

# Inequality: Wealth, health and longevity

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- **Introduction**
- Economic inequality
- Lifespan inequality
- The role of education
- Conclusions

# Inequality can be good or bad

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**Good**

## **Diversity**

- Biological – essential for evolution
- Intellectual – different and better ideas
- Cultural – richer life experiences
- Workforce – supports commercial success

**Bad**

## **Opportunity**

- When it relates to inequality of opportunity

## **Extreme**

- When it reflects extreme, unfair and avoidable differences

**We focus on the bad kind of inequality**

# What's so bad about this kind of inequality?

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## At the individual level

### Poor outcomes in terms of:

- Unfulfilled potential
- Life satisfaction
- Self esteem
- Health
- Lifespan

## At the societal level

### Poor outcomes in terms of:

- Populism
- Social cohesion
- Democratic participation
- Missed talent
- Economic underperformance
- Conflict

# The Global Financial Crisis shone the spotlight on inequality

## Economic inequality



Source: Occupy Wall St

"We are the 99%"

Youth unemployment > 50%

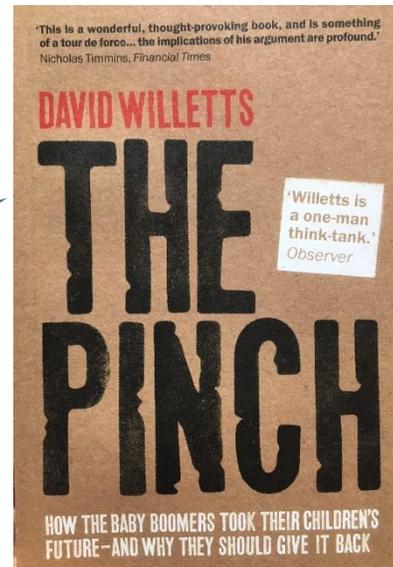
"How the baby boomers took their children's future – and why they should give it back"

## Generational inequality



Source: Movimiento 15-M

"Older workers not bearing their share of the pensions burden"



UK

UK edition  
**The Guardian**

26 Feb 2018

Generational battle lines harden over pensions

# Measuring inequality

## Inequality variables:

Economic  
Health  
Lifespan (Longevity)  
Education  
Employment opportunities

## Inequality statistics:

Top 1% share  
90/10 ratio  
Gini coefficient

## Inequality breakdowns:

By:  
Gender  
Age (generation)  
Socio-economic group  
Geography  
Education attainment  
Parent characteristics

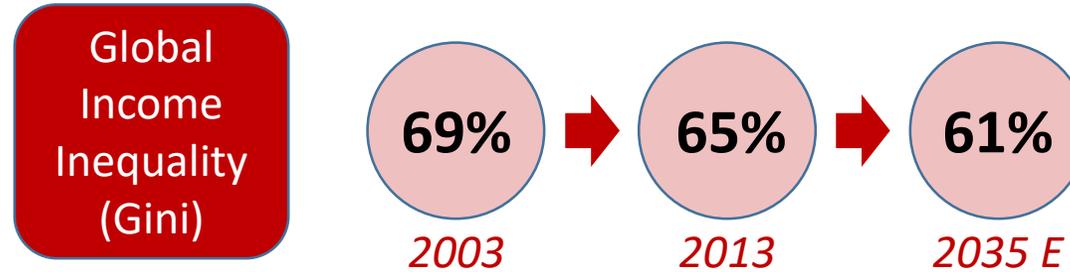
*For example,  
Gini Coefficients:*

Global  
Income **65%**  
Inequality

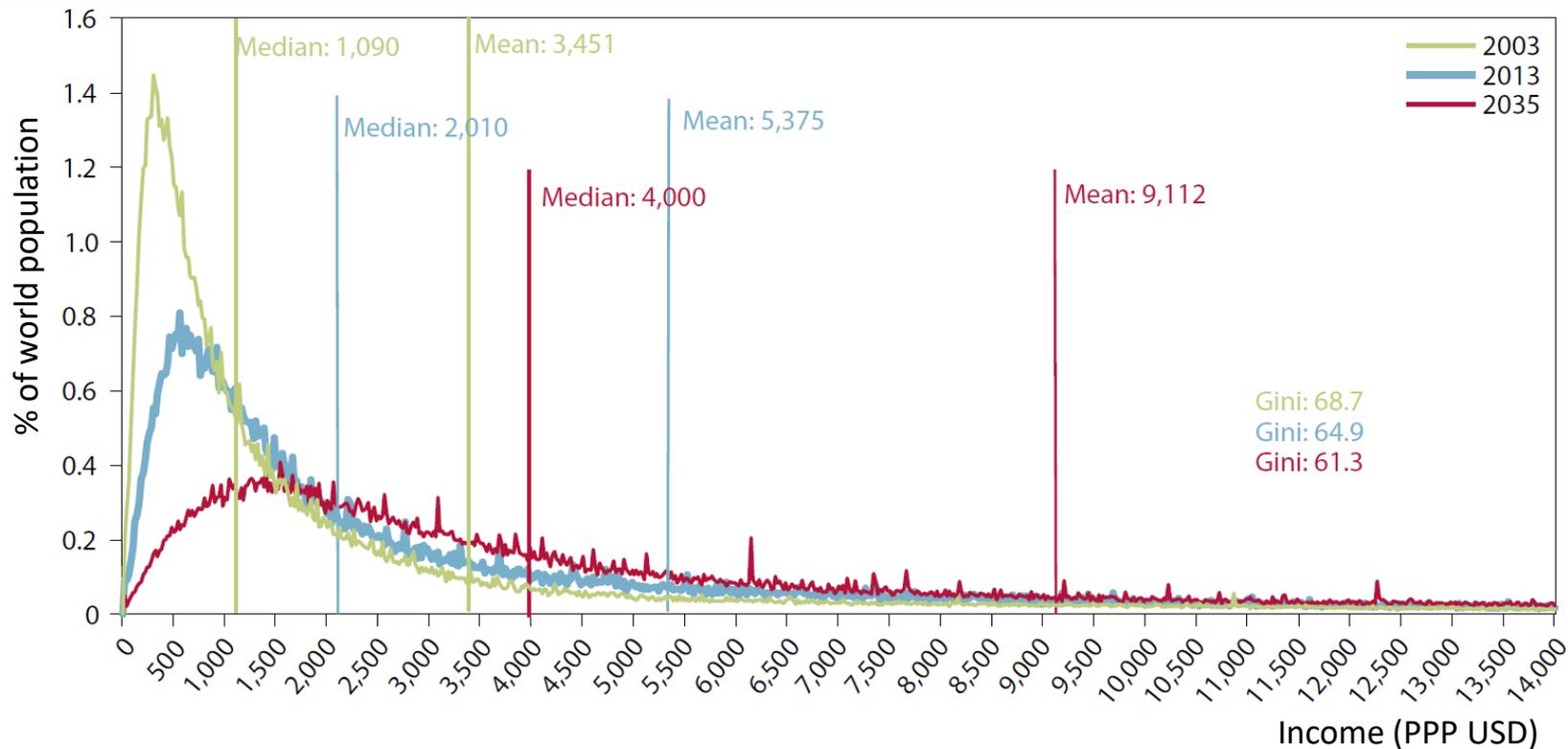
Global  
Lifespan **18%**  
Inequality

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# Income inequality is the most studied measure of inequality



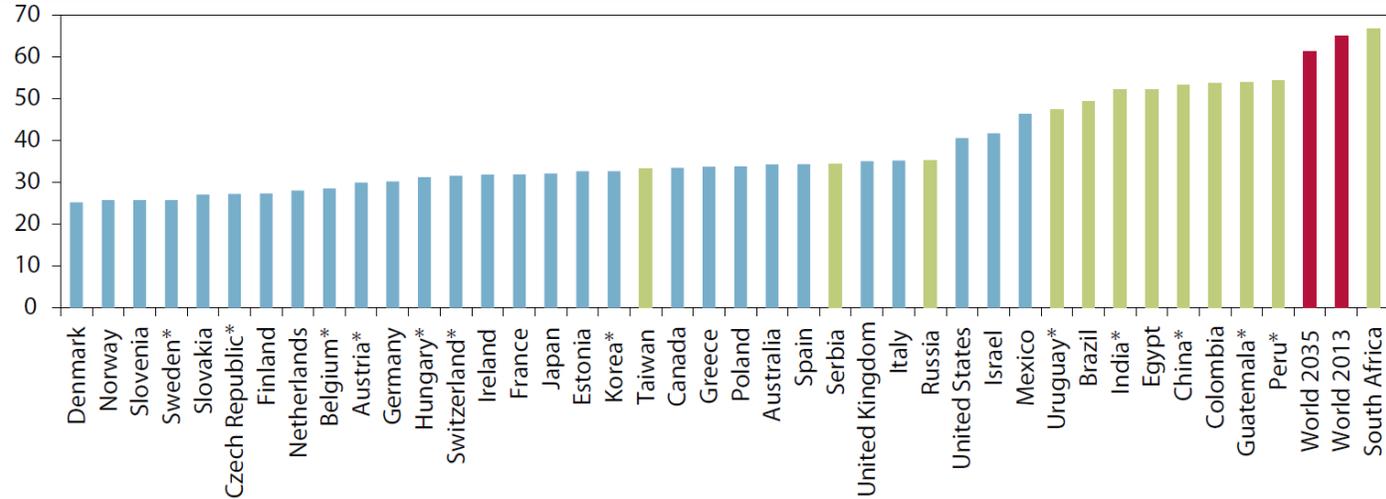
## Global income distributions 2003, 2013, 2035 E



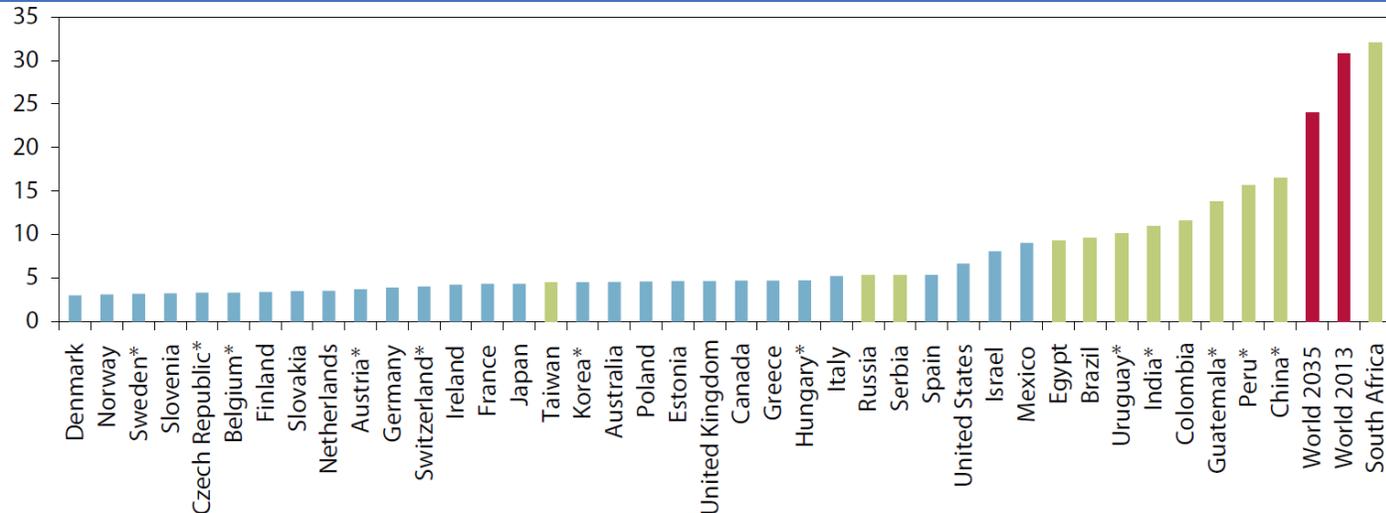
Source: Hellebrandt and Paolo Mauro (2015), The Future of Worldwide Income Distribution

# There is wide variation across countries of the income inequality within countries

**Gini coefficient - household per capita disposable income in late 2000s**

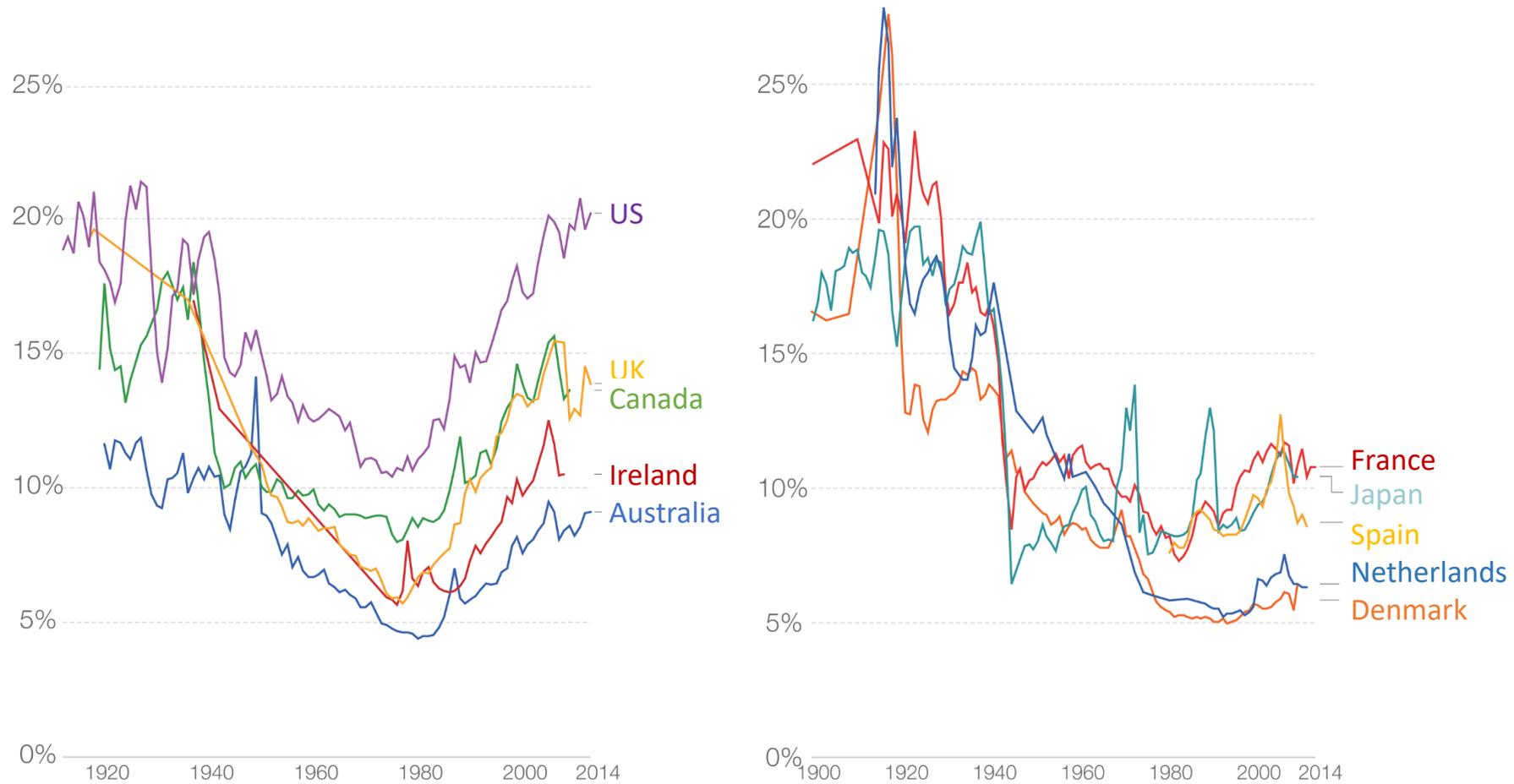


**90/10 ratio - household per capita disposable income in late 2000s**



# Improvements in the top 1% share of income have reversed in English-speaking countries since the 1980s

## Share of total income going to top 1% (before tax and transfers)

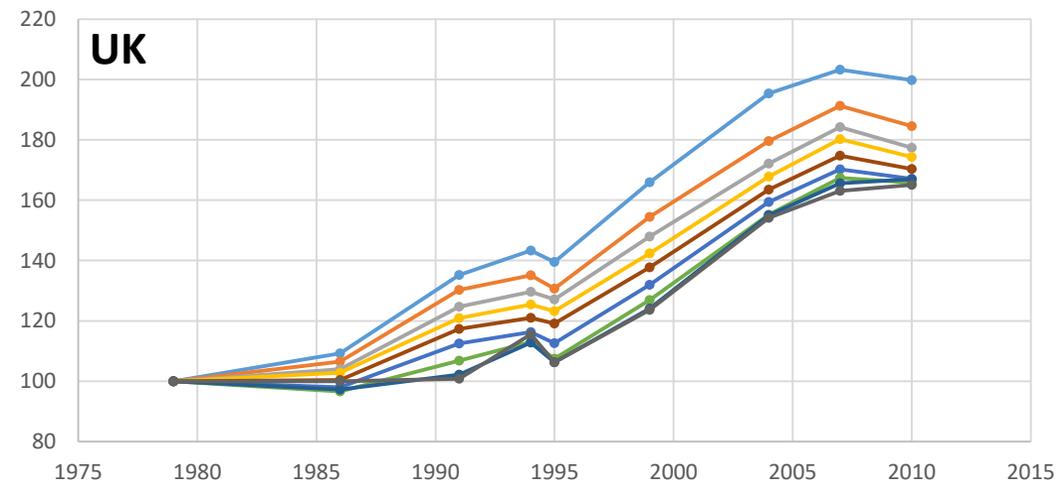
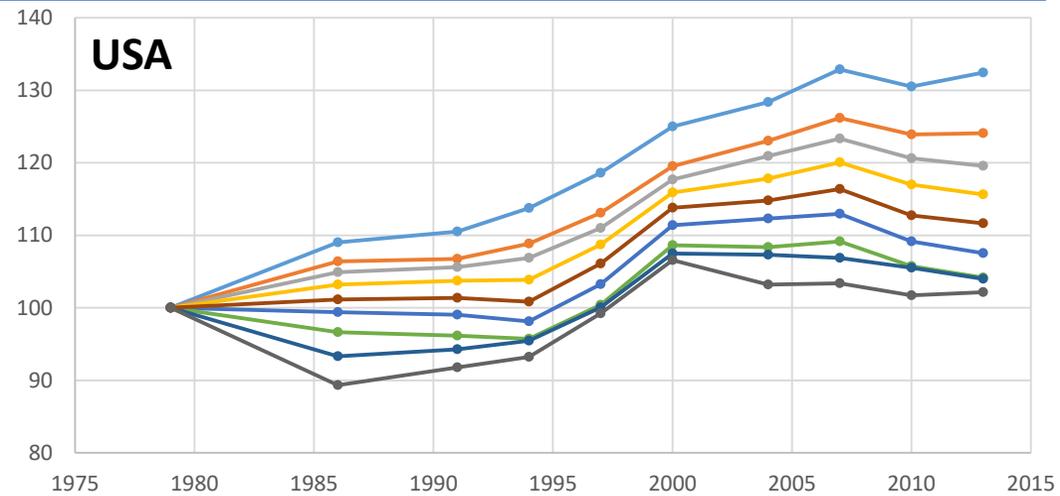


Data source: World Wealth and Income Database (2018). This is income before taxes and transfers. This data visualisation is available at [OurWorldinData.org](https://ourworldindata.org). There you find the raw data and more visualisations on inequality and how the world is changing. Licensed under CC-BY-SA by the author Max Roser.



# The whole distribution of income gives a the more complete picture

## Real disposable household income\*



- Experience is country specific

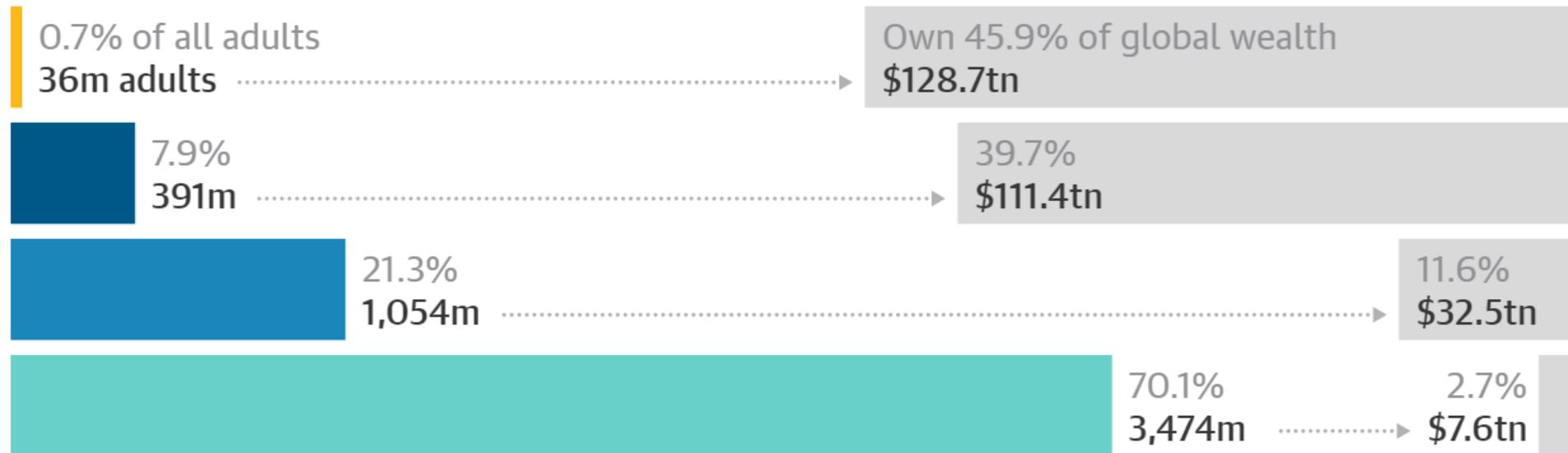
\* Deciles 1 to 9. Income is adjusted for household size, inflation and price differences between countries and expressed in 2011 dollars.

Source: Incomes across the Distribution Database, Nolan, Thewissen, Roser 2016 (Our World in Data)

# Inequality in wealth exceeds inequality in income

## Distribution of global wealth

Individual wealth held ■ \$1m+ ■ \$100,000 to \$1m ■ \$10,000 to \$100,000 ■ Under \$10,000



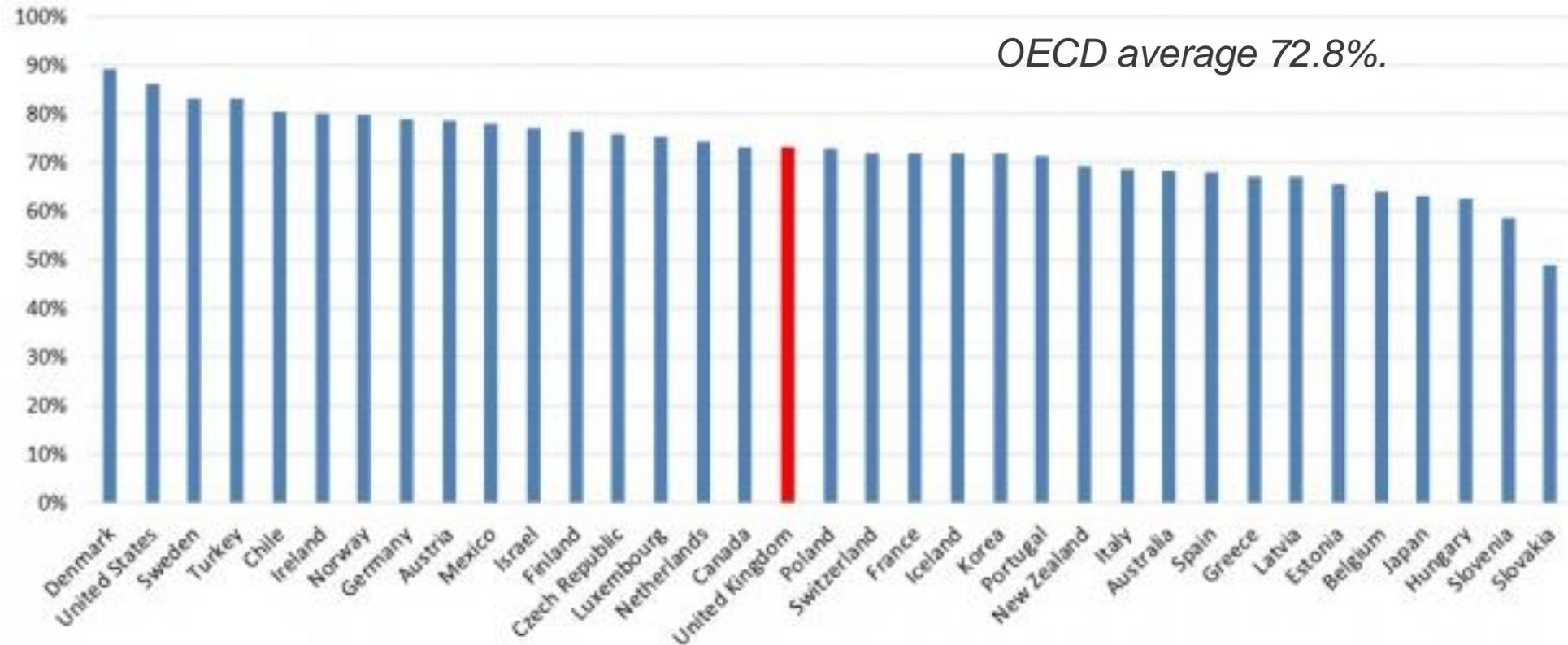
Guardian graphic | Source: Credit Suisse Global Wealth Databook 2017

*The Guardian*, Tuesday, 14 November 2017

**Wealth inequality in the developed world is largely linked to property and pensions wealth**

# Country rankings of wealth inequality differ from income inequality

## Wealth inequality in different countries (Gini coefficient)



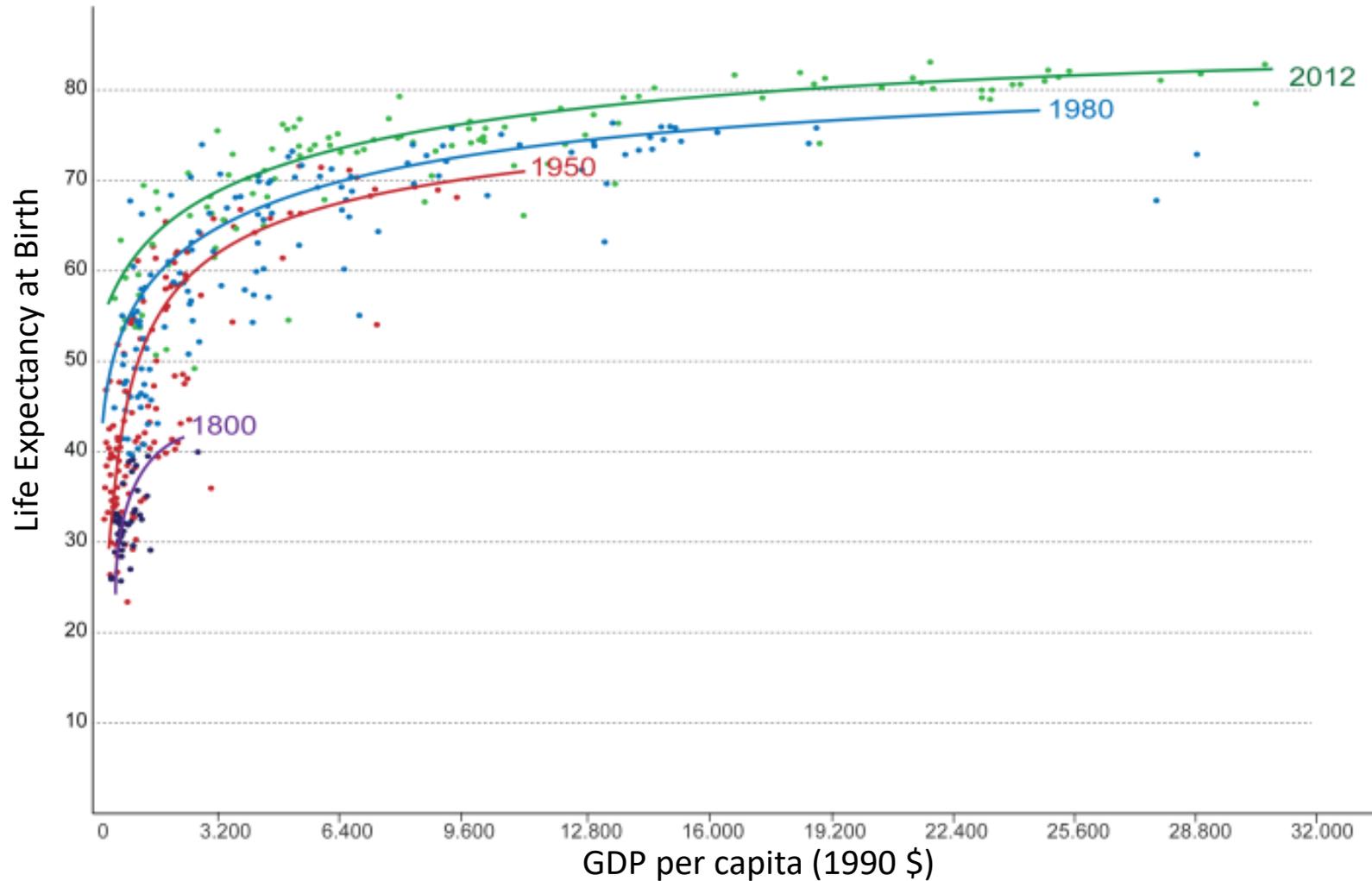
Source: The Equality Trust; <https://www.equalitytrust.org.uk/scale-economic-inequality-uk>  
Credit Suisse Global Wealth Databook 2016

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# Life expectancy increases with income – the “Preston Curve”



Life Expectancy vs. GDP per Capita from 1800 to 2012 – by Max Roser



Data sources: Data on life expectancy are from Gapminder.org; data on GDP per capita are from the 'New Maddison Project Database'.  
The interactive data visualisation is available at [OurWorldinData.org](https://ourworldindata.org). There you find the raw data and more visualisations on this topic.

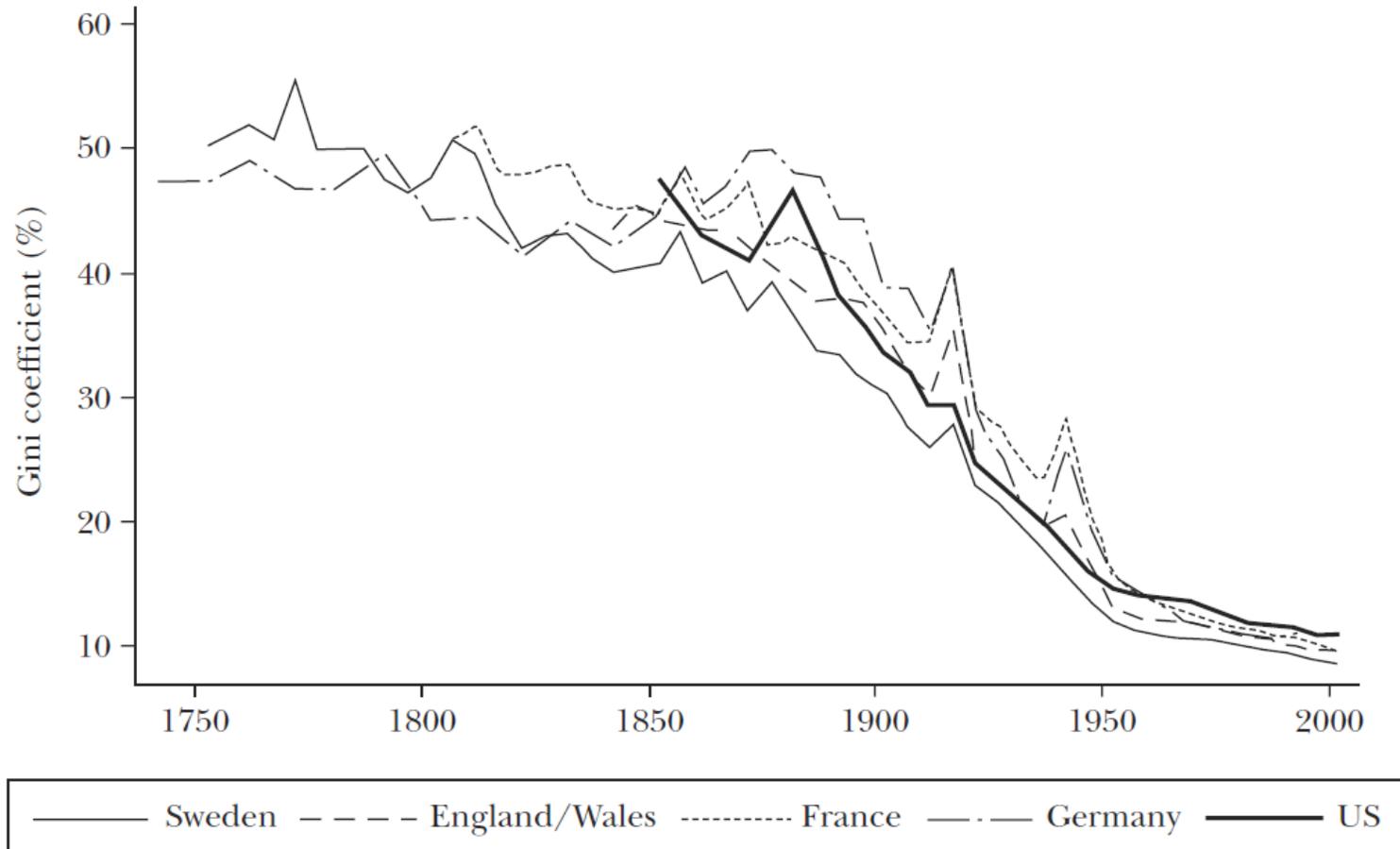
Licensed under [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) by the author Max Roser.

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# Over time lifespan inequality has been falling

## Gini coefficient for lifespan inequality



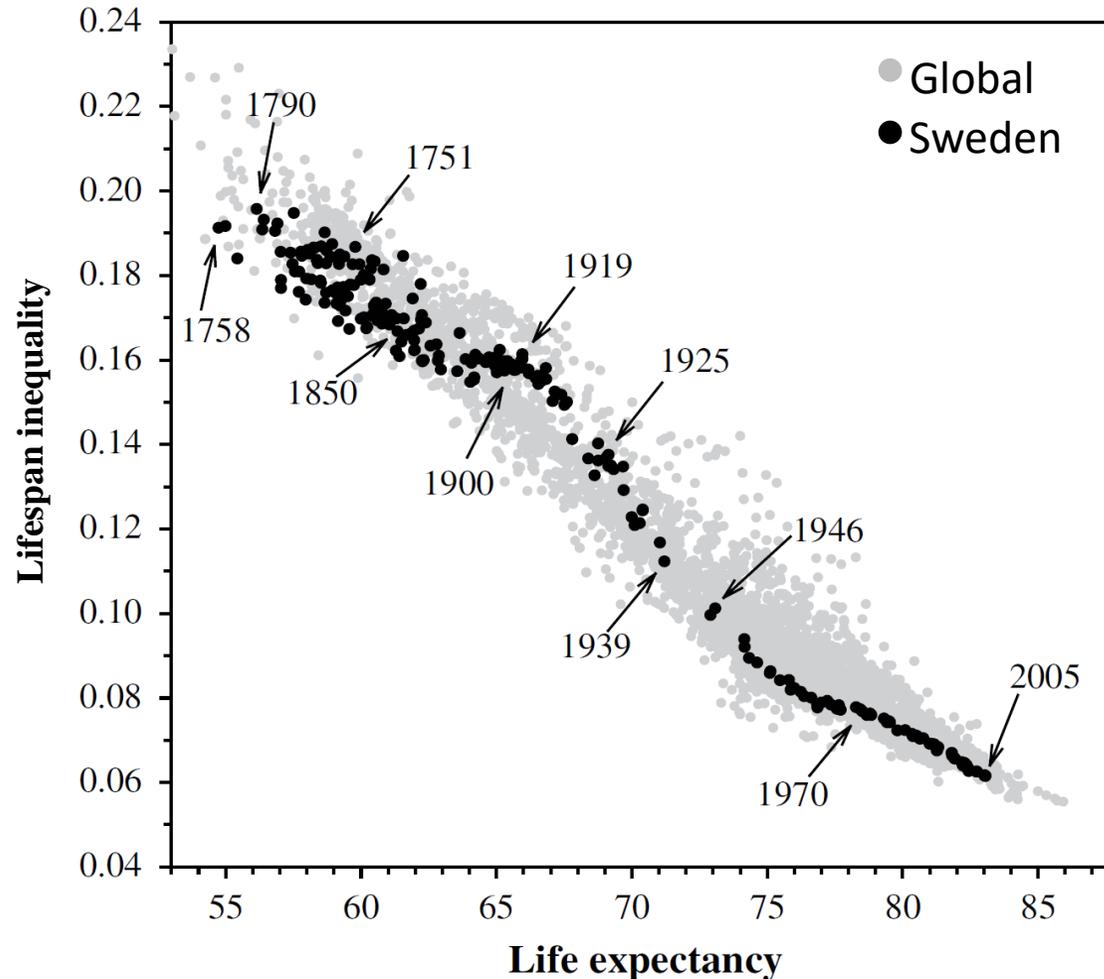
*Note:* Data are five-year averages centered around year shown.

Source: Peltzman 2009  
Journal of Economic  
Perspectives 23 (4) Fall  
175–190

# Lifespan inequality has fallen as LE has risen

## Lifespan inequality vs life expectancy

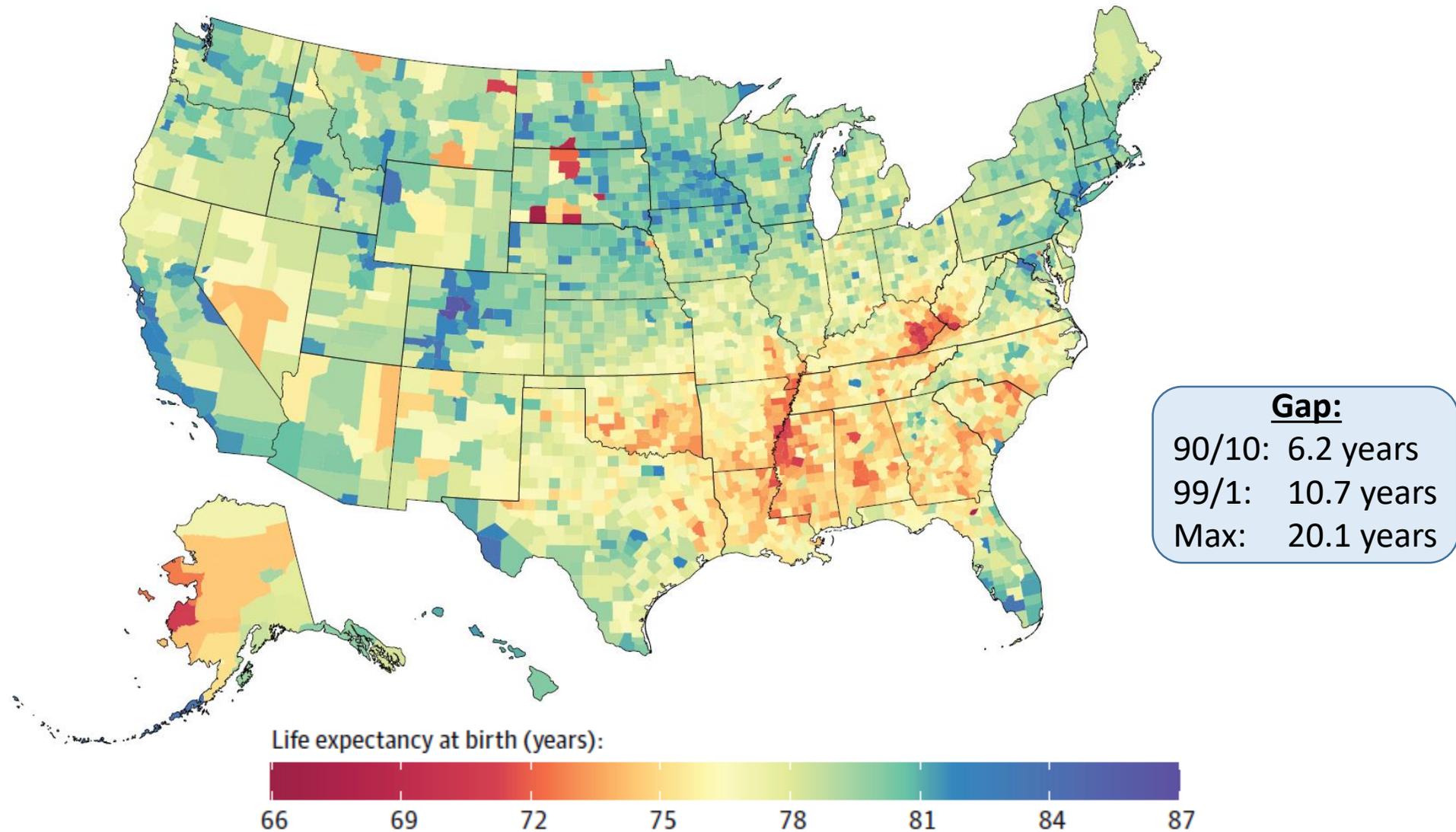
– Females age 15+, Sweden 1751-2005



- Trajectory of **lifespan inequality** vs. **LE** through time and across countries
- Based on 9063 life tables for 212 countries

Source: Smits and Monden 2009, Length of life inequality around the globe. Soc Sci Med. 68(6), 1114-23

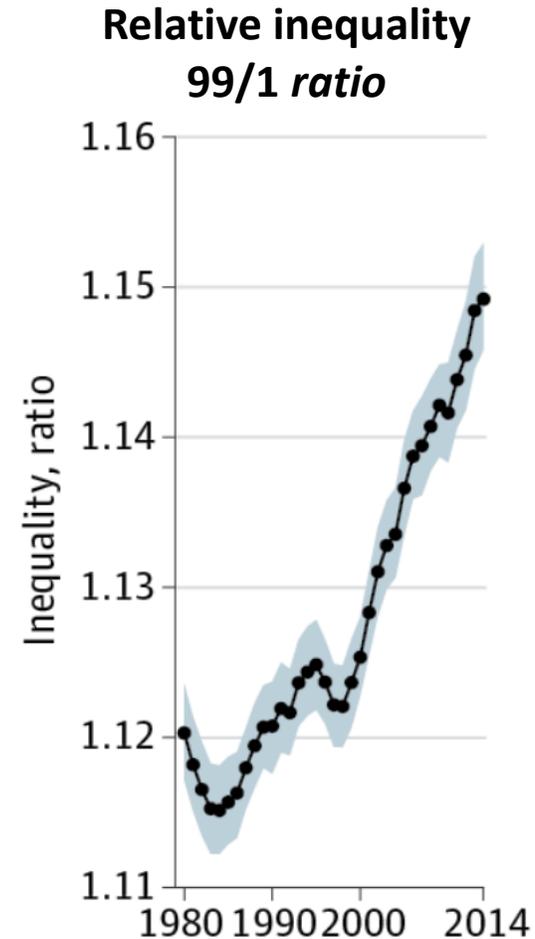
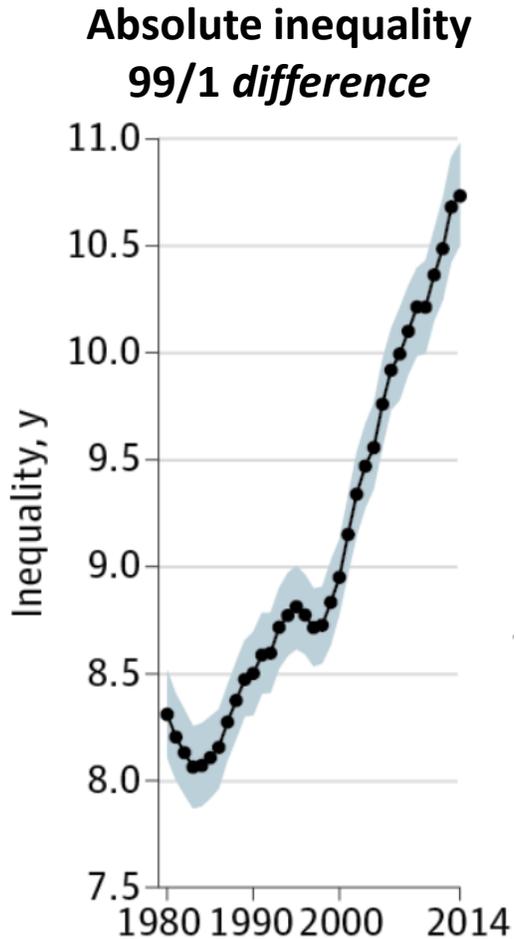
# LE at birth by US county 2014



Source: Dwyer-Lindgren, Bertozzi-Villa, Stubbs, et al. *JAMA Intern Med.* 2017. Inequalities in Life Expectancy Among US Counties, 1980 to 2014 Temporal Trends and Key Drivers. 177(7):1003-1011

# Life expectancy inequality has been worsening across US counties

## Life expectancy at birth inequality – US counties

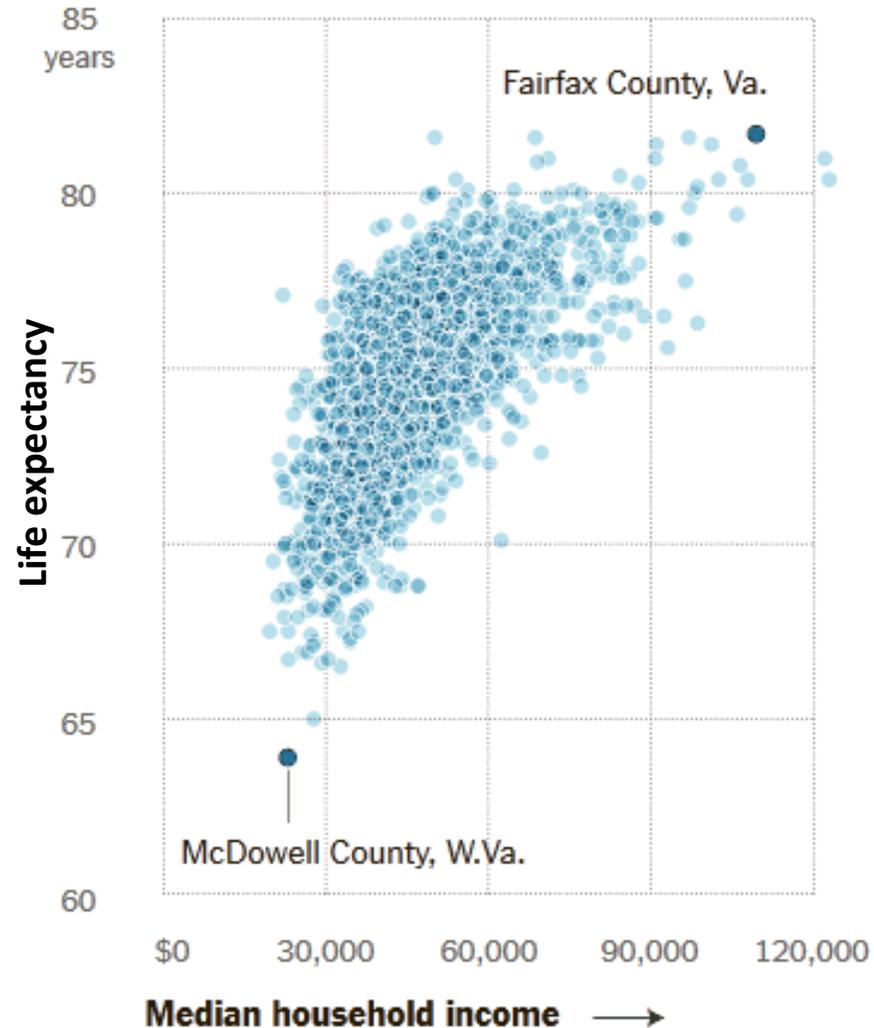


Source: Dwyer-Lindgren, Bertozzi-Villa, Stubbs, et al. *JAMA Intern Med.* 2017. Inequalities in Life Expectancy Among US Counties, 1980 to 2014 Temporal Trends and Key Drivers. 177(7):1003-1011



# Within countries, lifespans are longer where income is higher

## US male LE vs income by county

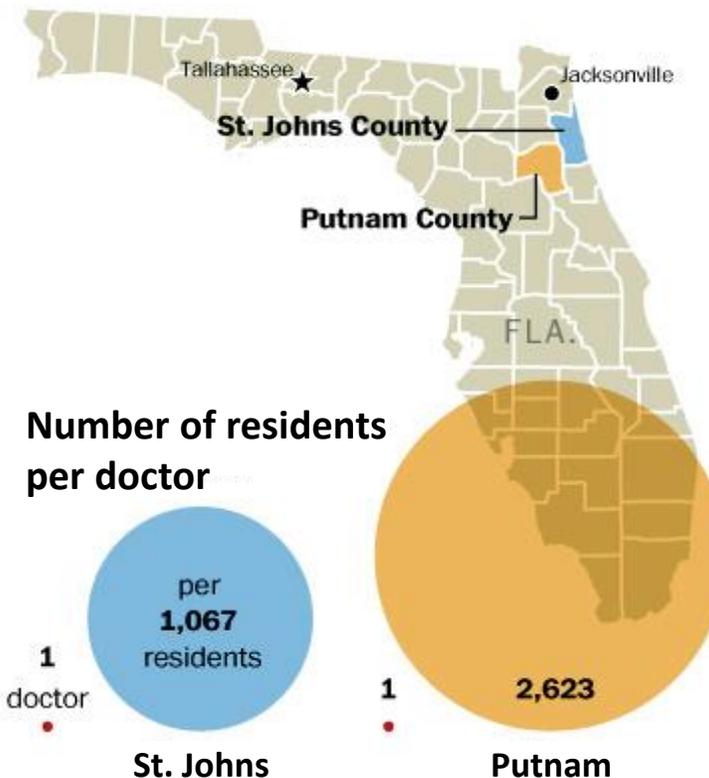
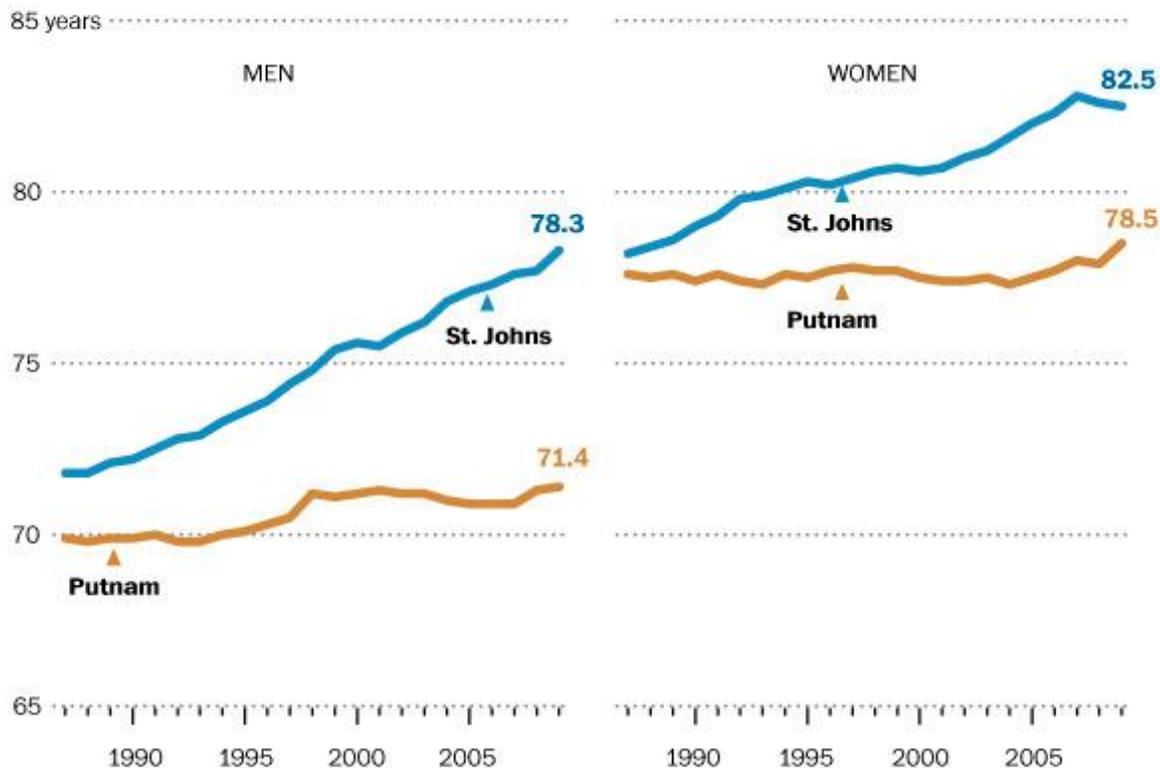


- Preston curve for US counties
  - Similar to international Preston Curve
  - Longevity positively associated with income
- Two counties separated by 350 miles could not be more different:
  - Fairfax County
  - McDowell County

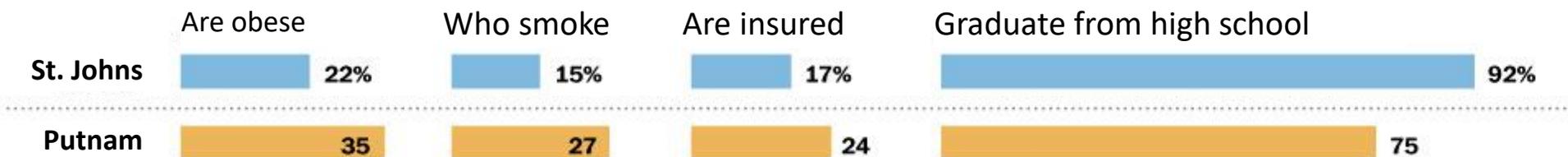
New York Times, March 15, 2014. [http://www.nytimes.com/interactive/2014/03/15/business/higher-income-longer-lives.html?\\_r=0](http://www.nytimes.com/interactive/2014/03/15/business/higher-income-longer-lives.html?_r=0)  
Sources: Institute for Health Metrics and Evaluation (life expectancy); socialexplorer.com (income data from the 1990 decennial Census and 2008-2012 American Community Survey)

# Differences in LE from health status, education and lifestyle for two neighbouring US counties

## Life expectancy



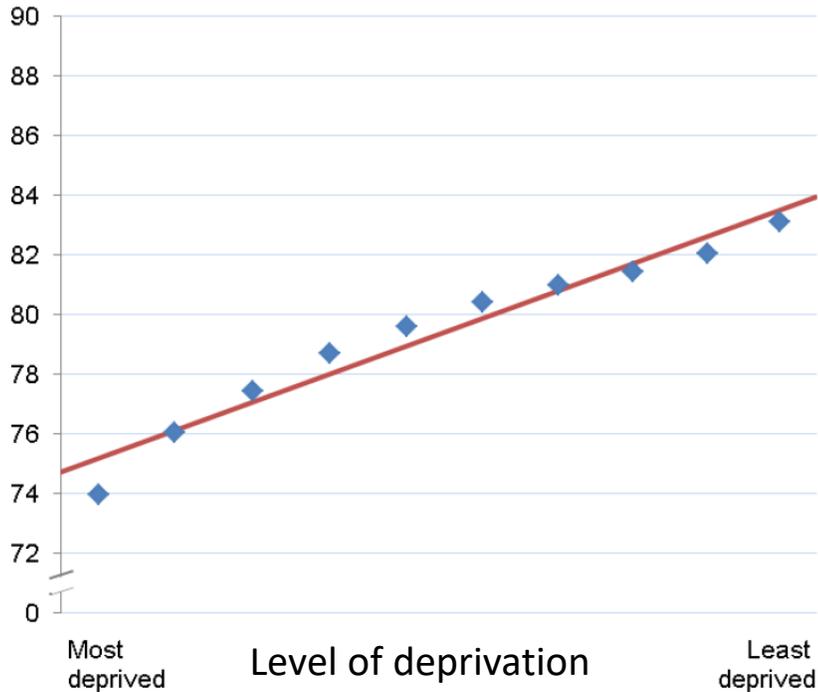
## Percentage who:



SOURCE: County Health Rankings and Roadmaps program, Robert Wood Johnson Foundation. The Washington Post. Published on March 10, 2013, 8:07 p.m.  
[http://www.washingtonpost.com/business/economy/economic-inequality-contributing-to-gap-in-life-expectancy/2013/03/10/54b5d21c-89df-11e2-98d9-3012c1cd8d1e\\_graphic.html](http://www.washingtonpost.com/business/economy/economic-inequality-contributing-to-gap-in-life-expectancy/2013/03/10/54b5d21c-89df-11e2-98d9-3012c1cd8d1e_graphic.html)

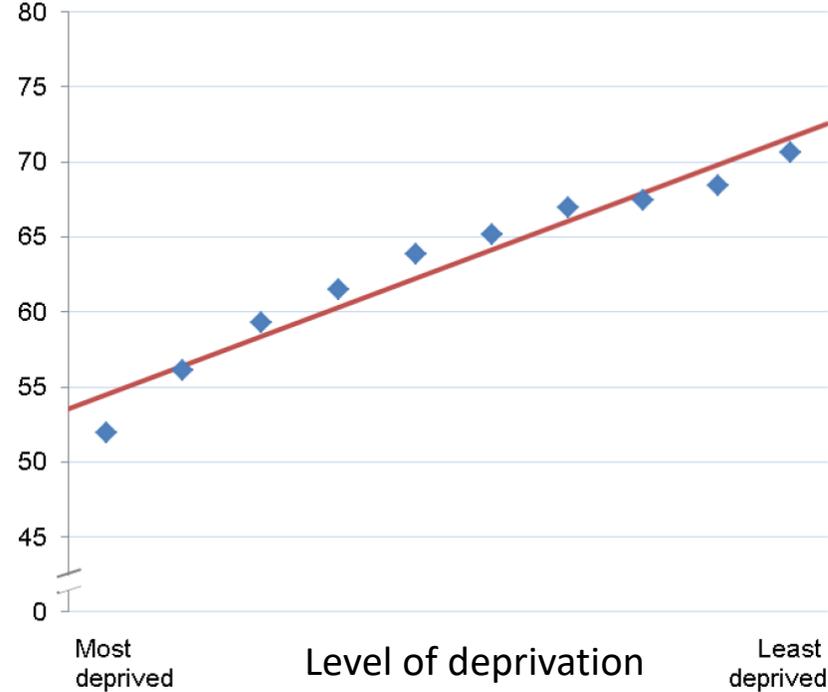
# There are even wider inequalities in *Healthy* Life Expectancy – related to level of deprivation\*

### LE at birth (Males England)\*



**Gap:**  
9.2 years male  
7.1 years female

### Healthy LE at birth (Males England)\*



**Gap:**  
20 years  
(male & female)

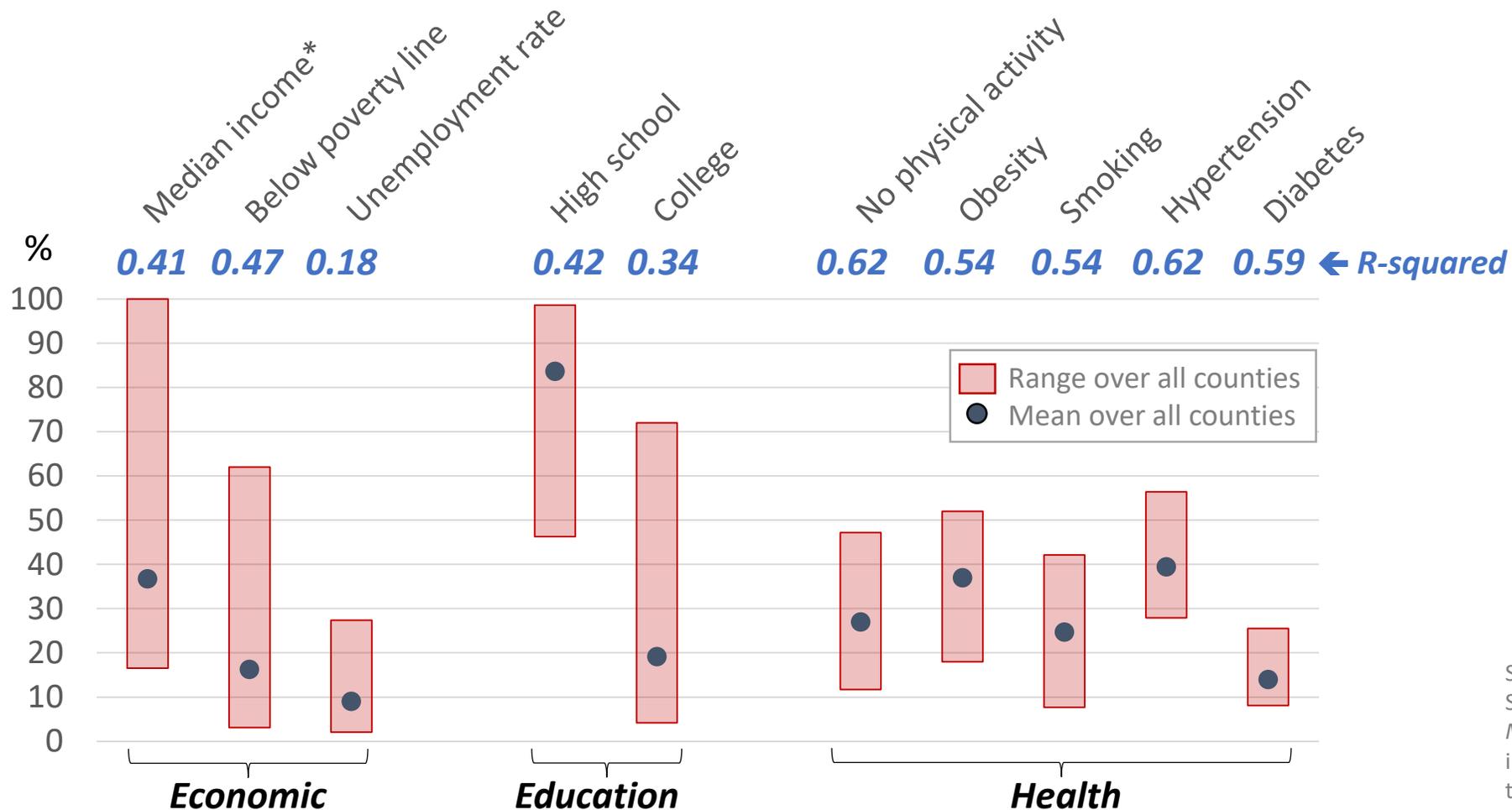
Source: Public Health England. Public Health Outcomes Framework: Health Equity Report. Focus on Ethnicity PHE analysis of ONS data.

\* Level of deprivation as reflected in deciles of the Index of multiple deprivations (IMD)



# Life expectancy shows significant relationships with economic, education and health factors

## Range of US county outcomes for factors associated with LE



Source: Dwyer-Lindgren, Bertozzi-Villa, Stubbs, et al. (2017) *JAMA Intern Med.* 2017;177(7):1003-1011 "Inequalities in Life Expectancy Among US Counties, 1980 to 2014: Temporal Trends and Key Drivers".

\* Median household income of each county as % of maximum median household income.

# The association between economic and education factors and life expectancy is mediated through the “health” risk factors

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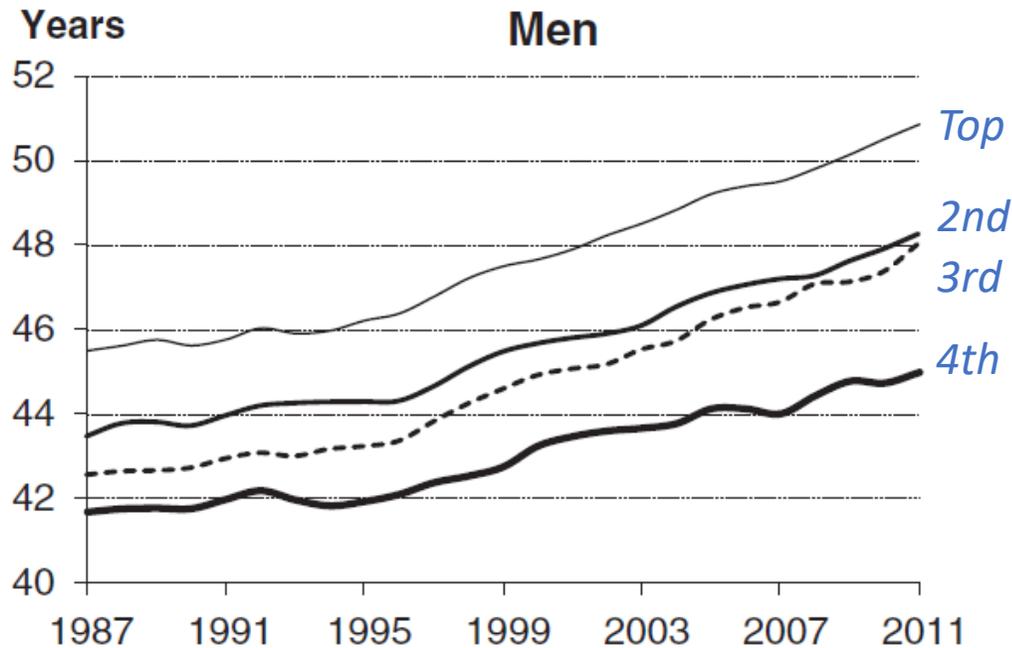


Source: Dwyer-Lindgren, Bertozzi-Villa, Stubbs, et al. (2017) *JAMA Intern Med.* 2017;177(7):1003-1011 “Inequalities in Life Expectancy Among US Counties, 1980 to 2014: Temporal Trends and Key Drivers”.

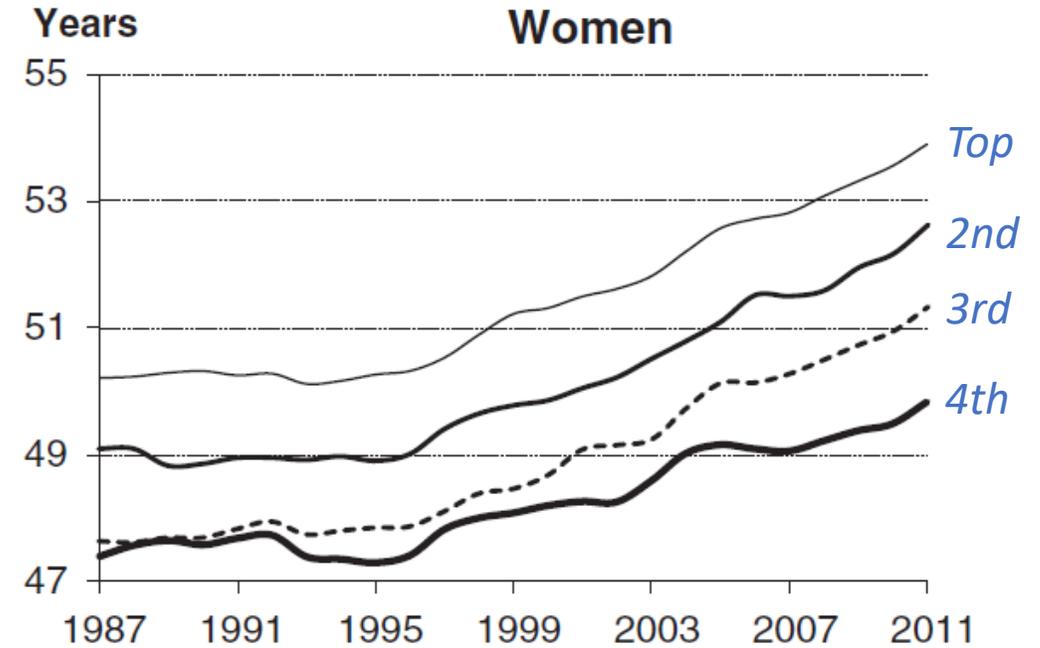
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# In many countries education is a highly significant predictor of LE

## Denmark: Life expectancy age 30 by education quartile



**Gap:**  
5.8 years

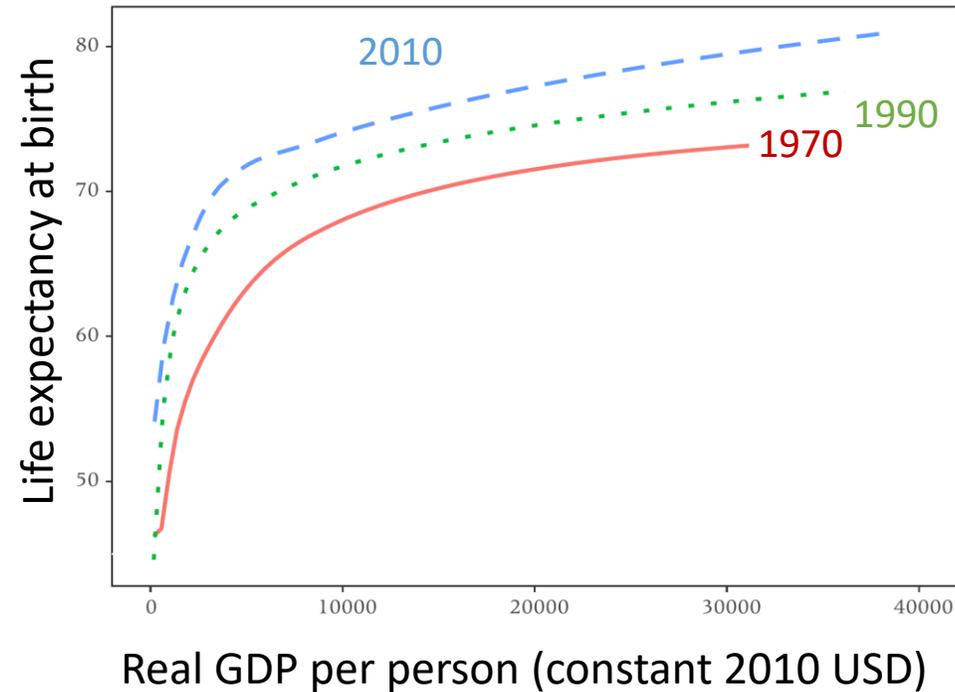


**Gap:**  
4.1 years

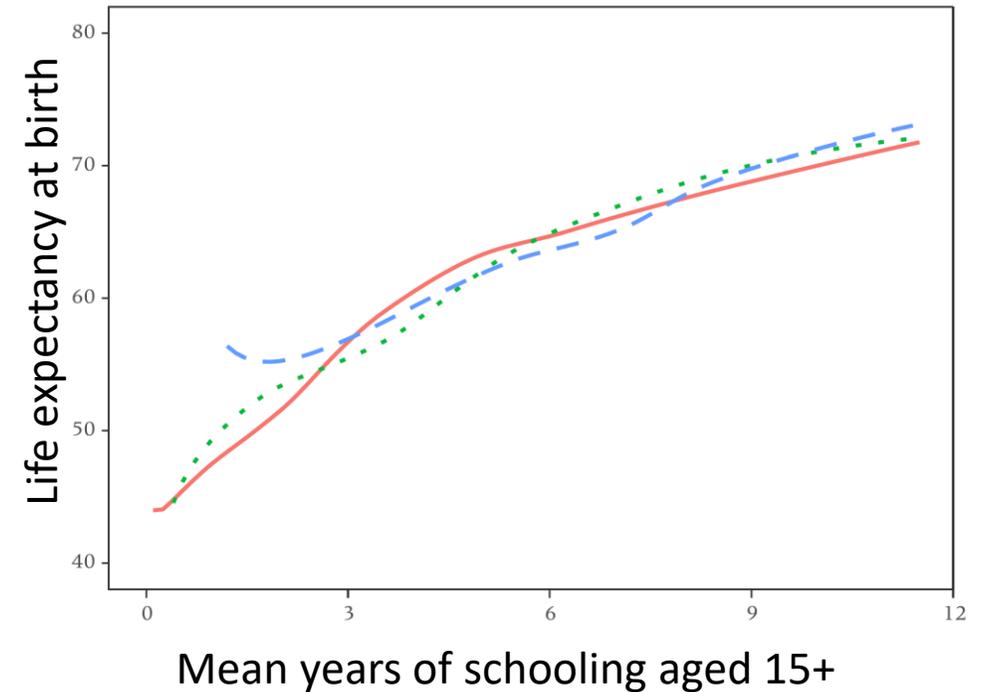
Source: Brønnum-Hansen and Baadsgaard (2012). Widening social inequality in life expectancy in Denmark. BMC Public Health 2012, 12:994

# Education seems to be a better predictor of life expectancy than income

## Traditional Preston Curve – LE vs GDP\*



## New Preston Curve – LE vs Education\*



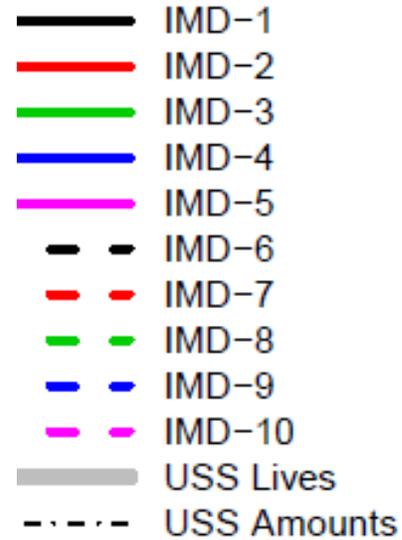
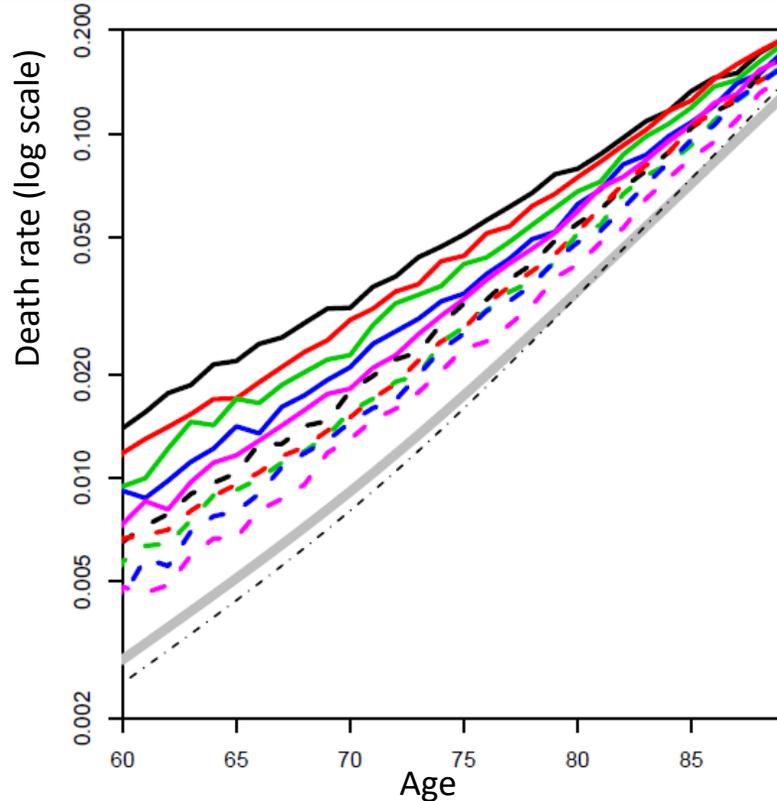
\*Based on multivariate analyses on 174 countries for 1970–2015

Source: Lutz and Kebede (2018) Education and Health: Redrawing the Preston Curve. *Population and Development Review* 44(2) 343-361.

**Education policy is a key element of addressing lifespan inequality**

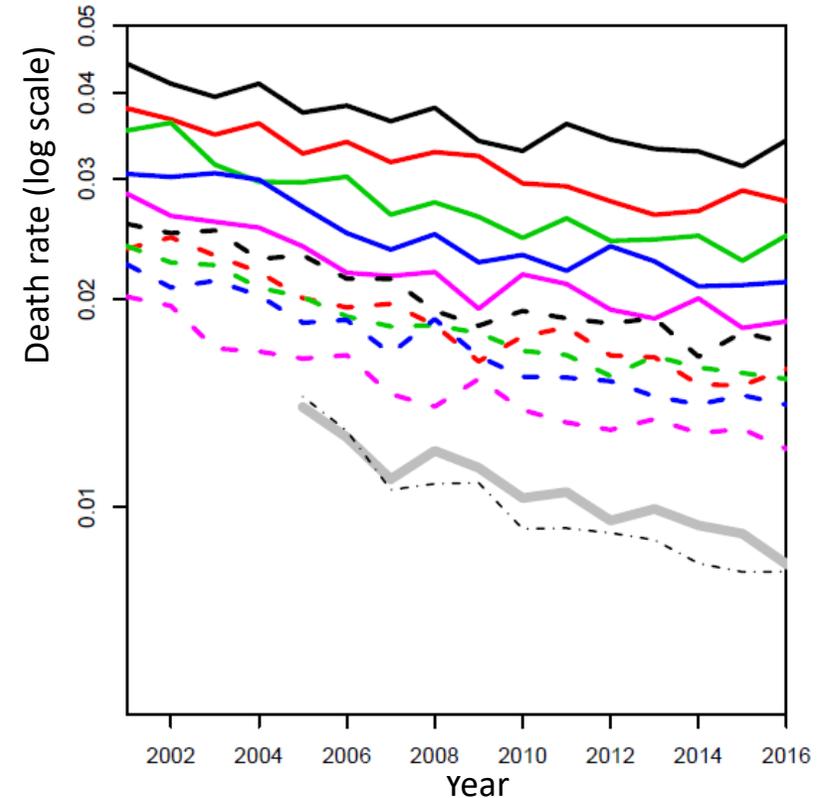
# More evidence that education is positively associated with low mortality

Male death rates 2015 by age England



Source: USS, Cairns et al 2018 unpublished

Male age 70 death rates history



- USS is a UK pension plan for the higher education sector
- Socio-economic groups reflect deciles of the UK index of multiple deprivations (IMD)

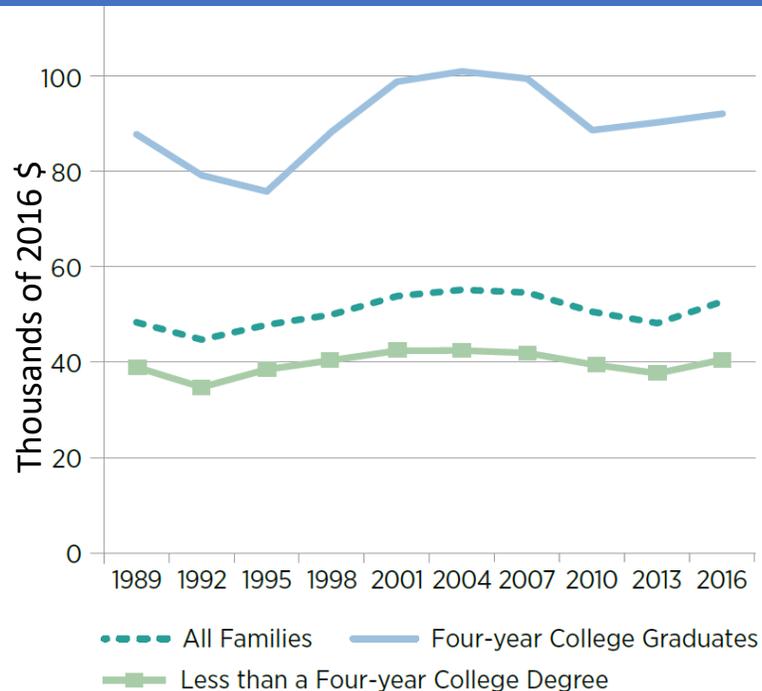
**Education-related effect exists across socio-economic groups**



# Education also seems to play a key role in addressing economic inequality

- Financial returns from education are large in high-inequality countries
- *Parental education* also has a positive association with income
- Education facilitates mobility
  - Immobility and inequality are positively associated through the “Great Gatsby Curve”

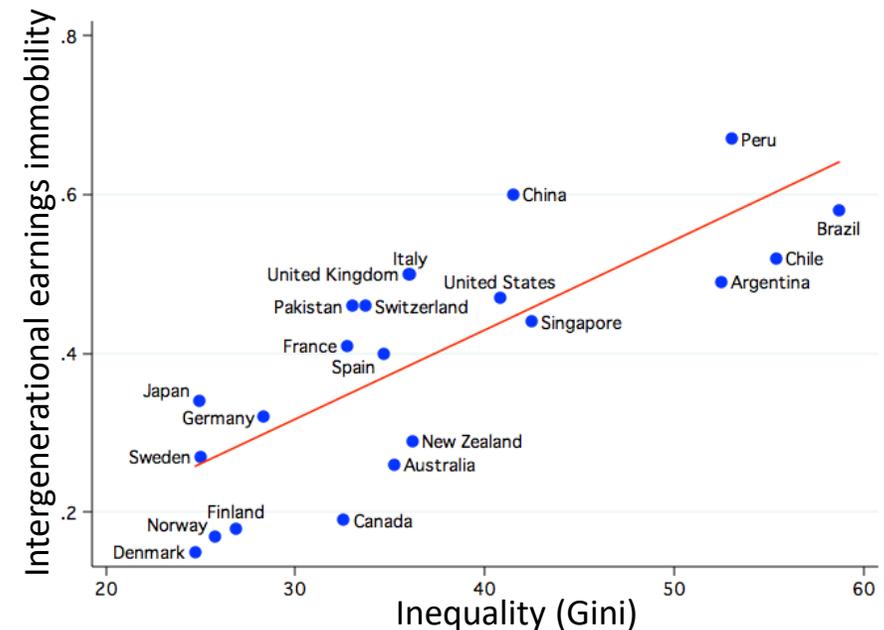
## US median income by education



Source: Federal Reserve of St. Louis, (2018), “The financial returns from college across generations.”

Non-Restricted (NR)

## The “Great Gatsby Curve”



Source: Miles Corat (2012), <https://milesorak.com/2012/01/12/here-is-the-source-for-the-great-gatsby-curve-in-the-alan-krueger-speech-at-the-center-for-american-progress/>

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# Conclusions

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- Globally inequality has been falling, looking at the whole distribution
  - But there are pockets where inequality remains persistently high or is increasing
  
- Economic inequality and lifespan inequality are positively associated
  
- Education seems to play a key role in reducing inequality
  - Both economic and lifespan inequality
  - The effects are compounded across generations

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