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Cross-national differences in health at older ages: The role of public policies

Mauricio Avendano

Unisanté - University of Lausanne

Harvard University

London, ELSA 20th Anniversary, 11th May 2023

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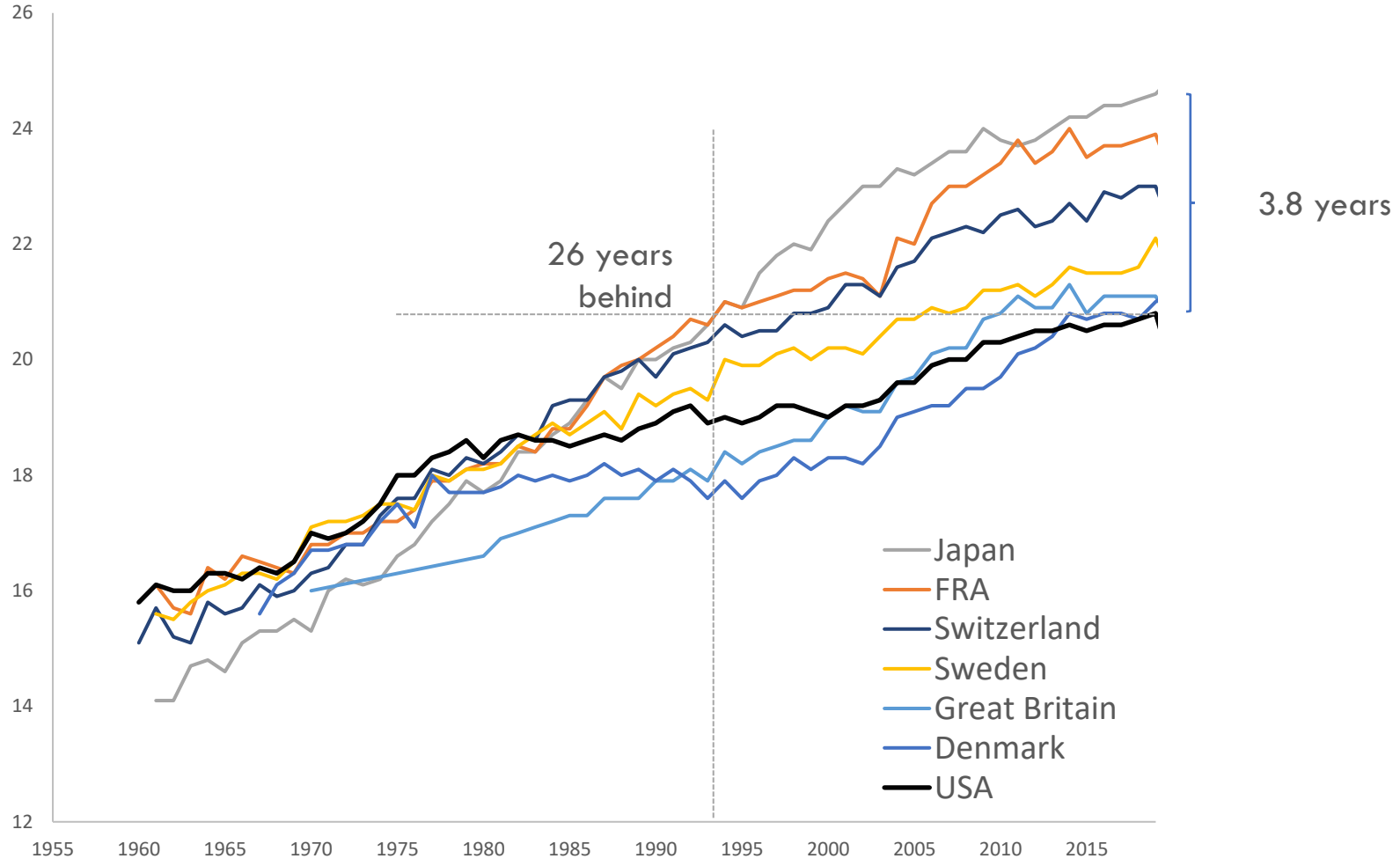
Female Life Expectancy at age 65, 1960-2020



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Avendano & Kawachi, An Rev Public Health, 2014 (updated to 2020)

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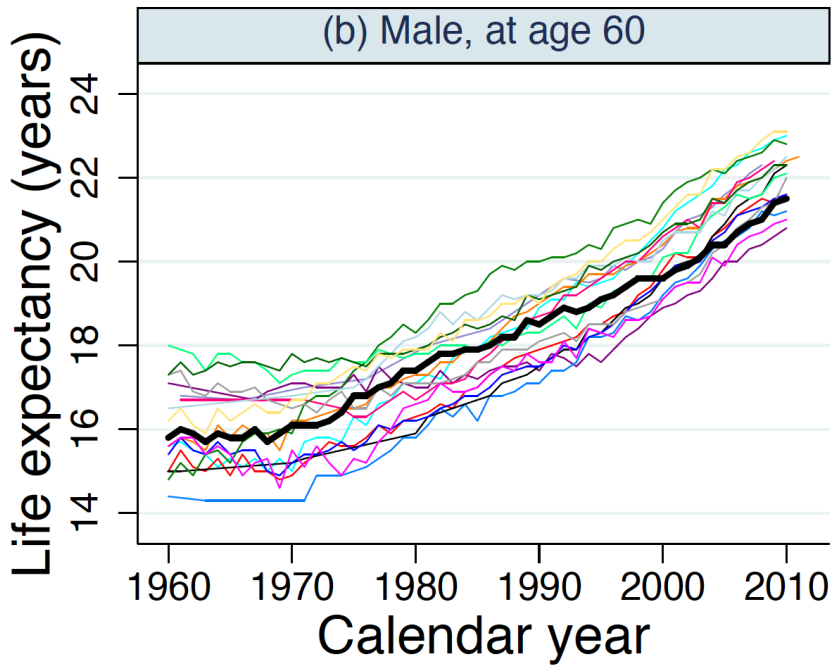
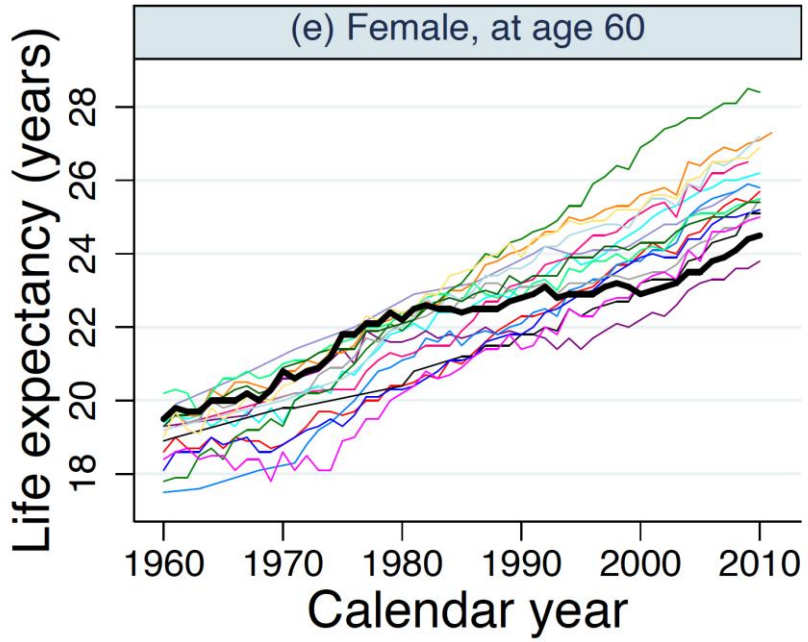
Life expectancy at 60, OECD countries, 1960-2010





Australia, Austria, Canada, Denmark, Finland, France, UK, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, USA

Avendano & Kawachi, Ann Review of Public Health, 2014

ANNUAL REVIEWS

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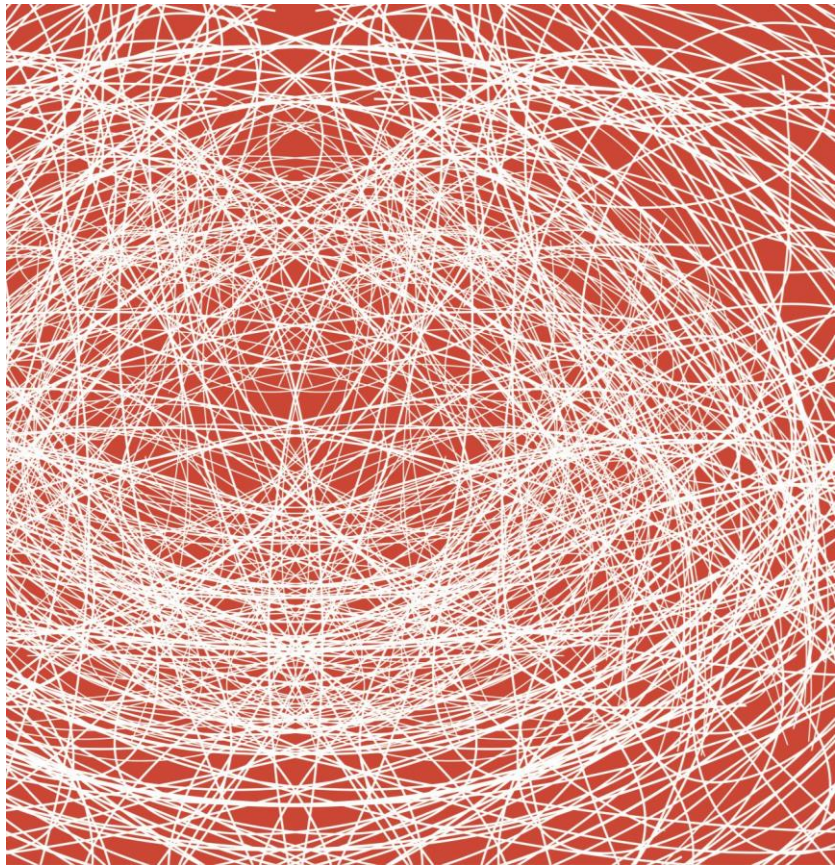
Outline

- **Why is this important**
- The 'Discovery' of cross-national differences in health
- **The explanation** of differences
- The contribution of **public policy**
- Perspective on **the future**



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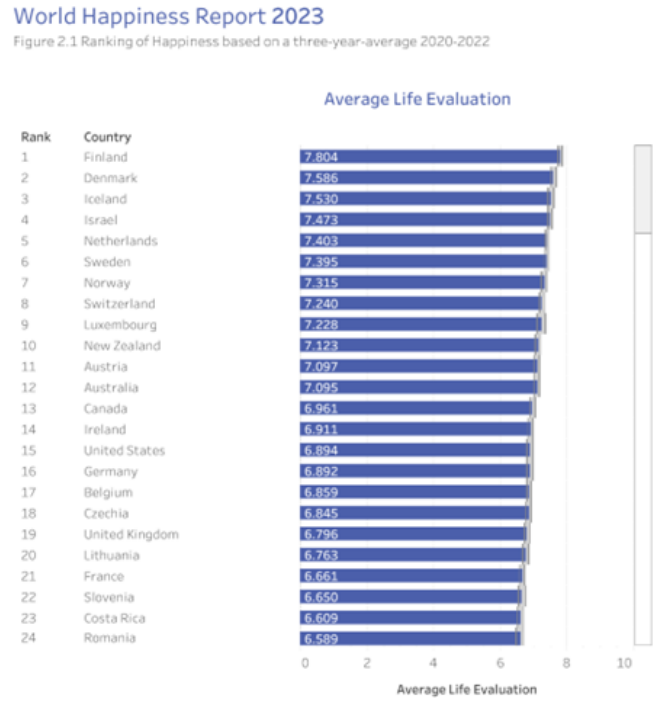
Why cross-national health comparisons

- **Policy relevance**
  - ‘To improve in anything, we need inspiration.’ (Lucia Kossarova)
  - ‘International shaming’ -motivate action
  - Identify impact of public action

- **Scientific relevance**
  - Going beyond the individual: understand impact of policy, culture, environment, political system, social context, family structures, work
  - Causal identification: Country shocks produce potentially exogenous changes in individual behaviour (e.g., smoking, caring, going to school, working, owning a house)



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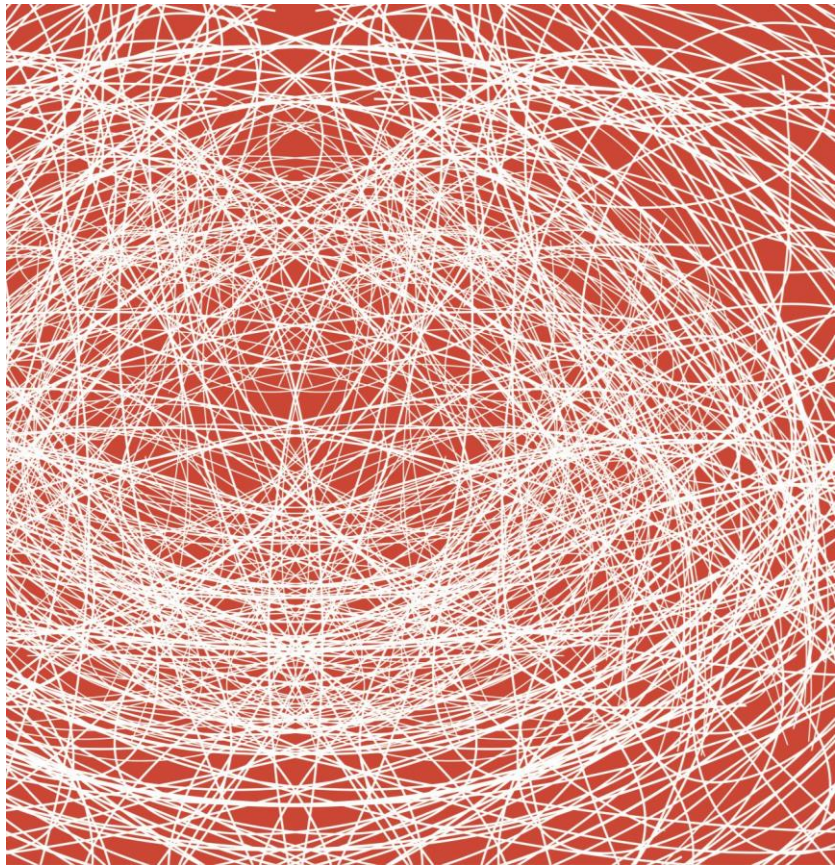

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JAMA®
The Journal of the American Medical Association

Disease and Disadvantage in the United States and in England

James Banks, PhD
Michael Marmot, MD
Zoe Oldfield, MSc
James P. Smith, PhD

Context The United States spends considerably more money on health care than the United Kingdom, but whether that translates to better health outcomes is unknown.

Objective To assess the relative heath status of older individuals in England and the United States, especially how their health status varies by important indicators of socioeconomic position.

Design, Setting, and Participants We analyzed representative samples of residents aged 55 to 64 years from both countries using 2002 data from the US Health and Retirement Survey (n=4386) and the English Longitudinal Study of Aging (n=3681), which were designed to have directly comparable measures of health, income, and education. This analysis is supplemented by samples of those aged 40 to 70 years from the 1999-2002 waves of National Health and Nutrition Examination Survey (n=2097) and the 2003 wave of the Health Survey for England (n=5526). These surveys contain extensive and comparable biological disease markers on respondents, which are used to determine whether differential propensities to report illness can explain these health differences. To ensure that health differences are not solely due to health issues in the black or Latino populations in the United States, the analysis is limited to non-Hispanic whites in both countries.

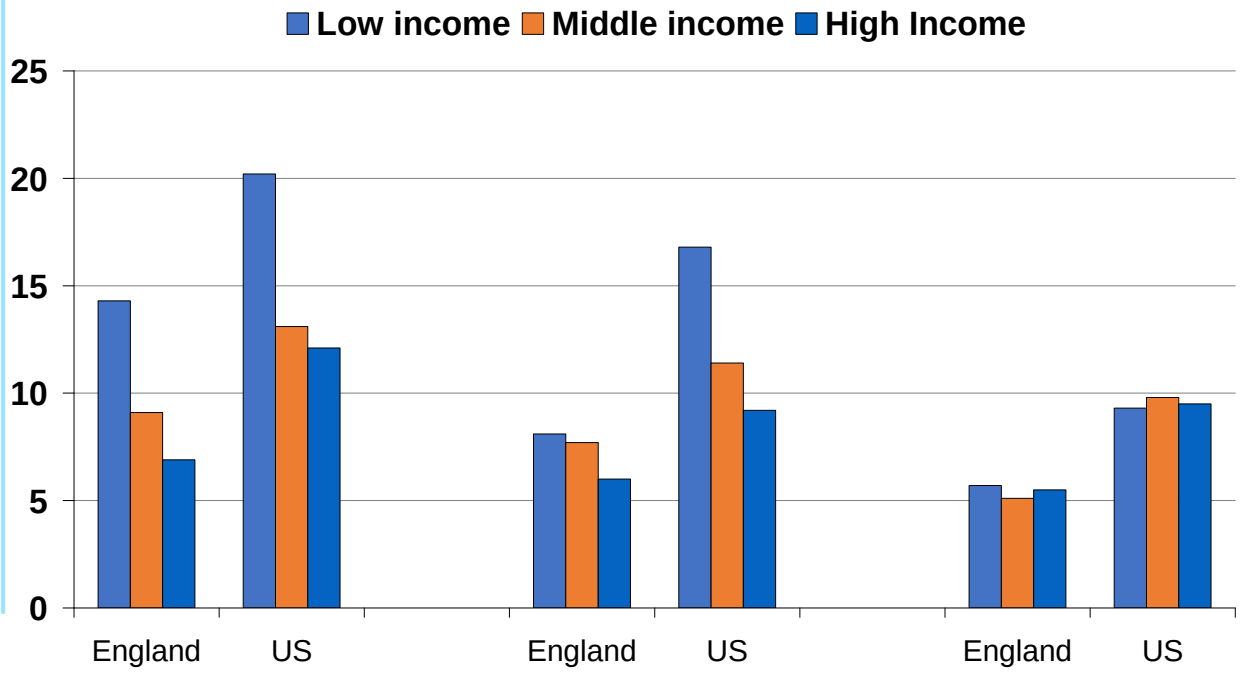
Main Outcome Measure Self-reported prevalence rates of several chronic diseases related to diabetes and heart disease, adjusted for age and health behavior risk factors, were compared between the 2 countries and across education and income classes within each country.

THE UNITED STATES HAS A CONsiderably greater expenditure on medical care (US $5274 per capita) than in the United Kingdom (US $2164 adjusting for purchasing power).[1] To determine whether that expenditure translates into better health outcomes for the adult US population, data on the degree of morbidity in each country beyond the childhood years are needed.

Given the strong link between socioeconomic position and health in both countries, cross-country comparisons of morbidity should examine varia-

Source: Banks, Marmot, Oldfield and Smith; JAMA 2006

Differences in self-rated health between England and the US, 55-64 year olds



Heart disease Diabetes Cancer

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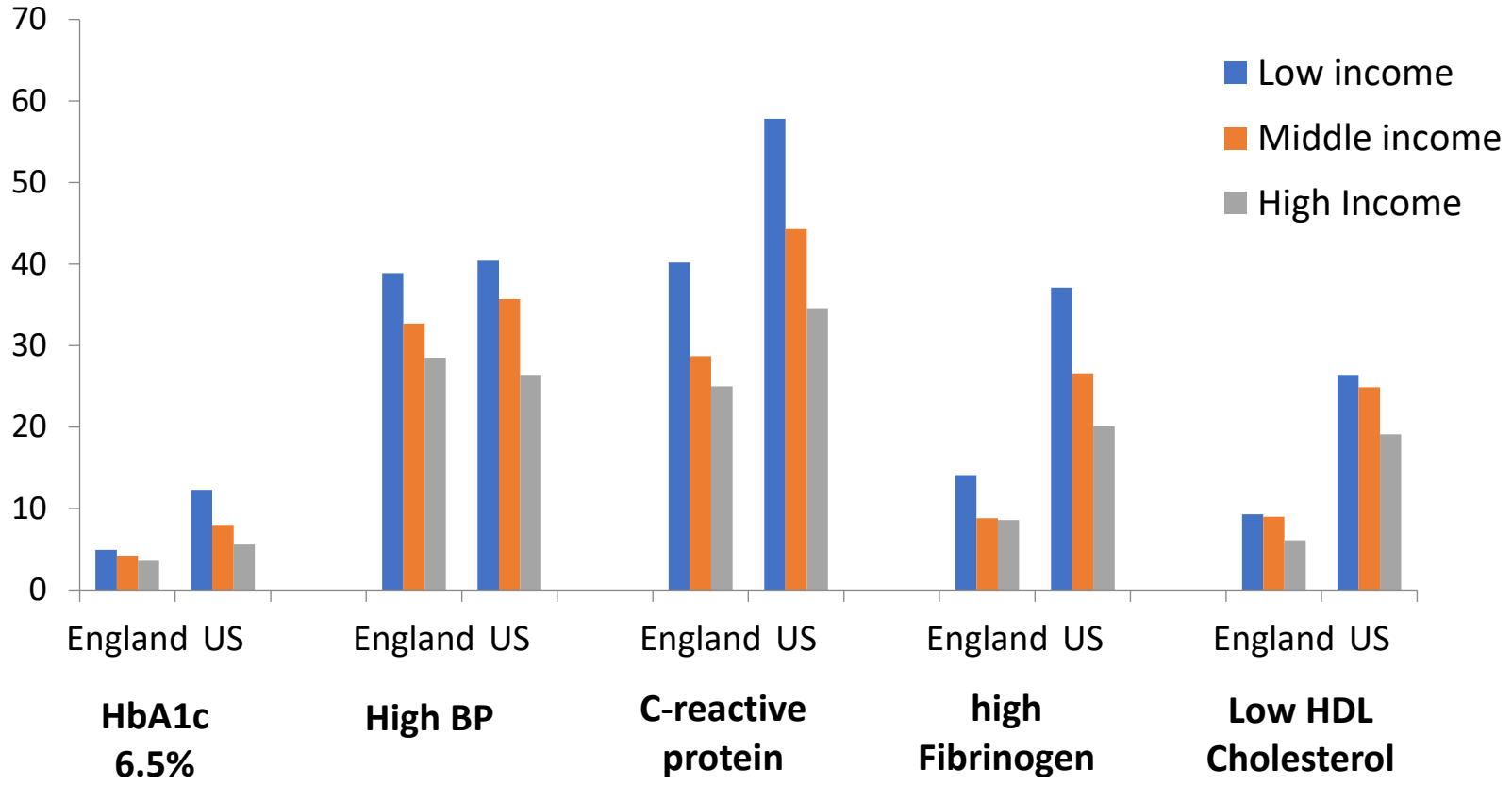
DIFFERENCES IN OBJECTIVE HEALTH BETWEEN ENGLAND AND THE US, 55-64 year olds



Source: Banks, Marmot, Oldfield and Smith; JAMA 2006

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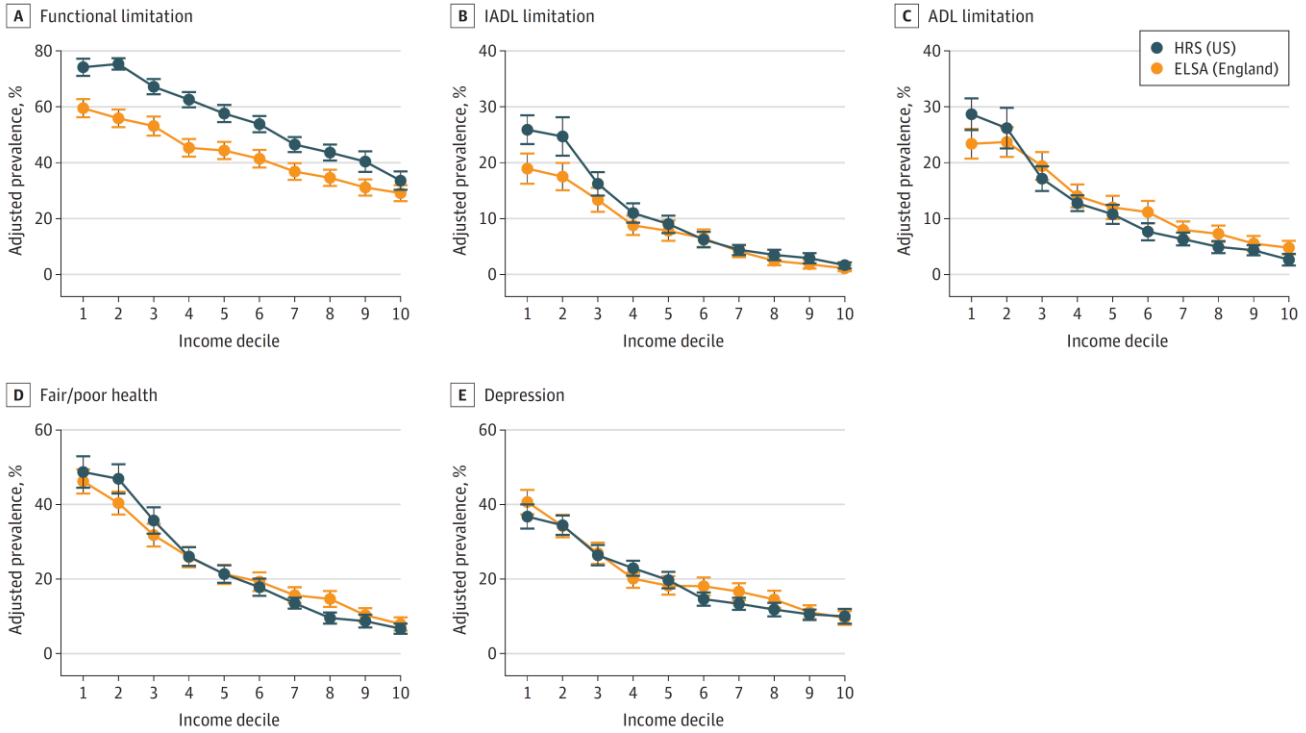
Adjusted Prevalence of Self-assessed Health Outcomes at Ages 55 to 64 Years for 2008-2016 by Country-Specific Income Decile



Source: Choi et al, JAMA Int Med, 2020

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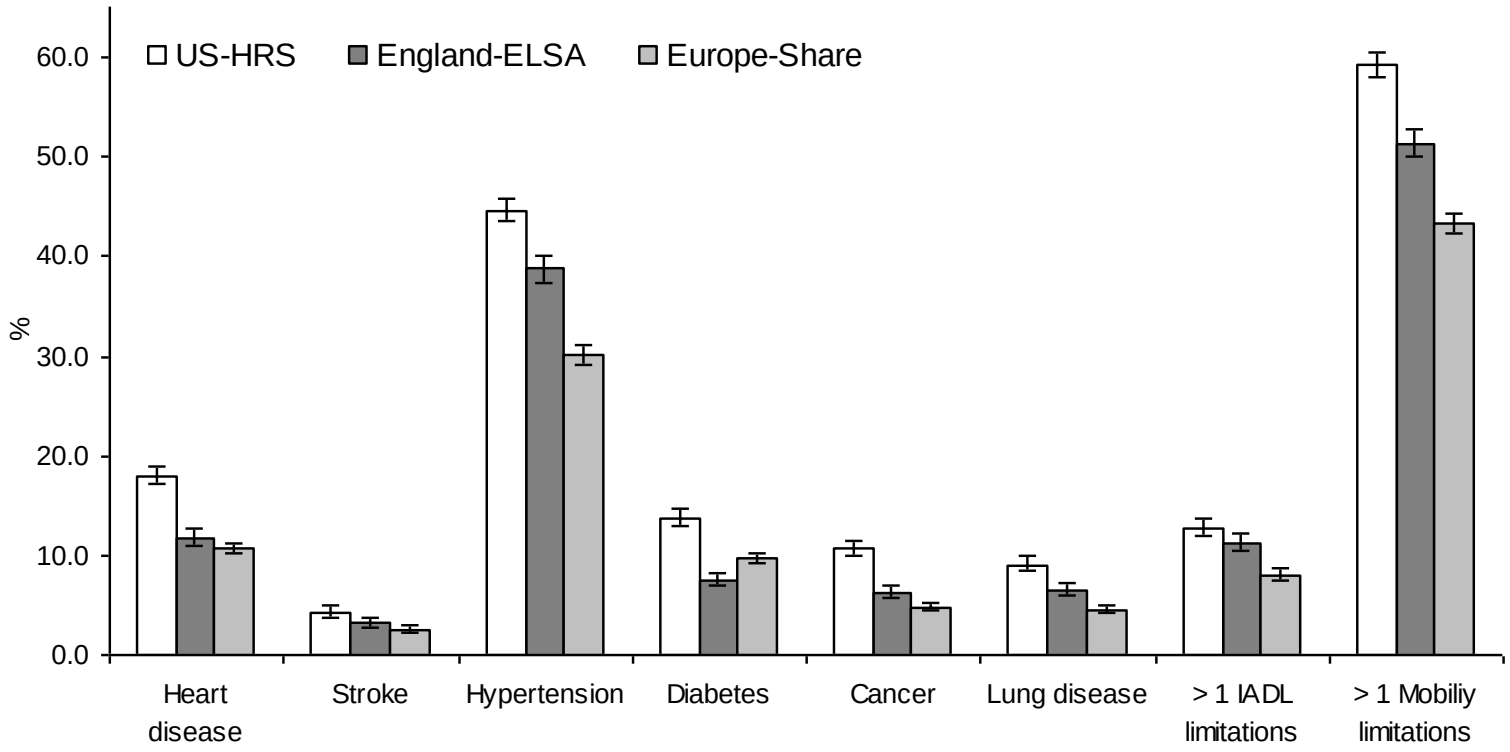
HRS ELSA SHARE

Health Disadvantage in US Adults Aged 50 to 74 Years: A Comparison of the Health of Rich and Poor Americans With That of Europeans

Mauricio Avendano, PhD, M. Maria Glymour, ScD, James Banks, PhD, and Johan P. Mackenbach, PhD



Source: Avendano et a Am J Public Health 2009

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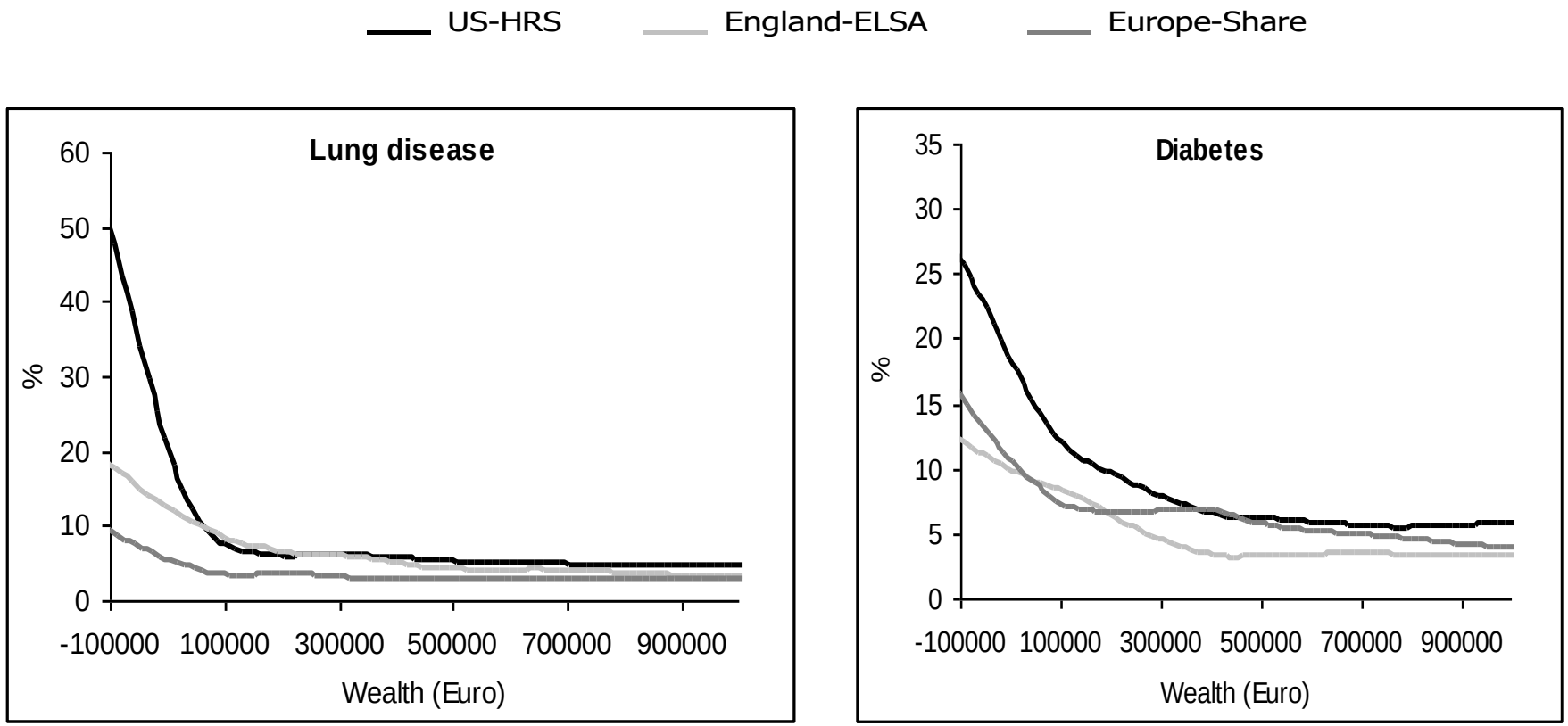
Health and Wealth in the US and Europe, aged 50-74



Source: Avendano et a Am J Public Health 2009

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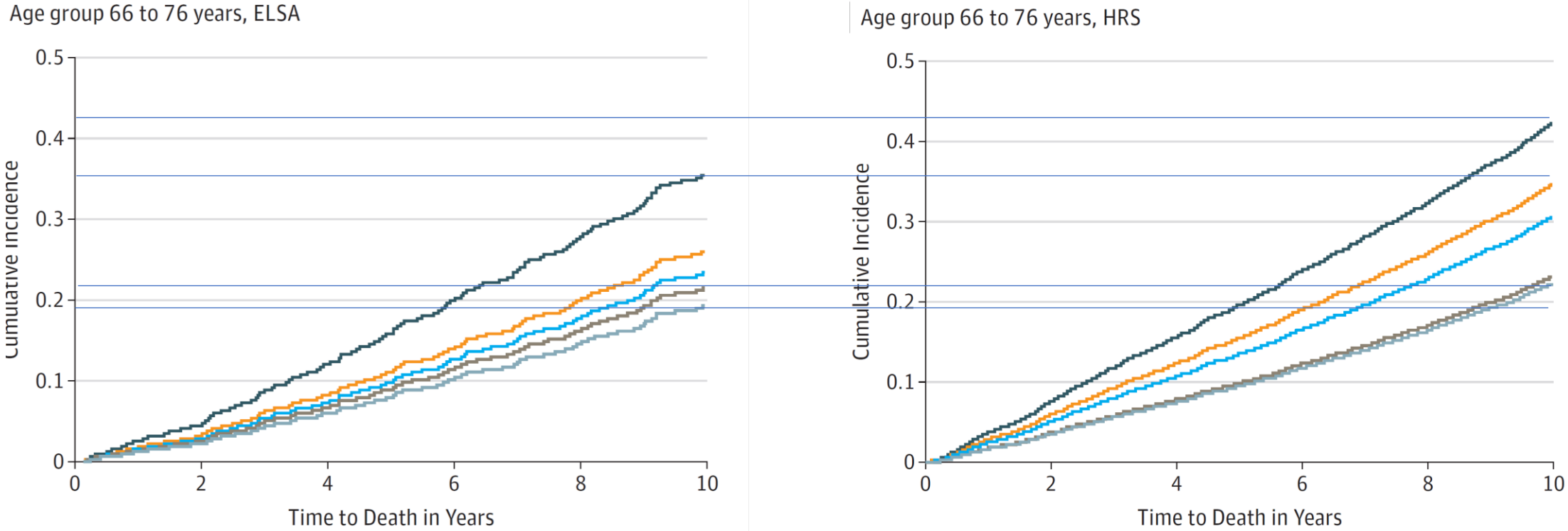
Cumulative incidence of death by wealth quintile, 66-76, USA (HRS) and England (ELSA)



Source: Makaroun et al JAMA Int Med, 2017

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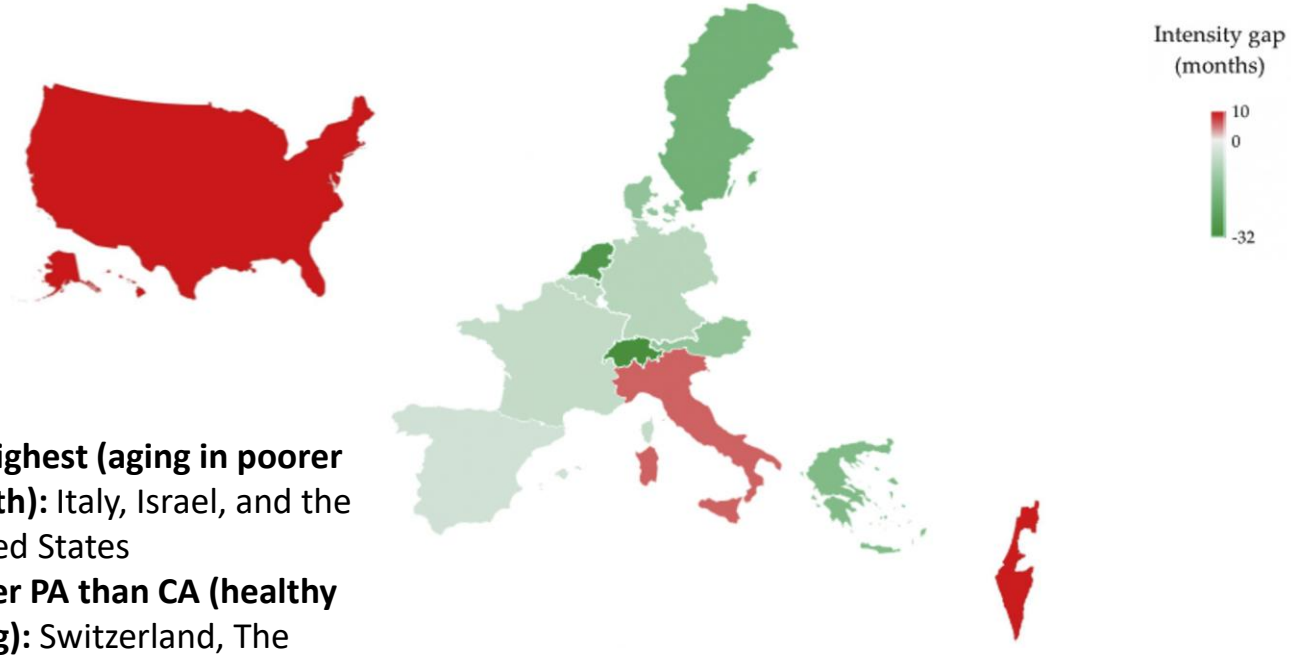
Economic Evaluation

Where Are Populations Aging Better? A Global Comparison of Healthy Aging Across Organization for Economic Cooperation and Development Countries

Thomas Rapp, PhD, Jérôme Ronchetti, PhD, Jonathan Sicsic, PhD



- **PA highest (aging in poorer health):** Italy, Israel, and the United States
- **Lower PA than CA (healthy aging):** Switzerland, The Netherlands, Greece, Sweden, and Denmark

Discrepancy between estimated physiological age (PA) and chronological age (CA)

Rank (highest to lowest)	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean
Chronological age (years)	USA 74.08	Spain 72.39	Greece 72.33	France 71.55	Belgium 71.49	Sweden 71.26	Switzerland 71.17	Israel 71.14	Netherlands 71.11	Italy 70.97	Austria 70.80	Denmark 70.75	Germany 70.26	72.15
Health depreciation indicators														
Frailty (%)	Italy 17.66	Spain 16.70	France 15.91	Belgium 15.08	Austria 12.88	Israel 11.25	Germany 11.09	Netherlands 10.98	USA 9.78	Denmark 9.62	Sweden 9.22	Greece 8.41	Switzerland 7.66	12.03
ADL index (mean)	Israel 0.45	USA 0.40	Spain 0.38	Belgium 0.31	Italy 0.30	France 0.25	Germany 0.24	Austria 0.23	Denmark 0.19	Greece 0.18	Sweden 0.16	Netherlands 0.13	Switzerland 0.11	0.30
IADL index (mean)	Israel 0.65	Spain 0.46	USA 0.44	Italy 0.31	Belgium 0.31	Greece 0.29	Austria 0.28	France 0.24	Denmark 0.22	Germany 0.18	Netherlands 0.17	Sweden 0.14	Switzerland 0.10	0.33
Comorbidity index (mean)	USA 1.30	Italy 1.21	France 1.18	Israel 1.16	Spain 1.16	Belgium 1.12	Germany 1.06	Denmark 0.98	Austria 0.97	Sweden 0.94	Greece 0.94	Netherlands 0.87	Switzerland 0.84	1.14
Number of Comorbidities														
High blood pressure (%)	USA 65.41	Israel 60.17	Italy 59.75	Greece 58.12	Spain 58.03	Germany 55.78	Austria 54.46	Belgium 49.02	Denmark 47.72	Sweden 46.81	France 46.32	Netherlands 42.32	Switzerland 41.43	56.13
Diabetes (%)	Israel 30.98	Spain 24.72	USA 24.07	Italy 18.58	Germany 17.66	Greece 17.53	Austria 15.46	Belgium 14.91	France 14.72	Netherlands 13.43	Sweden 12.97	Denmark 10.90	Switzerland 9.53	19.05
Cancer (%)	USA 19.46	Sweden 13.89	Germany 13.84	Denmark 12.95	Netherlands 11.75	Switzerland 11.55	France 11.25	Belgium 10.84	Austria 9.11	Israel 8.81	Italy 8.42	Spain 7.42	Greece 3.63	13.22
Lung diseases (%)	Italy 13.48	Denmark 11.84	USA 10.96	Spain 10.91	France 10.61	Germany 10.58	Netherlands 10.54	Belgium 9.65	Austria 9.39	Israel 8.21	Switzerland 7.64	Greece 6.74	Sweden 6.17	10.24
Heart problems (%)	USA 29.97	Israel 27.12	France 21.98	Belgium 21.69	Sweden 20.88	Italy 20.28	Spain 19.94	Austria 19.87	Greece 19.85	Germany 19.67	Netherlands 19.40	Denmark 17.87	Switzerland 13.21	23.23
Stroke (%)	Israel 10.43	USA 10.22	Austria 9.96	Denmark 8.48	Belgium 8.21	Germany 8.07	Netherlands 7.56	Sweden 7.38	France 7.19	Greece 6.74	Italy 6.49	Spain 5.47	Switzerland 4.58	8.31
Arthritis (%)	USA 67.74	Italy 53.83	France 51.55	Spain 49.08	Belgium 44.87	Denmark 42.02	Germany 33.34	Switzerland 33.22	Greece 29.15	Sweden 27.04	Austria 26.13	Israel 23.18	Netherlands 18.41	47.91
High cholesterol (%)	USA 52.23	Israel 42.44	Belgium 38.64	Greece 38.33	Spain 34.06	Italy 29.78	France 29.40	Denmark 29.02	Austria 25.60	Netherlands 25.06	Germany 24.73	Sweden 20.75	Switzerland 19.08	36.71
Cataracts (%)	USA 33.00	Israel 17.36	Sweden 14.10	Spain 13.51	Denmark 13.19	Germany 13.50	Netherlands 12.97	Greece 12.56	Austria 11.65	Switzerland 11.32	France 11.20	Belgium 11.07	Italy 9.16	18.73

Source: Rapp, Ronchetti & Sicsic, Value in Health, 2022

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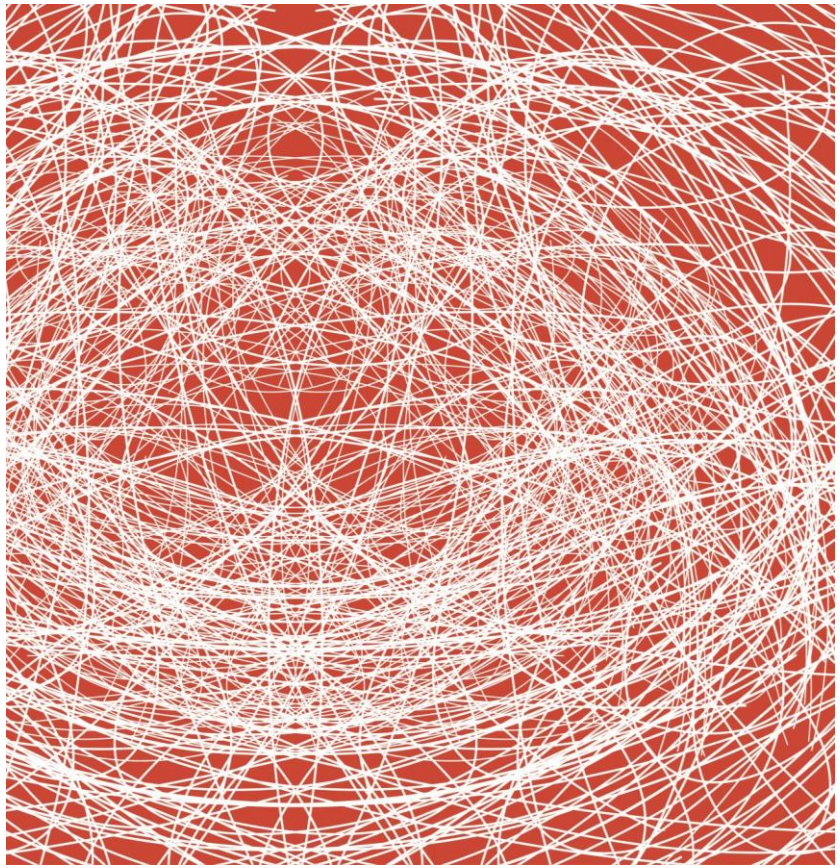

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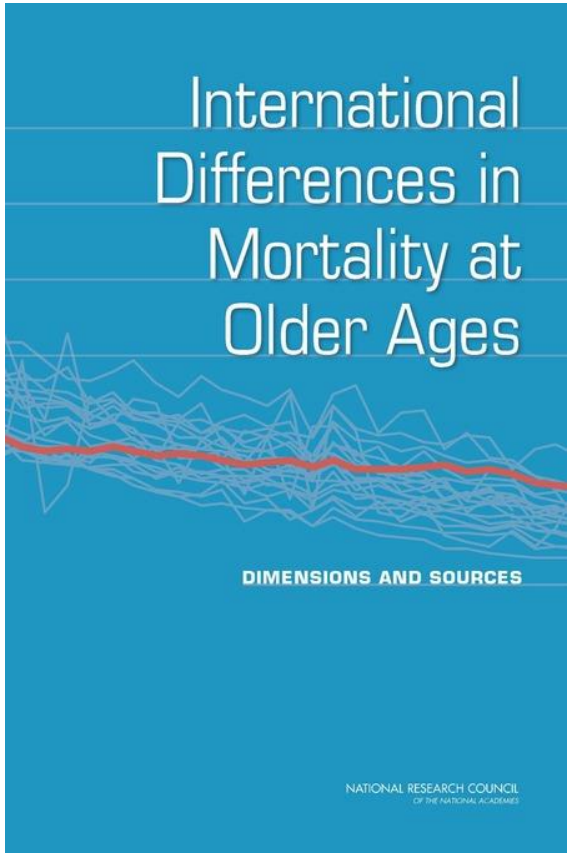
EXPLAINING THE US HEALTH AND MORTALITY DISADVANTAGE



- Smoking histories (Preston et al; Pampel)
- Obesity (Alley et al)
- Physical activity (Steptoe & Wikman)
- Social integration and social interactions (Banks et al)
- The Health System (Preston & Ho)
- Hormone therapy (Goldman)
- Socioeconomic Inequality (Avendano et al)
- Geographical inequalities (Wilmoth et al)

*'Having the **highest level of cigarette consumption** per capita in the developed world over a 40-year period (up to the mid-1980s) has left a very visible and continuing imprint on U.S. mortality'*

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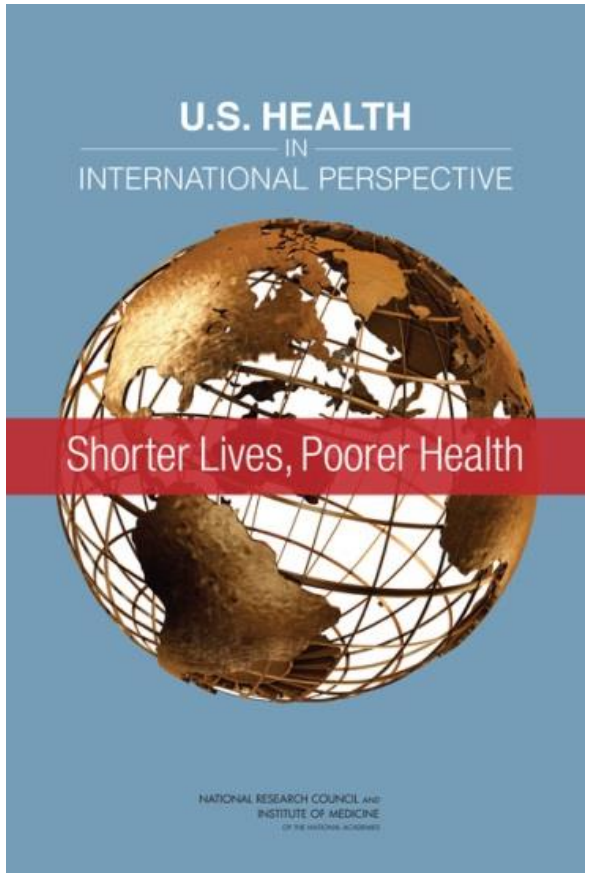
The US Health disadvantage across the life-course



- Public Health and Medical care systems
- Behaviour: Tobacco, diet, physical activity, alcohol & drug use, sexual practices, injuries
- Social factors
- Physical and social environments
- Policies and Social values

*'Given the pervasive nature of the low U.S. rankings….. Might **certain aspects of life in modern America** be part of the explanation for the U.S. health disadvantage? '*

*'There are no definitive studies on this subject, but the public health literature certainly documents **the health benefits of strengthening systems for health and social services, education, and employment; promoting healthy life-styles; and designing healthier environments'***

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Why do Americans have Shorter Life Expectancy and Worse Health Than Do People in Other High-Income Countries?

Mauricio Avendano[1,2] and Ichiro Kawachi[2]

Review in Advance first posted online on January 9, 2014. (Changes may still occur before final publication online and in print.)

Annu. Rev. Public Health 2014. 35:23.1–23.19

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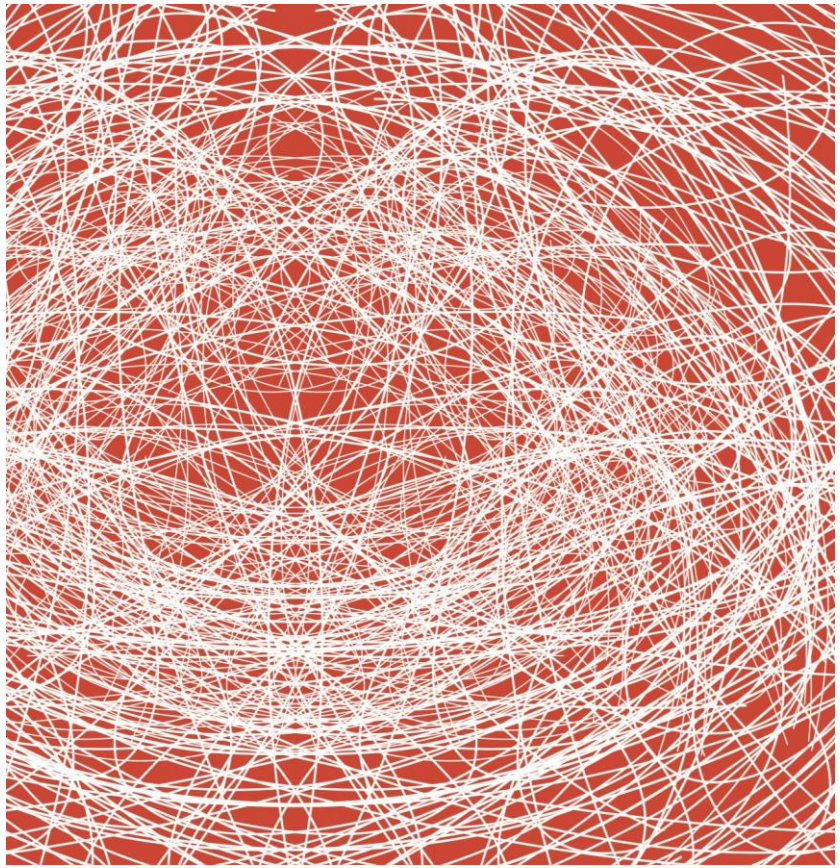

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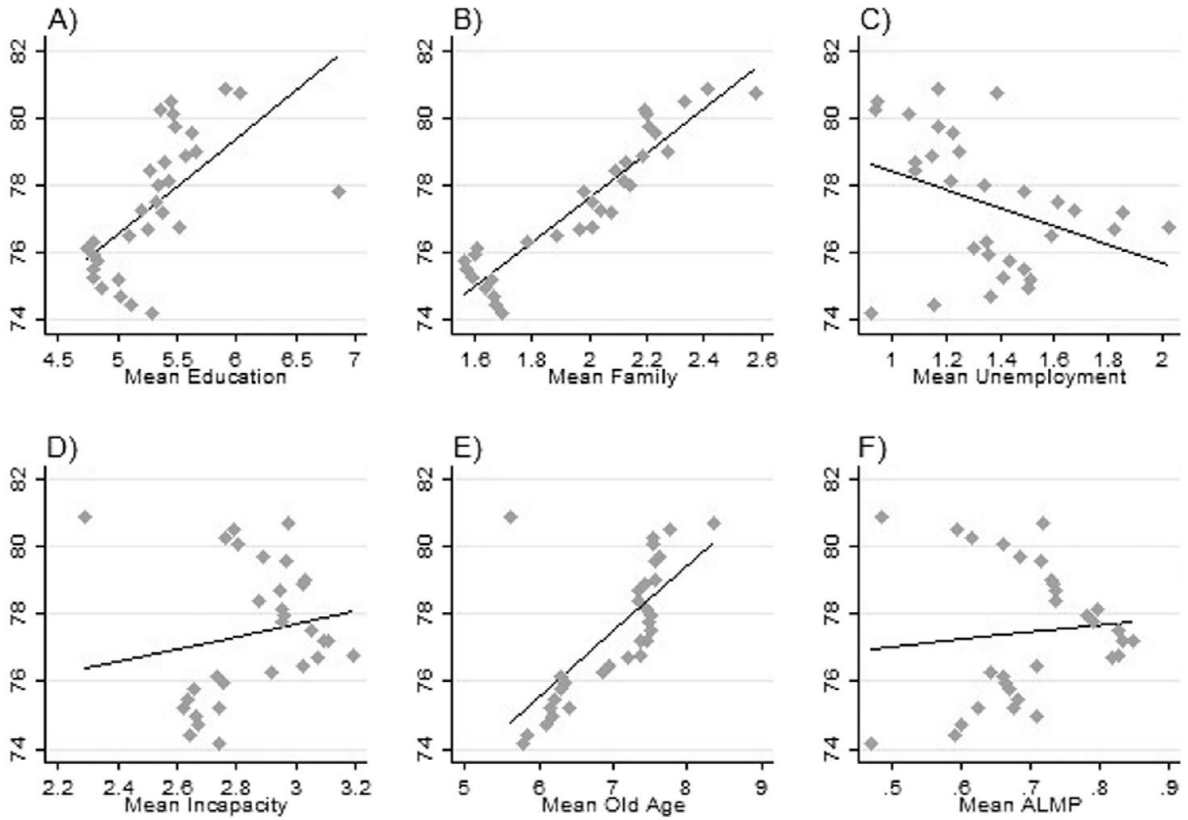
American Journal of
Preventive Medicine

RESEARCH ARTICLE

Social Policy Expenditures and Life Expectancy in High-Income Countries

Megan M. Reynolds, PhD,[1] Mauricio Avendano, PhD[2,3]



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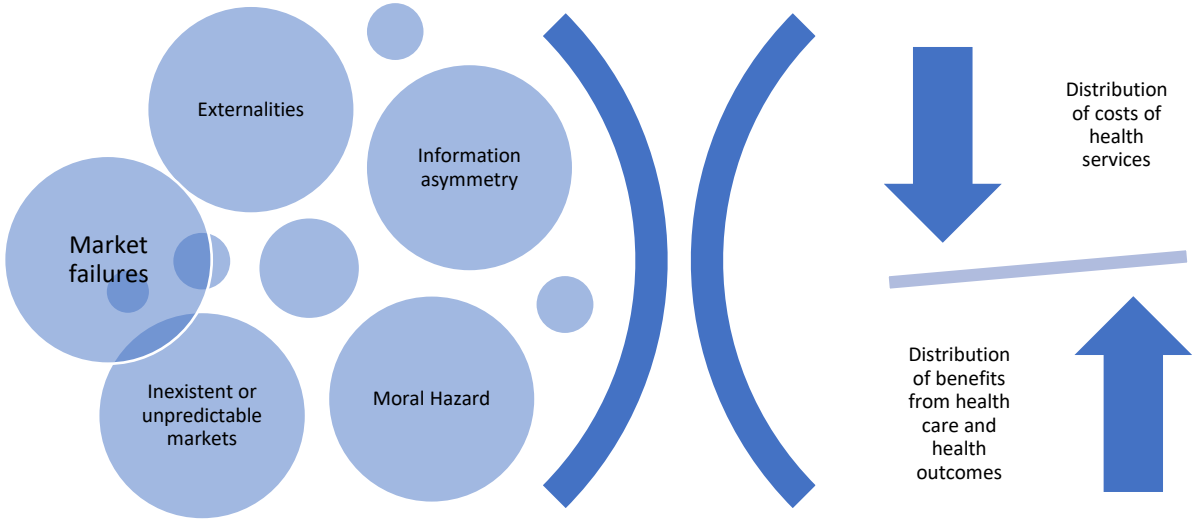
Estimating the contribution of public policies



Efficiency

Equity

- Policies aim to maximise some dimension of wellbeing, but not necessarily health
- Two questions need to be addressed:
  - **Q1:** How do public polices influence health?
  - **Q2:** Are differences in health caused by policy sufficiently large to explain cross-national differences in health?

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Public policies that may impact population health

Early childhood education	Education policy, e.g., compulsory schooling laws	Labour market policies, e.g., retirement and pension policy, unemployment benefits
Family policy, e.g., maternity leave policy, work-flexibility policies	Housing policies, e.g., relocation programmes	Anti-poverty policy, e.g., cash transfers, welfare benefits
Built environmental policies, e.g., transportation	Health policies, e.g., health insurance, regulation of drugs, public health	Long-term care policy

Public transport policy: The free Bus Pass

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English Longitudinal Study of Ageing, 2002 – 2014

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Transport use and cognitive function scores in older age, ELSA

ELSA

	Probability of transport use
	β (95% CI)
Eligible for free bus travel	0.074 (0.060, 0.089)***

7% increase in transport use if eligible to free bus pass

	IV 2nd Stage β (95% CI)
Total Cognitive Function	0.346 (0.017,0.674)*
Memory	0.546 (0.111,0.982)*
Executive Function	0.323 (-0.153,0.800)
Processing Speed	0.332 (-0.234,0.898)

*p<0.05 **p<0.01 ***p<0.001

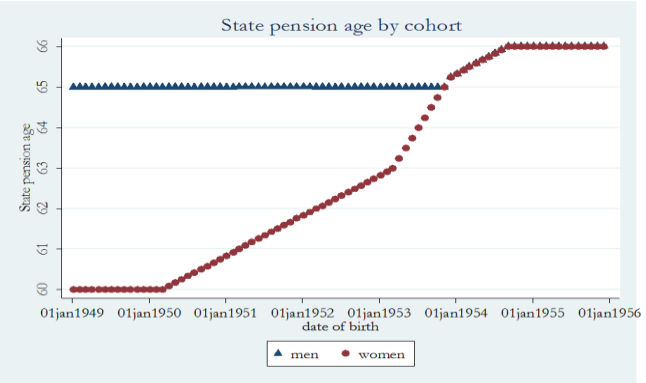
Reinhard et al, Am J Epi, 2019

JOURNAL OF POLICY ANALYSIS AND MANAGEMENT

ELSA

Should I Care or Should I Work? The Impact of work on Informal Care

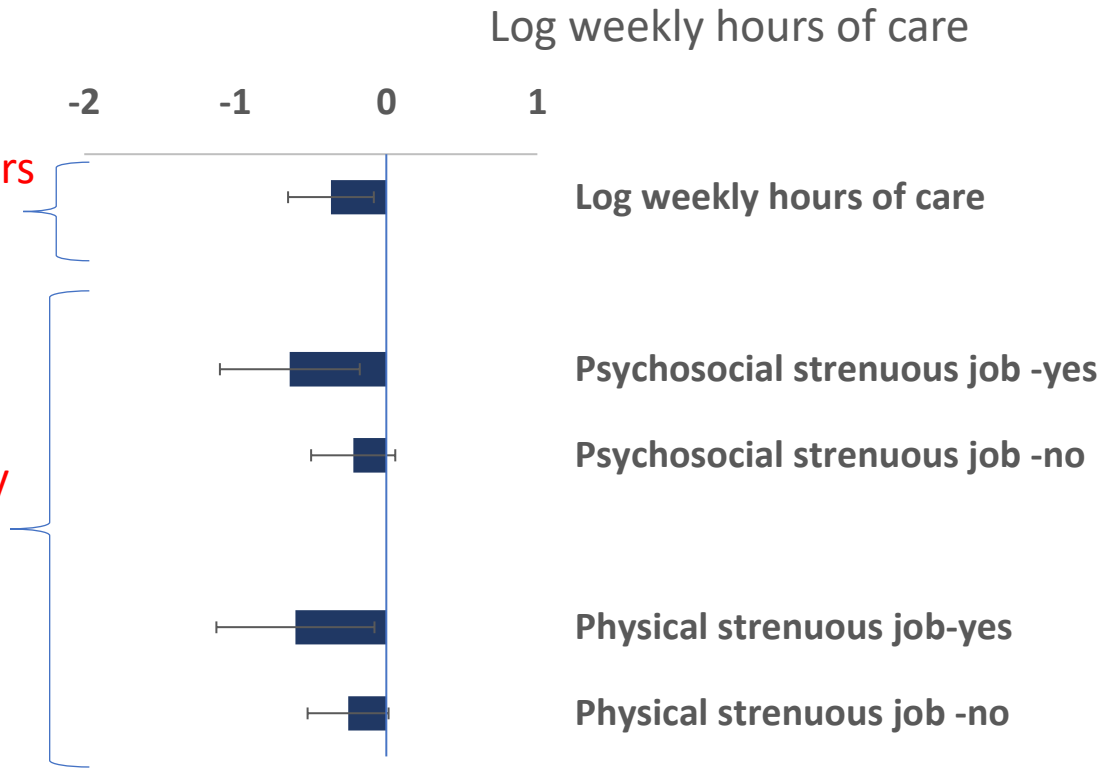
Ludovico Carrino[a,b] Vahé Nafilyan[c,d], Mauricio Avendano[e,f]



Prolonging work → lower caregiving: opportunity costs of time is higher

An increase of 10% in work-hours *(+100mins/w)* leads to 3.7% lower care hours *(-21 mins/w)*

Larger effect for women in psychosocially or physically strenuous jobs



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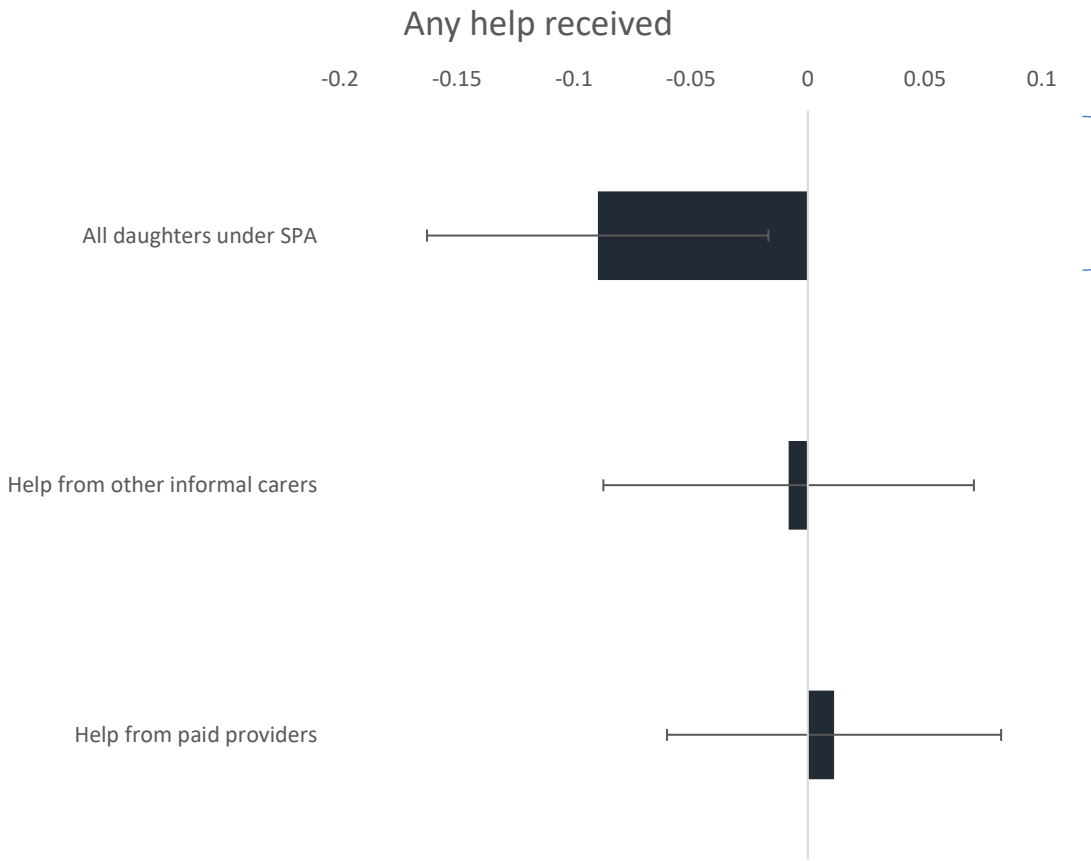
The impact of reduced daughter's informal care on older parents' receipt of care

ELSA



When oldest daughter is not eligible to a pension, her older parents receive less help

Reduced care from daughter is not compensated by other informal or formal care sources

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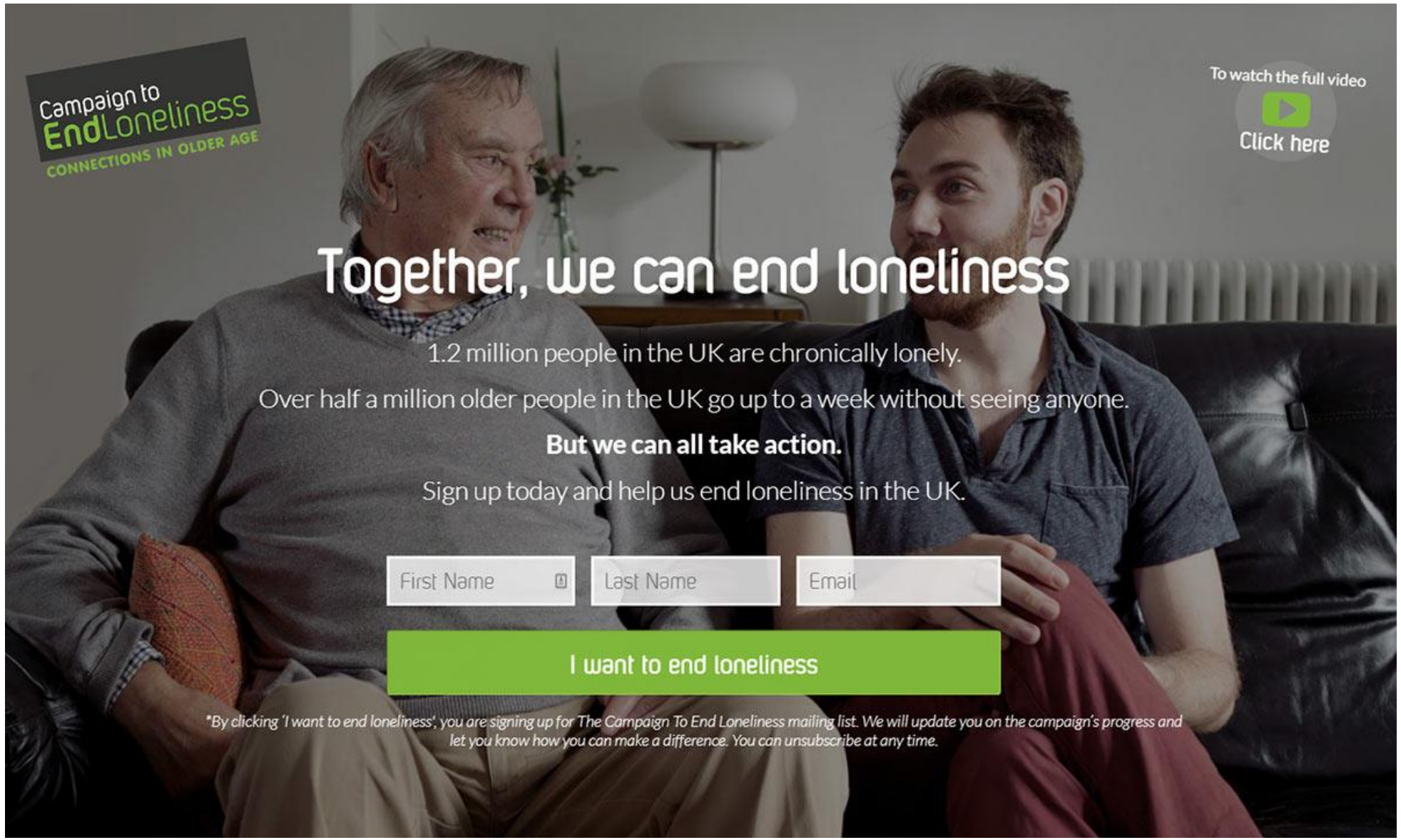

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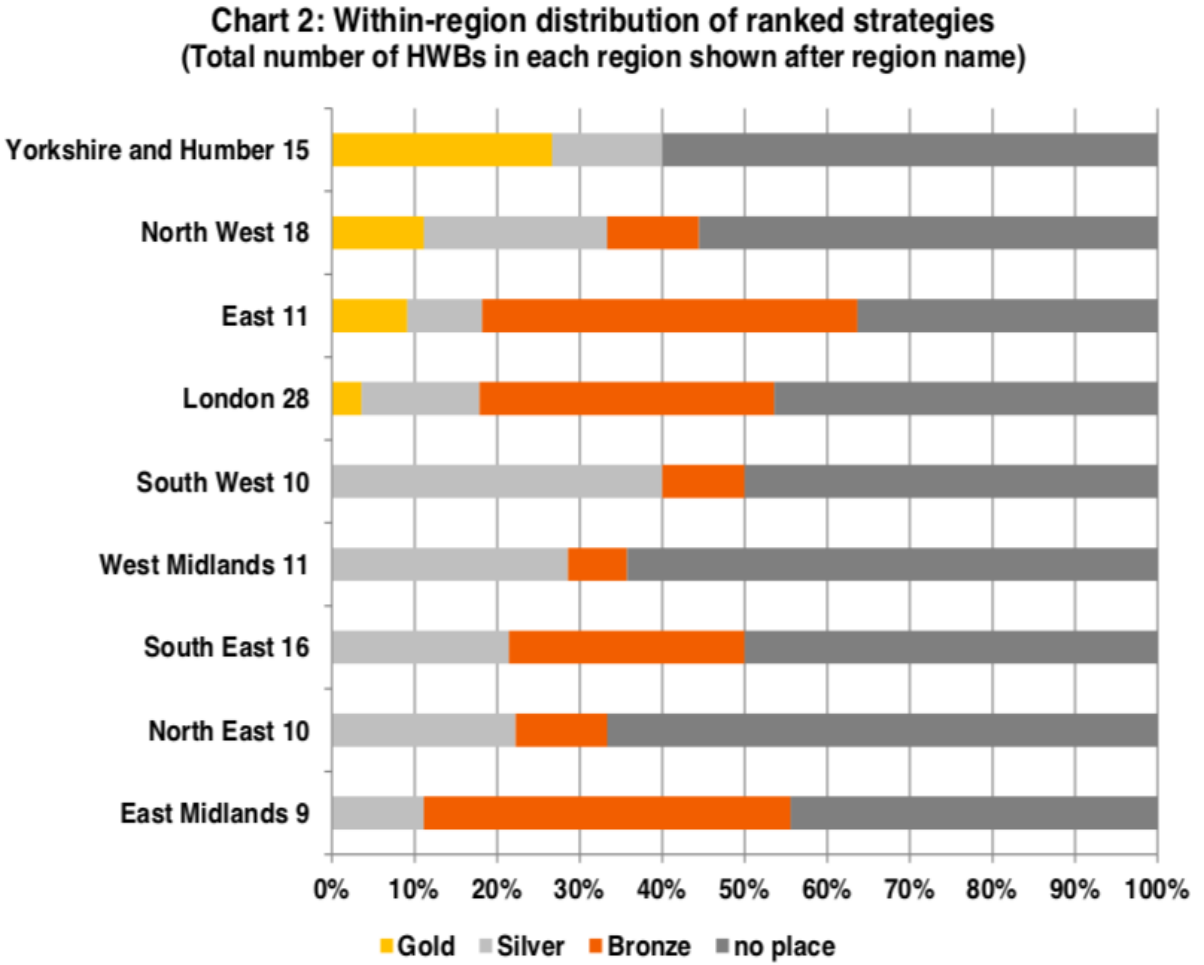
Campaign to End Loneliness

- **Main differences of strategies**
- Gold: measurable actions and targes on tackling issues of loneliness
- Silver: stated commitment to learning about the issue of loneliness in local areas and improving social relationships
- Bronze: recognition of loneliness as an issue and commitment to improving social relationships



Source: Cupitt 2013

Li, Carrino, Reinhard, Avendano, in preparation

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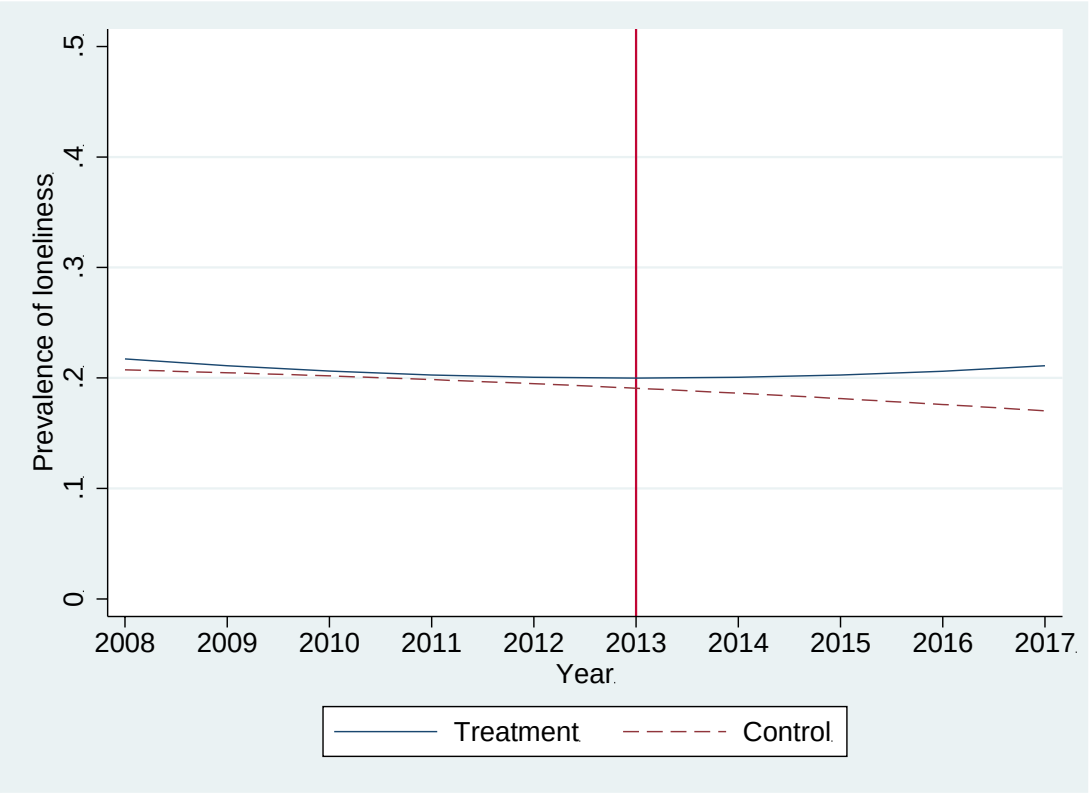
Impact of End Loneliness campaign on feelings of loneliness

ELSA



	Loneliness
Panel A: by education	(1)
Education (=A-level or above)	-0.113 (0.058)
Time* Treatment	0.134 (0.103)
Time* Treatment*Education	**-0.379***** **(0.104)**

reduced levels of loneliness for higher educated (≥ A-level) older adults by 0.4 unit

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Li, Carrino, Reinhard, Avendano, in preparation

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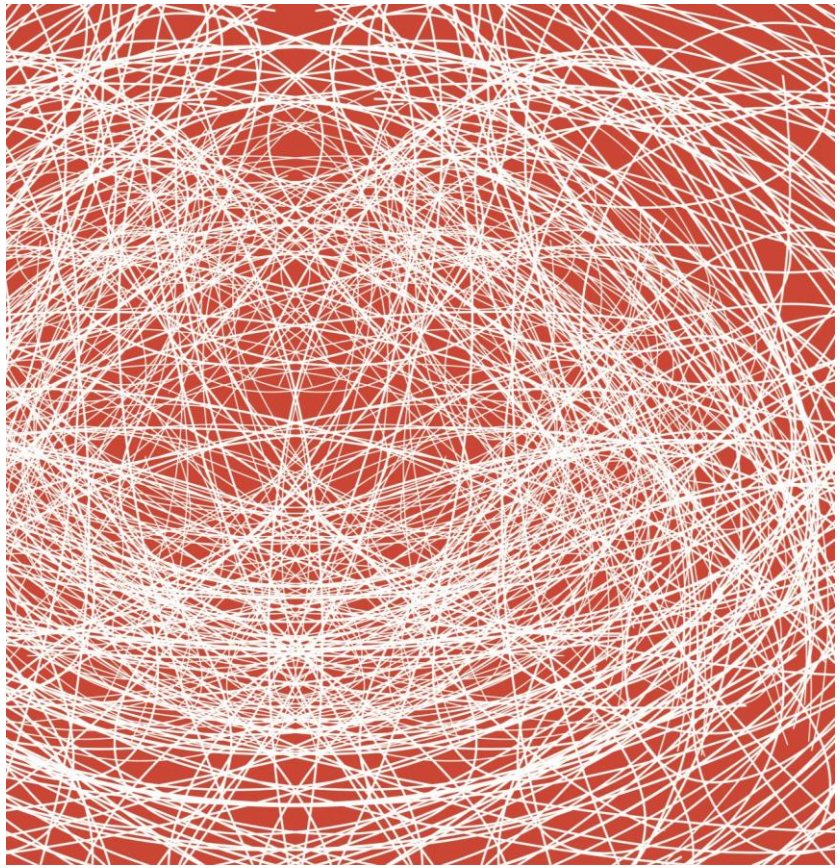
Outline

- Why is this important
- The 'Discovery' of cross-national differences in health
- The explanation of differences
- The contribution of public policy
- Perspective on **the future**



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The future

- Link to more policies, consider time lag of policy effect operating across childhood, adult life and older age
- Examine the synergic effect of policies –and the contribution of multiple policies (or constellations of policies), rather than single policies
- Link specific outcomes to specific policies or exposures –e.g., link cancer survival to specific cancer prevention policies

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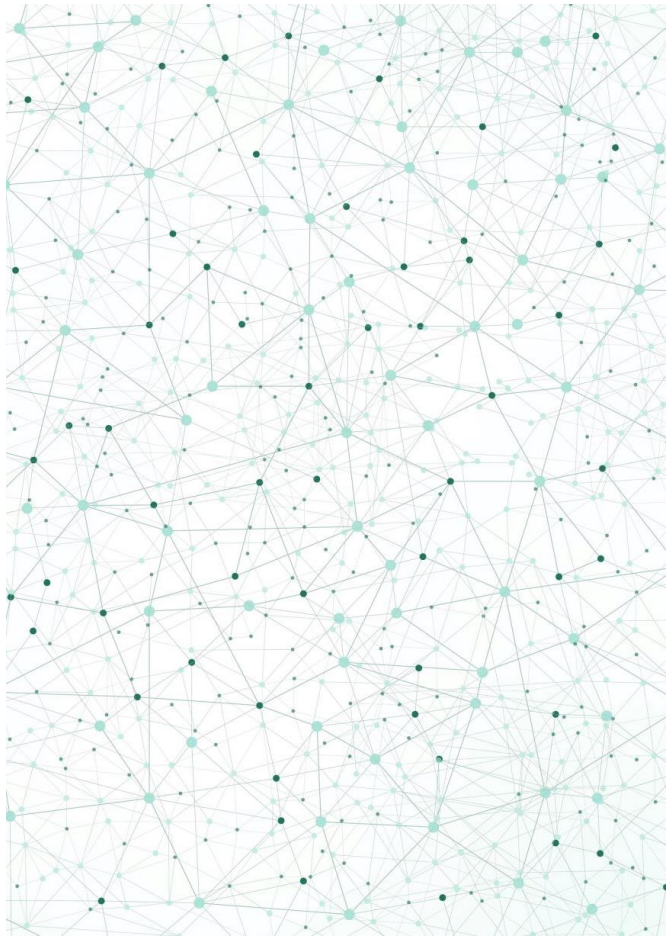

Conclusions

- ELSA and HRS-sister studies have taught us that cross-national differences in health a) are large and real; b) apply too all SES groups, but are often larger for the bottom of the SES distribution
- There is no simple explanation: a) smoking likely important for historical trends, but behavioural differences not full explanation; b) health care unlikely to be a explanation for all differences
- Public policies likely important, but a) establishing causal impacts challenging, b) only local average treatment effects obtained; c) challenging to harmonise all policies across countries
- ELSA and HRS-sister surveys are unique resource to understand how public policies shape cross-national health differences by influencing the environment in which people age