Inequality in Health

Lecture XII: Labour and Health

Dr Martin Karlsson
University of Duisburg-Essen
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Outline

Recap of Last Lecture

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- In addition to the **intergenerational transmission** of **SES** (income, education etc.), evidence that **health** outcomes transmit across generations.
- Increasing interest in economic research about:
  - Transmission **mechanisms**
  - Health-SES **gradient**.
- Recent studies aim at disentangling the effect of **genes**, **environment** and the **interaction** between the two in order to quantify the contribution of each of these on the IGT of health.
- Comparing adoptees with biological parent-child pairs, Thompson (2014) estimates that the genetic component accounts for just **20 to 30%** of the intergenerational association for several chronic health conditions.

Introduction

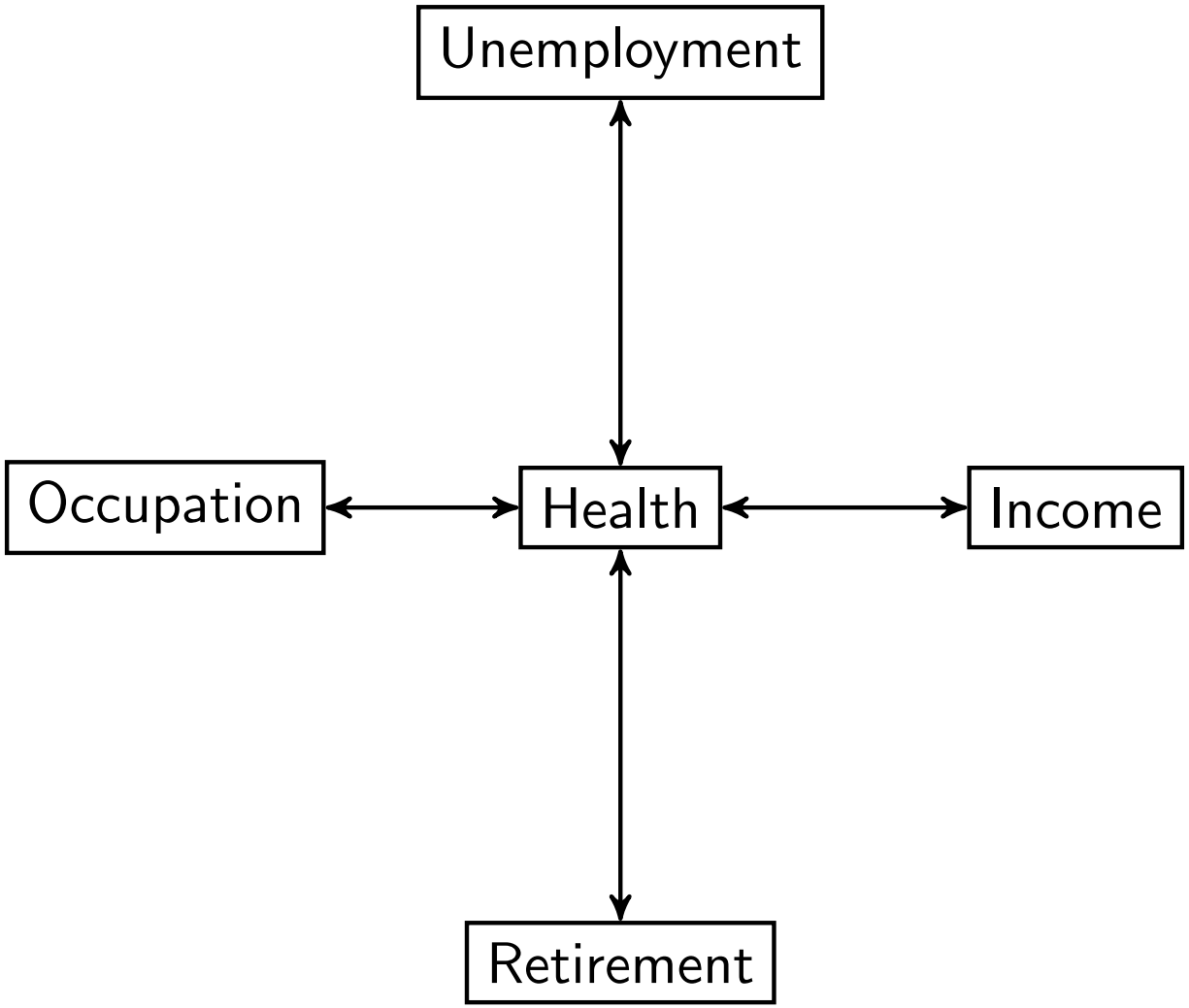
Introduction

- The relationship between **labour** and **health** is frequently studied in health economics research.
- Labour and health are both **multidimensional**.
- Work is not only an exchange of leisure for income:
  - Having a job might increase utility beyond monetary benefits
  - Work might result in disutility.
- Health consists of both **physical** and **mental** health and both dimensions might affect or be affected by work.

Introduction

- There are **four major strands** of the literature evaluating the relationship between health and labour market outcomes:
  - Income
  - Occupation
  - Unemployment
  - Retirement
- The first one is dominated by non-economists and studies the health effects of income and income inequality.
- The relationships are characterised by **simultaneity**, i.e. labour market characteristics affect health and vice versa.

Labour and Health



Mortality Trends

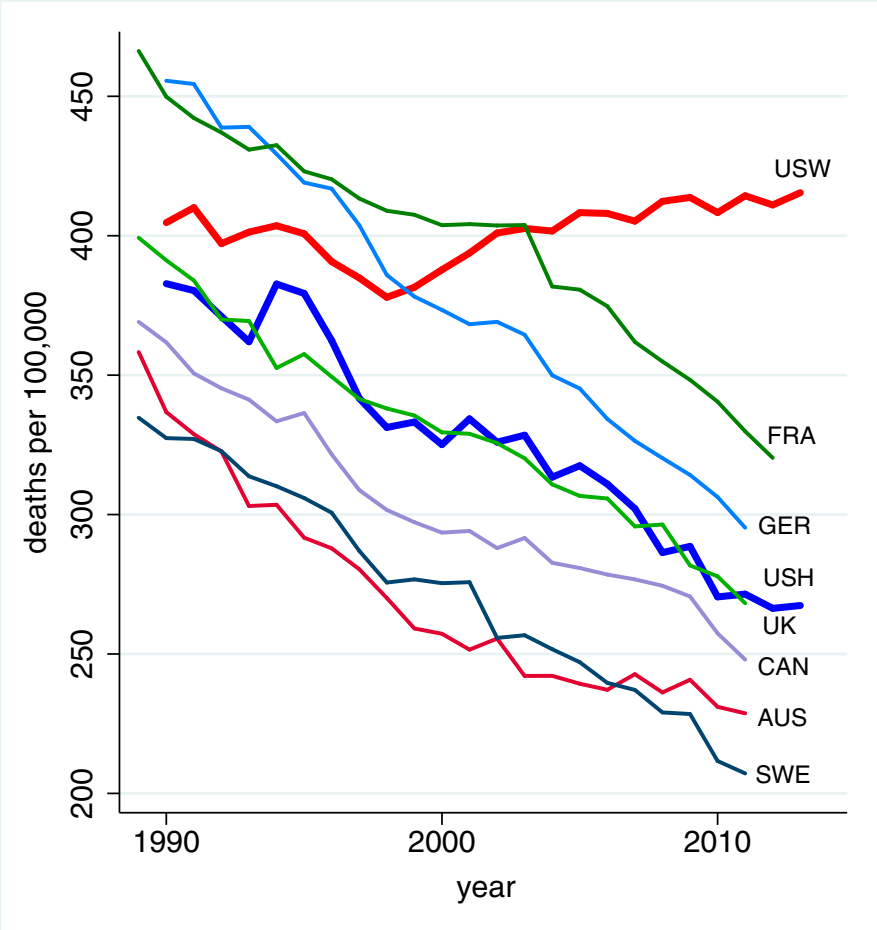


Figure 1. Trends in mortality (45-54) by country. Source: Case & Deaton (2015).

Mortality Trends II

	All-cause mortality	All external causes	Poisonings	Intentional self-harm	Transport accidents	Chronic liver cirrhosis
White non-Hispanics (WNH)	33.9 (415.4)	32.8 (84.4)	22.2 (30.1)	9.5 (25.5)	−0.9 (13.9)	5.3 (21.1)
Black non-Hispanics	−214.8 (581.9)	−6.0 (68.0)	3.7 (21.8)	0.9 (6.6)	−4.3 (14.6)	−9.5 (13.5)
Hispanics	−63.6 (269.6)	−2.9 (43.6)	4.3 (14.4)	0.2 (7.3)	−4.9 (10.0)	−3.5 (23.1)
WNH by education class						
1. Less than high school or HS degree only	134.4 (735.8)	68.7 (147.7)	44.3 (58.0)	17.0 (38.8)	1.77 (24.2)	12.2 (38.9)
2. Some college, no BA	−3.33 (287.8)	18.9 (59.9)	14.6 (20.6)	6.03 (19.6)	−1.90 (9.96)	3.03 (14.9)
3. BA degree or more	−57.0 (178.1)	3.57 (36.8)	4.64 (8.08)	3.32 (16.2)	−3.63 (5.98)	−0.77 (6.98)
Ratios of rates groups 1–3						
1999	2.6	2.4	4.0	1.7	2.3	3.4
2013	4.1	4.0	7.2	2.4	4.0	5.6

Figure 2. Trends in U.S. mortality by education 1999-2013. Source: Case and Deaton (2015).

Income and Health

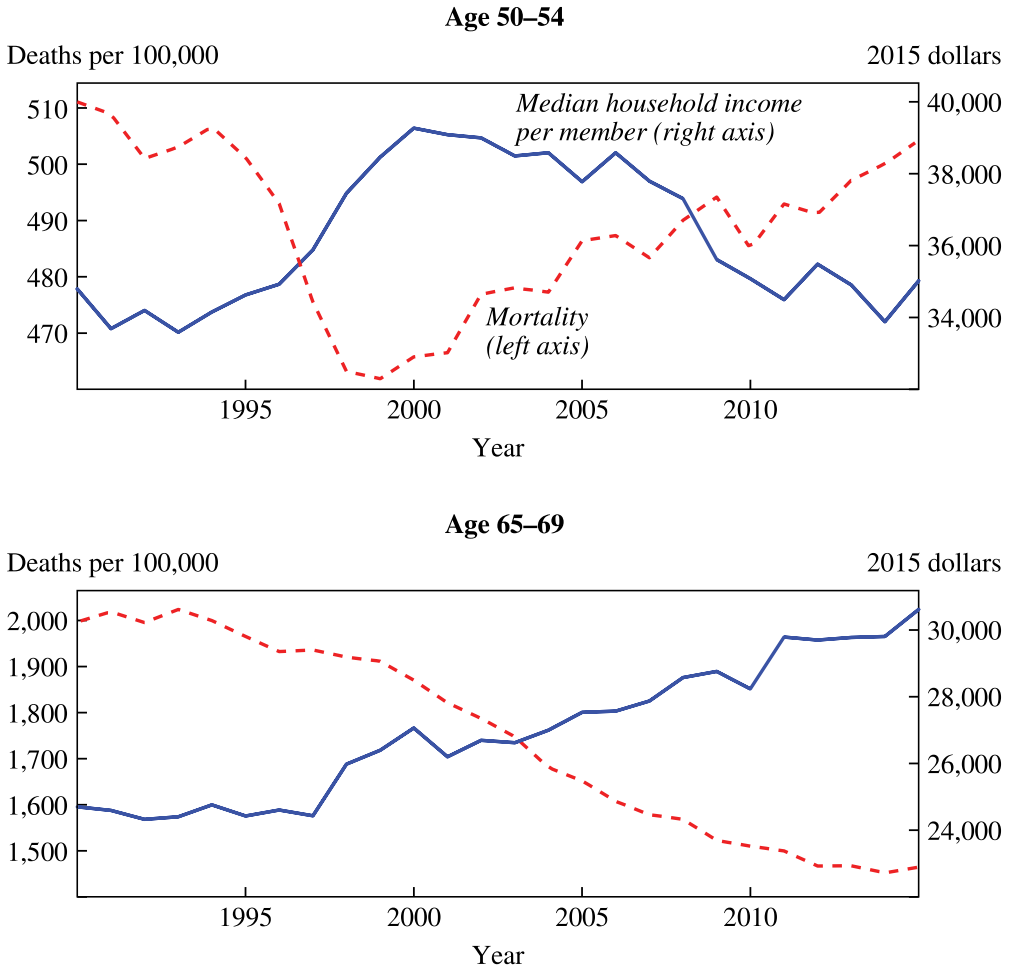


Figure 3. Trends in mortality and income. Source: Case and Deaton (2017).

Income and Health II

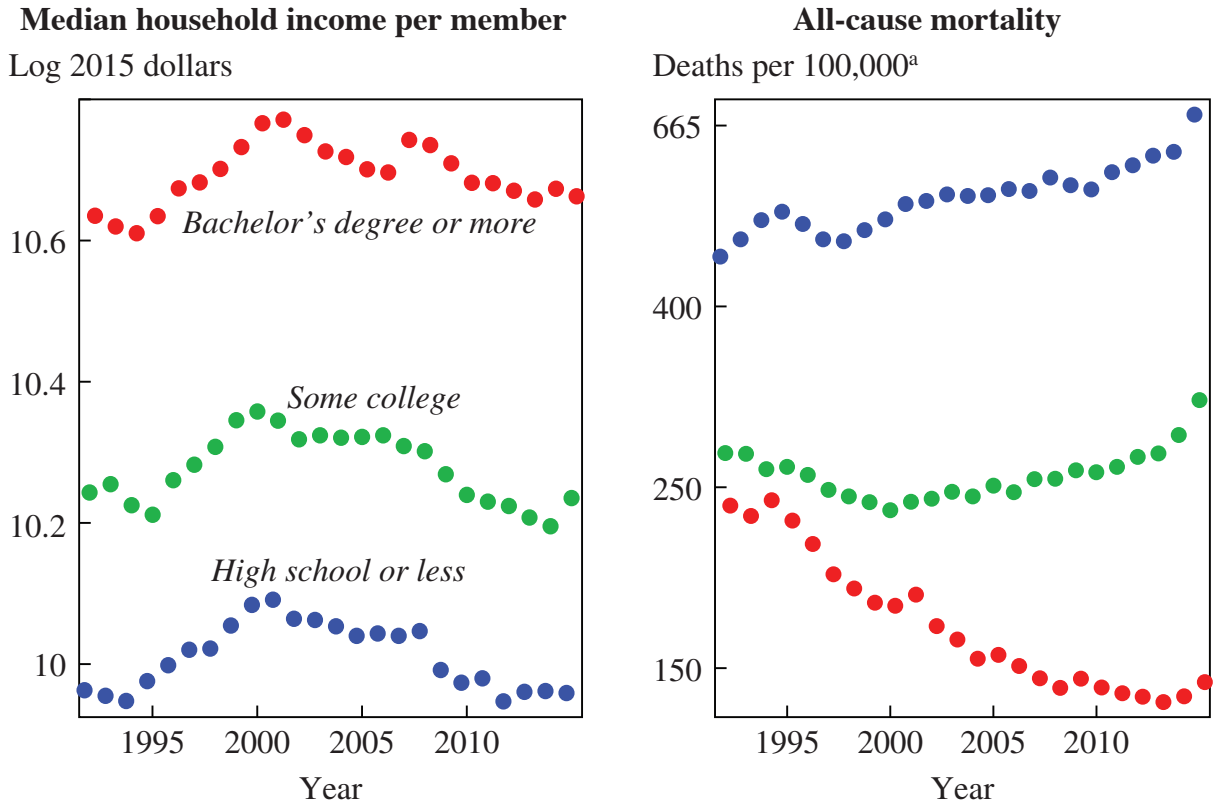
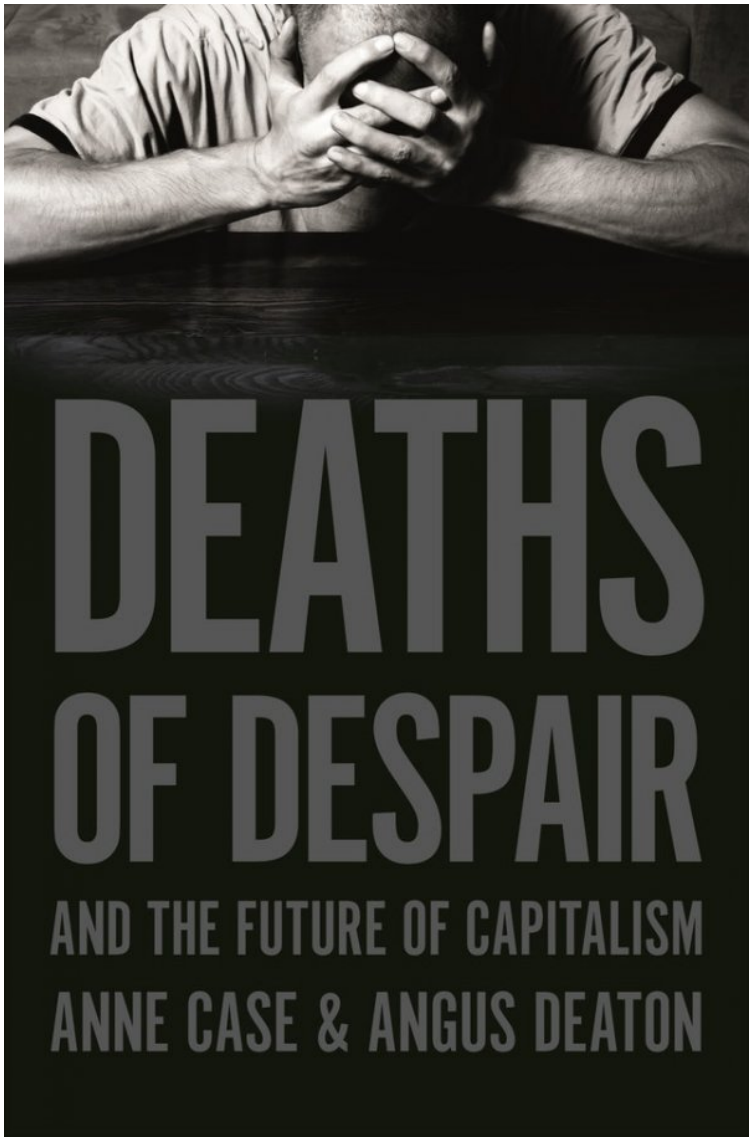


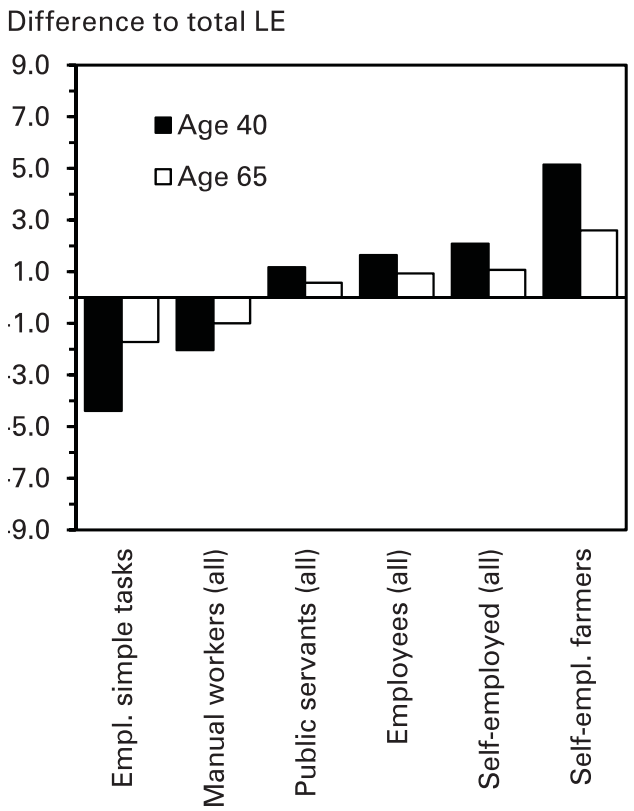
Figure 4. Trends in mortality and income. Source: Case and Deaton (2017).

Deaths of Despair

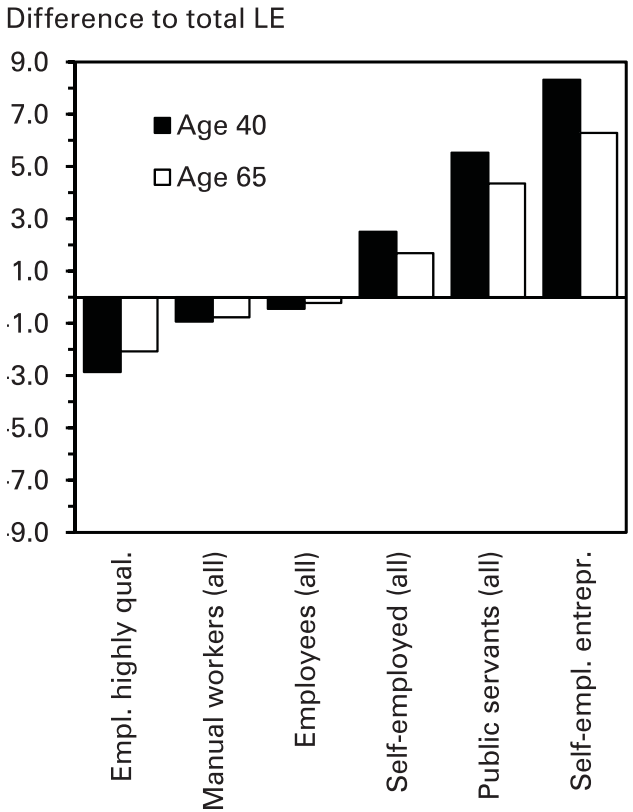


- **Contemporaneous** levels of resources – slowly growing, stagnant, or declining **incomes** cannot explain.
- It's about **cumulative disadvantage**.
- Labour market **entry conditions** of **uneducated whites** deteriorating.

Occupation and Health



(a) Males



(b) Females

Figure 5. Deviation of life expectancy at ages 40 and 65 of subpopulations in Germany. Source: Luy et al. (2015).

Unemployment and Health I

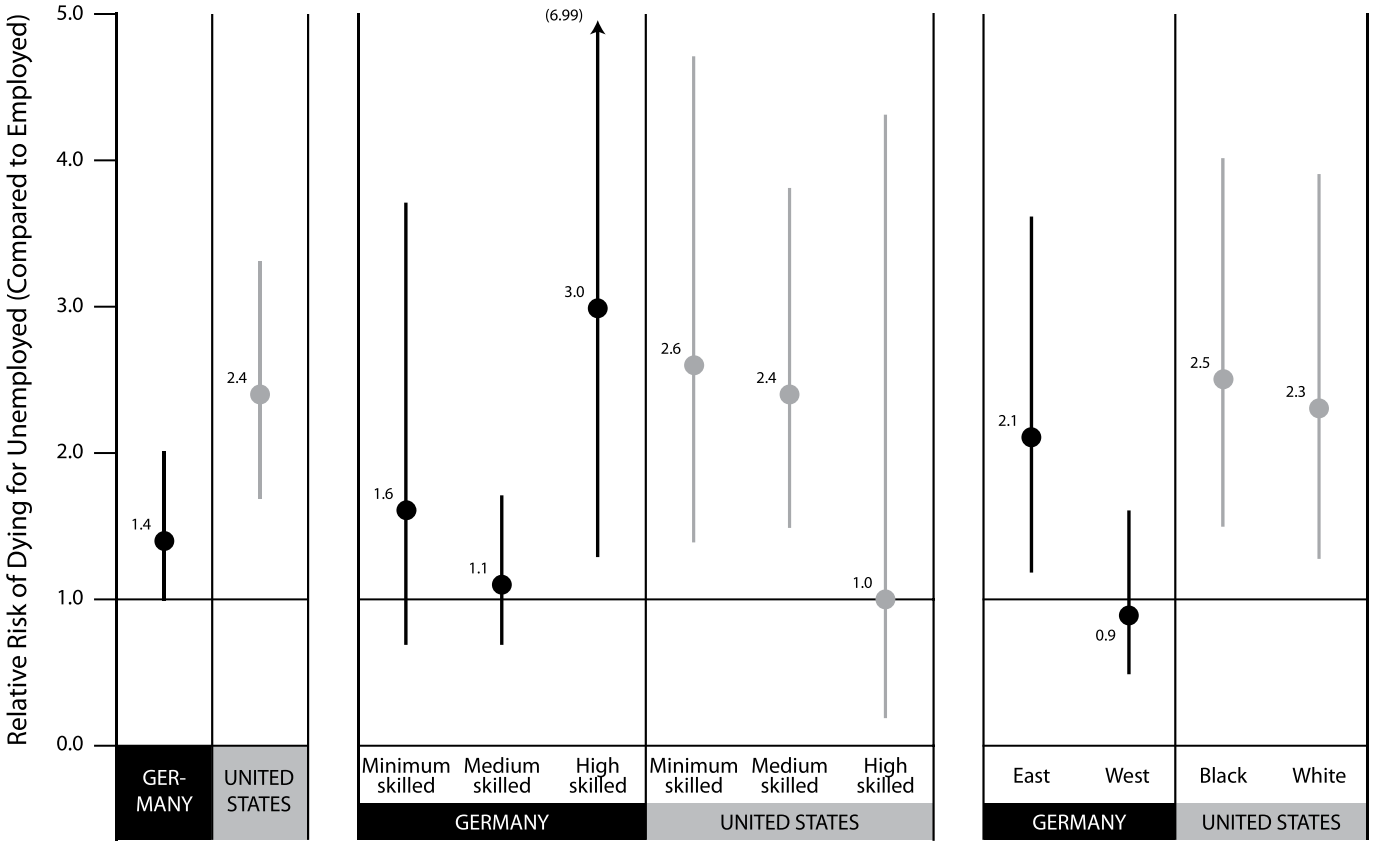


FIGURE 1—Summary of the relative risks of dying for the unemployed for the German and American cohorts: German Socio-Economic Panel and US Panel Study of Income Dynamics, 1984–2005.

Figure 6. Source: McLeod et al. (2012).

Unemployment and Health II

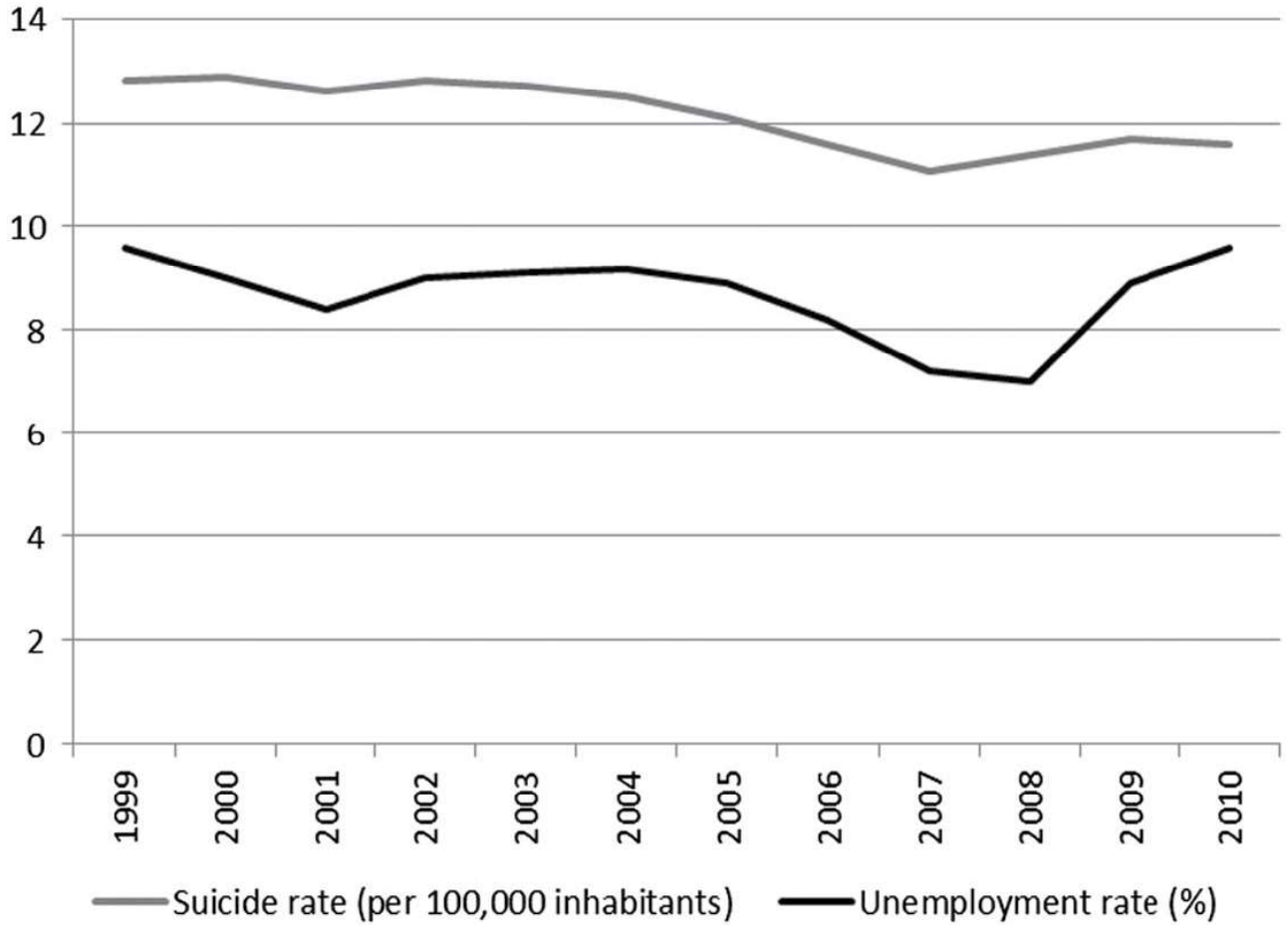
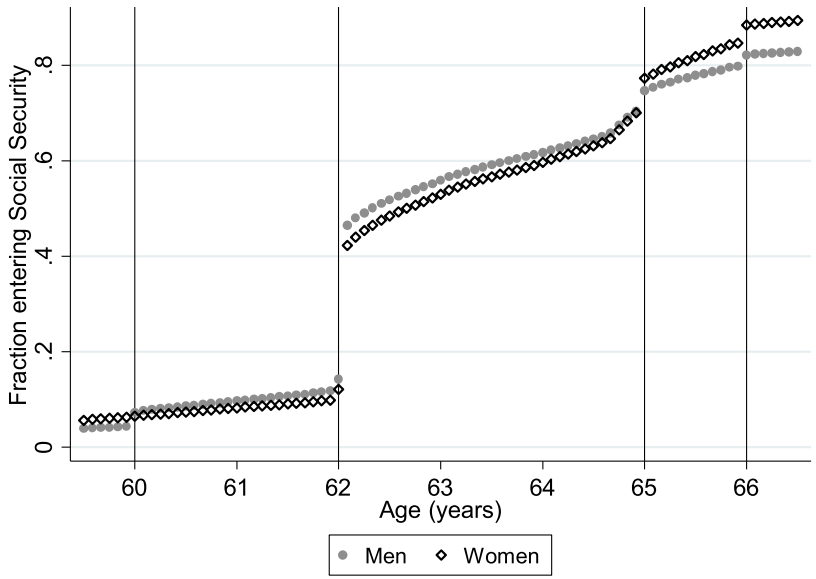
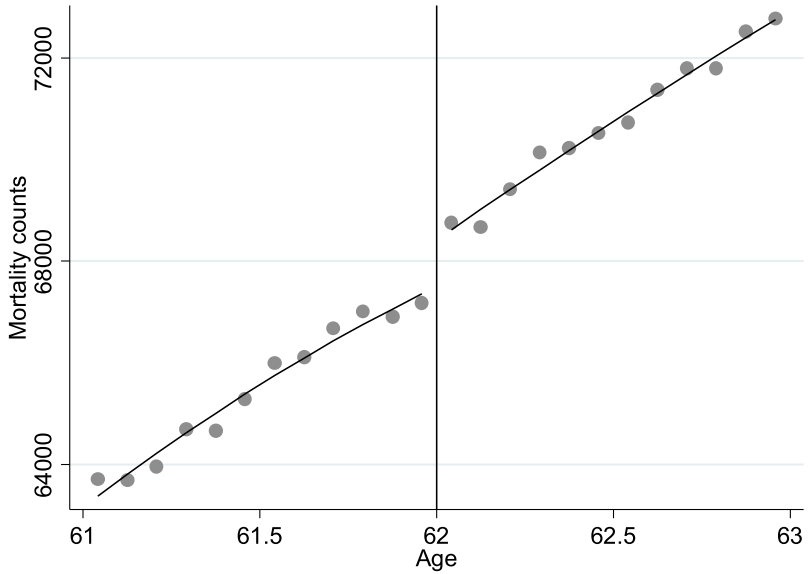


Figure 7. Unemployment and Suicide Mortality in Europe. Source: Breuer (2015).

Retirement and Health



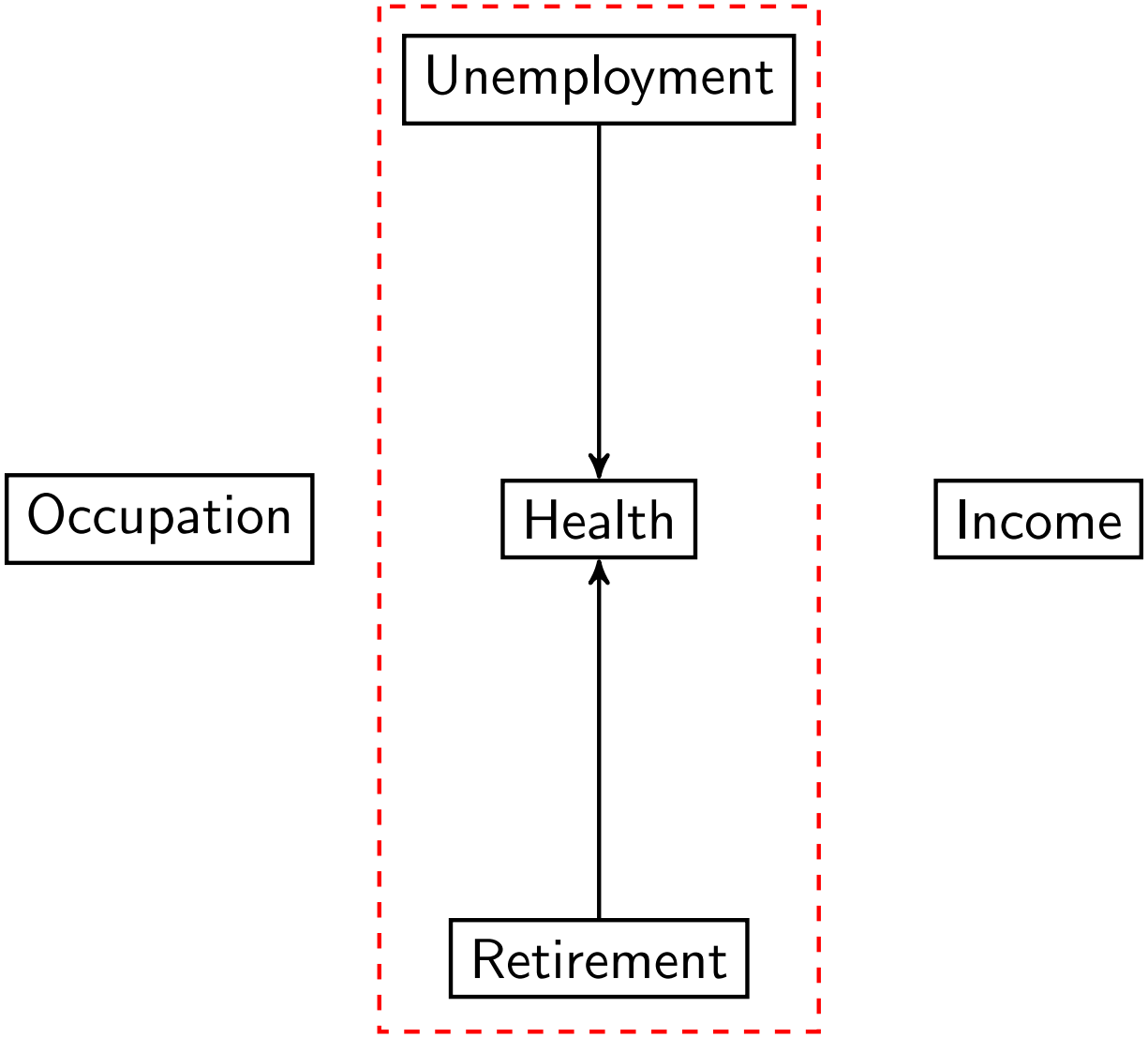
(a) Retirement



(b) Mortality

Figure 8. Retirement and mortality around Social Security eligibility age 62 in the US. Source: Fitzpatrick and Moore (2018).

Labour and Health: This Lecture



Unemployment and Health

Health and the Business Cycle

- Seminal paper by Ruhm (2000): Mortality is **pro-cyclical** (exception: suicides).
  - Smoking and obesity increase in upturns
  - Physical activity reduced
  - Less healthy diets
- Similar results found for **Germany** (Neumayer, 2004); **Sweden** (Van den Berg et al., 2017); **Norway** (Haaland and Telle, 2015).
- Relationship might have **changed** over time – estimates for **Great Recession** (2007-09):
  - Health-compromising behaviour was reduced (Ásgeirsdóttir et al., 2014), but
  - Increased prevalence of poor SAH (Mazeikaite et al., 2019).
  - In general, empirical evidence suggests pro-cyclicality has gone down (Ruhm, 2015).
- Note: research designs are **simple**. No exogenous variation!

Unemployment and Health

- Unemployment typically also results in a drop in earnings (income); thus literature on **income effects** relevant here as well.
- However, unemployment may have additional effects – social stigma, loss of networks, time – which can affect health.
- Causality may go in both directions:
  - Unemployment affects health
  - Adverse health conditions increase probability of unemployment
- Empirical solution: use exogenous changes in unemployment:
  - Plant closures
  - Mass layoffs
  - Shift-share instruments (though not individual-level).

Mechanisms

Potential mechanisms:

- Reduced lifetime earnings
- Increased self-harm
- Mental illness
- Smoking/drinking behaviour
- Dietary aspects

Trade-induced unemployment and mortality in the U.S

- Pierce and Schott (2020) study the effects of **trade liberalization** with China on **mortality** (particularly '*deaths of despair*') in the U.S.
- Exploit a **policy change** that increased import competition for U.S firms and disrupted labor markets.
- Research design similar to that used by Autor et al. (2013) to study labour market impact.
- Information on mortality rates and causes of death.
- Moving from 25^{th} percentile to the 75^{th} percentile regarding trade policy exposure is associated with **2-3** more drug-related deaths (per 100,000 individuals).

Data

- All deaths and their causes in the USA from 1990 to 2013.
- Measures of county-level exposure to the trade liberalization based on local industry composition:

$$NTRGap_c = \sum_j \frac{L_{jc}^{1990}}{L_j^{1990}} NTRGap_j \tag{1}$$

- For mechanisms: Labor market outcomes, data on disability transfers and disabled workers.
- Various demographic covariates and information on other trade policies.

Research Design

Counties more affected by the policy face differential changes on deaths of despair?

Difference-in-Differences:

$$DeathRate_{ct} = \sum_t \theta(Year = t) \times NTRGap_c + \beta X_{ct}$$
$$+ \sum_t \gamma_t 1(Year = t) \times X_c + \delta_c + \delta_t + \epsilon_{ct}$$

$NTRGap$ measures the tariff rise that would happen in the absence of the policy introduction. Sector-specific tariffs were determined in 30s.

X Controls (e.g policy variables for China)

δ Fixed effects (county, year)

Identifying Assumption?

"First Stage"

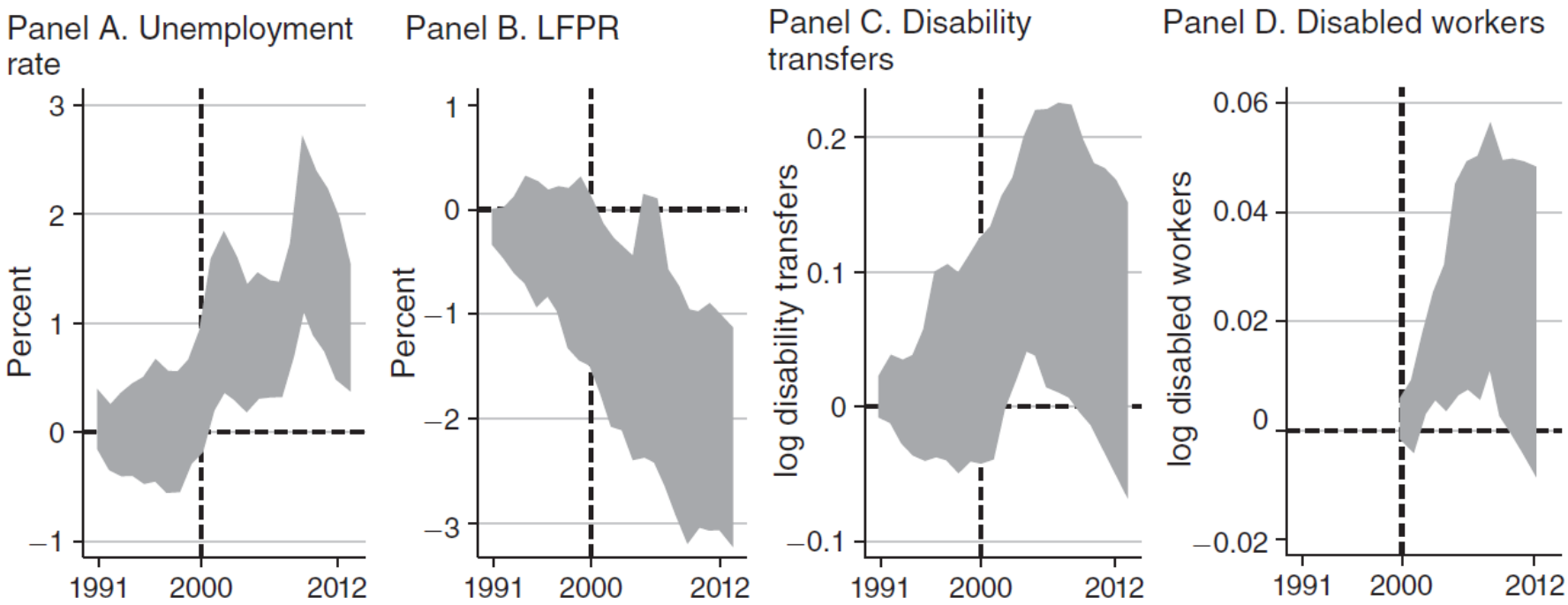


Figure 9. Labor Market Indicators

Mortality

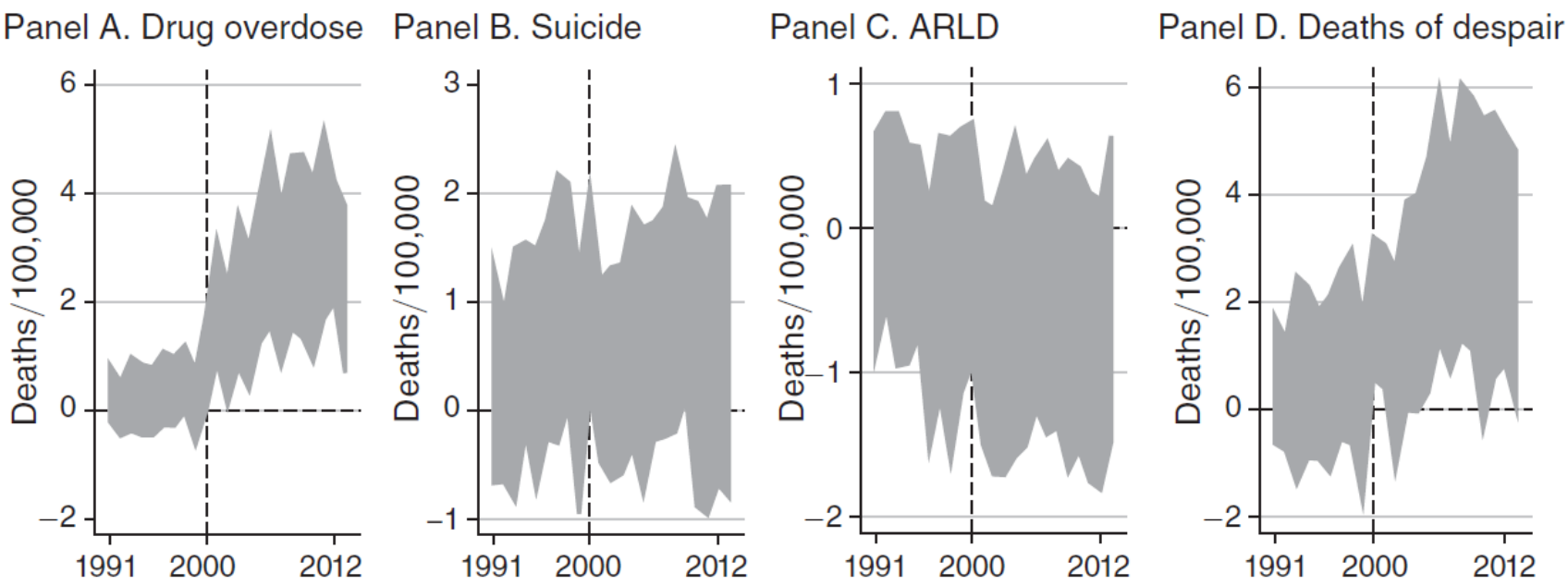


Figure 10. Deaths of Despair

Summary of Results

- Significantly positive effects of U.S trade policy on deaths of despair.
- An interquartile shift in counties exposure: $\uparrow$ 2-3 (per 100,000).
- Effects are driven by **drug overdoses** (effect stronger for males)
- Mechanisms:The trade policy caused a **labor market shock**.

Retirement and Health

Retirement and Health

- The effects of retirement were frequently evaluated in health and labour economics.
- High relevance due to population ageing.
- Again, there is causality in both directions:
  - Retirement affects health
  - Adverse health conditions increase probability of (early) retirement
- Solution: exploit retirement rules.
- Issue: what does RDD actually pick up?

Mechanisms

Potential mechanisms:

- Physical activity
- Stress reduction
- Leisure
- Increased childcare
- Smoking/drinking behaviour
- Dietary aspects

N.B. Not even the **sign** of the relationship a priori clear (cf. unemployment).

Effect of Retirement Reform on Health in Israel

- Shai (2018) evaluates the effect of retirement on health.
- Exploits **retirement reform** in Israel in 2004 (retirement age raised from 65 to 67) to implement a DID approach.
- Increase in retirement age associated with a deterioration in health.

Data

- Israeli Health Survey:
  - repeated cross-section, individual-level – 1996, 1999/2000, 2009.
  - information on health, employment, SES
- Israeli Household Expenditure Survey:
  - repeated cross-section, individual-level – 1997 - 2013
  - information on health care expenditure, employment, and SES
- Survey of Health, Ageing, and Retirement in Europe (SHARE):
  - panel data, individual-level – 2005/2006, 2009/2010
  - information on health, employment, and SES

Research Design

- **Treatment group**: males aged 65-69 in 2009
- **Control group**: males aged 50-64 and 70-74 in 2009

Estimating Equation

$$Y_{ist} = \alpha_1 + \text{Age}_s + \text{Year}_t + \alpha_2 \left(\text{ages 65-66}\right)_s \cdot (\text{year} > 2004) + \alpha_3 X_{ist} + \varepsilon_{ist} \tag{2}$$

where

Y health outcome of individual i at age s in year t,

X observed controls.

Assumption: no other factor/policy affected the specific age group except for the increased incentives to stay in the workforce.
$\Rightarrow \alpha_2 =$ causal effect of reform

Selected Results

	Ages 50–74	
Column	(1) OLS	(2) Difference in Differences
Panel A. Health Outcome		
Severe Morbidity Index	−0.24***	0.1*
	(0.02)	(0.05)
Observations	5511	5511
Panel B. Health Outcome:		
Poor Health Index	−0.44***	0.14*
	(0.03)	(0.08)
Observations	5511	5511
Panel C. Health Outcome:		
Physician Visits	−0.09***	0.068*
	(0.01)	(0.04)
Observations	5511	5511
Panel D. Health Outcome:		
Dentist Physician	0.01	−0.02
	(0.008)	(0.02)
Observations	5511	5511

Figure 11. Main Results

Summary of Results

- Employment worsens health and increases health care utilization.
- Due to reverse causality, simple OLS regressions provide severely biased estimates.
- Results are consistent for all three datasets.

Summary and Conclusions

Summary and Conclusions

- Labor and health are characterised by **simultaneity**, i.e. health and labor supply are determined at the same time.
- There are four major strands in the literature of labour and health evaluating the relationship between health and income, occupation, unemployment, and retirement, respectively.
- Pierce and Schott (2020) estimate labour market .
- Exploiting a reform in Israel in 2004, Shai (2018) shows that an increase in retirement age is associated with adverse health effects.

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