Medium- and Long-term Impacts of Graduating in a Recession: Implications for Understanding the Consequences of Pandemic-Related Disruptions

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Seminar on Developing a Research Agenda
on the Medium- and Long-term Social Impacts of the Covid-19 Pandemic

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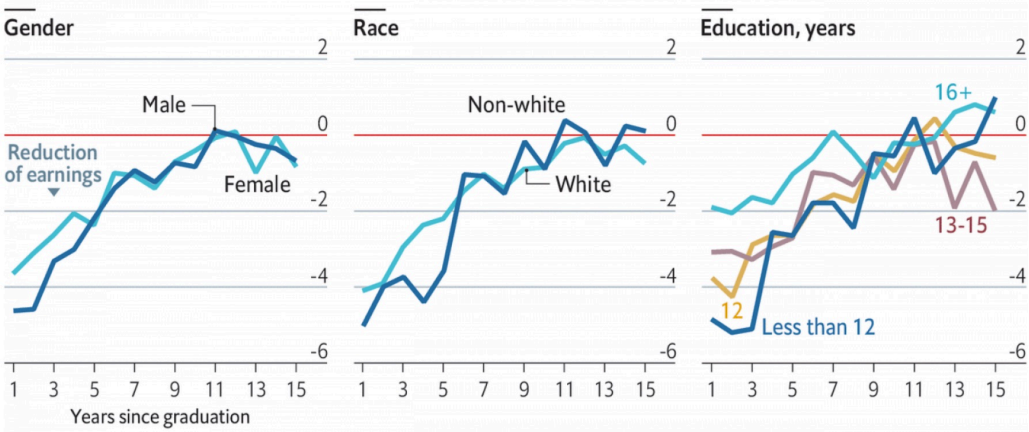
Persistent Impacts of Temporary Fluctuations

- Traditional view: business cycles only have temporary impacts
- New insight: Persistent impacts on labor market entrants, measured up to 10-15 years

  (Oyer 2008, Kahn 2010, Wozniak 2010, Oreopoulos et al. 2012, Rothstein 2019, Schwandt/von Wachter 2019)
- Graduates are hit in a vulnerable transition period
- Starting at "lower-quality" employers and catching up via job switches
- Stronger impacts for less advantaged groups

Strokes of bad luck

United States, effect of a one percentage-point increase in the unemployment rate on entry-level earnings
1976-2015, %



Source: "Unlucky Cohorts", by Hannes Schwandt and Till M. von Wachter, NBER working paper, 2018

The Economist

Today: Life Course Consequences

Long-term impacts of graduating in a recession on

1. Career development and household finances

2. Family formation

3. Mortality

$\Rightarrow$ Finding: Initial shock during transition period persistently alters life course

Main paper:

- Schwandt, Hannes and Von Wachter, Till M. (2020) "Socioeconomic Decline and Death: Midlife Impacts of Graduating in a Recession," National Bureau of Economic Research, Working Paper (No. w26638)

Additional papers:

- Schwandt, Hannes and Von Wachter, Till M. (2019) "Unlucky cohorts: Estimating the long-term effects of entering the labor market in a recession in large cross-sectional data sets," *Journal of Labor Economics*, 37(S1), pp.S161-S198.

- Currie, Janet and Schwandt, Hannes (2014) "Short-and long-term effects of unemployment on fertility," *Proceedings of the National Academy of Sciences*, 111(41), pp.14734-14739.

Methods and data

The Ideal Regression

$$outcome_{i,t} = \alpha + \beta_a u_{s,g} + \gamma_a + \delta_s + \lambda_g + \theta_t + _{i,t}$$

- Longitudinal data, withwith $u_{s,g}$ unemployment rate at labor market entry
- Estimate profile by years of age a
- Fixed effects (δ_s, λ_g) identify local recessions
- Two problems in cross-sectional data:
  1. Measurement: Year and state of labor market entry unknown
  2. Confounding selection: Year and state of labor market entry not random

Data

Large cross-sectional data sets

- Census / American Community Survey (ACS): Years of education, state of birth
- Current Population Survey (CPS): Years of education, but just state of residence
- Vital Statistics mortality data (1979-2016): No education, but state of birth
- Unemployment rates: BLS, 1976+ state-level

$\Rightarrow$ Follow entire cohorts instead of individuals ("intent-to-treat")

$\Rightarrow$ Core cohorts: 1960-1967, graduating around 1982 recession

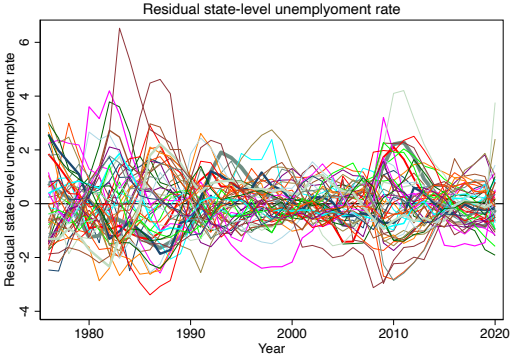
"Double-weighted" Approach to Address Potential Selection

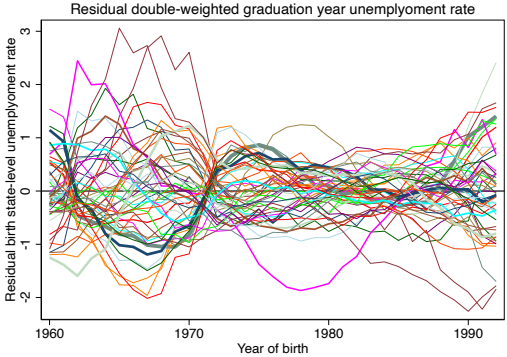
$$outcome_{i,t} = \alpha + \beta_a u^{DW}_{b,c} + \gamma_a + \delta_b + \lambda_c + \theta_t + \epsilon_{i,t}$$

- Divide population into cohorts by state and year of birth
- "Double-weighted" average graduation year unemployment rate

$$u^{DW}_{b,c} = \sum_{A=16}^{22} \overline{edu}^{A}_{b,c} \sum_{s=1}^{50} \overline{mig}^{A}_{b,s} [u_{s,c+A}]$$

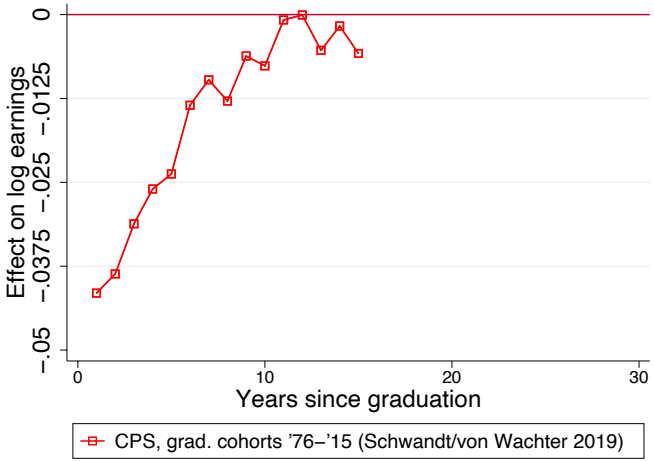
- Use average migration and education rates (unaffected by local recessions!)


Residual state-level unemployoment rate
Residual state-level unemployoment rate
6
4
2
0
-2
-4
1980
1990
2000
2010
2020
Year

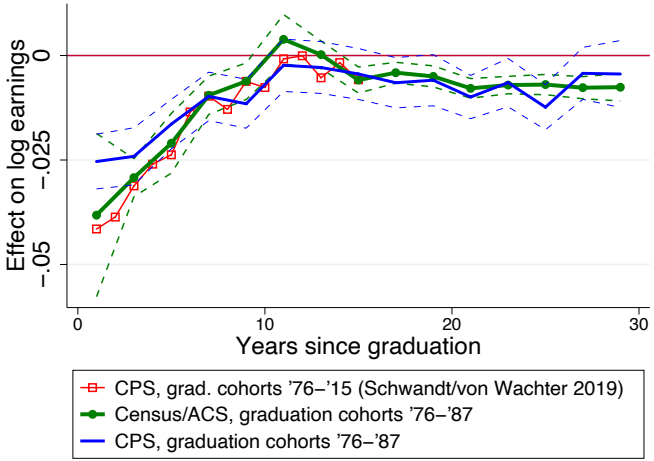

Residual double-weighted graduation year unemployoment rate
Residual birth state-level unemployoment rate
3
2
1
0
-1
-2
1960
1970
1980
1990
Year of birth

Comparing different data sets, methods, and cohorts

Baseline Result Using Standard Approach



Extended Period Using Standard Approach, CPS and Census



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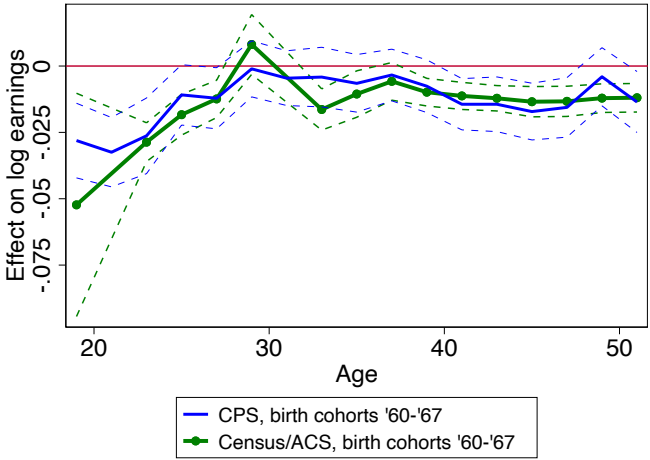


Impacts on career development and family formation

Estimation results

$$outcome_{i,t} = \alpha + \beta_a u_{b,c}^{DW} + \gamma_a + \delta_b + \lambda_c + \theta_t + \epsilon_{i,t}$$

Effect of Graduation Unemployment Rate on Labor Market Outcomes

	Log earnings (1)	% any earnings (2)	Log hourly wage (3)	Log weekly hours worked (4)	% working part-time (5)
Age 19-29	-0.022***	-0.131	-0.009***	-0.006***	0.692***
	(0.003)	(0.096)	(0.003)	(0.001)	(0.147)
Age 30-40	-0.008***	0.426***	-0.006**	-0.001	0.264**
	(0.002)	(0.092)	(0.002)	(0.001)	(0.130)
Age 41-52	-0.013***	0.156**	-0.014***	-0.005***	0.322**
	(0.002)	(0.078)	(0.003)	(0.001)	(0.130)
Observations	21,063	21,063	13,872	13,872	13,872
Mean dep. var.	9.93	80.36	2.48	3.63	22.19
R^2	0.913	0.411	0.847	0.603	0.453

Notes: Regressions of socioeconomic outcomes on the double-weighted labor market entry unemployment rate interacted with age group dummies (Eq. (3)) are shown. Data from Census, ACS, and CPS, years 1979–2019. Columns (3) - (5) only CPS. Regressions include fixed effects for age groups, cohort, year, and state of birth. Standard errors (in parenthesis) clustered at the state-of-birth by year-of-birth level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Effect of Graduation Unemployment Rate on Household Finances

	Log household income (1)	% owning house (2)	% with family welfare income (3)	% receiving foodstamps (4)	% with SS or Medicare (5)	% with work disability (6)
Age 19-29	-0.018***	0.302*	0.314***	0.696***	-0.003	-0.276***
	(0.003)	(0.159)	(0.035)	(0.076)	(0.038)	(0.086)
Age 30-40	-0.007***	-0.326***	-0.070**	-0.090	-0.007	-0.262***
	(0.002)	(0.100)	(0.028)	(0.075)	(0.035)	(0.088)
Age 41-52	-0.018***	-0.618***	-0.132***	0.120**	0.155***	0.197**
	(0.002)	(0.096)	(0.021)	(0.054)	(0.037)	(0.089)
Observations	21,055	21,055	21,063	20,502	21,012	11,628
Mean dep. var.	10.65	63.30	2.46	8.21	3.32	7.22
R^2	0.844	0.898	0.443	0.423	0.380	0.355

Notes: Regressions of socioeconomic outcomes on the double-weighted labor market entry unemployment rate interacted with age group dummies (Eq. (3)) are shown. Data from Census, ACS, and CPS, years 1979–2019. Regressions include fixed effects for age groups, cohort, year, and state of birth. Standard errors (in parenthesis) clustered at the state-of-birth by year-of-birth level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Effect of Graduation Unemployment Rate on Family Formation

	% married (1)	% divorced (2)	Number of children (3)	% childless (4)	Spousal minus own education (5)	Spousal log earnings (6)
Age 19-29	0.343*	0.096*	0.014***	-0.632***	-0.014**	-0.012***
	(0.199)	(0.054)	(0.004)	(0.188)	(0.006)	(0.004)
Age 30-40	-0.173*	0.108*	0.002	0.004	-0.011**	-0.007**
	(0.097)	(0.065)	(0.003)	(0.093)	(0.004)	(0.003)
Age 41-52	-0.437***	0.232***	-0.011***	0.443***	-0.012***	-0.015***
	(0.106)	(0.056)	(0.004)	(0.141)	(0.004)	(0.003)
Observations	21,063	21,063	21,063	21,063	21,028	21,023
Mean dep. var.	56.29	14.73	1.01	47.79	0.05	10.10
R^2	0.841	0.707	0.864	0.866	0.044	0.691

Notes: Regressions of socioeconomic outcomes on the double-weighted labor market entry unemployment rate interacted with age group dummies (Eq. (3)) are shown. Data from Census, ACS, and CPS, years 1979–2019. Regressions include fixed effects for age groups, cohort, year, and state of birth. Standard errors (in parenthesis) clustered at the state-of-birth by year-of-birth level. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

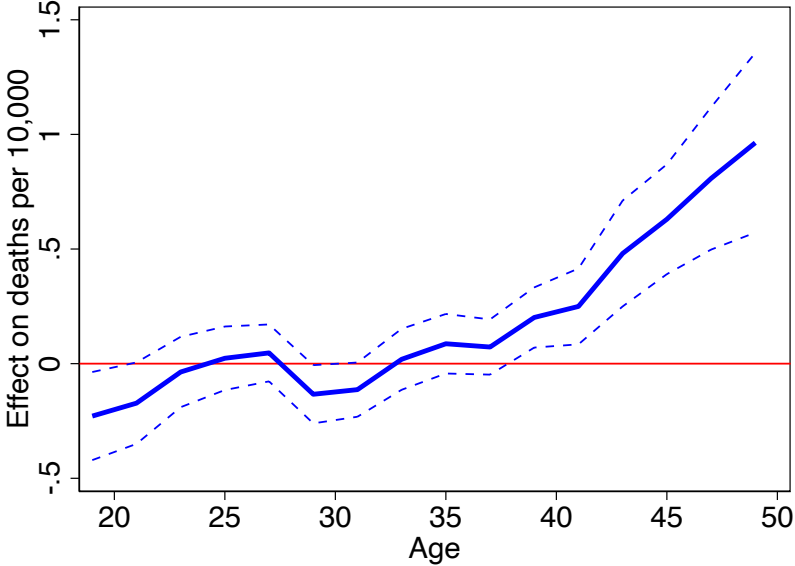
Results in Line with (econ) Life-cycle Model Predictions

- **Career development** (Gibbons/Waldman, 2006; Oreopoulos/von Wachter/Heisz, 2012)
  - Recession graduates accumulate skills in lower quality jobs, never fully catch up
  - Persistent effects; wage gaps could widen again in midlife
  - Effect on labor supply ambiguous (substitution vs. income effect)
- **Family formation** (Currie/Schwandt 2014, Dehejia/Lleras-Muney, 2004; Low/Meghir/Pistaferri/Voena, 2018)
  - Short run: fertility procycical (opportunity costs high during recessions!)
  - Medium run: flat career paths make earlier family formation cheaper
  - Long run: lower income and worse match quality may reduce fertility

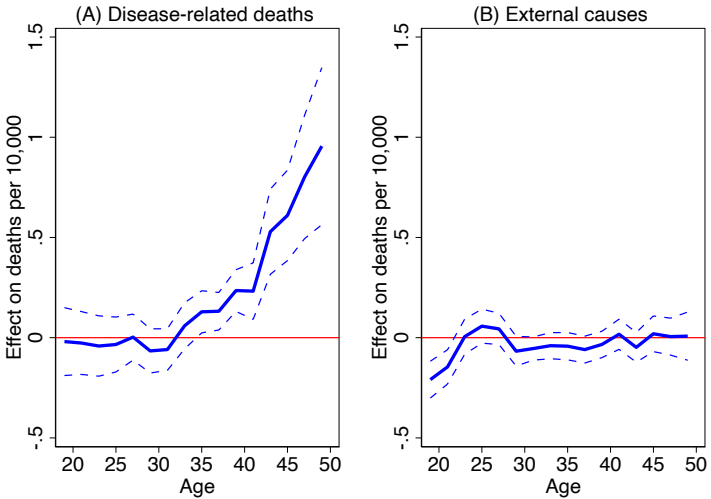
Impacts on mortality

$$mortality_{i,t} = \alpha + \beta_a u_{b,c}^{DW} + \gamma_a + \delta_b + \lambda_c + \theta_t + +_{i,t}$$

Impact on Overall Mortality



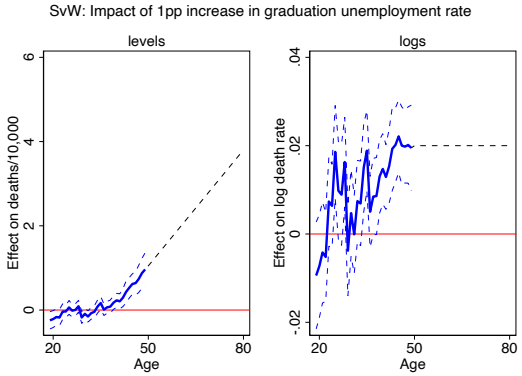
Effects by Cause

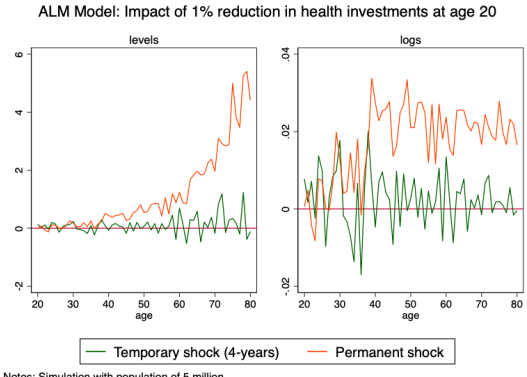


Life-cycle Model Predictions

- Strong SES-health correlation but causality difficult
- Moreau and Lleras-Muney (2021) mortality model
  - Health determinants: investments, age depreciation, random shocks
  - Fixed mortality threshold $\Rightarrow$ health differences more important with age
  - Increasing age gaps both for temporary and persistent reductions in investment
  - But log mortality impact only increasing for persistent investment reductions, while strictly decreasing for temporary reductions
- Note: Investments can be monetary, but also time and life-style (e.g., stress)
- Ruhm (2000, 2005): Recessions might temporarily *improve* health investments and shocks

Estimates Match Model with 1% Permanent Health Investment Shock





Notes: Simulation with population of 5 million

Magnitude of mortality effects

Impact of +3.9 p.p. Unemployment Rate (for Cohort of 4m)

	linear extrapolation (1)	percent extrapolation (2)
Excess deaths		
At age 20	-374	-374
At age 50	7,089	7,089
At age 75	74,430	85,605
Life expectancy loss		
Life years	-1,973,297	-2,978,912
Months per capita	-5.9	-8.9

Heterogeneity of effects across social groups

Unequal Impacts across Gender, Race, Education

- Gender
  - Stronger labor market effects for men, women buffer via higher participation
  - Higher (relative) mortality impacts among women
- Race
  - Stronger initial effects among non-White population
  - Similar socio-economic long-term effects, but non-White population works more
  - Larger mortality impact on non-White people, except for drug overdose deaths
- Education (SES analysis only)
  - Stronger short- and long-term effects for less educated persons
  - Negative fertility impacts concentrated among more educated persons

COVID-19 recession graduates

COVID-19 Recession Graduates: What to Expect

Upsides

- Economy in principle healthy (so far...)
- Unprecedented government interventions
- Better prepared for future crises?

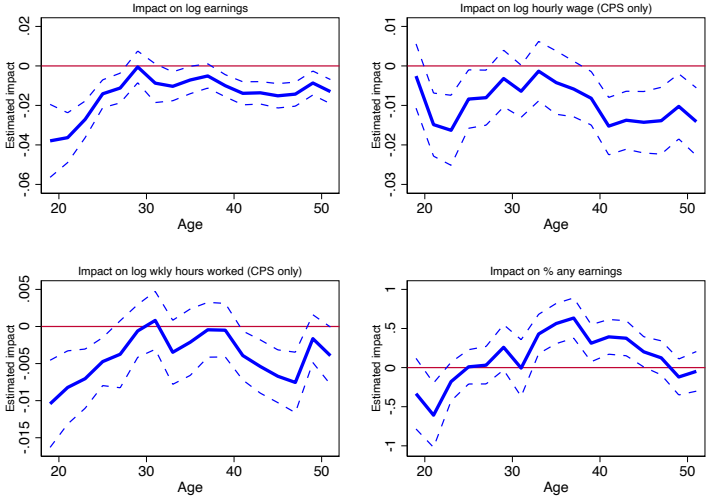
Downsides

- Is the crisis really over?
- Strongly unequal impact across racial/ethnic and socioeconomic groups
- Lack of work place experience, network development, social integration
- Mental health consequences of social isolation

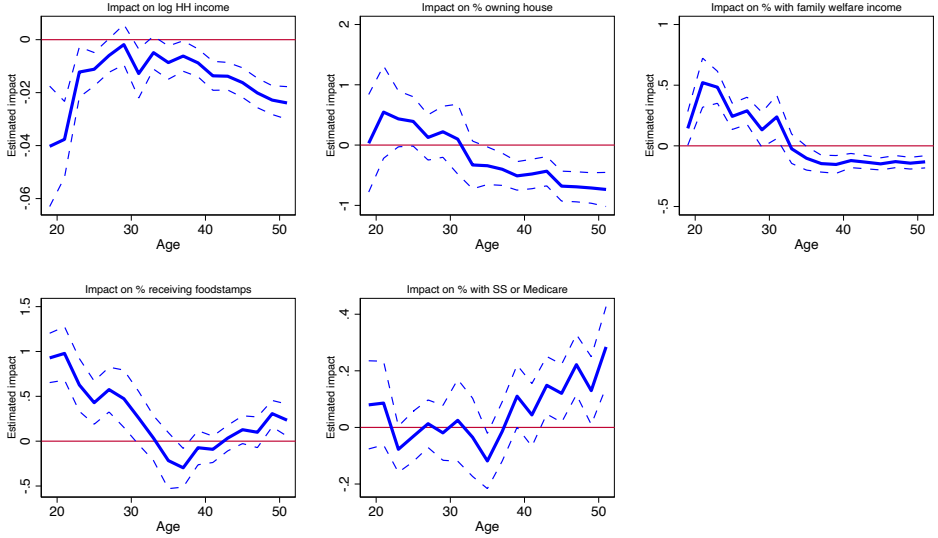
$\Rightarrow$ **Graduation transition period particularly vulnerable during pandemic times**

APPENDIX

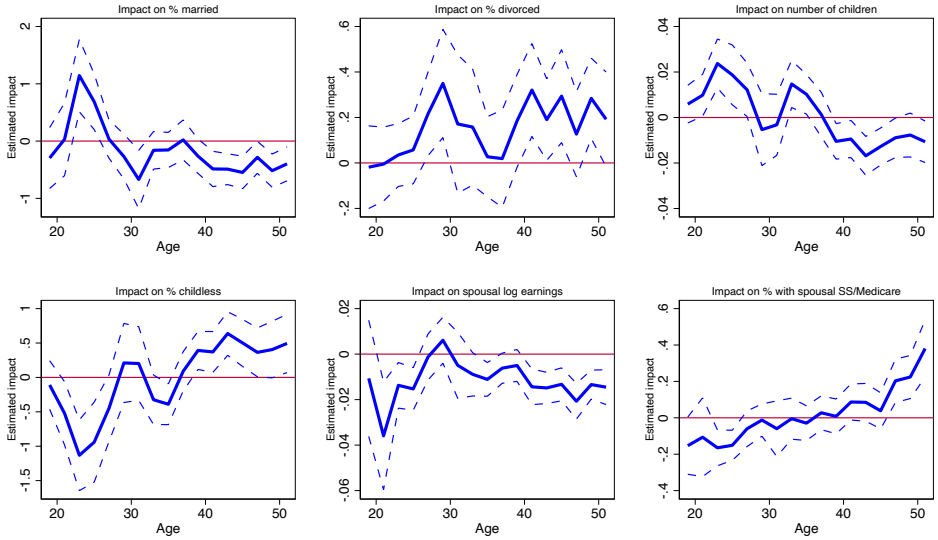
Labor market outcomes



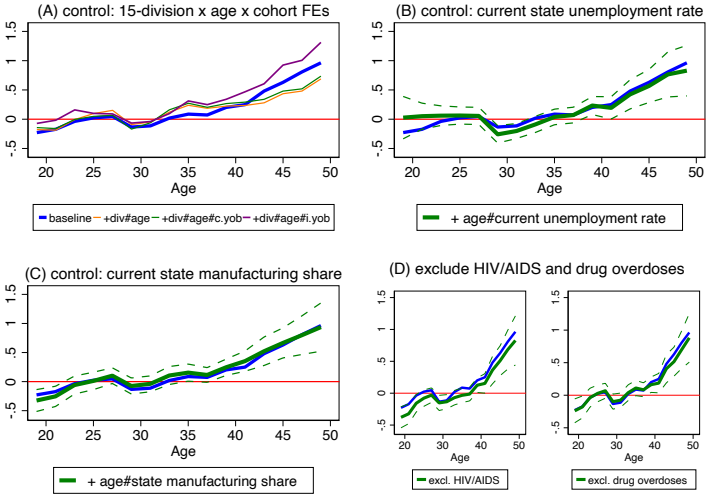
Household finances and transfers



Family formation



Controlling for spatial trends and potentially correlated shocks



Benchmark estimates

1982 recession: **6-9 month life expectancy reduction**

- Sullivan & von Wachter (2009)
  - Mortality effects of lay-offs
  - 12-18 month reduction in life expectancy
  - But also larger permanent income effect (10-20%)
- Ruhm (2000), Miller et al. (2009), Stevens et al. (2015)
  - *Contemporaneous* effect of +3.9 p.p. increase
  - +1.9 month increase in life expectancy
- U.S. life expectancy trend over past 50 years: +2 months per year

COVID-19: Unemployment +20 p.p. $\Rightarrow$ 3.3 years life expectancy loss?

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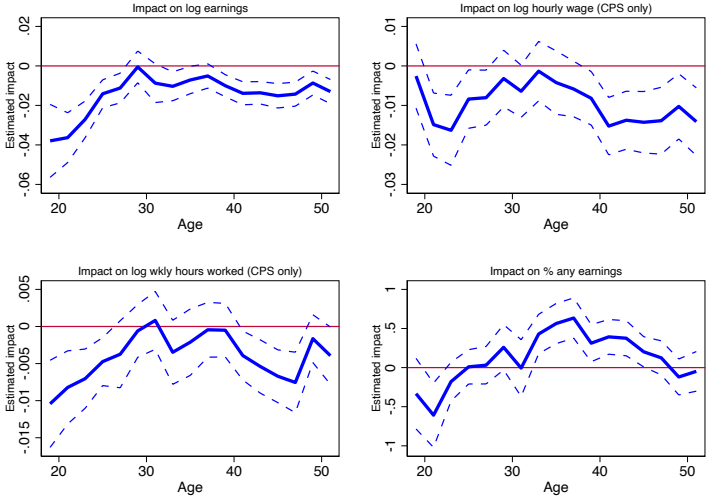

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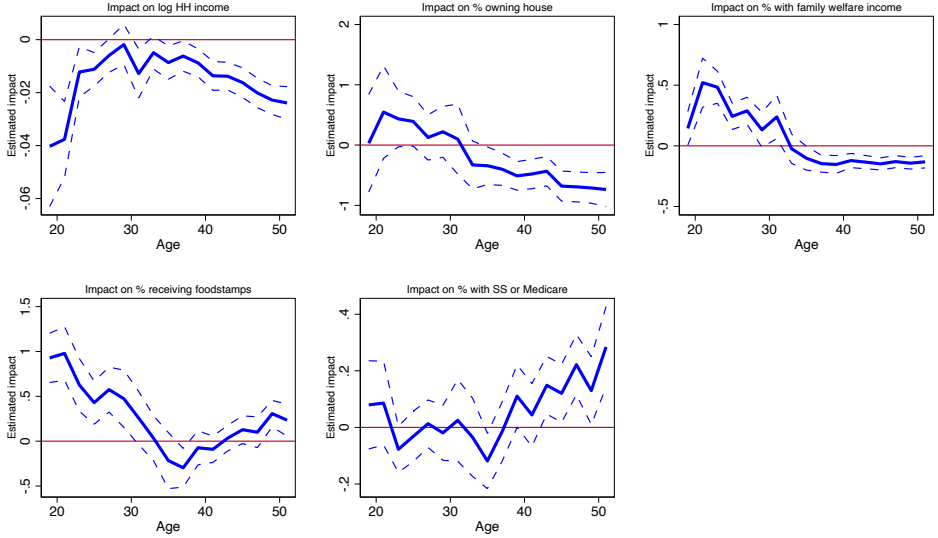

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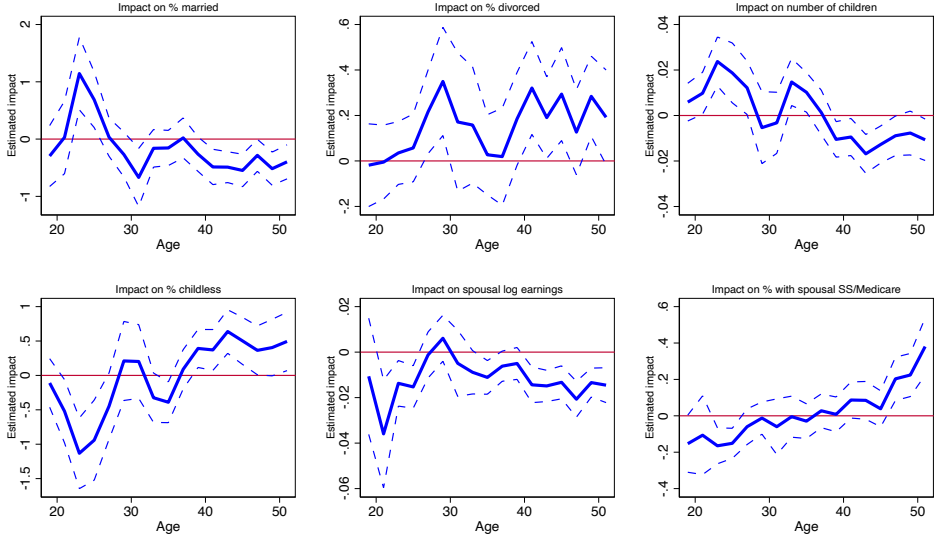

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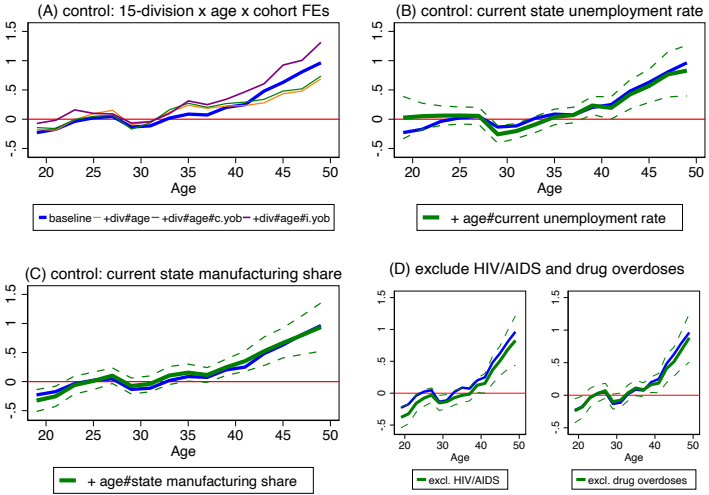

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