

Complementary Investments Over the Life Course and the Black-White Earnings Gap

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Motivation

- The Black-White earnings gap among men today is the same as in 1950, despite efforts to address discrimination in labor markets (Bailey and Danzinger 2013; Bayer and Charles 2018)
- Sustained gaps speak to importance of systemic discrimination (Darity et al 2005; Powell 2007; Phelan and Link, 2015; Bohren et al 2022)
- Models of systemic discrimination imply that reducing racial disparities requires investing in multiple domains in a sustained manner (Johnson 2018; Johnson and Jackson 2019; Derenoncourt 2022)
- Investments of this type are rare (Alesina et al 1999; Michener 2018; Darity 2022)

This study

- Identifies a set of *de facto* life cycle investments
 - Early life exposure to first antibiotics, 1937 (Jayachandran et al 2010; Bhalotra and Venkataramani 2015)
 - Early career exposure to FLSA 1966 (Derenoncourt and Montialoux 2021; Bailey et al 2021)
- Assesses collective impacts of these interventions on racial disparities in earnings in a quasi-experimental setup
- Finds complementarities between the two investments:
 - Reduced racial gaps in earnings
 - FLSA helped Black workers achieve the full potential of a healthier start

Interventions

Sulfa drugs:

- Sulfa drugs (mid 1930s) found to be effective in reducing pneumonia morbidity and mortality in young children (Lesch 2007, Jayachandran et al 2010)
- Infancy exposure → greater human capital accumulation and earnings in adulthood for Black and White men (Bhalotra and Venkataramani 2015)

1966 FLSA

- Raised national hourly min. wage to highest real rate in 20th century (Bailey et al 2021)
- Extended min. wage to a range of industries in which Black workers were overrepresented
- Large declines in B-W wage gap (Derenoncourt and Montialoux 2021)

Potential interactions

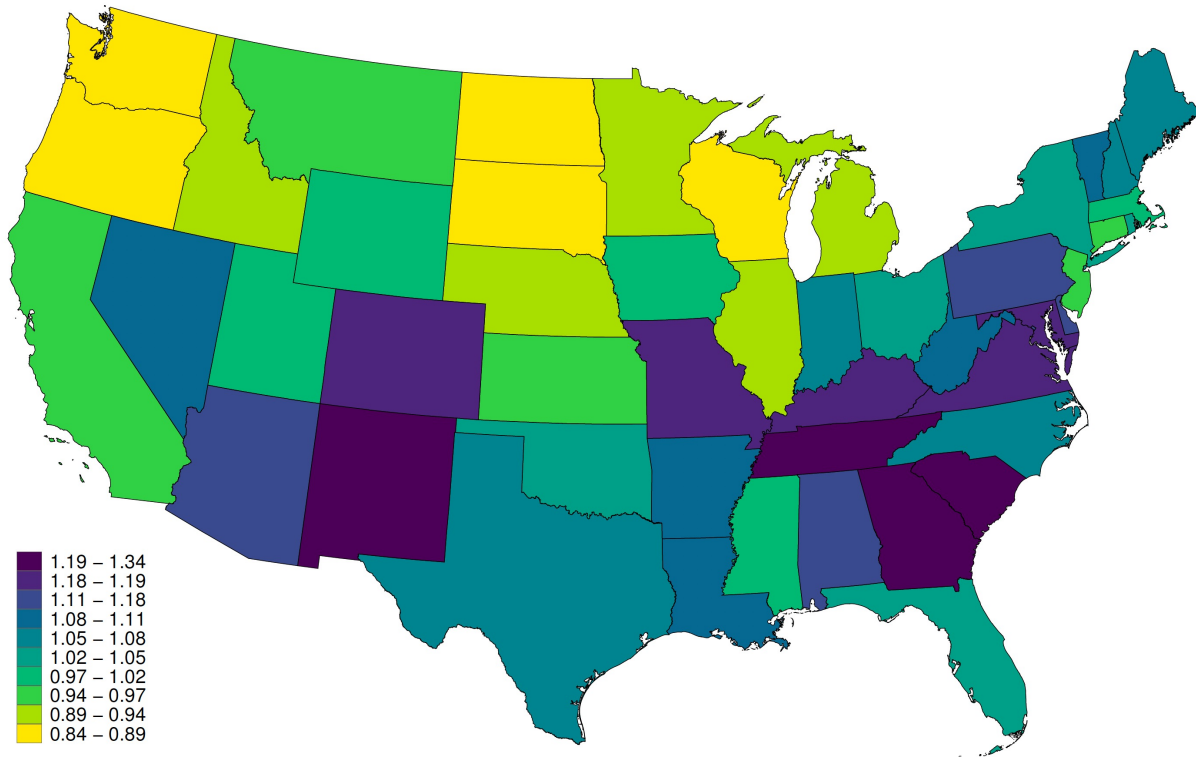
- Substitutes: workers with better health endowments → less likely to work in low-wage industries → benefit less from min. wages hikes
- Complements: workers with better health endowments → able to find better opportunities when frictions in labor market are addressed by min. wage hikes
- *For Black workers, we argue complementarity more likely:*
 - Black workers benefitted more from early life shock (because of worse baseline) but constrained in labor market due to systemic discrimination (Bhalotra and Venkataramani 2015)
 - Min. wage hikes can address occupational segregation, high search costs (Derenoncourt and Montialoux 2021; Wursten and Reich 2023)

Data and design

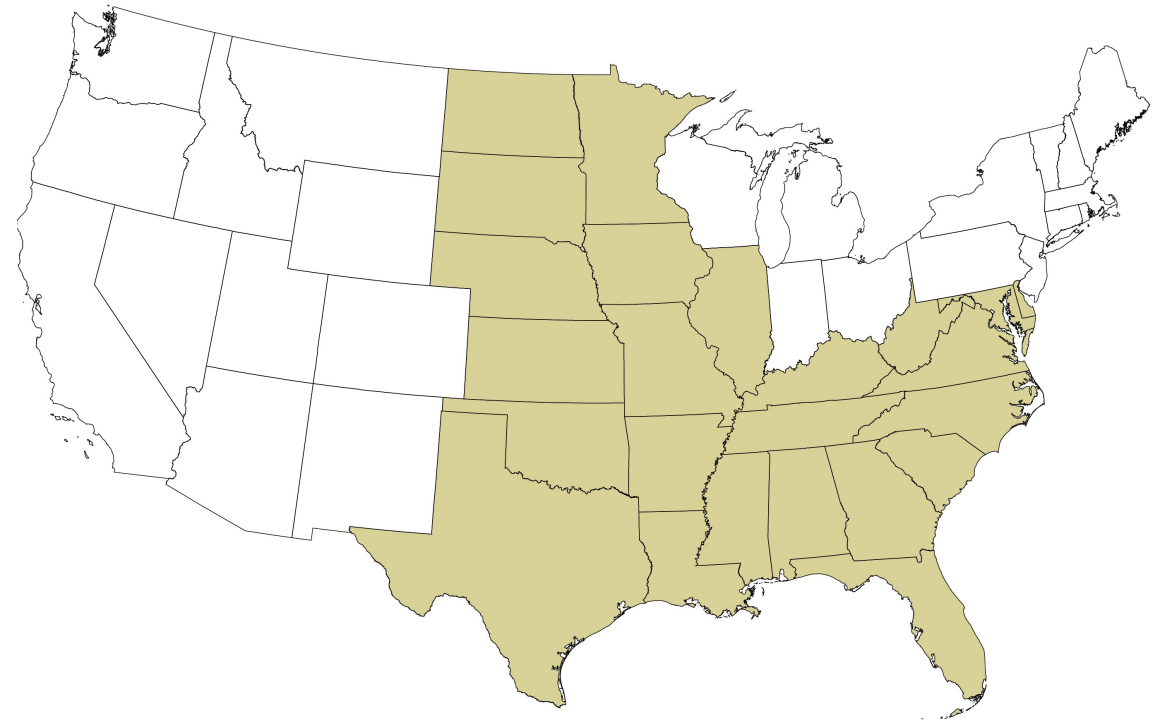
- Interactive 2 X 2 design combining pre-post birth year exposure to sulfa and pre-post exposure to FLSA using 1960 and 1970 Censuses
 - Focus on 1930-1943 male birth cohorts
 - Sulfa-affected cohorts were 23-30 y.o. at time of FLSA
- Identification for sulfa shock: Post-1937 birth X pre-sulfa burden of disease (Bhalotra and Venkataramani 2015; Chuard et al 2022)
- Identification for FLSA: Post-1966 census enumeration X pre-FLSA lack of state min wage laws (e.g. Derenoncourt and Montialoux 2021)

Identifying variation

Baseline pneumonia mortality rates



States with no minimum wage laws in 1966 ("strongly treated")



Model

$$Y_{isbtc} = \beta_0 + \beta_1(\text{Post Sulfa}_c \times \text{Base Pneumonia}_b) + \beta_2(\text{Strongly Treated State}_s \times \text{Post FLSA}_t) + \beta_3(\text{Post Sulfa}_c \times \text{Base Pneumonia}_b) \times \text{Post FLSA}_t + \tau[(\text{Post Sulfa}_c \times \text{Base Pneumonia}_b) \times (\text{Strongly Treated State}_s \times \text{Post FLSA}_t)] + \mu_b + \lambda_c + \phi_s + \psi_t + X'_{stbc}\Gamma + \eta_{istc}. \quad (3)$$

i = individual
s = state at enumeration
b = birth state
t = census wave
c = birth cohort

Include birth state, birth year, enumeration state, enumeration year, birth state X enumeration year, and birth year X enumeration state FEs

Single
policy
effects

	log(Wage Income)	
	Black (1)	White (2)
Panel A: Sulfa		
Post Sulfa × Base Pneumonia	0.0459 (0.0755)	0.121*** (0.0350)
Mean of Dep. Var.	9.25	9.73
Scaled effect size	0.007	0.019
Observations	80,974	772,267
R-Squared	0.368	0.505
Panel B: FLSA		
Strongly Treated Stata × Post FLSA	0.200*** (0.0589)	0.0328* (0.0167)
Mean of Dep. Var.	9.25	9.73
Observations	82,088	776,130
R-Squared	0.255	0.208

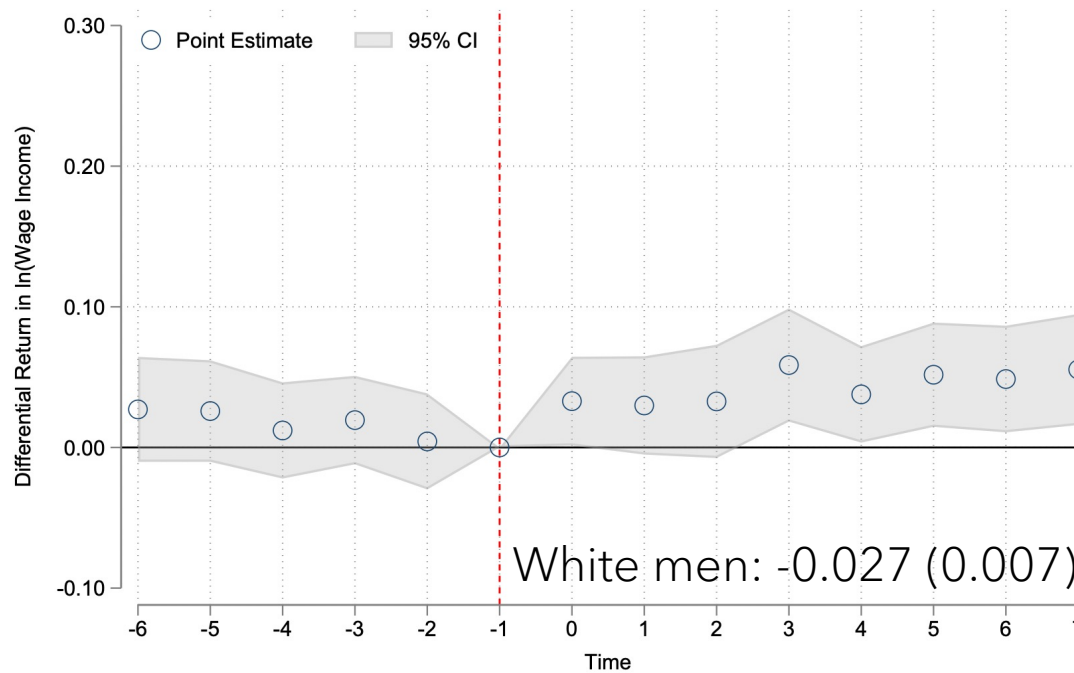
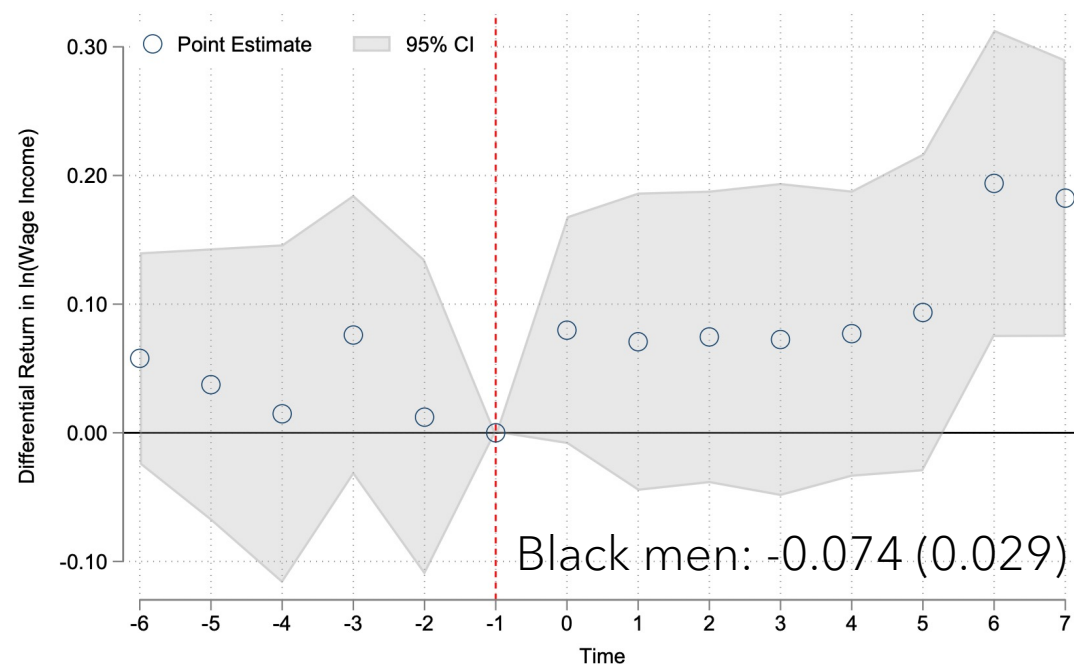
Interaction effects and earnings gaps

	Sulfa Arrival (1)	FLSA Reform (2)	Interactive Reform (3)
Reform	0.121*** (0.0350)	0.0328* (0.0167)	0.0269*** (0.00675)
Reform × Black	-0.0749 (0.0732)	0.167*** (0.0536)	0.0470** (0.0214)
Observations	853,241	858,218	853,241
R-Squared	0.499	0.225	0.508
White (control)	10.53	10.54	10.57
Black (control)	10.04	10.20	10.22
Δ WB (control)	0.491	0.347	0.350
Scaled Estimate	-0.152	0.481	0.134

Sulfa X FLSA effect equivalent to a 13.4% reduction in BW wage gap.

FLSA effectively undid widening of BW gap induced by sulfa exposure alone.

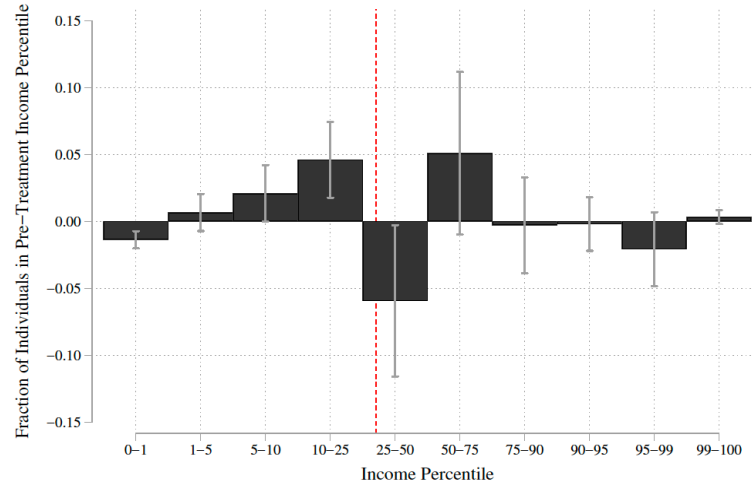
Event studies for interaction effects



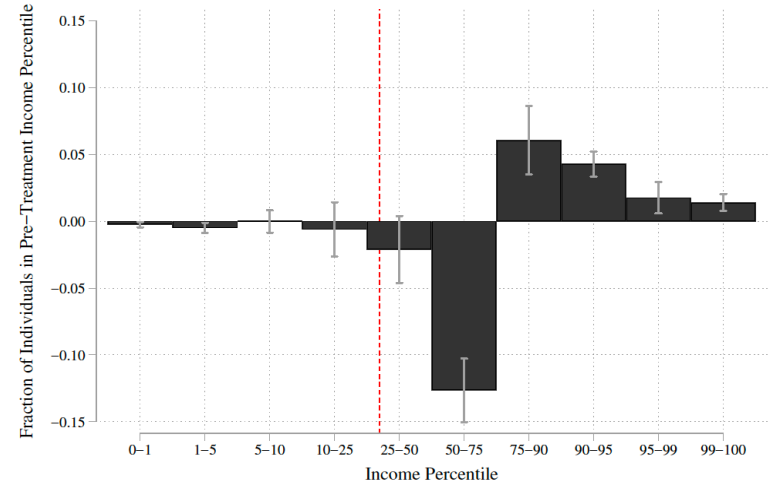
Why complementarity?

- Sulfa-led *selection* into FLSA-covered industries/states:
 - Sulfa exposed workers more likely to stay in birth state (which for Black workers were more likely FLSA-treated) and sort into FLSA industries
- FLSA helped better endowed workers surmount labor market *barriers*
 - Sulfa exposed workers were more likely to exit FLSA covered industries after FLSA
- However, migration and industry choice explain little of the complementarity found, suggesting role of within industry mobility

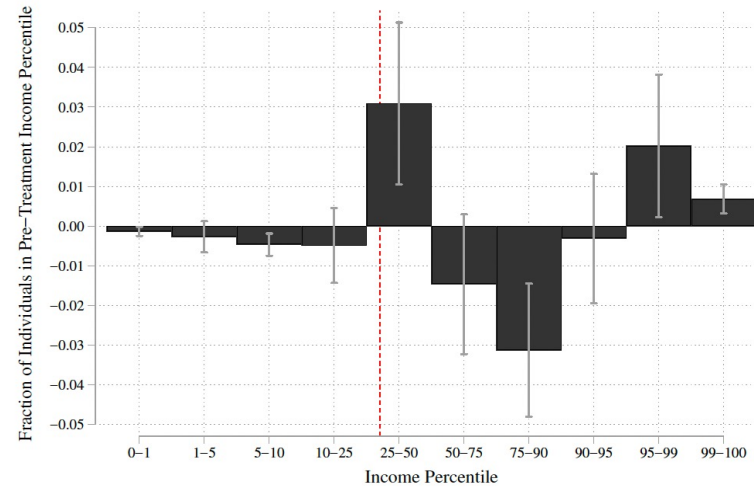
Impacts on income distribution



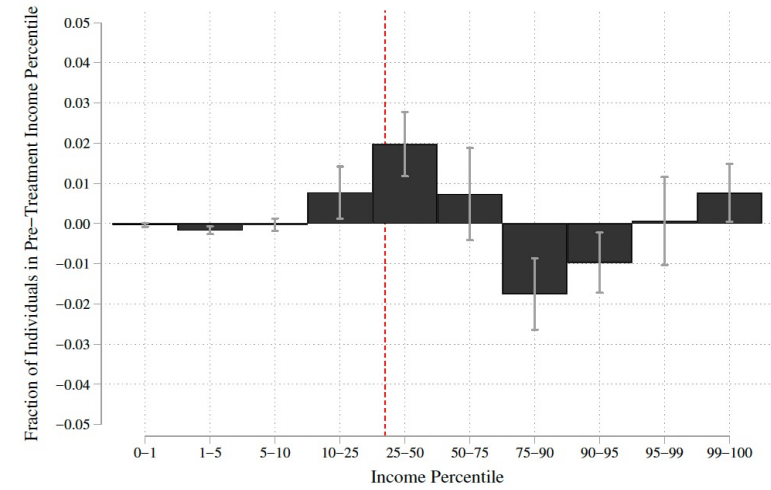
(a) Sulfa (Black Men)



(b) Sulfa (White Men)



(e) Sulfa x FLSA (Black Men)



(f) Sulfa x FLSA (White Men)

Discussion and next steps

- Findings consistent with need for sustained, multi-dimensional investments to address racial disparities in economic outcomes
- Current interpretation: FLSA addressed frictions faced by Black workers, potentiating prospects of those with better health endowments
- Next steps:
 - Effects across income distribution

Thank you.

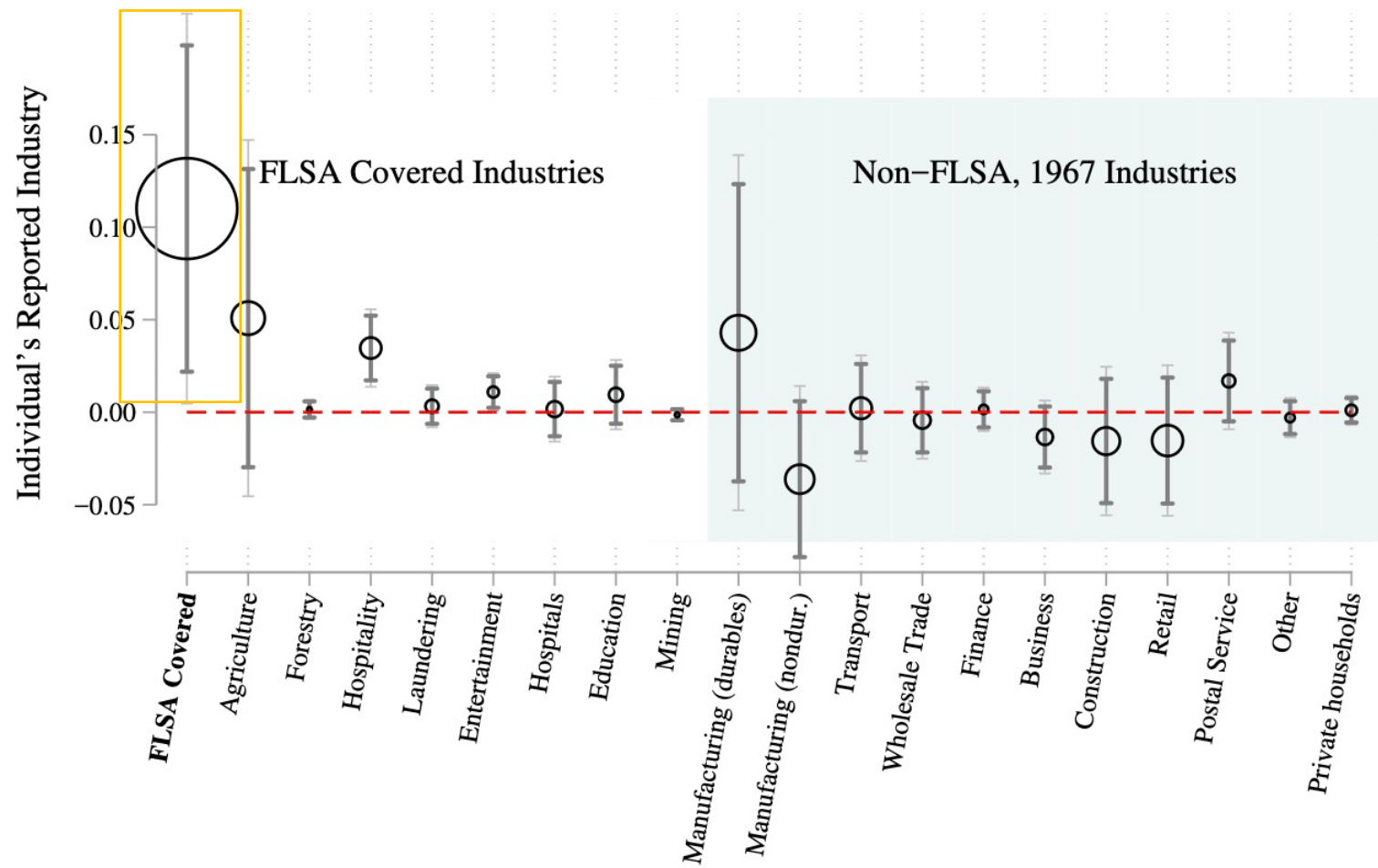
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Returns to early exposure to sulfa drugs are shaped by institutional racism

Impacts of early exposure to sulfa drugs in 1980-2000 censuses
(Bhalotra and Venkataramani 2015)

	Schooling	log(Family Income)	Cognitive Disability	Work Limiting Disability
Panel A: Black Men				
Post × Base Pneumonia Influenza	1.005*** (0.267)	0.494*** (0.0910)	-0.0858 (0.0649)	-0.168*** (0.0256)
FWER p-value	[0.176]	[0.054]	[0.448]	[0.024]
Post × Base Pneumonia Influenza × Slave Fraction	-1.978*** (0.619)	-0.877*** (0.207)	0.0686 (0.123)	0.368*** (0.0615)
FWER p-value	[0.153]	[0.079]	[0.817]	[0.025]
Post × Slave Fraction	1.111** (0.474)	0.285* (0.162)	-0.168** (0.0819)	-0.250*** (0.0500)
<i>Effect size at slave fraction = 0</i>	0.191 years	0.0938 %	-1.630 pp	-3.196 pp
<i>Effect size at slave fraction = 0.2 (Median)</i>	0.116 years	0.0605 %	-1.369 pp	-1.799 pp
<i>Effect size at slave fraction = 0.5 (Max)</i>	0.00299 years	0.0105 %	-0.978 pp	0.297 pp
N	66,533	162,696	51,486	171,865

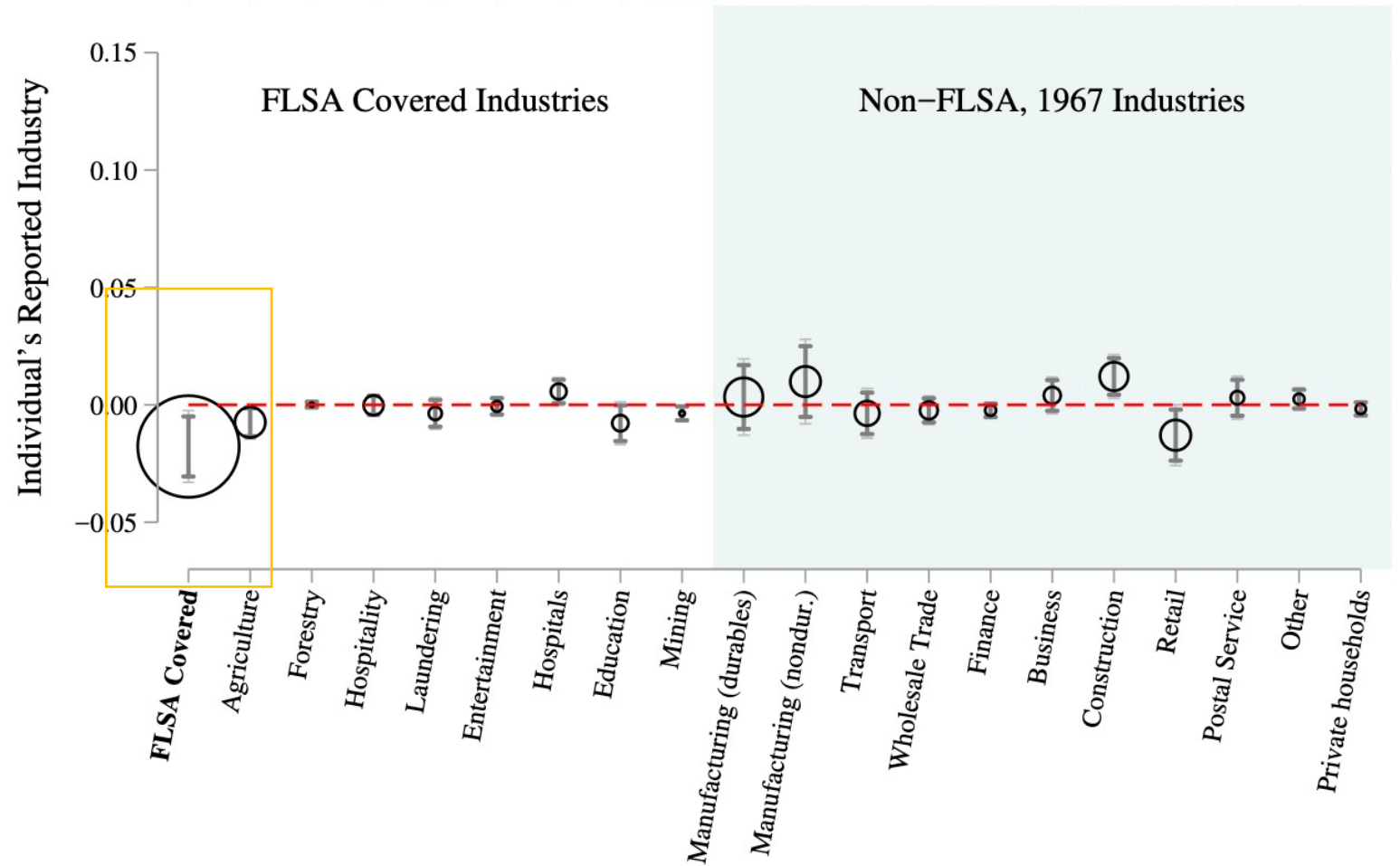
Selection into FLSA Industries



Opposite pattern for white workers.

Sulfa-shock → reduced migration from birth state for Black > white men → more exposure to FLSA (though birth state and enumeration state FE control for this).

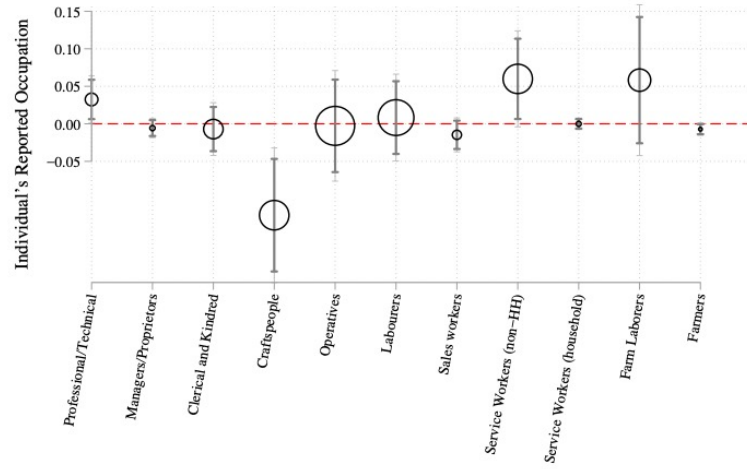
Sulfa X FLSA led exit from FLSA-covered industries



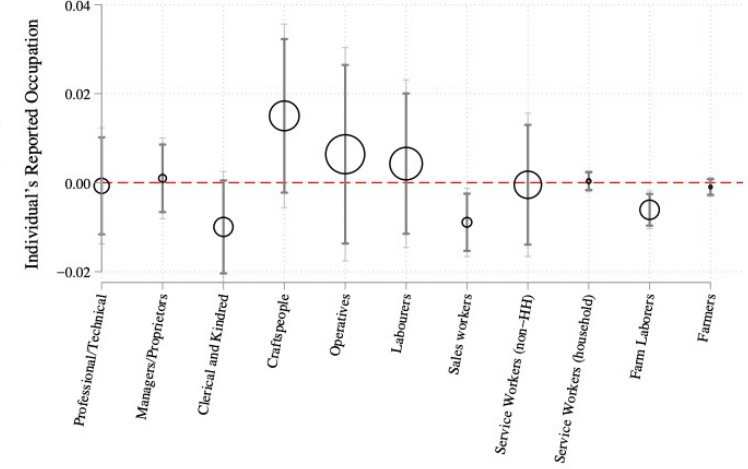
Estimated interaction effects on log(wage earnings) remain after including industry FE, suggesting the importance of within industry mobility.

Impacts on occupational choice

Panel A: Black Males

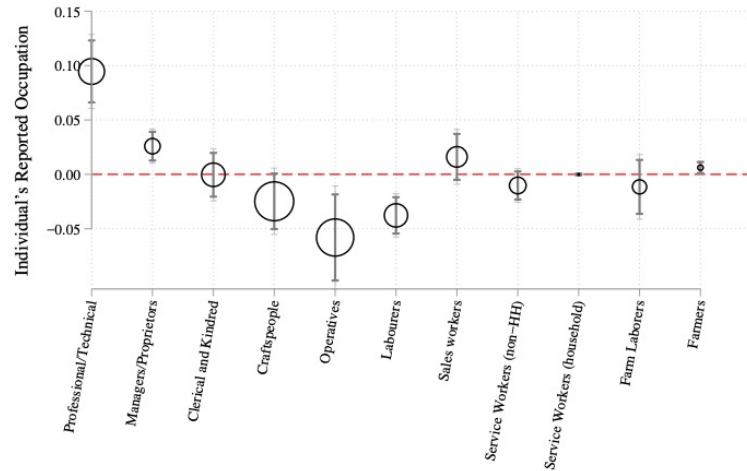


(a) Sulfa Impacts (1960)

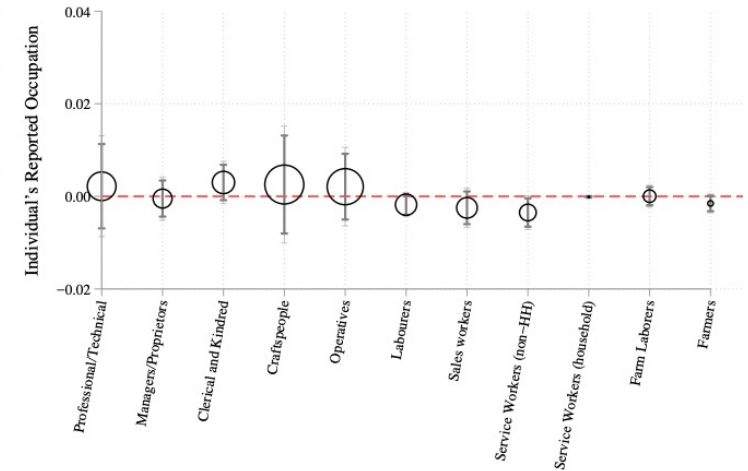


(b) Interactive Impact (Sulfa x FLSA)

Panel B: White Males



(c) Sulfa Impacts (1960)



(d) Interactive Impact (Sulfa x FLSA)