Minimum wage effects on mental health: Event study evidence from the Behavioral Risk Factor Surveillance System (BRFSS), 1993–2019

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Motivation

- Declining mental health in the US, particularly amongst young- and working-age adults
- Over the past two decades, morbidity from common mental disorders has been rising, alongside suicide rates and fatal drug overdoses
- Effects are not felt equally
  - Disproportionate rise in suicide and drug overdose rates amongst racially minoritized groups
  - For those with poor mental health, white adults are more likely than Hispanic and Black adults to receive any mental health services

Motivation

- Lifting people out of poverty is associated with improved measures of mental health and wellbeing
- Minimum wage increases found to decrease suicide rates
- Minimum wages differentially affect the wages of non-Hispanic Black and Hispanic workers relative to non-Hispanic white workers

This paper

- How do minimum wage increases influence mental health outcomes?
  - To what extent are there differential impacts by race/ethnicity?
- Leverage policy variation to estimate event-study models for likely impacted sample
  - Majority of minimum wage and health literature uses two-way fixed effects approaches which may be biased

Preview of Findings

- Improvements in non-Hispanic Black workers of self-rated general health, number of poor mental health days and the rate of mental distress, with effects sustained four years post minimum wage increase
- Precise null effects among non-Hispanic whites
- Imprecise null effects among Hispanics

Data

- Behavioral Risk Factor Surveillance System for health outcomes for years 1993 to 2019
  - Representative at the state-level
  - Released every year for each state
  - Captures self-report health data, our measures of interest are:
    - Number of poor mental health days in past 30 days
    - Frequent mental distress: 15 or more poor mental health days in past 30 days
    - Self rated health as fair or poor
    - Number of poor physical health days in past 30 days
- Minimum wage policy data from Vaghul and Zipperer
- Merged with population demographics, state-level policy and socioeconomic variables

Summary Statistics

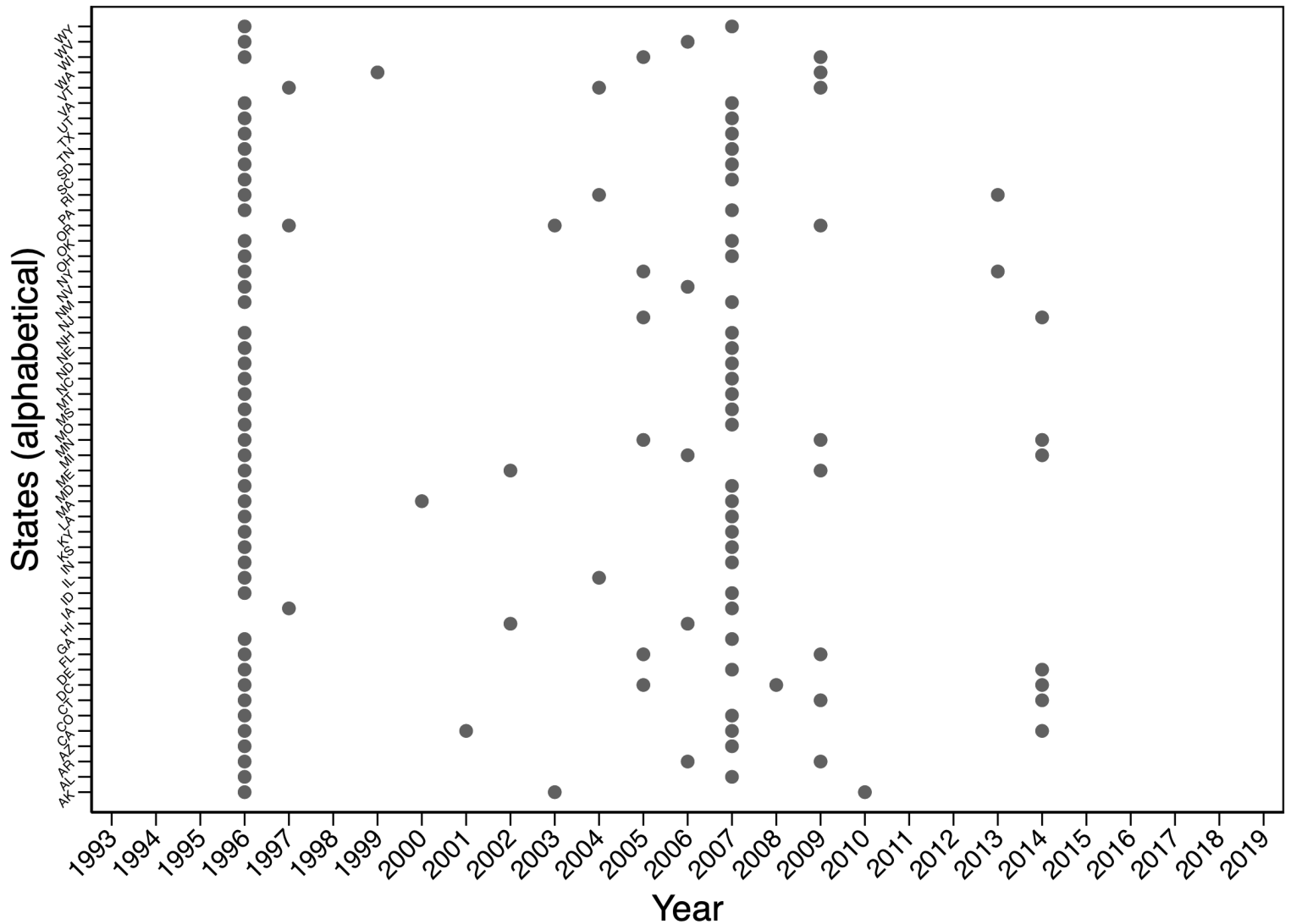
Table: Average outcomes for primary sample, by race and ethnicity

	Pooled	**NH White**	**NH Black**	**Hispanic**
Poor mental health days	4.03	4.23	3.92	3.53
	(7.65)	(7.79)	(7.75)	(7.15)
Frequent mental distress	0.12	0.13	0.12	0.11
	(0.33)	(0.33)	(0.32)	(0.31)
Fair/Poor health	0.09	0.07	0.10	0.16
	(0.29)	(0.25)	(0.30)	(0.36)
Poor physical health days	1.97	1.99	1.75	2.01
	(5.09)	(5.07)	(4.86)	(5.27)
Observations	*361767*	*262708*	*43436*	*55623*

Study design

- Use event study models to estimate changes in outcomes in the years before and after the policy is implemented
  - Estimate separate models for each health outcome and race/ethnicity groups
- Key identifying assumption is parallel trends (policy adoption is uncorrelated with unobserved drivers of heath outcomes)
  - Event study specification allows us to test for pre-trends
- Sample restriction
  - Adults age 18-29, as wage effects are strongest in this group (Allegretto and Nadler 2020)
  - Currently working or have worked within the last year
  - Main focus is on those with less than a BA
  - Examine policy effects among BA+ as placebo test

Qualifying Minimum Wage Events



Criteria for qualifying events: year-over-year increases of $\geq$ \$0.25 and at least two pre-event years without a minimum wage change.

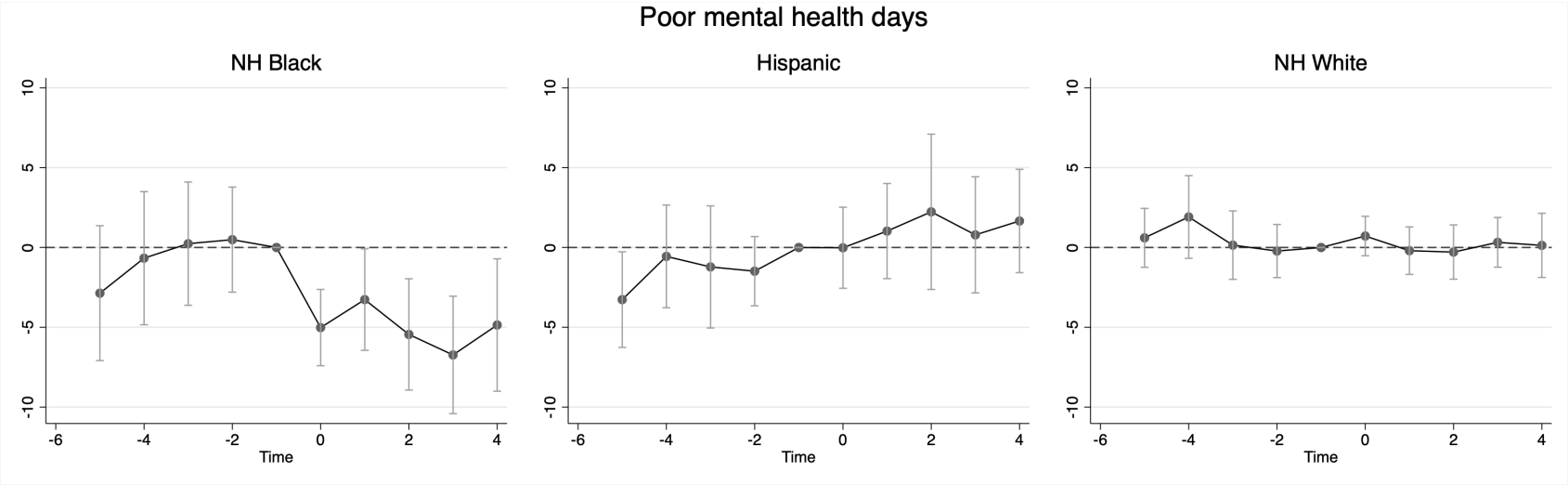
Event Study Specification

$$Y_{ist} = \theta_t + \theta_s + (\theta_s \times t) + \sum_{k=-5, k\neq -1}^{4} \Big(\mathbb{1}(t - t_s^* = k) \times \delta_s \Big) \beta_k + \delta C_{it} + \gamma S_{st} + \varepsilon_{ist}$$

- t_s^* indicates the year of a qualifying minimum wage event in state s
- k is a vector of event-time indicator variables
- δ_s is the size of change in the minimum wage (2019\$) over the $[t = -5, t = 4]$ event window

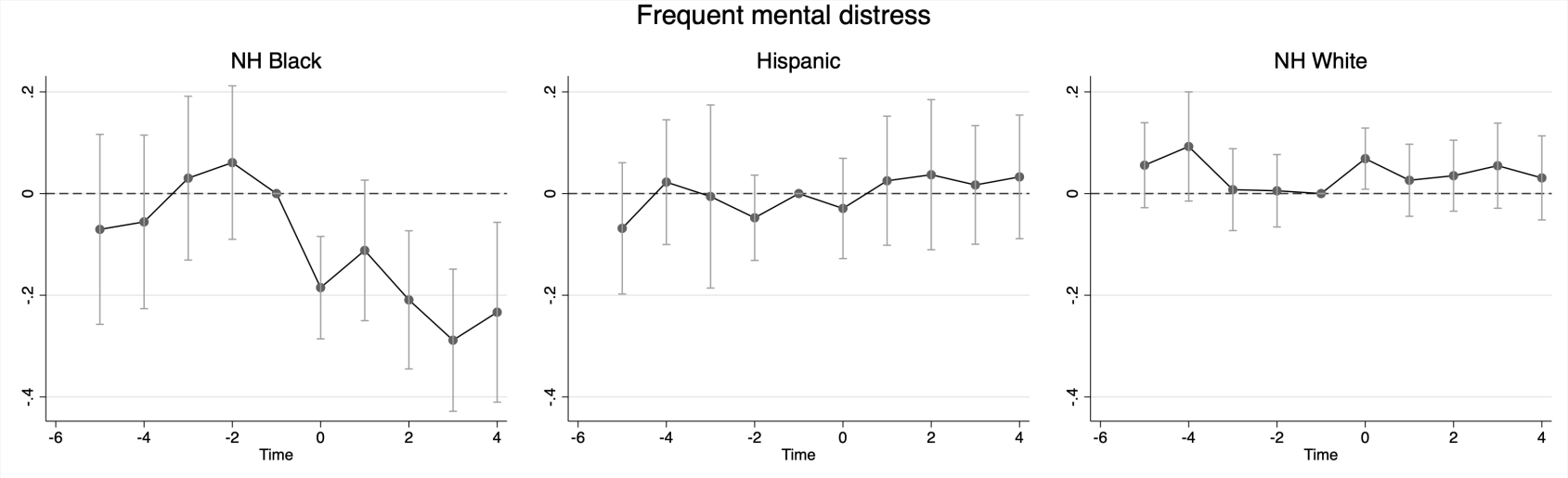
Event study results - Poor mental health days

Race/ethnicity stratified event study results for number of poor mental health days in past 30 days.



Notes: Sample restricted to workers ages 18–29 with less than a BA. Event occurs at t=0.

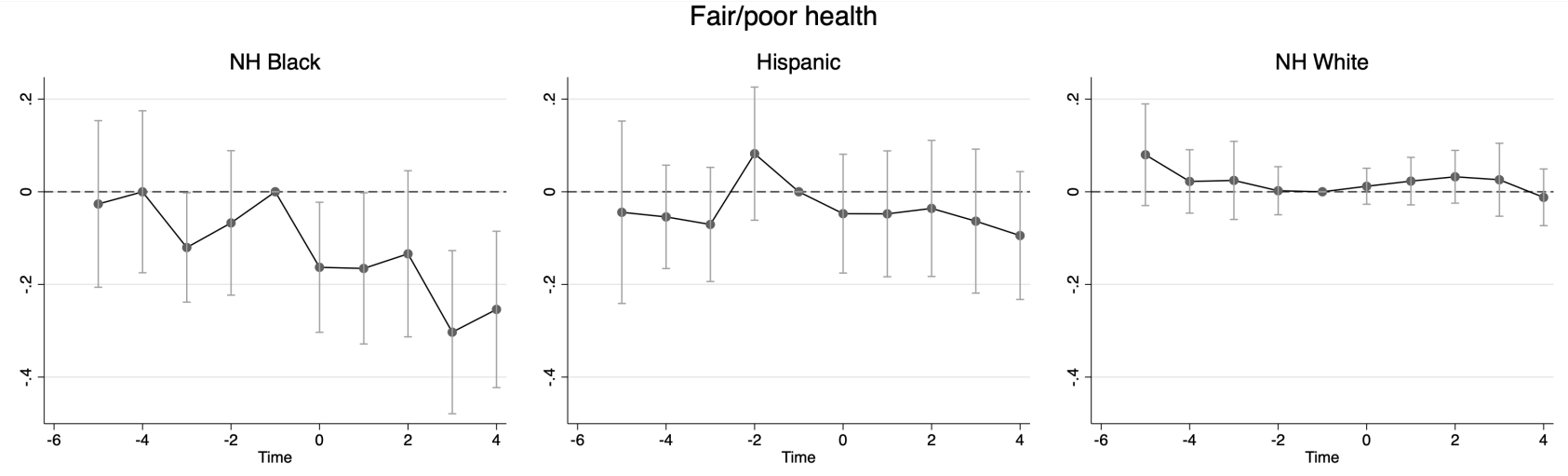
Event study results - Frequent Mental Distress



Notes: Frequent mental distress defined as reporting having at least 14 days of poor mental health in the past 30 days. Sample restricted to workers ages 18–29 with less than a BA. Event occurs at t=0.

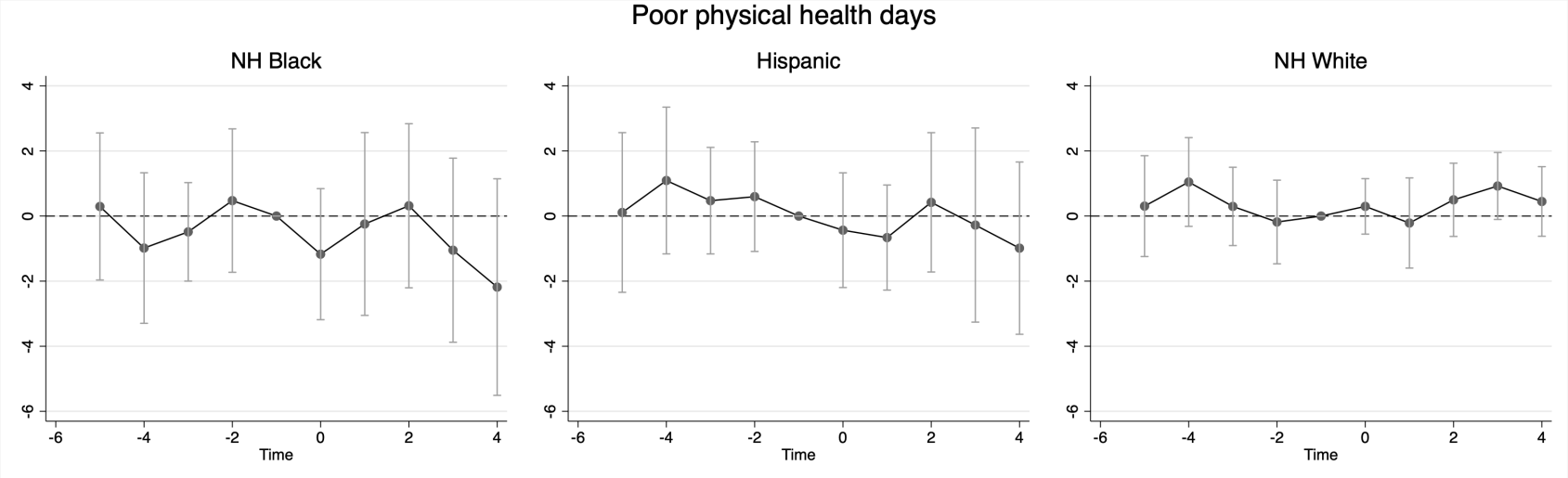
Event study results - Poor health

Race/ethnicity stratified event study results for "poor health". Captures the likelihood of self-reporting health as "poor" or "fair" on 5-level question.



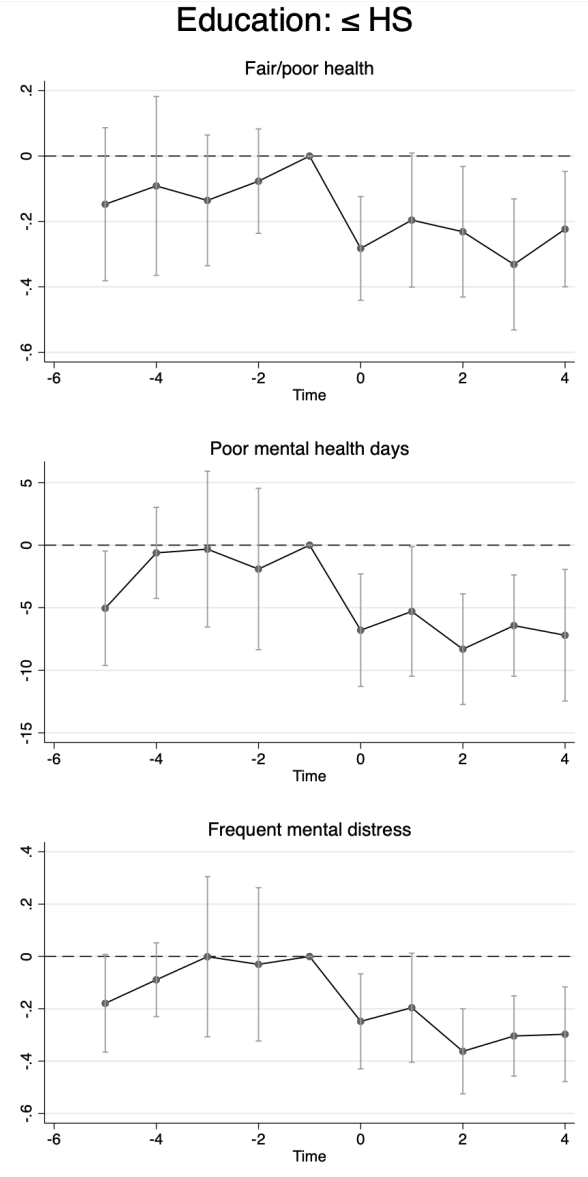
Non-Hispanic Blacks are less likely to report fair or poor health after a qualifying minimum wage event.

Event study results - Poor physical health days

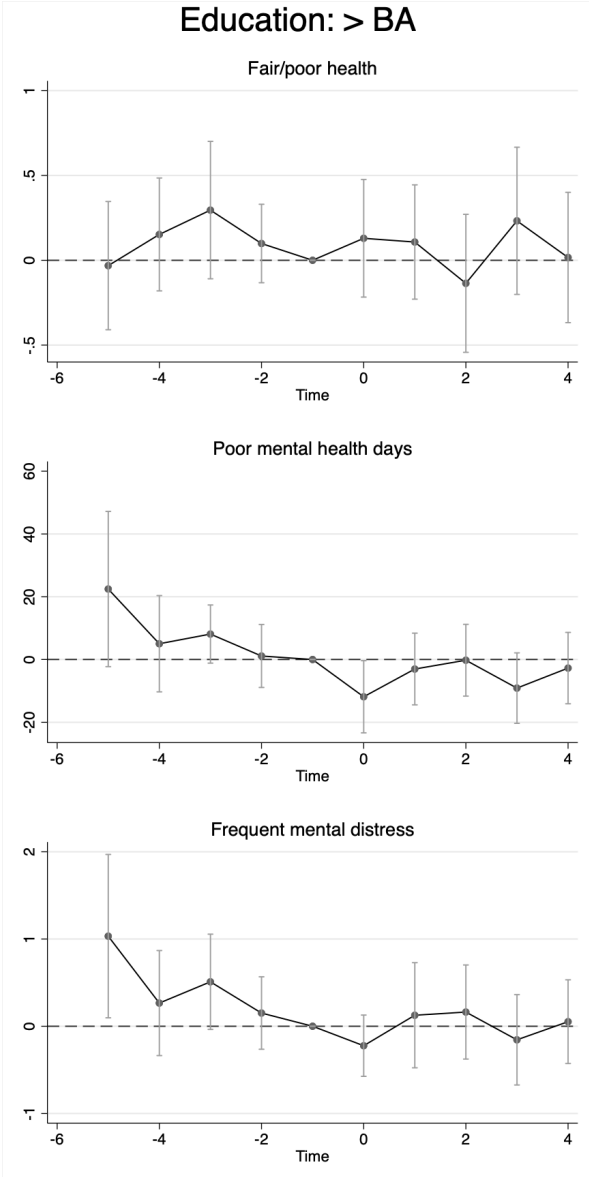


Placebo Results: Black workers aged 25-29

Main Sample



Placebo Sample



Conclusions

- Can minimum wages address population mental health outcomes?

  Significant reductions in poor mental health amongst non-Hispanic Black sample, who may be more exposed to wage increases

- Economic policies can have significant downstream effects on population health
  - Findings suggest role of income support policies for addressing health inequalities

Thank you!

Comments welcome: wdow@berkeley.edu

Appendix: Descriptives

Design

	Pooled	NH White	NH Black	Hispanic
Female	0.42	0.42	0.50	0.36
	(0.49)	(0.49)	(0.50)	(0.48)
Marital status				
Single	0.64	0.62	0.77	0.59
	(0.48)	(0.48)	(0.42)	(0.49)
Married	0.27	0.30	0.17	0.28
	(0.45)	(0.46)	(0.37)	(0.45)
Unmarried couple	0.09	0.08	0.06	0.13
	(0.28)	(0.27)	(0.24)	(0.34)
Number of children in household				
0	0.51	0.56	0.43	0.40
	(0.50)	(0.50)	(0.49)	(0.49)
1	0.25	0.24	0.26	0.26
	(0.43)	(0.43)	(0.44)	(0.44)
2 or more	0.25	0.20	0.31	0.34
	(0.43)	(0.40)	(0.46)	(0.47)
Household income				
<$15,000	0.14	0.10	0.17	0.22
	(0.34)	(0.30)	(0.38)	(0.42)
$15,000–25,000	0.26	0.22	0.32	0.32
	(0.44)	(0.42)	(0.47)	(0.47)
$25,000–35,000	0.19	0.19	0.2	0.17
	(0.39)	(0.39)	(0.40)	(0.37)
$35,000–50,000	0.18	0.20	0.15	0.13
	(0.38)	(0.40)	(0.36)	(0.34)
$50,000–75,000	0.13	0.15	0.09	0.08
	(0.34)	(0.36)	(0.29)	(0.28)
>$75,000	0.11	0.14	0.06	0.07
	(0.32)	(0.34)	(0.24)	(0.26)
Educational attainment				
Less than high school/GED	0.13	0.09	0.09	0.28
	(0.34)	(0.29)	(0.28)	(0.45)
High school or GED	0.44	0.44	0.47	0.41
	(0.50)	(0.50)	(0.50)	(0.49)
1-3 years post-secondary	0.43	0.46	0.44	0.31
	(0.49)	(0.50)	(0.50)	(0.46)
Uninsured	0.27	0.22	0.27	0.42