The Population Health Impact of the Right-to-Work Laws

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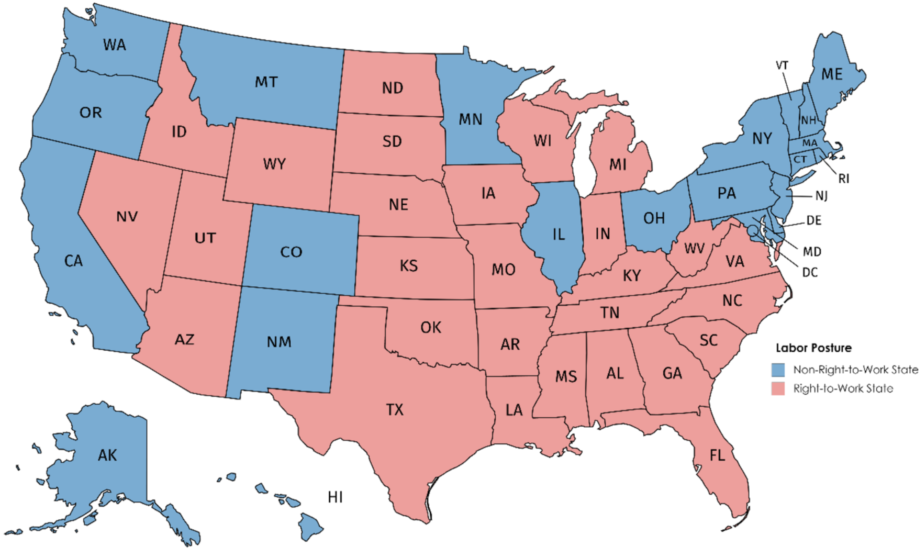
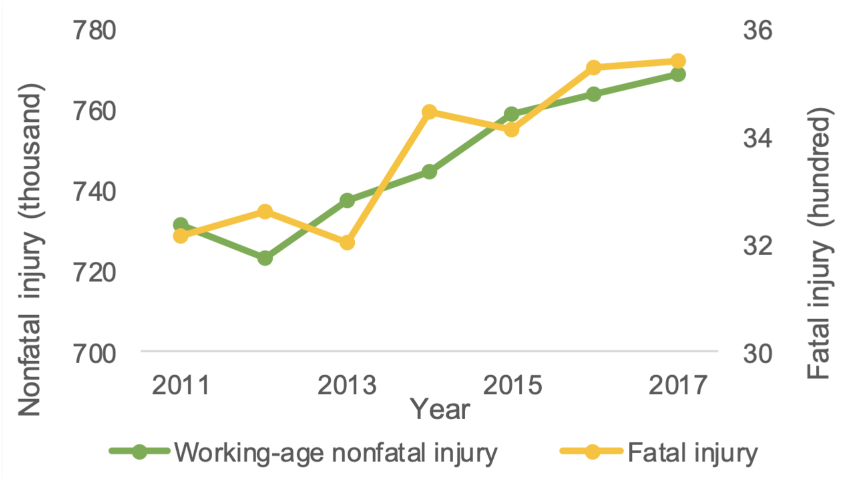
PAA Annual Meeting
April 8, 2022

Prevalence of State Right-to-Work Laws



Data Source: National Right to Work Foundation

Increasing trend of fatal and nonfatal occupational injuries



Source: The U.S. Bureau of Labor Statistics

"Deaths of despair" on the rise in the US (Case & Deaton, 2015, 2017)

Research Question

- What is the causal impact of the Right-to-Work (RTW) legislation on population health?

Existing Literature

- Studies on the economic effects of RTW laws have produced mixed results, but a substantial literature agrees that they tend to weaken union bargaining power (Holmes 1998; Chava et al. 2020; Kalenkoski & Lacombe 2006; Vedder & Robe 2014; Carroll 1983; Ellwood & Fine 1987; Eren & Ozbeklik 2016; Garofalo & Malhotra 1992; Lumsden & Petersen 1975)
- The health impacts of RTW laws remain understudied (Gould & Shierholz 2011; Zullo 2011; Zoorob 2018)
- Existing literature suffers from important methodological limitations (Borusyak et al. 2021; Callaway & Sant'Anna 2021; De Chaisemartin & D'Haultfoeuille 2020; Goodman-Bacon 2021; Baker et al. 2021; Sun & Abraham 2021)

Two key contributions:

1. widen the literature on the link between RTW laws and health
2. address the methodological issues

This Paper

- Investigate the impact of RTW laws on four critical health outcomes
  1. all-cause mortality
  2. mortality among White and Black workers without college degrees
  3. mortality related to "deaths of despair"
  4. occupational fatal injuries

- Construct a unique state-year-level dataset for the years 1992-2016 from multiple data sources

- Apply the innovative interactive fixed effects counterfactual (IFEct) estimator to investigate the dynamic treatment effects

Theoretical Framework

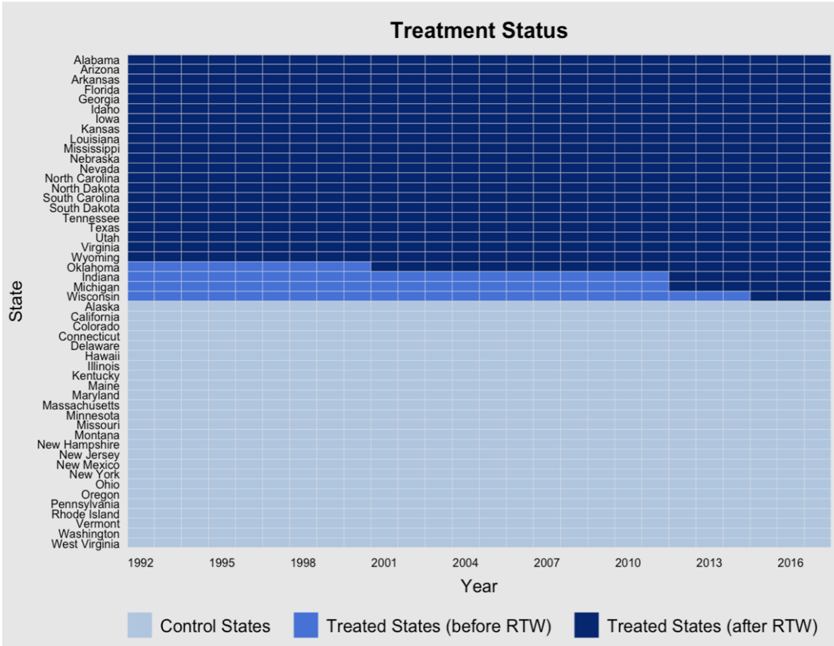
- Restrict the functions of unions, less likely to receive employer-sponsored health insurance
- Worse workplace safety
- Restrict health promotion, worse psychosocial influences on health (e.g., job instability and no sense of belonging)

Data

State-year panel dataset of 50 states from 1992-2016

- Dependent variables:
  1. workers' age-adjusted (25-64) mortality from CDC and SEER
  2. all-cause mortality rates for White and Black workers without college degrees separately
  3. "deaths of despair" mortality: drug overdose, suicide, and alcohol-related diseases
  4. fatal occupational injuries from BLS
- Key independent variables:
  1. enactment of RTW laws - four treatment units: Oklahoma, Michigan, Indiana, and Wisconsin
- Control variables:
  1. several time-varying state characteristics similarly as Zoorob (2018) and Caughey and Warshaw (2016)

The dynamic "roll out" of RTW laws



Traditional TWFE Approach

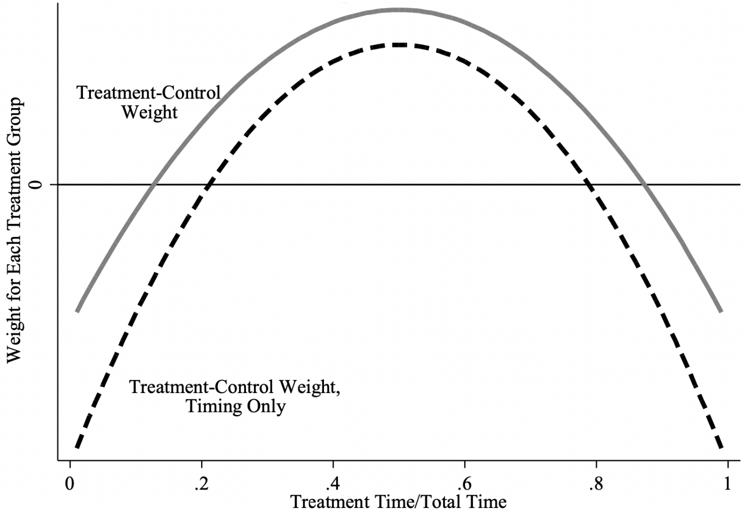
$$y_{it} = \alpha_i + \alpha_t + \delta D_{it} + \epsilon_{it}$$

- α_i and α_t are unit and time fixed effects
- D_{it} the unit-time indicator for treatment

Allows only one parameter to capture the treatment effect for all units

δ with staggered treatment timing is a *weighted average of many different treatment effects*: weights are often negative and non-intuitive

Negative Weighting Problem



Source: Goodman-Bacon (2021)

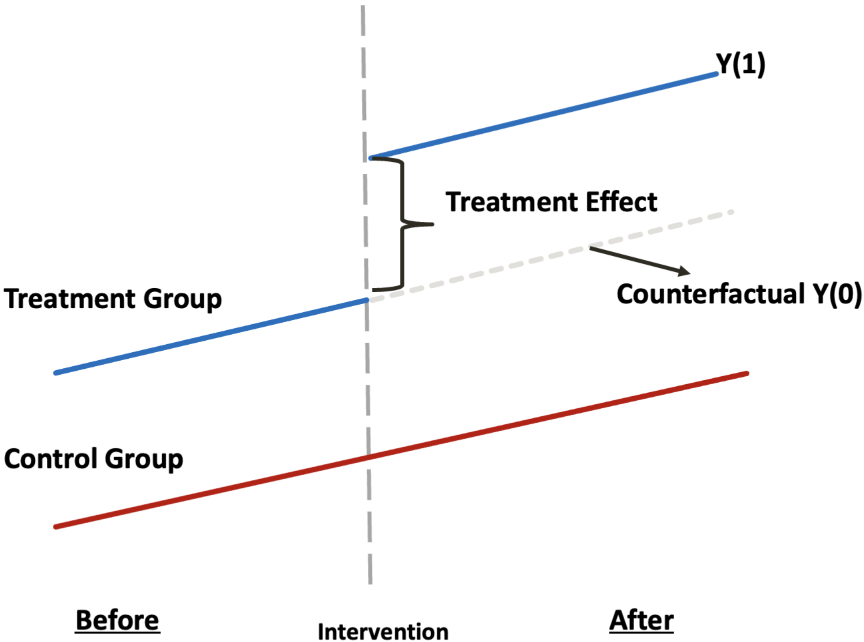
- Units treated in the middle get more weight as treated
- Units treated at the beginning or toward the ends get more weight as controls

Why TWFE approach fails in our case?

TWFE models in the staggered policy adoption can lead to severely biased estimates of the treatment effect (Borusyak et al. 2021; Callaway & Sant'Anna 2021; De Chaisemartin & D'Haultfoeuille 2020; Goodman-Bacon 2021; Imai & Kim 2019; Sun & Abraham 2021)

- TWFE in staggered design violates:
  1. ✕ "constant treatment effect"
  2. ✕ "no carryover effect"
  3. ✕ strict exogeneity

Counterfactual estimators



"*Causal inference is a missing data problem*" more details

Intuition of IFEct method

- In a panel setting, treat $Y(1)$ as missing data
- Predict $Y(0)$ based on an outcome model (a factor model) (Gobillon & Magnac, 2016; Xu, 2017; Liu et al. 2021)
  - Train prediction models only with data in the control group
- Estimate ATT by averaging differences between $Y(1)$ and $\hat{Y}(0)$

link to scm

The advantages of IFEct method

TWFE :

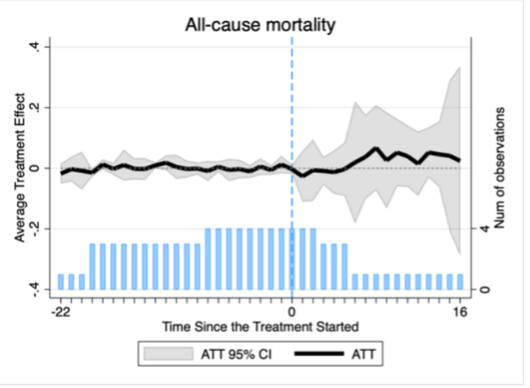
- ✗ "constant treatment effect"
- ✗ "no carryover effect"
- ✗ strict exogeneity

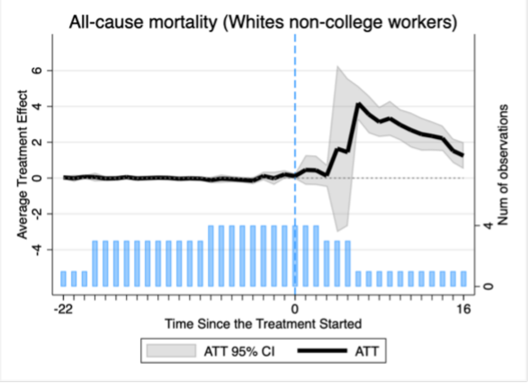
IFEct :

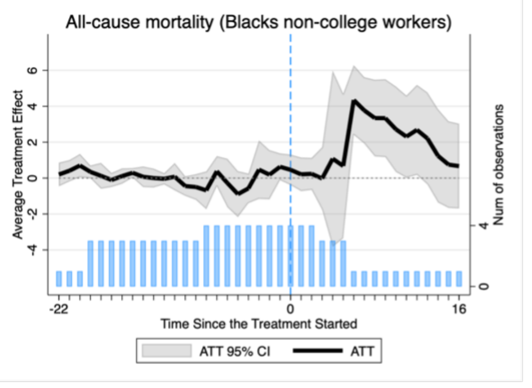
- ✓ heterogeneous treatment effects
- ✓ dynamic & carryover effects
- ✓ Account for certain unobserved time-varying confounders
  - Rely on the factor-augmented models to relax the strict exogeneity assumption

The Dynamic Treatment Effects of RTW

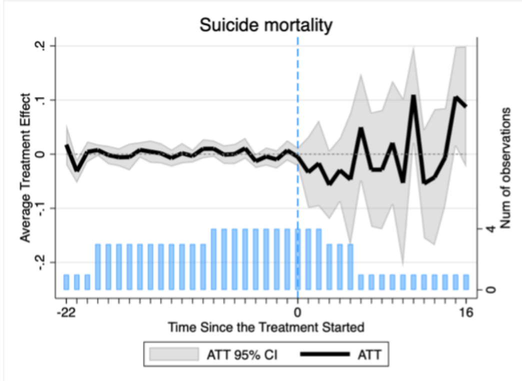
All-cause mortality

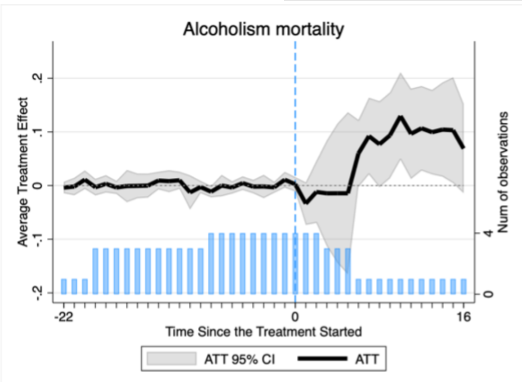


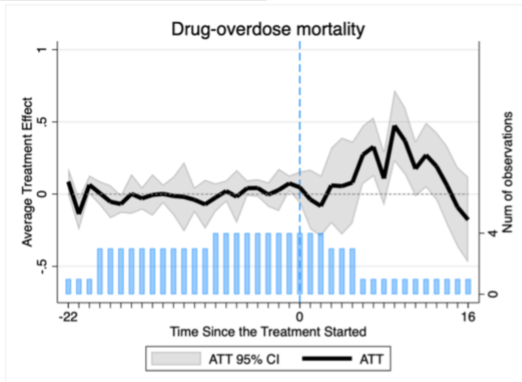




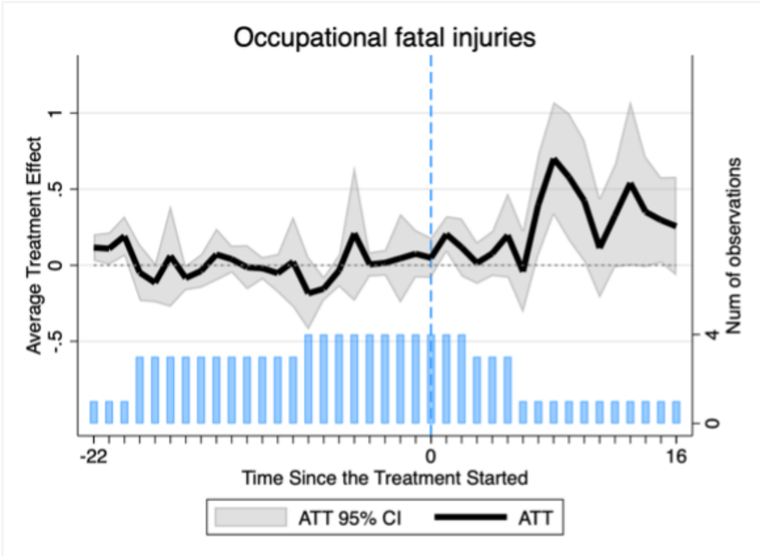
“Deaths of despair”







Fatal injuries



Other Results

- Diagnostic tests
  - *Placebo test*: Statistically indistinguishable from zero, except for drug-overdose mortality and mortality for White workers without college degrees
  - *Wald test for no pre-treatment trend*: The p-values are all greater than 0.1, thus fail to reject the null hypothesis that there is no pre-treatment trend
- Effects by treatment cohort: Oklahoma experienced a particularly strong effect

Conclusion

- This study examines the effects of RTW legislation on population health outcomes
  - We apply the innovate IFEct approach to overcome pitfalls of the TWFE method
  - The passage of RTW laws has led to increased mortality
  - A greater impact on early adopter – Oklahoma, important to uncover the heterogeneity of treatment effects

Policy Implication

- Policy makers should focus their attention on how changes in labor and industrial policy "spill over" to health impacts
  - Factor in these risks and their costs for policy evaluation
  - Use correct methods to quantify the effects

- States that choose to pass RTW laws should consider "safeguards" to reduce negative effects on workers' health, especially those without college degrees

Thank You!

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Appendix

Right-to-work Laws

- Ban on contracts requiring all employees to join and pay dues to a union
- Arguments for:
  - Liberty of contract
  - Freedom of association
- Arguments against:
  - Free-riding

Link with synthetic control

- Recall that ADH (2010) use a factor-augmented model to motivate the synthetic control method:

$$Y_{it}(0) = \theta_t' Z_i + \xi_t + \lambda_i' f_t + \varepsilon_{it}$$

- What if we actually estimate the model using observations under the control condition only?
- Xu (2017) imports the so-called interactive fixed-effect (IFE) model to a DiD setting:

$$Y_{it}(0) = X_{it}'\beta + \alpha_i + \xi_t + \lambda_i' f_t + \varepsilon_{it}$$

- Athey et al. (2021) extend it and introduce the matrix completion method
- Liu et al. (2021) put these methods in a general framework — "the counterfactual estimators"
- No negative weighting!

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Model-based counterfactual estimators

A model-based counterfactual estimator proceeds in the following steps:

- Step 1: Train the model using observations under the control condition ($D_{it} = 0$).
- Step 2. Predict the counterfactual outcome $\hat{Y}_{it}(0)$ for each observation under the treatment condition ($D_{it} = 1$) and lobtain an estimate of the individual treatment effect: $\hat{\tau}_{it} = Y_{it} - \hat{Y}_{it}(0)$
- Step 3. Generate estimates for the causal quantities of interest

$$ATT = \mathbb{E}\left[\tau_{it} \mid D_{it} = 1, \forall i \in \mathcal{T}, \forall t\right], \quad \text{or}$$
$$ATT_s = \mathbb{E}[\tau_{it} \mid D_{i,t-s} = 0, \underbrace{D_{i,t-s+1} = D_{i,t-s+2} = \cdots = D_{it} = 1}_{s \text{ periods}}, \forall i \in \mathcal{T}].$$

back

TWFE vs. IFEct

	(1)	(2)
	Two-Way Fixed Effects (TWFE)	Interactive Fixed Effects Counter-factual Estimates (IFEct)
Panel A: All-cause mortality		
All-cause mortality	0.03	0.01
	(0.02)	(0.04)
All-cause mortality (Whites non-college workers)	1.21	1.53
	(0.72)	(1.60)
All-cause mortality (Blacks non-college workers)	1.15	1.23
	(0.97)	(1.78)
Panel B: Mortality Related to "Deaths-of-Despair"		
Drug-overdose mortality	0.20*	0.07
	(0.08)	(0.13)
Alcohol-related mortality	0.03	0.03
	(0.03)	(0.08)
Suicide mortality	0	-0.02
	(0.02)	(0.04)
Panel C: Fatal injuries		
Occupational fatal injuries	0.18**	0.22*
	(0.06)	(0.12)
Observations	1250	1250
# Units	28	28