

Workers' Compensation Policy and Reported COVID-19 Occupational Illnesses

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Bureau of Labor Statistics (BLS)

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General Motivation

- ▶ Survey data should always be understood within the collection context
- ▶ Especially when survey respondents may be influenced by the policy or labor environment

Example

- ▶ Consider the Survey of Occupational Injuries and Illnesses (SOII)
- ▶ Most employers know not to submit case info for an employee who got the flu
- ▶ But what about if an employee contracted COVID-19? Is that an occupational illness?



Reporting to SOII & Workers' Comp. Policy Change

SOII Reporting

- ▶ OSHA record keeping requirements imply some COVID-19 cases should be reported to SOII
- ▶ Imperfect compliance or misunderstandings in recordability can affect reporting

Workers' Compensation Policy Changes

- ▶ During the pandemic many states issued WC policy changes:
Alaska SB0241
"...an employee who contracts the novel coronavirus disease (COVID-19) is conclusively presumed to have contracted an occupational disease..."
- ▶ Shifted burden of proof from employee to employer
- ▶ May have altered perceptions about the recordability of COVID cases

Overview and Preview of Results

Question: Did these changes in WC policies affect the reporting of COVID-19 cases in the 2020 SOII?

Methods: Generalized Difference-in-Difference

Findings:

- ▶ WC compensability presumption changes significantly affect reported recordable COVID-19 cases
- ▶ Significant heterogeneity in effects by occupation-industry groups (e.g. large effects among healthcare workers and small effects among other essential workers)
- ▶ In aggregate we estimate that ~90K of the 390K COVID cases in SOII are due to policy changes



Literature

Presumption Changes & WC Claims

- ▶ Cabral and Dillender (2020) and LaSee et al. (2023)

Factors Influencing OSHA Recordkeeping

- ▶ Changes to Requirements/Policy: Friedman and Forst (2007) and Ruser and Smith (1988)
- ▶ Limited Employer Knowledge: Rappin et al. (2016) and Wuellner and Phipps (2018)
- ▶ Injury “visibility”: Boden (1987), Leigh and Robbins (2004), and Nestoriak and Pierce (2009)

WC and OSHA Recordability

- ▶ WC impacts recorded injuries: Butler et al. (2013) and Gentry and Viscusi (2019)

Incidence & Exposure of COVID-19

- ▶ Incidence: Almagro and Orane-Hutchinson (2022), Azzimonti et al. (2020), Houšteká et al. (2021), and Perio et al. (2020)
- ▶ Exposure: Dalton et al. (2022), Dey et al. (2020), Dingel and Neiman (2020), Hensvik et al. (2021), and Mongey et al. (2021)

Data



SOII & COVID-19 Data

Survey of Occupational Injuries and Illnesses (SOII)

- ▶ Annual, establishment-based survey of nonfatal injuries
 - ▶ Mandatory survey of ~200,000 establishments per year
 - ▶ Takes directly from an establishment's OSHA logs
 - ▶ Scope: private, local gov, and state gov across all states and industries
- ▶ Two main components:
 1. **Summary Files (1995-present):** Establishment-level data
 2. **Cases Files (1992-present):** Detailed case data
- ▶ COVID-19 coding
 - ▶ Occupational Injuries & Illnesses Classification System (OIICS)
 - ▶ Classified under 3299 "other diseases due to viruses, n.e.c."

Year	2017	2018	2019	2020
"329" Cases	50	250	30	448000

CPS & Hours Data

Why Hours?

- ▶ Injuries per some measure of exposure
- ▶ SOII only has total annual establishment hours

Current Population Survey (CPS)

- ▶ Nationally representative monthly household survey
- ▶ ~60,000 households per month
- ▶ 4-8-4 rotation schedule
- ▶ Slight scope differences (federal gov)
- ▶ Captures individual's industry, occupation, hours

⇒ We use the share of hours for an state-occupation-industry group in the CPS to determine the share of hours an individual establishment contributes to the total

Incidence Rate

Outcome Variable

$$Y = \frac{\text{Incidents}}{\text{Hours}} * 1000 * 40 * 50$$

Interpretation

- ▶ Incidents per 1000 full-time equivalent (FTE) workers
- ▶ 1000 workers working 40 hours a week for 50 weeks a year
- ▶ Alternative intuition: expected number of injuries

Industry	Cases	Incidence Rate
All Private Industry	390,000	4.00
Healthcare and Social Asst.	288,000	19.63
Manufacturing	30,000	2.54
Retail Trade	19,000	1.75

From Table 1 of "How COVID-19 is reflected in the SOII data"

Recordability Vs. Compensability

Reportability to SOII

- ▶ The reportability of an injury or illness to SOII is determined by OSHA rules for recordability
- ▶ These are federal rules

Workers' Compensation

- ▶ Compensability of an injury or illness often depends on state rules
- ▶ Not compensable: *"an ordinary disease of life, to which the general public is equally exposed"* (Britt 2021; Gliedman 2007)

Important Takeaway:

- ▶ Though there is conceptual overlap, they are not the same
- ▶ WC \nRightarrow OSHA recordable & OSHA recordable \nRightarrow WC

Workers' Compensation Presumption Policies

Presumption Heterogeneity

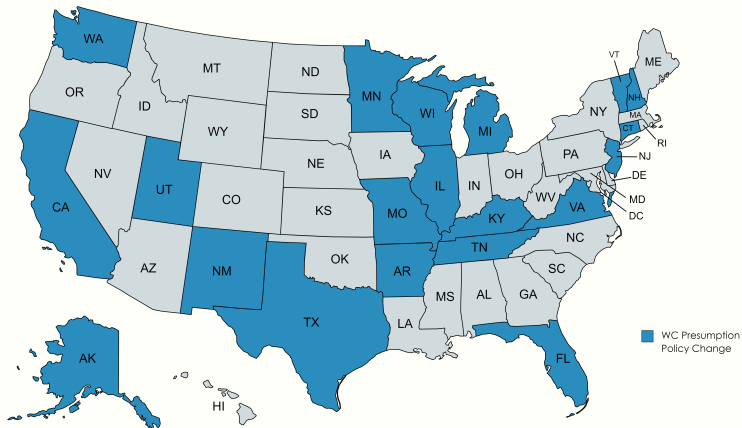
- ▶ Several states issued guidance regarding the compensability of COVID-19 claims
- ▶ Usually specified occupations and/or groups of workers
- ▶ Though some states issued informal guidance we restricted treatment to states that changed the presumption

Treated Groups

- ▶ Each group is defined by SOC, NAICS, and ownership
- ▶ Identified 8 groups: healthcare workers, first responders, child care workers, corrections workers, home healthcare workers, other healthcare workers, state healthcare workers, and essential workers

⇒ Treatment status is determined both by group and state

Treated States



Created with mapchart.net

State Presumption Changes

WC Policy Coverage	AK	AR	CA	CT	FL	IL	KY	MI	MN	MO
Healthcare Workers	✓	✓	✓			✓	✓	✓	✓	
First Responders	✓	✓	✓		✓	✓	✓	✓	✓	✓
State Healthcare					✓					
Home Healthcare			✓			✓		✓	✓	
Other Healthcare			✓				✓	✓	✓	
Childcare							✓		✓	
Corrections					✓	✓	✓	✓	✓	
Other Essential			✓	✓		✓	✓			
WC Policy Coverage	NH	NJ	NM	TN	TX	UT	VA	VT	WA	WI
Healthcare Workers		✓					✓	✓	✓	
First Responders	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
State Healthcare			✓							
Home Healthcare		✓						✓	✓	
Other Healthcare		✓						✓	✓	
Childcare								✓	✓	
Corrections	✓	✓			✓		✓	✓	✓	
Other Essential		✓							✓	

Estimation & Identification



Main Specification: Generalized Difference in Difference

Y_{gst} = Incidence rate of COVID-19 in group g in state s at time t

$$Y_{gst} = \beta(T_{gs} \times P_t) + \theta X_{gst} + \alpha_{gs} + \tau_t + \varepsilon_{gst}$$

- ▶ g =group, s =state, t =year
- ▶ X_{gst} , covariates
- ▶ α_{gs} , state-group FEs
- ▶ τ_t , time FEs
- ▶ ε_{gst} , idiosyncratic error
- ▶ T_{gs} , state-group treatment indicator
- ▶ P_t , post-treatment indicator

Identification \implies within state & between state variation

Dose Specification

$$Y_{gst} = \beta(D_{gs} \times P_t) + \theta X_{gst} + \alpha_{gs} + \tau_t + \varepsilon_{gst}$$

- ▶ D_{gs} , fraction of year “treated”
- ▶ Never treated $\implies D_{gs}=0$

Identification from heterogeneous policy “doses” (i.e. different policy roll-out timing)

Heterogeneous Effects Specifications

Effects by Group:

$$Y_{gst} = \sum_h \beta_h^{group} \mathbb{1}_{g=h}(T_{gs} \times P_t) + \theta X_{gst} + \alpha_{gs} + \tau_t + \varepsilon_{gst}$$

Effects by State:

$$Y_{gst} = \sum_r \beta_r^{state} \mathbb{1}_{s=r}(T_{gs} \times P_t) + \theta X_{gst} + \alpha_{gs} + \tau_t + \varepsilon_{gst}$$

Effects by State \times Group:

$$Y_{gst} = \sum_{h,r} \beta_{hr}^{group \times state} \mathbb{1}_{s=r} \mathbb{1}_{g=h}(T_{gs} \times P_t) + \theta X_{gst} + \alpha_{gs} + \tau_t + \varepsilon_{gst}$$

Identification Discussion

Assumptions

▶ Parallel Trends

- ▶ Contemporaneous policies aimed at mitigation \Rightarrow bias estimates downward
- ▶ Changes across time AND across state

▶ SUTVA

- ▶ No spillover effects and uniform treatment
 - ▶ State FEs, state-specific estimates
 - ▶ External validity

Covariates: Flu level, state & self insurance percentage, participating state

Above assumptions \Rightarrow identify a weighted ATT

Policy timings are not immensely different so the TWFE issues noted in Goodman-Bacon (2021) are minimal

Results



Main Effects

	Ind. Model Eq. (1)	Ind. Model Eq. (1)	Dose Model Eq. (1)	Dose Model Eq. (1)
Policy Effect	3.37 (2.07)	3.39* (2.04)	4.26 (2.72)	4.29 (2.69)
Flu Level		0.09 (0.48)		0.11 (0.47)
% Self-Ins.		-0.27 (24.36)		-2.22 (24.16)
% State-Ins.		-15.58 (50.67)		-15.87 (51.05)
State Particip.		-0.50 (2.46)		-0.51 (2.46)
Observations	730	730	730	730
Year FE	Yes	Yes	Yes	Yes
Other FE	State x Group	State x Group	State x Group	State x Group
Weighting	Total Hours	Total Hours	Total Hours	Total Hours

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Interpretation: We estimate an average of 3.39 additional COVID cases per 1000 FTEs reported to SOII among groups subject to a WC policy change.

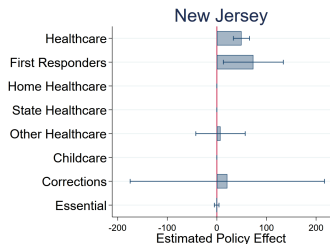
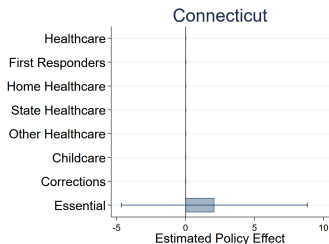
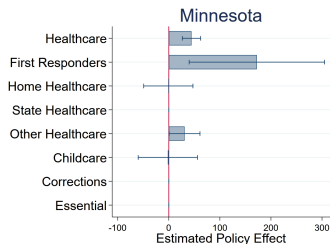
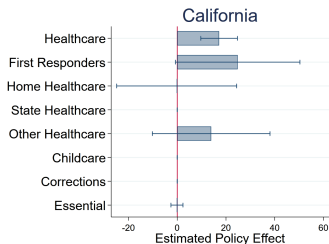
Effects by Treatment Group

	Ind. Model Eq. (1)	Ind. Model Eq. (1)	Dose Model Eq. (1)	Dose Model Eq. (1)
Healthcare	27.02*** (5.47)	27.02*** (5.47)	33.85*** (6.81)	33.83*** (6.82)
First Responders	25.66*** (7.13)	25.68*** (7.08)	30.98*** (8.55)	31.00*** (8.50)
Home Healthcare	-0.93 (0.66)	-0.86 (0.74)	-1.24 (0.85)	-1.18 (0.96)
State Healthcare	57.79* (30.29)	57.77* (30.44)	69.56*** (21.04)	69.53*** (21.13)
Other Healthcare	21.09*** (4.64)	21.17*** (4.77)	26.62*** (6.16)	26.68*** (6.33)
Childcare	-1.98*** (0.42)	-1.69*** (0.52)	-2.57*** (0.58)	-2.22*** (0.64)
Corrections	45.22* (26.48)	45.11* (26.68)	48.53 (32.59)	48.41 (32.81)
Essential	-0.28 (0.43)	-0.41 (0.52)	-0.53 (0.53)	-0.69 (0.65)
Flu Level		0.41 (0.41)		0.41 (0.41)
% Self-Ins.		-2.91 (14.49)		-2.10 (14.65)
% State-Ins.		-2.99 (41.32)		-1.27 (41.50)
State Particip.		-0.82 (2.50)		-0.83 (2.51)
Observations	730	730	730	730
Year FE	Yes	Yes	Yes	Yes
Other FE	State x Group	State x Group	State x Group	State x Group
Weighting	Total Hours	Total Hours	Total Hours	Total Hours

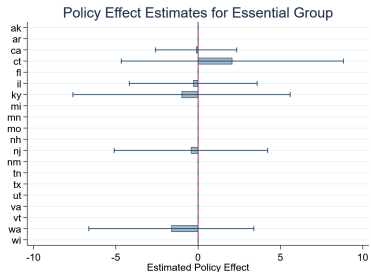
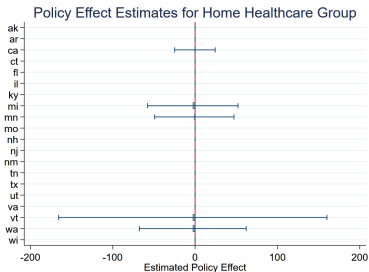
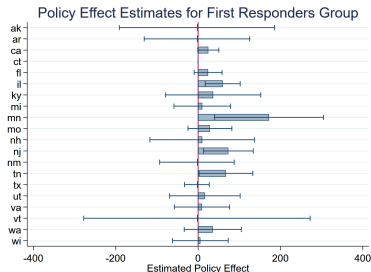
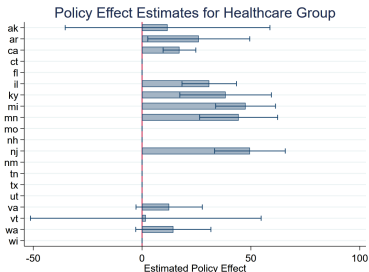
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Effects by State-Group



Heterogeneous Group Effects by State



Conclusion

- ▶ We investigate the effect of WC presumption changes on COVID-19 cases reported to the SOII
- ▶ Use the unique combination of injury and economic data available in the SOII
- ▶ COVID-19 presumption changes results:
 - ▶ Main Effect: 3.39 more cases per 1,000 FTE workers
 - ▶ Heterogeneous Effect: 25-58 more cases per 1,000 FTE workers, with large significant effects for the healthcare and first responder sectors
 - ▶ In aggregate, an estimated ~90K cases of the 390K cases were attributable to these changes
- ▶ Implication: SOII is an incredible resource for studying occupational injuries and illnesses, but care should be taken when using it to study COVID cases contracted on the job.

CONTACT INFORMATION

Thank You!

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Appendix



Motivation

National Safety Council

- ▶ Workplace incidents cost \$167 billion in 2021
- ▶ Days of work lost ~70,000,000

Insurance Information Institute

- ▶ 135,572,000 workers covered by WC in 2020
- ▶ \$58.9 billion WC benefits paid in 2020

Bureau of Labor Statistics (BLS)

- ▶ 2.6 million nonfatal and 5,190 fatal recordable workplace incidents in 2021
- ▶ 428,700 recordable respiratory illnesses in 2020 vs. 127,200 in 2019

Workers' Comp. & OSHA Recordability

Workers' Compensation

- ▶ Employers pay premiums to insurance providers
- ▶ Workers waive their right to sue their employer for workplace injuries
- ▶ Affected workers receive payouts from insurers

OSH ACT 1970 \implies OSHA Logs

- ▶ Recordable workplace incident:
 1. "involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid"
 2. involves "significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional"
 3. "meet[s] any of the specific recording criteria listed in 29 CFR Part 1904.8-1904.12"
- ▶ April 10th, 2020 guidance \implies COVID-19 is recordable if OSHA conditions met

CPS & Hours Data

Crosswalking

- ▶ SOII uses Standard Occupation Classification (SOC) and North American Industry Classification (NAICS) codes
- ▶ Census uses its own occ/ind classification system
- ▶ Crosswalks available on Census' website

A Finer Crosswalk

- ▶ Census' codes sometimes less detailed than NAICS and SOC
 - ▶ i.e. Most detailed Census occ codes map to multiple SOC codes
- ▶ In these cases, we estimate shares attributable to more details SOC and NAICS codes using:
 1. Occupation \Rightarrow Employment and Wage Statistics (OEWS)
 2. Industry \Rightarrow Quarterly Census of Employment and Wages (QCEW)

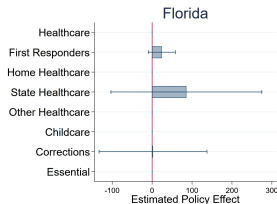
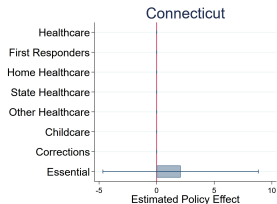
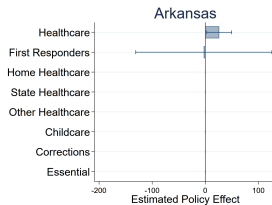
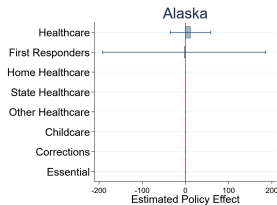
Effects by State

	Ind. Model Eq. (1)	Ind. Model Eq. (1)	Dose Model Eq. (1)	Dose Model Eq. (1)
AK	10.87*** (1.30)	11.31*** (1.46)	13.44*** (1.61)	14.00*** (1.81)
AR	25.12*** (1.50)	25.45*** (1.62)	31.08*** (1.85)	31.49*** (2.01)
CA	1.72 (2.36)	1.59 (2.45)	2.19 (3.00)	2.02 (3.12)
CT	2.08*** (0.37)	1.83*** (0.62)	10.69*** (1.89)	9.39*** (3.18)
FL	24.81*** (2.59)	24.75*** (2.62)	24.81*** (2.59)	24.75*** (2.62)
IL	2.79 (4.04)	2.62 (4.08)	3.43 (4.96)	3.22 (5.01)
KY	2.89 (5.09)	3.00 (5.19)	3.96 (6.99)	4.12 (7.12)
MI	41.43*** (6.34)	41.34*** (6.38)	52.50*** (8.03)	52.40*** (8.09)
MN	36.22*** (7.49)	36.65*** (7.57)	49.51*** (10.24)	50.10*** (10.34)
MO	28.74*** (0.37)	28.79*** (1.09)	41.47*** (0.53)	41.53*** (1.57)
NH	10.04*** (0.37)	9.94*** (0.57)	14.60*** (0.54)	14.46*** (0.83)
NJ	3.71 (5.55)	3.41 (5.60)	4.56 (6.82)	4.20 (6.89)
NM	-2.84*** (0.37)	-2.70*** (0.48)	-4.11*** (0.53)	-3.91*** (0.70)
TN	67.61*** (0.37)	67.43*** (0.48)	94.18*** (0.51)	93.94*** (0.66)
TX	-1.32 (2.70)	-0.91 (2.76)	-1.64 (3.37)	-1.13 (3.44)
UT	16.36*** (0.37)	16.62*** (0.44)	20.95*** (0.47)	21.28*** (0.56)
VA	12.30*** (0.43)	12.56*** (0.49)	15.27*** (0.54)	15.60*** (0.60)
VT	0.57 (1.06)	0.33 (1.14)	0.68 (1.27)	0.39 (1.36)
WA	-0.14 (1.93)	-0.13 (1.95)	-0.16 (2.30)	-0.16 (2.32)
WI	5.48*** (0.37)	5.12*** (0.64)	6.80*** (0.46)	6.36*** (0.80)
Flu Level		0.33 (0.43)		0.33 (0.43)
% Self-Ins.		0.89 (17.23)		0.89 (17.23)
% State-Ins.		5.49 (45.27)		5.49 (45.27)
State Particip.		-0.88 (2.60)		-0.88 (2.60)
Observations	730	730	730	730
Year FE	Yes	Yes	Yes	Yes
Other FE	State x Group	State x Group	State x Group	State x Group
Weighting	Total Hours	Total Hours	Total Hours	Total Hours

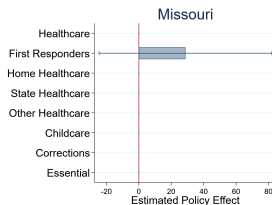
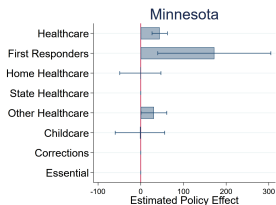
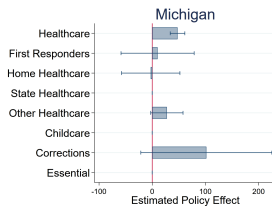
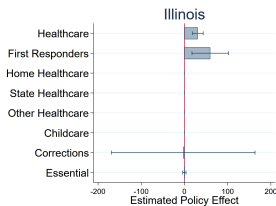
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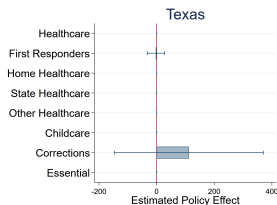
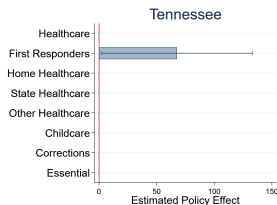
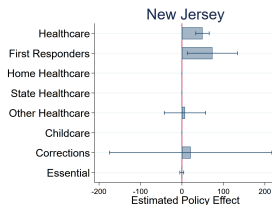
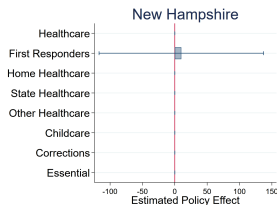
State-Group Effects



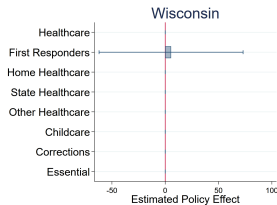
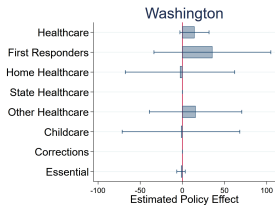
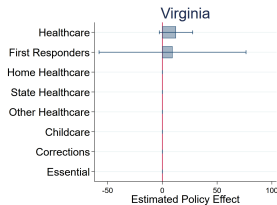
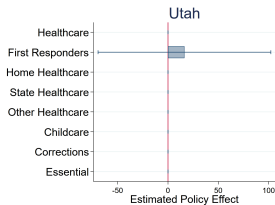
State-Group Effects Cont.



State-Group Effects Cont.

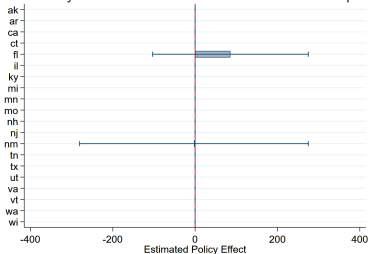


State-Group Effects Cont.

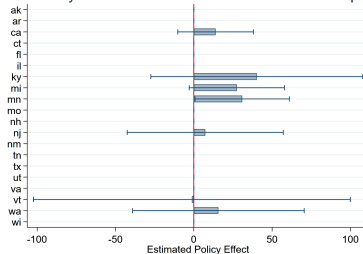


Group Effects by State Cont.

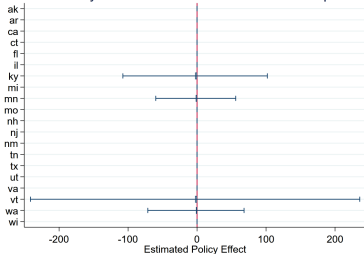
Policy Effect Estimates for State Healthcare Group



Policy Effect Estimates for Other Healthcare Group



Policy Effect Estimates for Childcare Group



Policy Effect Estimates for Corrections Group

