On the Effects of Regulated Overtime Standards

An examination of California's new overtime law for agricultural workers

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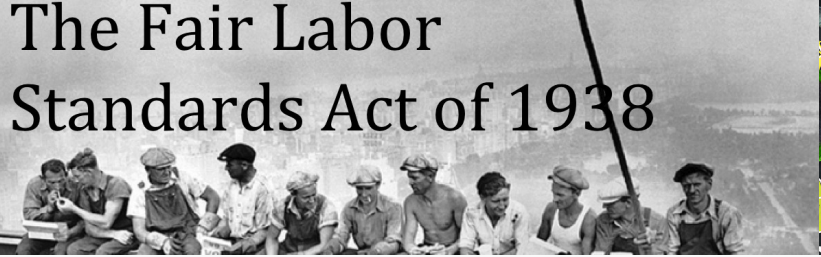
The Fair Labor Standards Act of 1938



Since 1938, the Fair Labor Standards Act (FLSA) has been one of main U.S. laws aimed at protecting employees.

It sets federal standards for several terms of employment, including:

- Minimum wage
- Child labor
- Overtime

Two Key Aspects of the FLSA Overtime Provisions

FLSA Fact #1

The act exempts some workers and industries from some or all of its standards

$\Rightarrow$ farm workers and ag employers are among the exempt

$\Rightarrow$ not legally entitled to any overtime pay, some (smaller) employers are not required to pay the minimum wage, and child labor laws are less stringent.

FLSA Fact #2

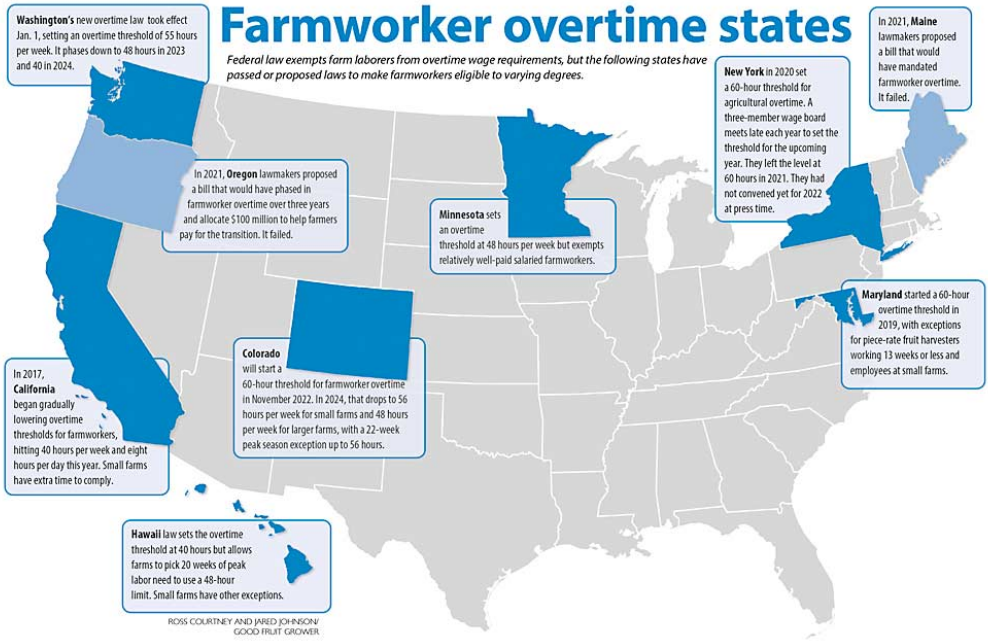
The act requires employers to comply with state laws that provide "greater employee protections."

$\Rightarrow$ common in the context of minimum wages

$\Rightarrow$ becoming more common in the context of overtime

Farmworker overtime states

Federal law exempts farm laborers from overtime wage requirements, but the following states have passed or proposed laws to make farmworkers eligible to varying degrees.



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This Study: How do regulated overtime standards (in California ag) impact the workers they aim to protect (in the short-run)?

Context: California's Assembly Bill 1066 Overtime Phase-in

Effective Date for Employers with...		Overtime Pay Required After
$>$ 25 Employees	$\leq$ 25 Employees	(Hours per Day/Hours per Week)
Pre 2019	Pre 2022	10/60
Jan. 1 2019	Jan. 1 2022	9.5/55
Jan. 1 2020	Jan. 1 2023	9/50
Jan. 1 2021	Jan. 1 2024	8.5/45
Jan. 1 2022	Jan. 1 2025	8/40

Notes: Table adapted from the California Labor Commissioner's Office FAQs on Minimum Wage `https://www.dir.ca.gov/dlse/faq_minimumwage.htm` and Overtime for Agricultural Workers `https://www.dir.ca.gov/dlse/Overtime-for-Agricultural-Workers.html`.

Why Study Overtime? No Consensus in Economic Theory

The "Motivating" Prediction: reduced hours + more workers = ↑ welfare

- Supported by **hours-demand models** assuming that firms will reduce hours to the "kink" in the cost curve (Brechling, 1965; Ehrenberg, 1971; Hart, 2004; Rosen, 1968)

Several Alternatives:

- **Hours-demand models** also show how hours can increase or remain the same, depending on firm type (Brechling, 1965; Ehrenberg, 1971; Hart, 2004; Rosen, 1968)
- **Wage-hours compensating models** suggest no hours (or earnings) effects, with reductions in base wages (Filer et al. 1996; Hart 2004; Trejo 1991)
- Ambiguous effects dependent on substitutionability or complementarity between inputs (Calmfors and Hoel, 1989; Ehrenberg and Schumann, 1982) or unexpected shocks (ao Madeira, 2014; Ehrenberg, 1970)

Why Study Overtime? No Consensus in Econometric Studies

Hours *decrease* (Buchmueller and Senesky, 2003; Chemin and Wasmer, 2009; Costa, 2000; Hamermesh and Trejo, 2000; Kuroda and Yamamoto, 2012; Skuterud, 2007) or *remain the same* (Johnson, 2003; Trejo, 2003)

Wages *increase* (Raposo and van Ours, 2010; Sánchez, 2017) *decrease* (Raposo and van Ours, 2010; Sánchez, 2017), or *remain the same* (Chemin and Wasmer, 2009; Kawaguchi et al., 2017)

Earnings *decrease* (Chen and Wang, 2011; Raposo and van Ours, 2010) or *remain the same* (Kawaguchi et al., 2017; Kuroda and Yamamoto, 2012)

Employment *remains the same* (Brown and Hamermesh, 2019; Chemin and Wasmer, 2009; Sánchez, 2017)

Bunching at overtime thresholds *increases* (Quach, 2022)

This Study: Questions, Results Preview, and Contributions

Whether: What happens to work hours?

⇒ **Average hours decrease** by 4 hours per week

⇒ **Hours distribution shifts**, more workers with hours below thresholds

How: What outcomes are impacted?

⇒ **Average earnings decrease** by $65 per week; fewer high earners

⇒ (prelim) No change in overall employment, but H-2A employment increases

⇒ (prelim) Reductions in workplace injuries

Contributions:

1. First empirical analysis of reductions in weekly overtime thresholds in the U.S.
2. First distributional analysis of overtime regulations
3. Heterogeneity and policy implications tailored to U.S. agriculture

Data: The National Agricultural Workers Survey (NAWS)

The NAWS is the only nationally representative survey of US agricultural workers.

Includes information from 1,200-3,600 interviews with workers at their place of work each cycle (two fiscal years). Currently available through 2022. Large share (1/3) of interviews are in California.

Includes detailed information on characteristics of current farm job:

- Hourly wage, weekly hours, earnings last pay period, task, crop, and more

But, the NAWS has limitations:

- Does not have information on employer (size)
- Does not estimate total employment
- Does not include H-2A (Visa) Workers
- Small sample sizes

Methods & Results for Average Effects

Methods

Approach 1: Event Study / Regression Discontinuity in Time

$$Y_{it} = \boldsymbol{X_{it}}'\boldsymbol{\alpha} + \sum_{t=2009}^{2022} \beta_t \mathbb{1}(time = t) + \varepsilon_{it} \tag{1}$$

Approach 2: Dynamic DiD with and without controls

$$Y_{ist} = \boldsymbol{X_{ist}}'\boldsymbol{\alpha} + \sum_{t=2009}^{2022} \beta_t \mathbb{1}(\text{time} = t)\mathbb{1}(\text{state=CA}) + \gamma_s + \gamma_t + \varepsilon_{it} \tag{2}$$

Controls: age, education, gender, children, experience, legal status, task, crop

Outcomes: Weekly Hours, Weekly Earnings (2022 real $)

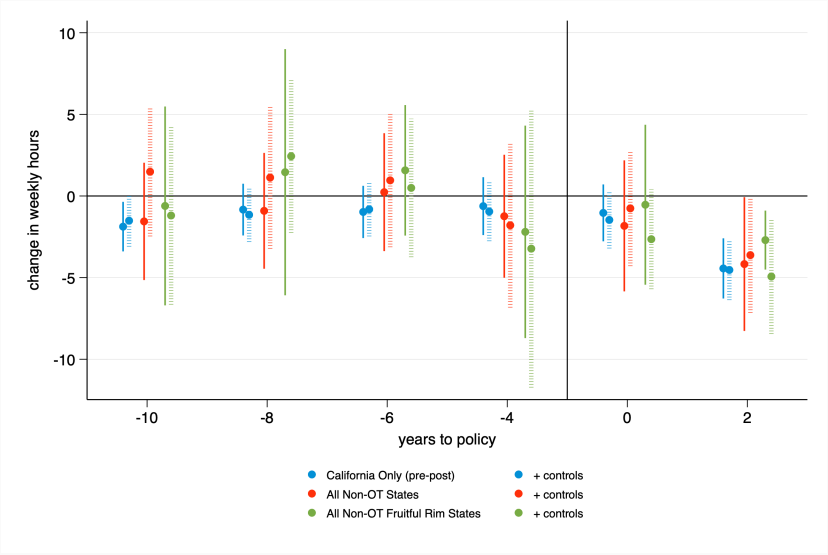
Identification: Dynamic DiD

Identifying assumption: Parallel trends—absent the OT law, the gap between treated and control groups would remain constant over time.

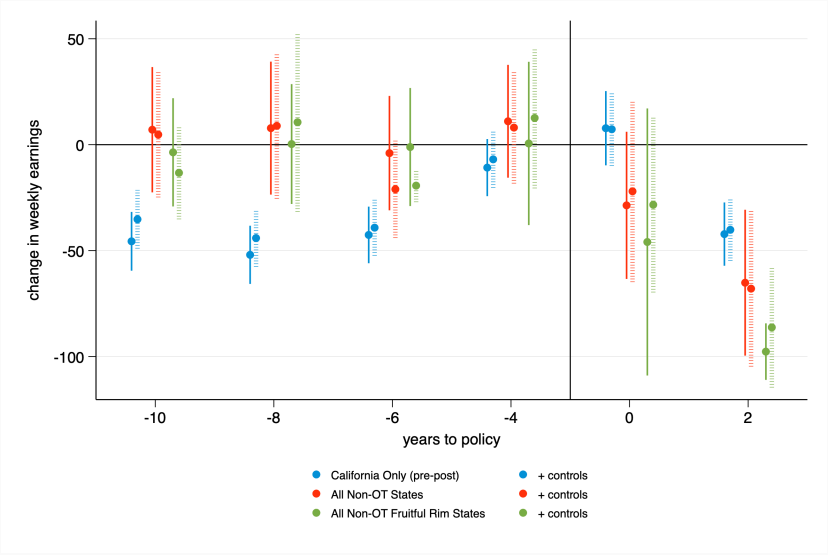
Identification concerns:

1. Worker and job characteristics differ in CA and other states, and hours or earnings evolve differently across time for these characteristics. demographics jobs
   ⇒ Alternative control groups and DR-DiD (Sant'Anna and Zhao, 2020)
2. Other policies that impact hours or earnings have evolved differently in CA and other states (minimum wages). minimum wages
   ⇒ Currently using a first stage regression on min wage (suggestions encouraged)
3. Worker and job characteristics that impact hours or earnings have evolved differently in CA and other states. (not the case)

On Average, Working Hours Decreased by 3-5 hrs/wk (4.2 in preferred)



On Average, Earnings Fell by 40-100 $/wk ($65 in preferred)



Methods & Results for Distributional Effects

Methods: Distributional Effects

Approach 1: Dynamic DiD without controls

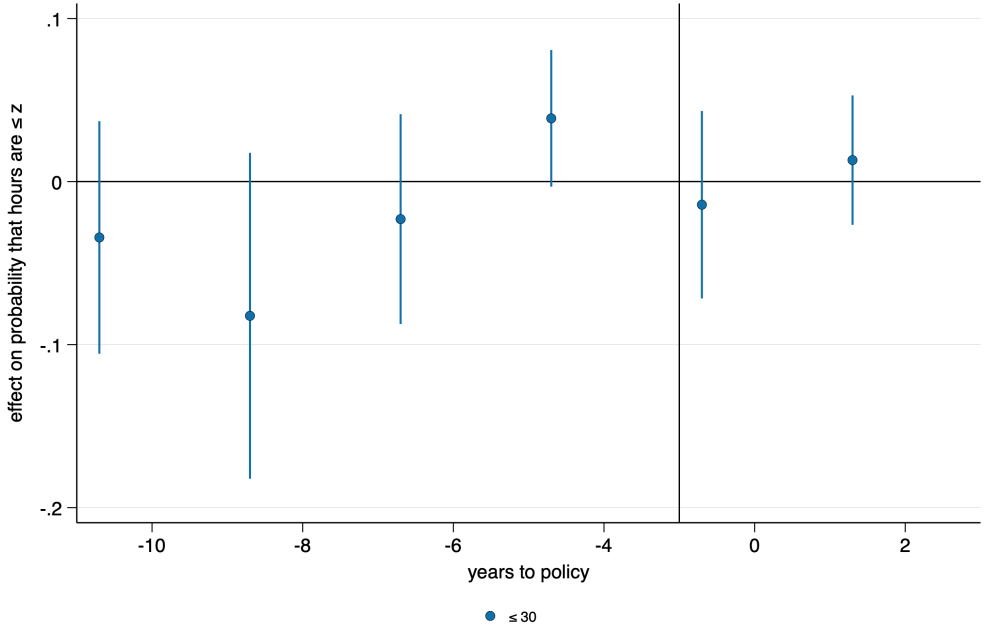
Approach 2: Dynamic DiD (non-ot states + controls + adj. earnings)

Approach 3: Distribution Regression DiD (Chernozhukov et al., 2013; Dube, 2019)

$$\mathbb{1}\left[Y_{ist} \leq z\right] == \alpha + \sum_{t=-10}^{4} \beta_{gt} D_{i,g,t} + \gamma_r + \gamma_t + \varepsilon_i \tag{3}$$

where z is a threshold for hours or earnings

For hours, I repeat this in 5 hours increments from 30 to 60.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0
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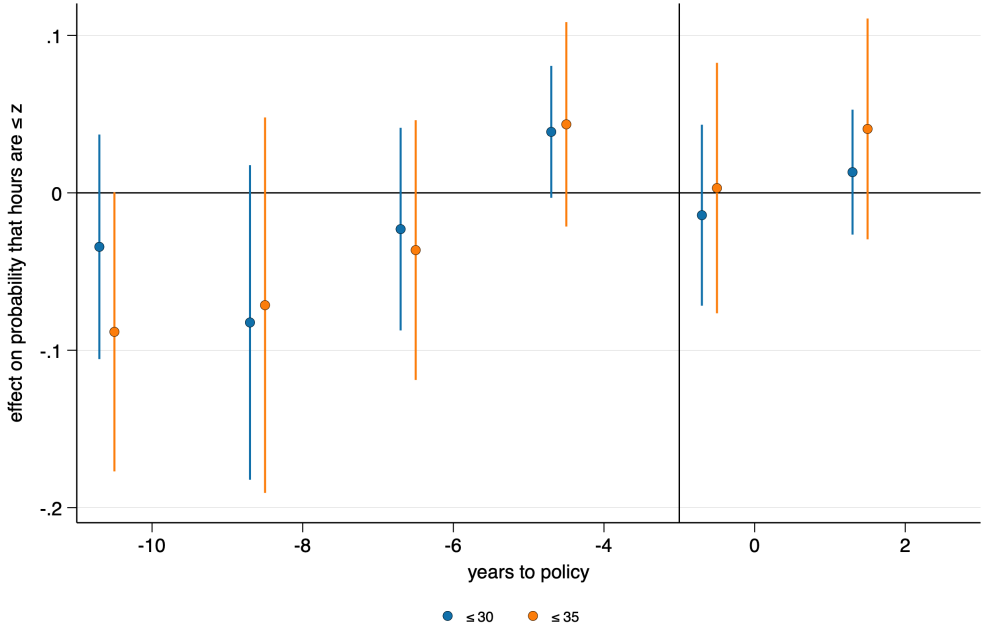
effect on probability that hours are ≤ z
-10
-8
-6
-4
0
2
years to policy
≤ 30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effect on probability that hours are ≤ z
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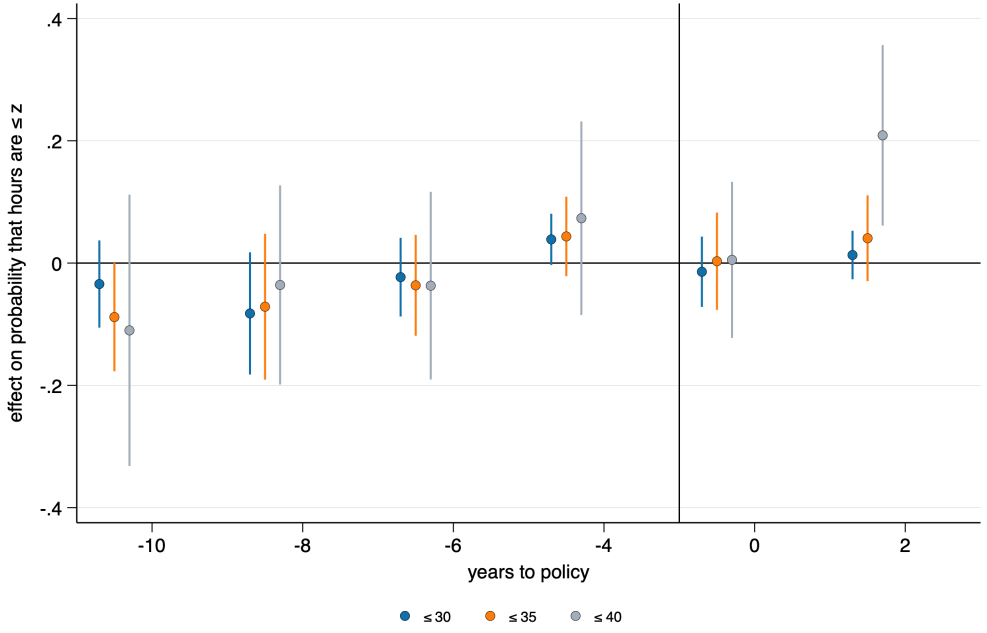
years to policy
≤ 30
≤ 35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effect on probability that hours are ≤ z
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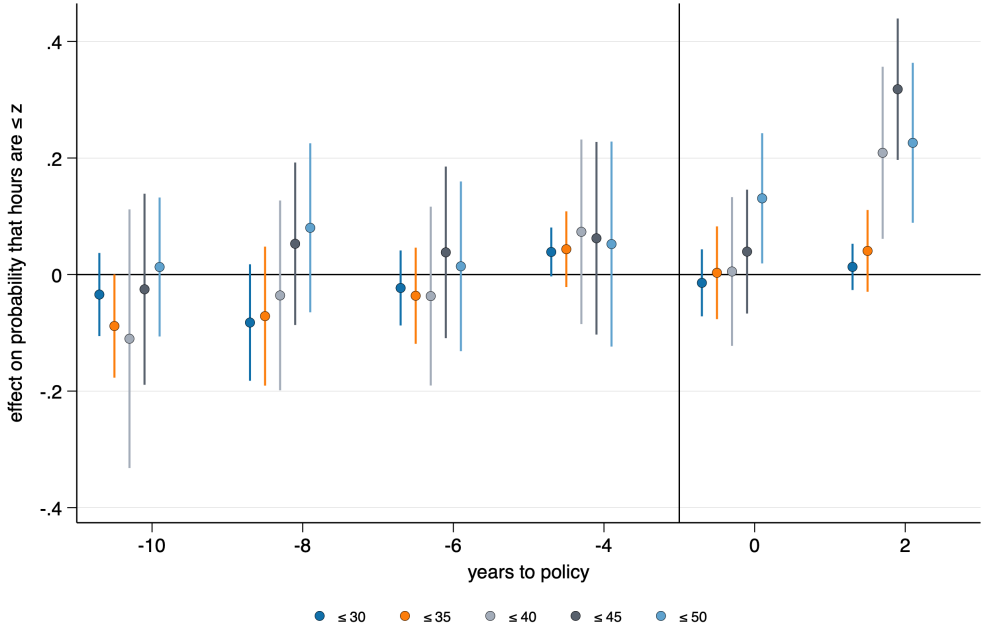
years to policy
≤ 30
≤ 35
≤ 40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effect on probability that hours are ≤ z
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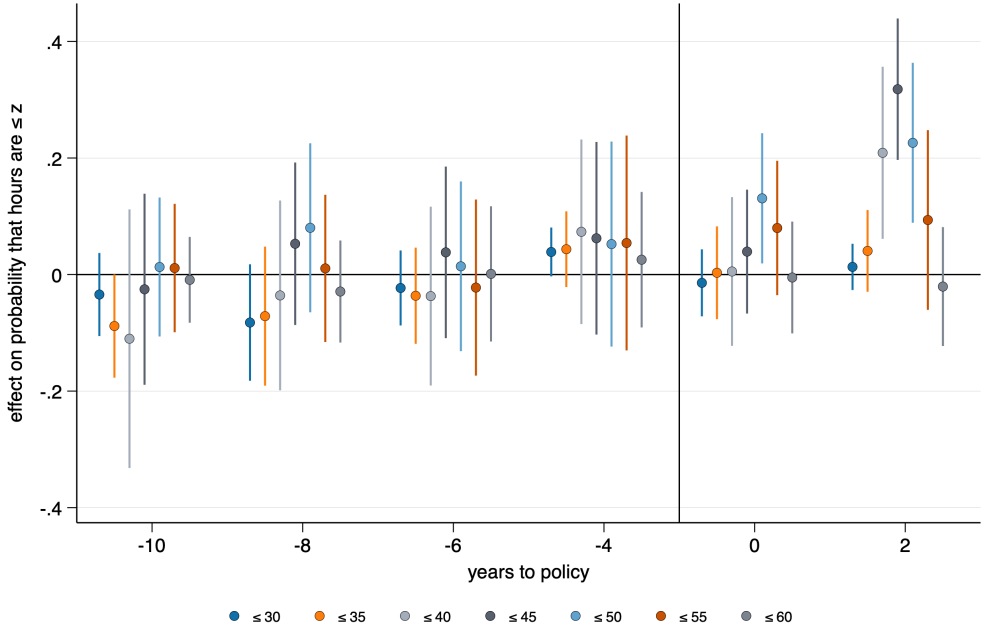
years to policy
≤ 30
≤ 35
≤ 40
≤ 45
≤ 50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effect on probability that hours are ≤ z
-10
-8
-6
-4
0
2
years to policy
≤ 30
≤ 35
≤ 40
≤ 45
≤ 50
≤ 55
≤ 60

Methods: Distributional Effects

Approach 1: Dynamic DiD without controls

Approach 2: Dynamic DiD with controls (ETWFE)

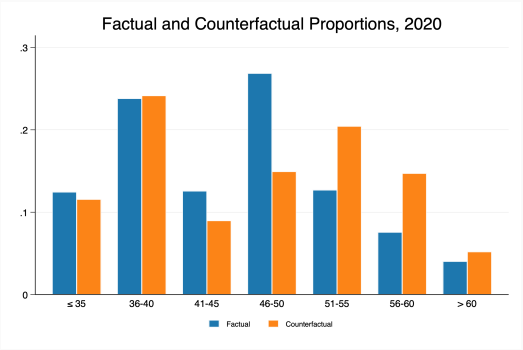
Approach 3: Distribution Regression DiD (Chernozhukov et al., 2013; Dube, 2019)

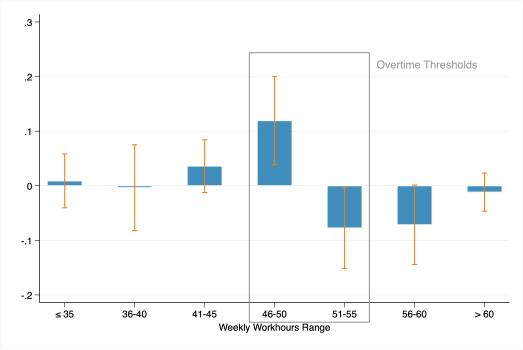
$$\mathbb{1}\left[Y_{ist} \leq z\right] == \alpha + \sum_{t=-10}^{4} \beta_{gt} D_{i,g,t} + \gamma_r + \gamma_t + \varepsilon_i \tag{4}$$

Construct Counterfactual Distributions (Chernozhukov et al., 2013)

$\Rightarrow$ I estimate the above equation using a logistic regression, subtracting the estimated DiD effect in each post-year and predict the probability that each worker's hours or earnings would fall below the indicated threshold (if the law never went into effect).

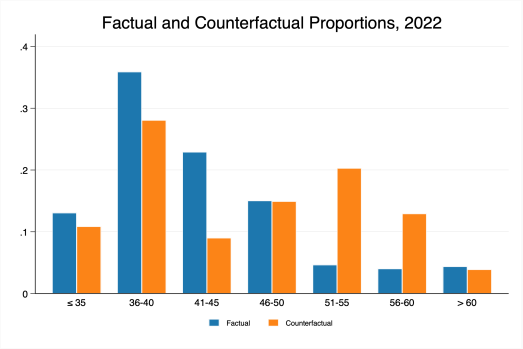
California 2019 & 2020: Observed Vs. Predicted Hours

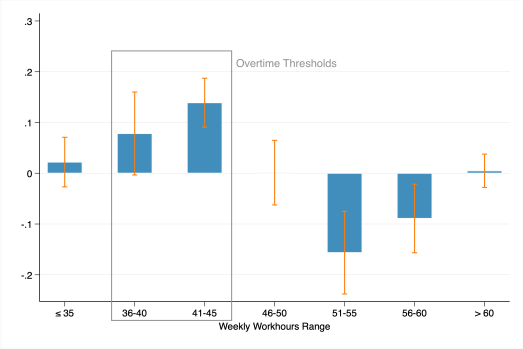




California 2021 & 2022: Observed Vs. Predicted Hours

Individual Years





Additional Specifications and Robustness

Heterogeneity: Hours decreased more for...

- Documented workers versus Undocumented workers
- English speakers versus non-English speakers
- Piece rate paid workers (relative to hourly)

Robustness

- Average hours effects are similar in the ACS results
- Distribution results consistent in event study design results
- No distributional changes in control states results
- No sig. changes when replicating for placebo treatment period results
- Increased bunching at the thresholds results

Recap and Discussion

As implemented, California's new overtime legislation appears to have reduced weekly working hours and earnings for crop workers, while not creating more domestic jobs.

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In 2021/22...

The average California crop employee worked 4 fewer hours and earned $65 less each week than they would have without the overtime law in place.

$\Rightarrow$ How hours and earnings changed are consistent with employers cutting hours to avoid paying the higher overtime rates.

Recap and Discussion

As implemented, California's new overtime legislation appears to have reduced weekly working hours and earnings for crop workers, while not creating more domestic jobs.

In 2021/22...

The average California crop employee worked 4 fewer hours and earned $65 less each week than they would have without the overtime law in place.

$\Rightarrow$ How hours and earnings changed are consistent with employers cutting hours to avoid paying the higher overtime rates.

Only 28% of crop workers worked $>$ 45 hrs/week

$\Rightarrow$ 52% would have worked this without the law in place

Only 48% of workers earned $>$ $600 a week

$\Rightarrow$ 68% would have earned this without the law in place

Looking Forward: Policy Implications and Next Steps

A subsidy or tax credit Policy Simulations

- ↑↑ Hours, ↑↑ Income
- Not feasible in California given the current deficit...

Exploring Employer Adaptation: Results

- **Preliminary** Evidence of substituting for H-2A Visa Workers
- **Preliminary** Reduced worker injuries are more consistent with reduced hours than being overworked

Missing Pieces and Next Steps:

- Multiple job holdings, worker well-being, preferences for hours versus income
- Implications for employers, agricultural production, technology

Thank you!

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References

ao Madeira, J. (2014). Overtime labor, employment frictions, and the new keynesian phillips curve. *The Review of Economics and Statistics*, 96(4):767–778.

Brechling, F. (1965). The relationship between output and employment in british manufacturing industries. *The Review of Economic Studies*, 32(3):187–216.

Brown, C. C. and Hamermesh, D. S. (2019). Wages and hours laws: What do we know? what can be done? Technical Report 5.

Buchmueller, T. C. and Senesky, S. (2003). The effect of california's daily overtime law on hours of work: A re-examination. *International Advances in Economic Research*, 9:86.

Calmfors, L. and Hoel, M. (1989). Work sharing, employment and shiftwork. *Oxford Economic Papers*, 41(4):758–773.

Chemin, M. and Wasmer, E. (2009). Using alsace-moselle local laws to build a difference-in-differences estimation strategy of the employment effects of the 35-hour workweek regulation in france. *Journal of Labor Economics*, 27(4):487–524.

Chen, L.-H. and Wang, W.-C. (2011). The impact of the overtime policy reform–evidence from the low-paid workers in taiwan. *Applied Economics*, 43(1):75–90.

Chernozhukov, V., Fernández-Val, I., and Melly, B. (2013). Inference on counterfactual distributions. *Econometrica*, 81(6):2205–2268.

Costa, D. L. (2000). Hours of work and the fair labor standards act: A study of retail and wholesale trade, 1938–1950. *ILR Review*, 53(4):648–664.

Dube, A. (2019). Minimum wages and the distribution of family incomes. *American Economic Journal: Applied Economics*, 11(4):268–304.

Ehrenberg, R. G. (1970). Absenteeism and the overtime decision. *The American Economic Review*, 60(3):352–357.

Ehrenberg, R. G. (1971). *Fringe benefits and overtime behavior: Theoretical and econometric analysis*. Lexington Books.

Ehrenberg, R. G. and Schumann, P. L. (1982). *Longer hours or more jobs? An investigation of amending hours legislation to create employment*. Cornell Studies in

Industrial and Labor Relations 22, New York State School of Industrial and Labor Relations. Ithaca, NY: Cornell University.

Filer, R. K., Hamermesh, D. S., and Rees, A. E. (1996). HarperCollins.

Hamermesh, D. S. and Trejo, S. J. (2000). The demand for hours of labor: Direct evidence from california. *The Review of Economics and Statistics*, 82(1):38–47.

Hart, R. A. (2004). Cambridge University Press.

Johnson, J. H. (2003). The impact of federal overtime legislation on public sector labor markets. *Journal of Labor Economics*, 21(1):43–69.

Kawaguchi, D., Naito, H., and Yokoyama, I. (2017). Assessing the effects of reducing standard hours: Regression discontinuity evidence from japan. *Journal of the Japanese and International Economies*, 43:59–76.

Kuroda, S. and Yamamoto, I. (2012). Impact of overtime regulations on wages and work hours. *Journal of the Japanese and International Economies*, 26(2):249–262.

Quach, S. (2022). The labor market effects of expanding overtime coverage.

Raposo, P. S. and van Ours, J. C. (2010). How working time reduction affects jobs and wages. *Economics Letters*, 106(1):61–63.

Rosen, S. (1968). Short-run employment variation on class-i railroads in the u.s., 1947-1963. *Econometrica*, 36(3/4):511–529.

Sánchez, R. (2017). Does a mandatory reduction of standard working hours improve employees' health status? *Industrial Relations: A Journal of Economy and Society*, 56(1):3–39.

Sant'Anna, P. H. and Zhao, J. (2020). Doubly robust difference-in-differences estimators. *Journal of Econometrics*, 219(1):101–122.

Skuterud, M. (2007). Identifying the potential of work-sharing as a job-creation strategy. *Journal of Labor Economics*, 25(2):265–287.

Trejo, S. J. (1991). The effects of overtime pay regulation on worker compensation. *The American Economic Review*, 81:719–740.

Trejo, S. J. (2003). Does the statutory overtime premium discourage long workweeks? *Industrial and Labor Relations Review*, 56(3):530–551.

Looking Forward: Policy Implications, Solutions, and a Caveat

A subsidy or tax credit

- $\uparrow\uparrow$ Hours, $\uparrow\uparrow$ Income

A partial reversal

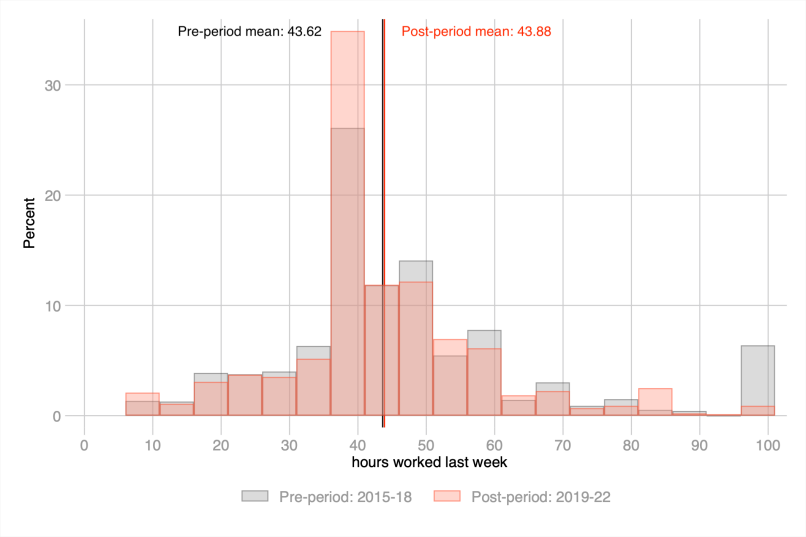
- $\uparrow$ Hours, $\uparrow$ Income

Important missing pieces in my work:

- Multiple job holdings, worker well-being, preferences for hours versus income
- Implications for employers, agricultural production, technology

Evidence from the Raw Data: Change in Hours in Non-OT States

Back



Evidence from the Raw Data: Change in Hours in Non-OT Nearby States

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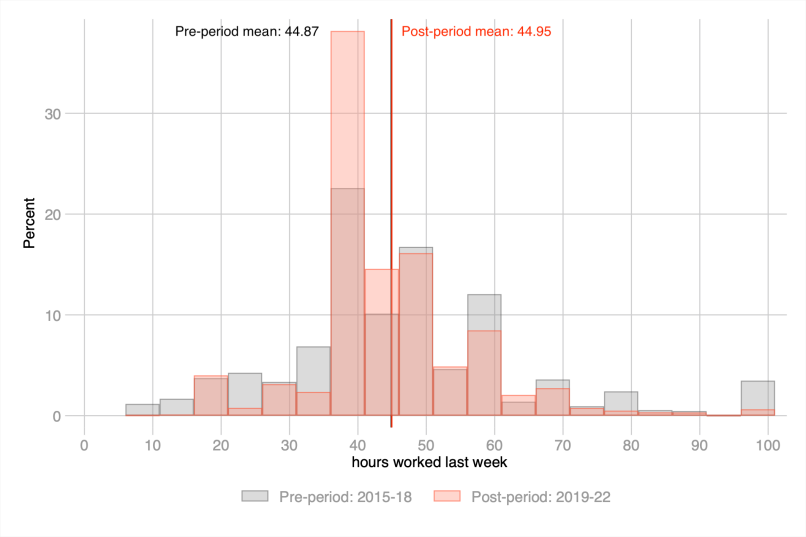

An Aside: Wage Compression Toward the Minimum Wage

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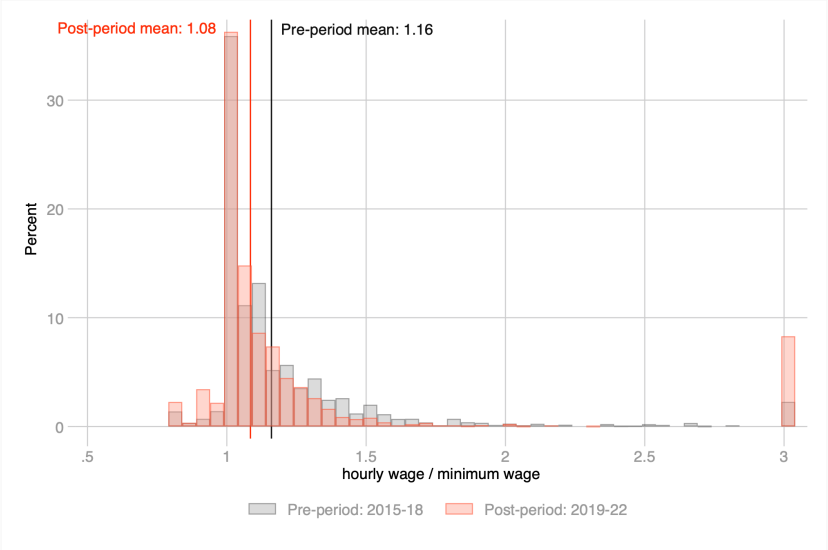


Baseline Differences in Worker Demographics) back

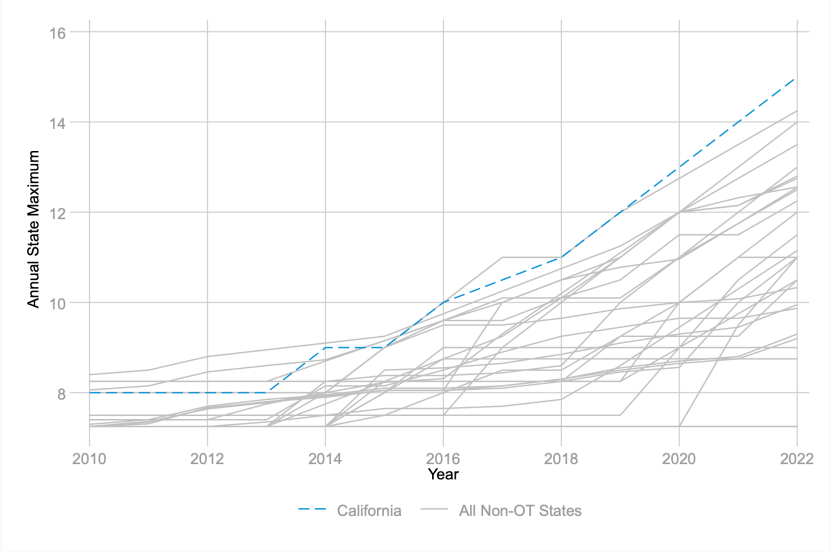
	California		All Non-OT States	
	mean	se	mean	se
Age	38.49	0.483	37.91	0.450
Education (years)	7.42***	0.124	7.42	0.124
Farm experience (years)	15.84***	0.417	13.57	0.377
Female (prop.)	0.27	0.026	0.30	0.015
Undocumented (prop.)	0.57***	0.020	0.41	0.019
Has kid (prop.)	0.51***	0.015	0.40	0.015
Speaks English (prop.)	0.24***	0.015	0.51	0.019
Observations (pre-period)	6,811		8,459	
Observations (full sample)	8,717		10,198	

Baseline Differences in Job Attributes) back

	California		All Non-OT States	
	mean	se	mean	se
Task (prop.):				
Pre-harvest	0.28	0.023	0.32	0.019
Harvest	0.22*	0.027	0.17	0.014
Post-harvest	0.15***	0.026	0.24	0.016
Semi-skilled	0.34**	0.028	0.27	0.016
Supervisor	0.00	0.000	0.00	0.000
Crop type (prop.):				
Field crops	0.03***	0.005	0.18	0.017
Fruits & Nuts	0.57***	0.035	0.16	0.021
Horticulture	0.09***	0.019	0.36	0.021
Vegetables	0.30	0.033	0.26	0.018
Misc/Mult	0.01***	0.007	0.04	0.006
Pay type (prop.):				
Hourly	0.86	0.024	0.94	0.009
Piece Rate	0.11	0.020	0.05	0.009
Combination	0.03	0.014	0.01	0.002
Observations (pre-period)	6,811		8,459	

California Minimum Wages Increased More than Other States

Back



California Minimum Wages Increased More than Other States

Back

State	Pct. Δ in Min Wage
California	87.5
New Jersey	79.3
Massachusetts	78.1
Arizona	76.6
Colorado	73.2
Maryland	72.4
Maine	70.0
Connecticut	69.7
Rhode Island	65.5
Oregon	60.7
Vermont	55.7
Missouri	53.8
New Mexico	53.3
Virginia	51.7
Arkansas	51.7
Florida	51.7

Notes: Percentage change in state minimum wages from 2010 to 2022.

An Aside: Wage Compression Toward the Minimum Wage

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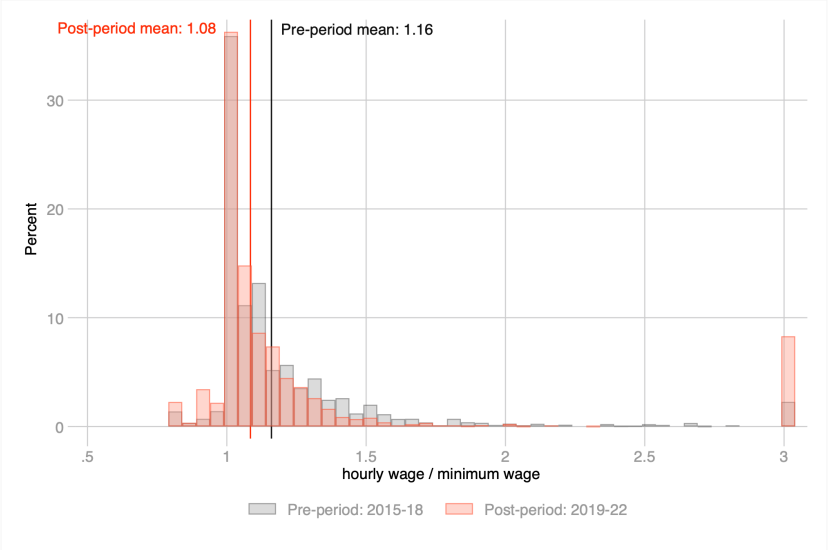

Minimum Wage Increase Schedule

Back Back to Equation

Effective Date	Hourly Minimum Wage for Employers with...	
	>25 Employees	≤25 Employees
Jan. 1 2022	$15.00	$14.00
Jan. 1 2021	$14.00	$13.00
Jan. 1 2020	$13.00	$12.00
Jan. 1 2019	$12.00	$11.00
Jan. 1 2018	$11.00	$11.00
Jan. 1 2017	$10.50	$10.00
Jan. 1 2016	$10.00	$10.00
Jul. 1 2014	$9.00	$9.00
Jan. 1 2008	$8.00	$8.00

Minimum Wage Increase Schedule

Back

Effective Date	Hourly Minimum Wage for Employers with...	
	>25 Employees	≤25 Employees
Jan. 1 2022	$15.00	$14.00
Jan. 1 2021	$14.00	$13.00
Jan. 1 2020	$13.00	$12.00
Jan. 1 2019	$12.00	$11.00
Jan. 1 2018	$11.00	$11.00
Jan. 1 2017	$10.50	$10.00
Jan. 1 2016	$10.00	$10.00
Jul. 1 2014	$9.00	$9.00
Jan. 1 2008	$8.00	$8.00

Improved DR DiD Results

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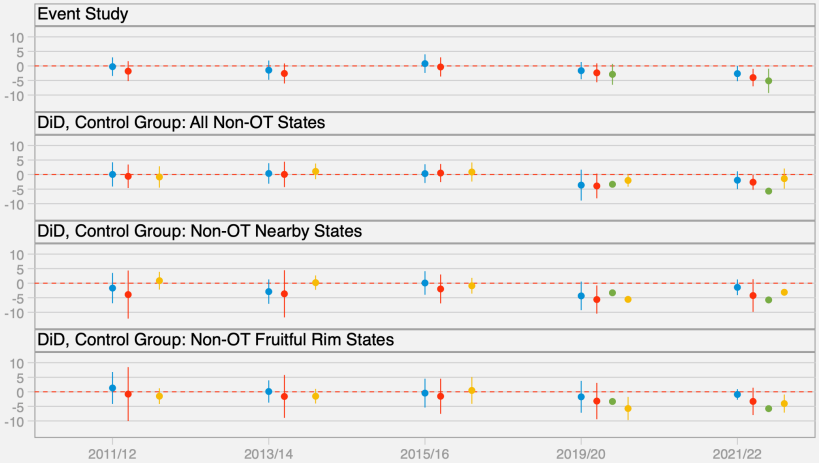
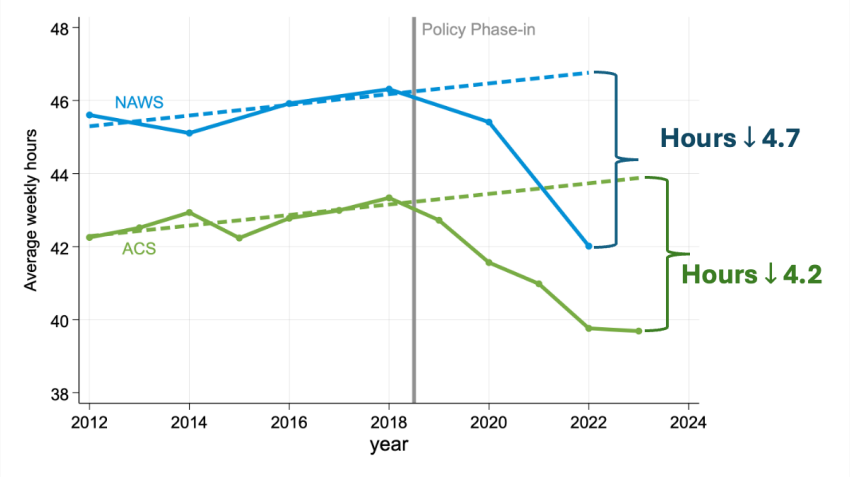
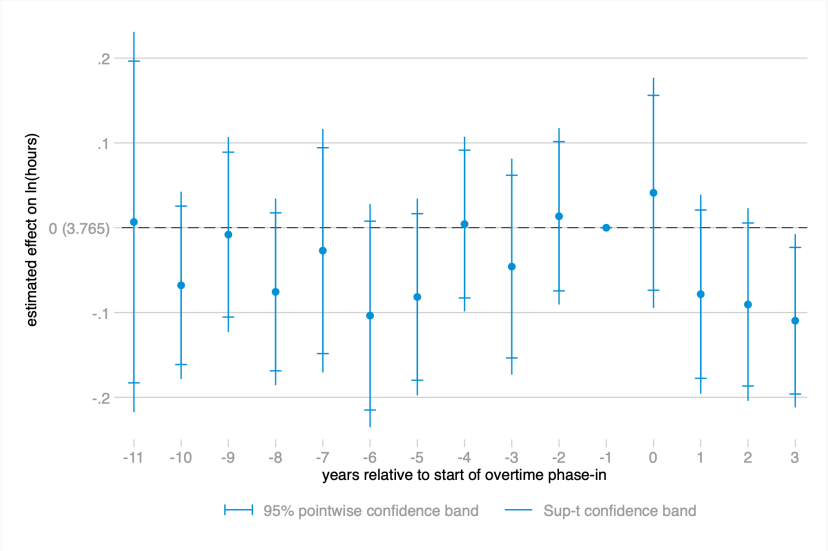


California Farmworker Hours Decreased After the Law



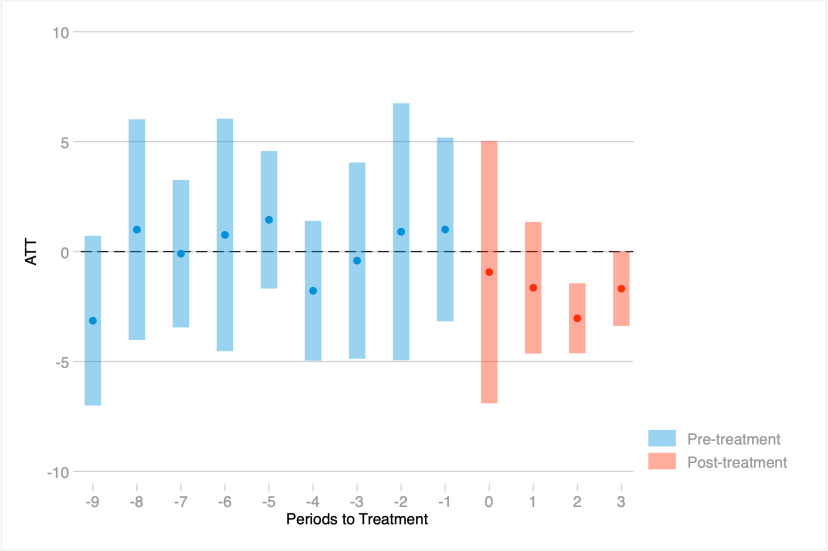
ES Results: Hours Decrease for the Average Worker ($Y_{it} = \ln(\textbf{hours}_{it})$)

Back



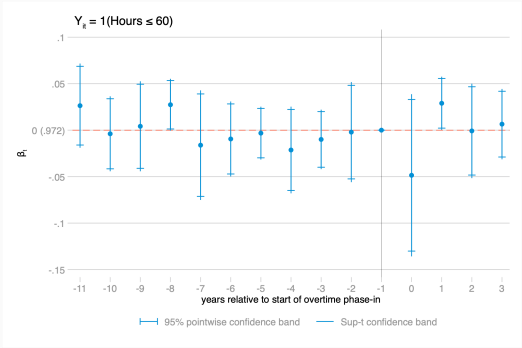
DiD Results: Hours Decrease for the Average Worker ($Y_{it} = \text{hours}_{it}$)

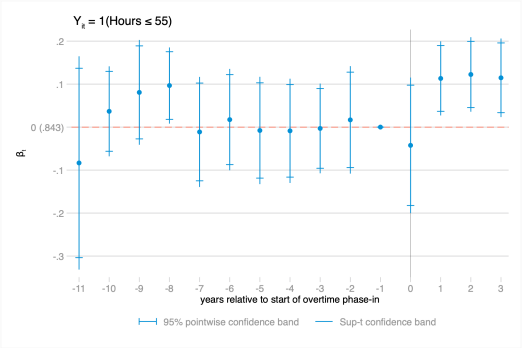
Back



Results: Distributional Effects ($Y_{it} = \mathbb{1}(\text{hours} \leq h)$)

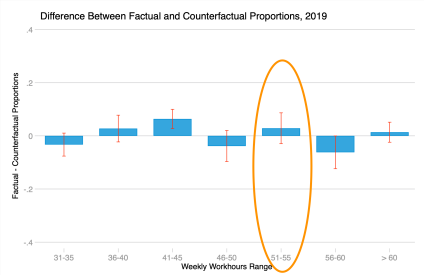
Back

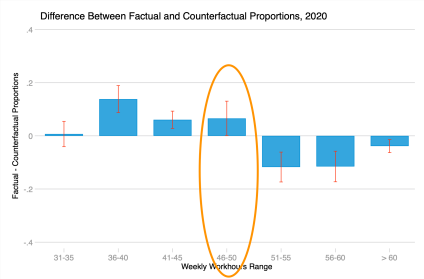


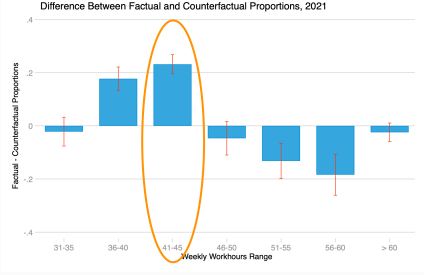


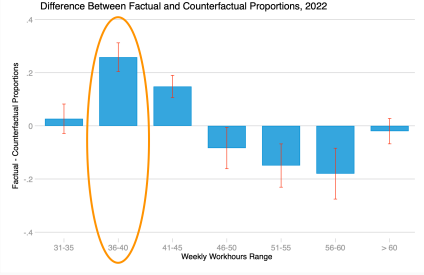
Robustness: DR-Event Study, California Only

Back



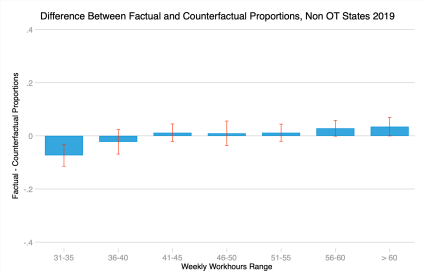


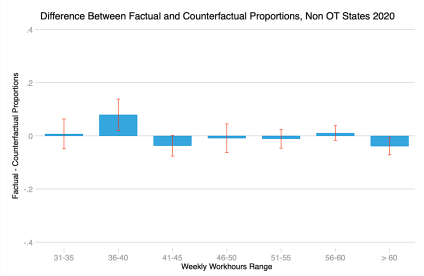


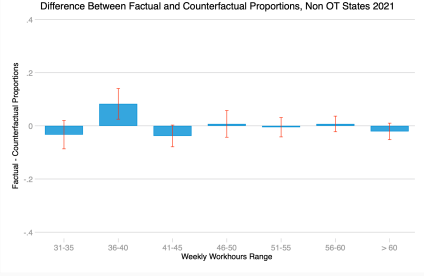


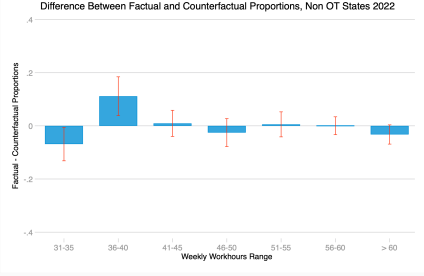
Robustness: DR-Event Study, All Non-OT States

Back





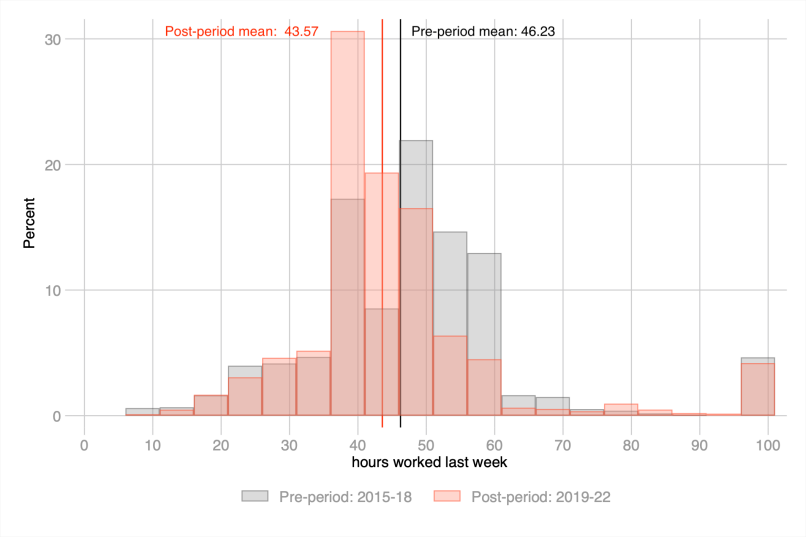




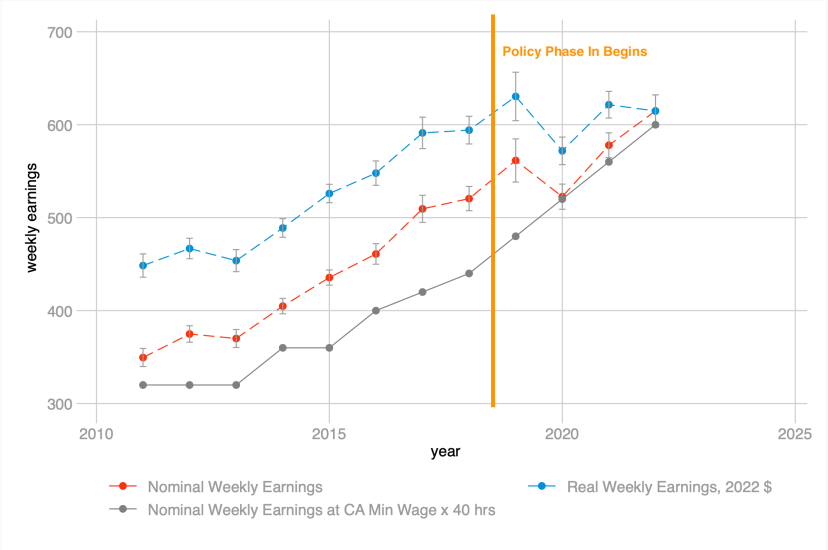
The NAWS (raw data):
What happens to hours, wages, and earnings for California Workers?

Evidence from the Raw Data: Hours Decrease

Hours in Non-OT States Back

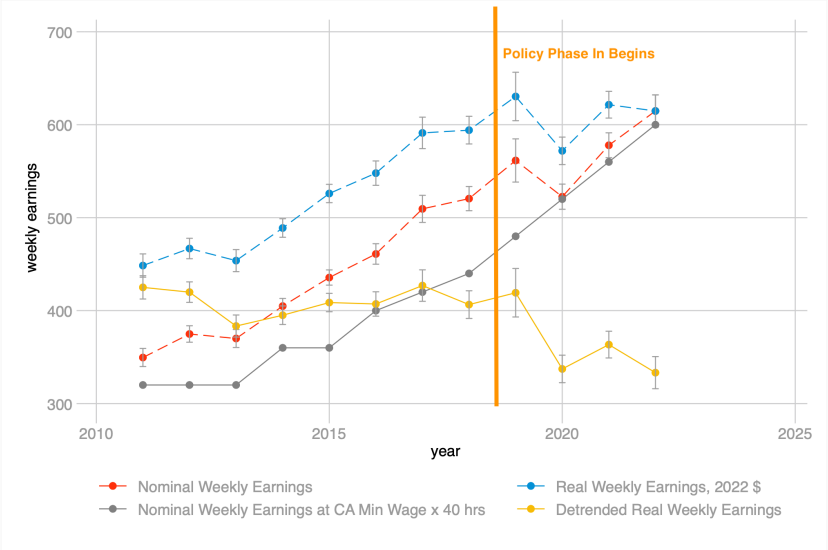


Evidence from the Raw Data: Earnings Stagnate, Decline



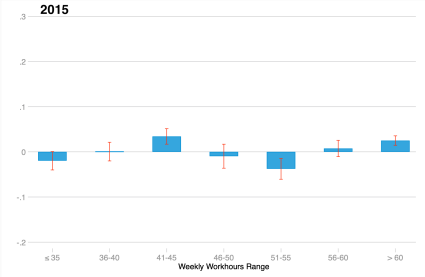
Evidence from the Raw Data: Earnings Stagnate, Decline

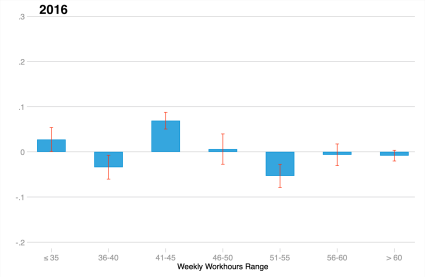
Back

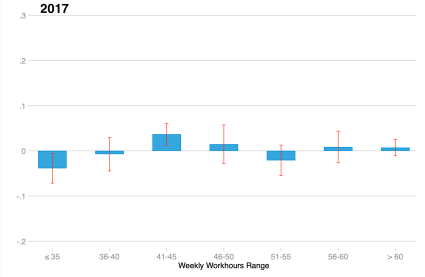


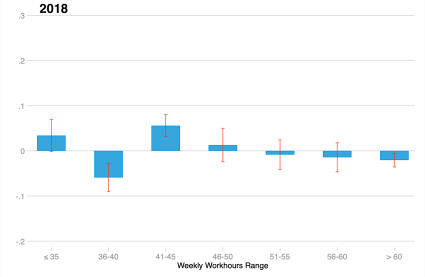
Robustness: DR-DiD 2015-2018 as "Treatment"

Back



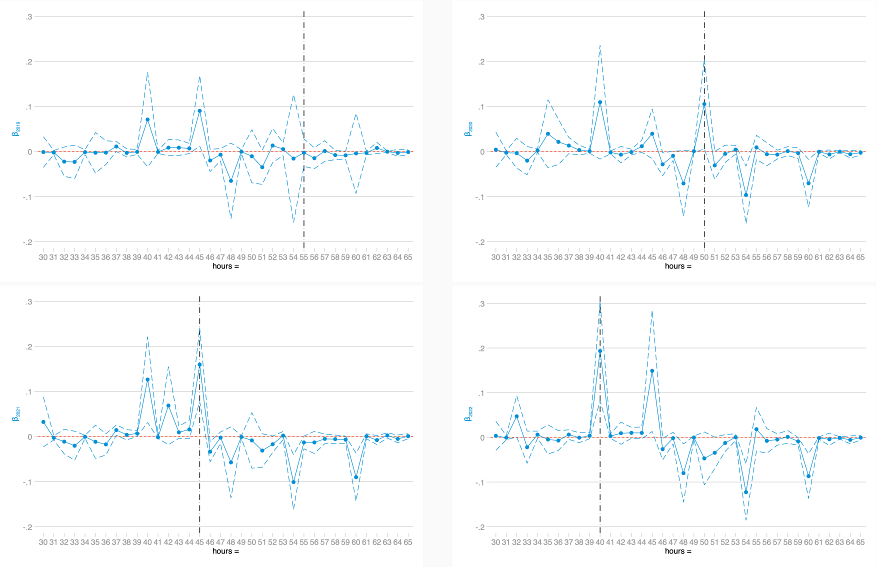






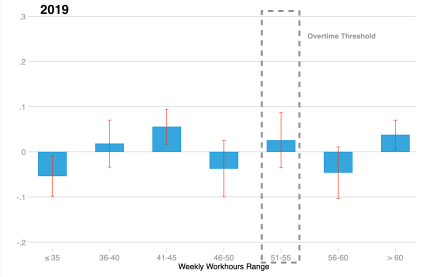
Robustness: Bunching, California Only

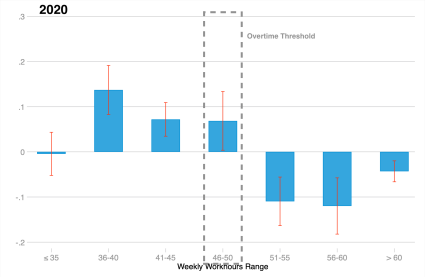
Back

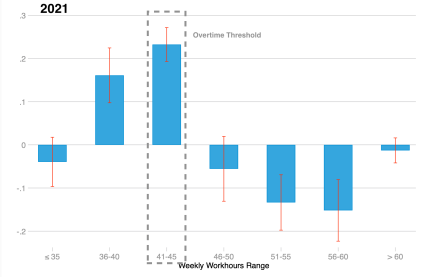


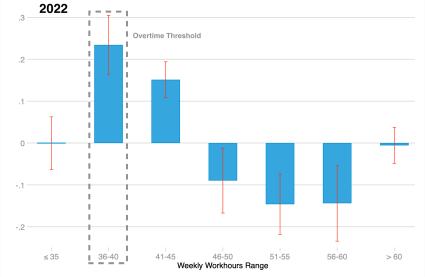
California 2019-2022: Observed Vs. Predicted Hours

Back

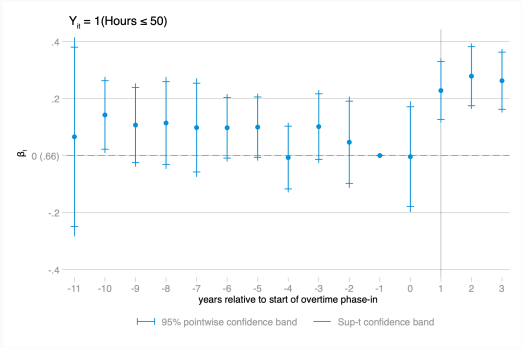


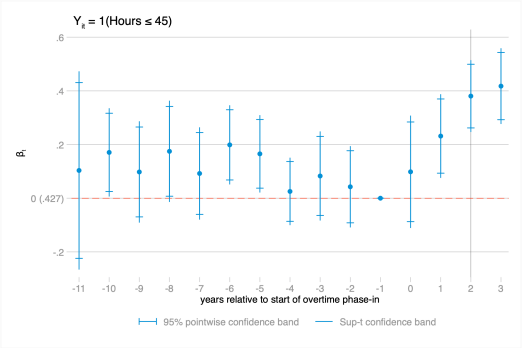






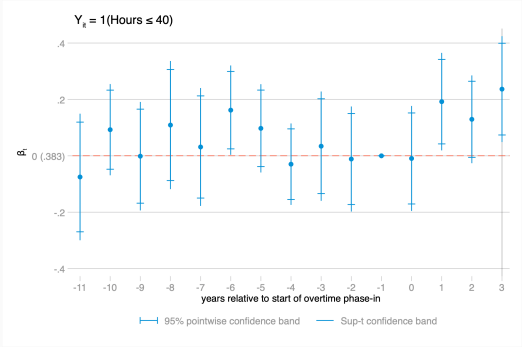
Results: Increased Probability of Hours Below New OT Thresholds

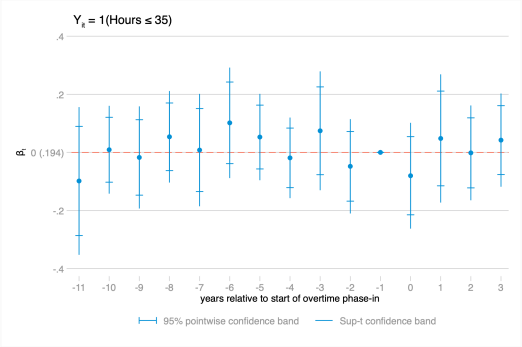




Results: Increased Probability of Hours Below New OT Thresholds

Back

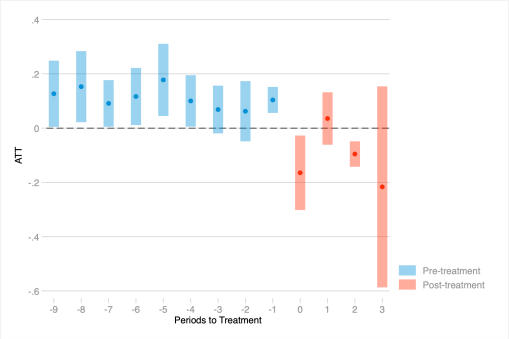




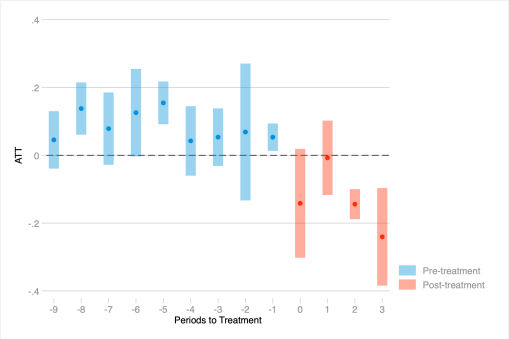
DiD Results: Wages and Earnings Decrease for the Average Worker (Y_{it} = hours$_{it}$)

Back

Hourly Wage



Weekly Earnings



Bunching Model

Back

To create the figures demonstrating bunching in each year, I run a series of regressions of the form:

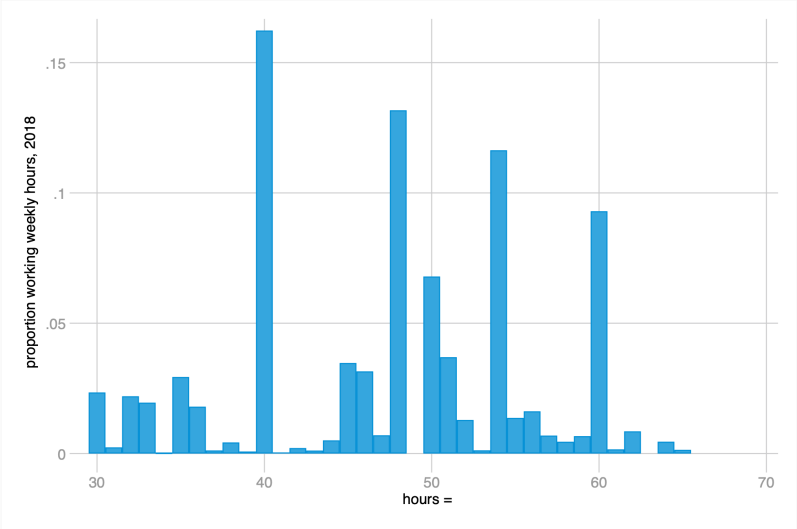
$$\mathbb{1}(h_{it} = h) = \boldsymbol{X_{it}}'\boldsymbol{\alpha^h} + \sum_{t=-10}^{3} \beta_t^h \mathbb{1}(time = t) + \varepsilon_{it}^h \tag{5}$$

where h takes on all integer values from 30 to 65.

The bunching figures show all coefficients β^h for a given value of t, that is, the coefficient on the same year indicator in each separate regression.

ES Results: Bunching in 2018 for Comparison

Back



Results: QCEW Employment, Alternative Specifications

Back

Direct Hire

	SDID, adj. emp.	SDID, emp.	SC, adj. emp.
ATT	-0.027	-5124.750***	-0.033
	(0.138)	(832.514)	(0.209)
Observations	1,071	1,071	1,071

Contract Hire

	SDID, adj. emp.	SDID, emp.	SC, adj. emp.
ATT	-0.102	-1476.198***	-0.145
	(1.191)	(542.958)	(1.755)
Observations	693	693	693

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

Results: H-2A Certifications, Alternative Specifications

Back

All H-2A Workers, Since 2011

	SDID, adj. emp.	SC, adj. emp.	SDID, emp.	SC, emp.
ATT	2.504**	2.916**	8312.399***	8458.448**
	(1.154)	(1.405)	(2753.127)	(3846.949)

2022 Factual Versus Predicted Earnings for California Workers

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