Does paid family leave save infant lives?

Evidence from California's paid family leave program

by Feng Chen, published in Contemporary Economic Policy, 2022

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Context & research question

- Parental family leave benefits infants:
    - less non-parental care → less infectious illnesses
    - more preventative care → more immunizations and well-visits
    - longer breastfeeding
    - better mental health (especially for mothers) → more attention to an infant's needs
- OECD – 6 months of paid leave for mothers, the U.S. – entitled to 12 weeks of unpaid leave
- Previous studies focused on European countries or unpaid leave in the U.S.
- In July 2004, California introduces 6 weeks of PFL for eligible workers (CA-PFL)

Research question:

> What is the causal effect of **CA-PFL** on **post-neonatal mortality rate (PNMR)**?

* Post-neonatal mortality rate (PNMR): infant deaths (between 28 and 365 days) per 1000 live births
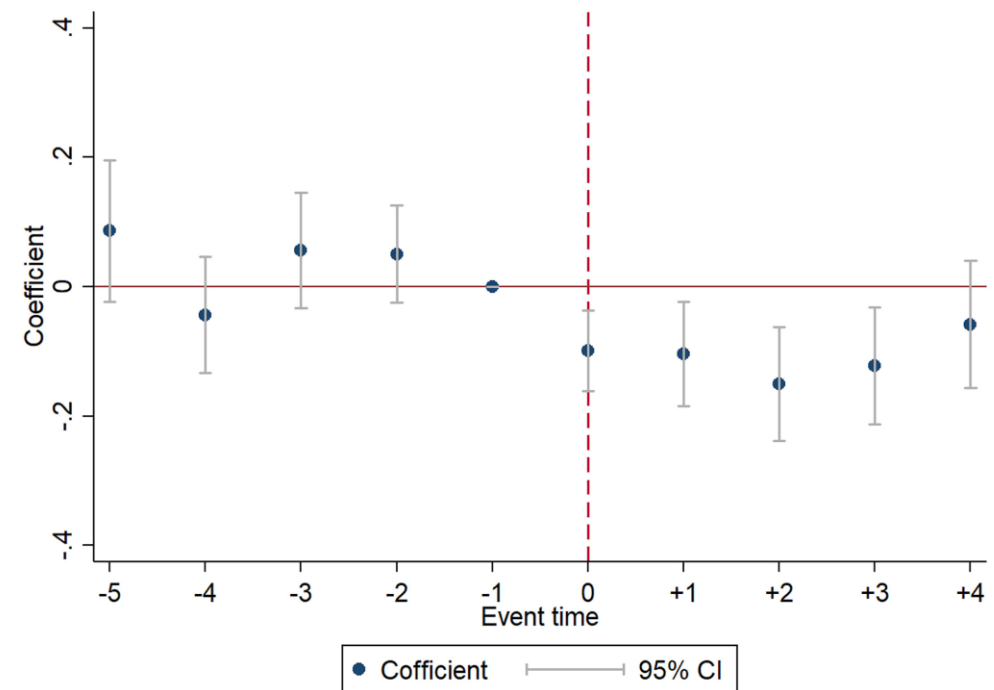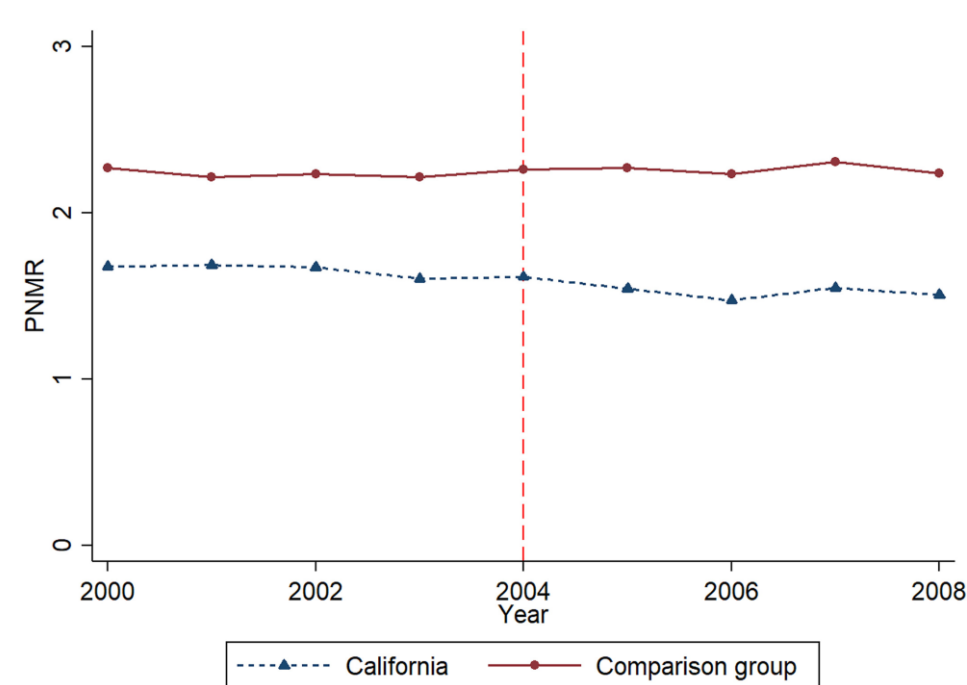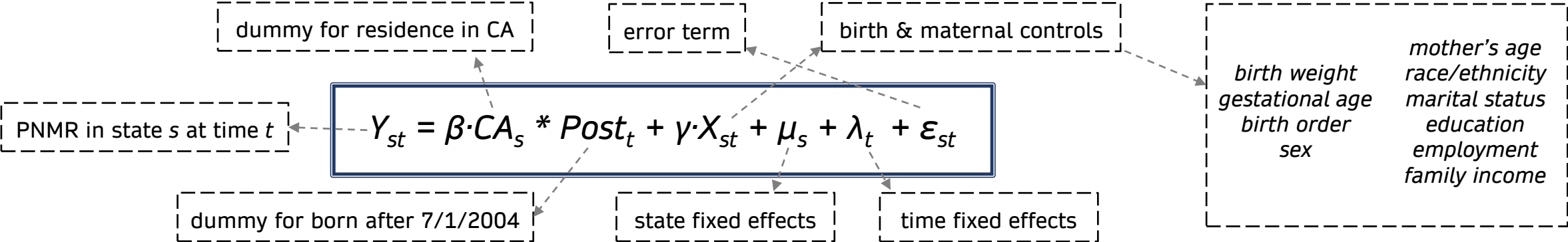
Data & summary statistics

- **Source**: cohort-linked singleton birth and infant death data of NVSS, CPS for some maternal controls

- **Unit of observation**: state-month combination

- **Sample period**: 2000 to 2008 (4.5 years before and after July 1, 2004)

- **Sample size**: 5508 observations (9 years * 12 months *51 states)

- **Comparison group**: 49 non-CA states and D.C.

TABLE 1 Summary statistics

Variable	All	Pre-CA-PFL		Post-CA-PFL	
		CA	Comparison	CA	Comparison
Outcome of interest					
Post-neonatal mortality rate	2.16	1.65	2.23	1.53	2.27
Placebo outcome					
Neonatal mortality rate	3.81	3.07	4.01	2.97	3.85
Fetal mortality rate	5.97	5.25	6.25	4.92	5.98
Fertility outcome					
General fertility rate	65.20	67.52	63.51	69.06	65.88
Number of births	15,798	43,114	11,202	45,193	11,751

Method: difference in differences

dummy for residence in CA

error term

birth & maternal controls

PNMR in state s at time t

$$Y_{st} = \beta \cdot CA_s * Post_t + \gamma \cdot X_{st} + \mu_s + \lambda_t + \varepsilon_{st}$$

birth weight
gestational age
birth order
sex

mother's age
race/ethnicity
marital status
education
employment
family income

dummy for born after 7/1/2004

state fixed effects

time fixed effects

Findings

- CA-PFL reduced the PNMR by **0.135 (8%)**

- Intention-to-treat effect (IOT): effect of offering the policy on the entire population

- Treatment-on-the-treated (TOT): effect on those who took PFL ~ 0.135*(1/0.27) = **0.5**

- Larger effect on boys, infants of married women, and on health-related causes of death

TABLE 2 Effects of CA-PFL on the PNMR

	(1)	(2)	(3)
CA*Post	−0.155	−0.161	−0.135
p-value	(0.000)	(0.000)	(0.000)
F-P p-value	[0.098]	[0.050]	[0.008]
R-squared	0.456	0.458	0.460
Observations	5508	5508	5508
State FE, time FE	Y	Y	Y
Birth control	N	Y	Y
Maternal control	N	N	Y

Robustness
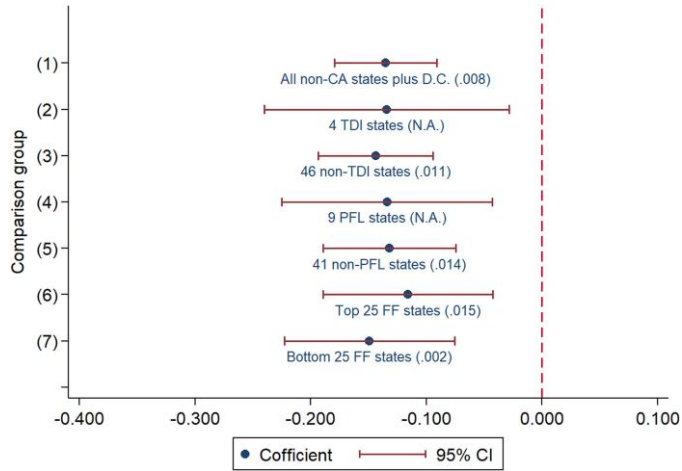
Alternative comparison groups
(based on FL related policies)
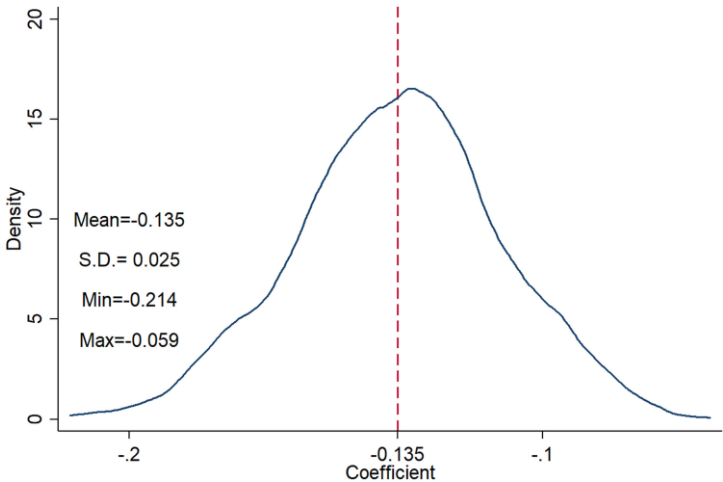
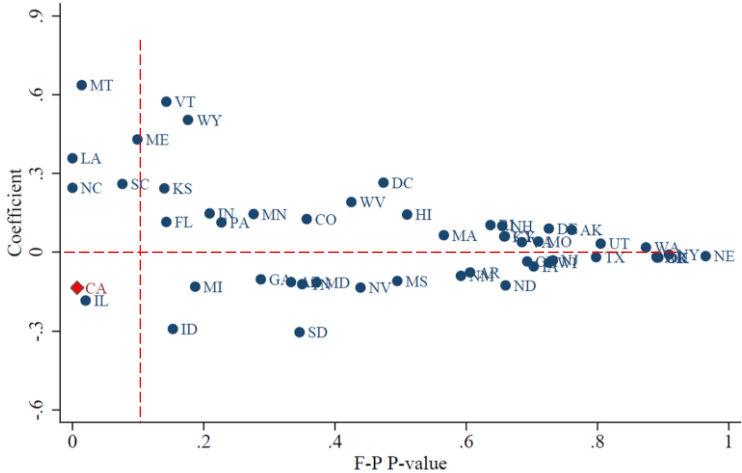
Alternative comparison groups
(1000 combinations of 25 random states)

| TABLE 6 Placebo outcome: Fetal mortality			
	(1)	**(2)**	**(3)**
CA*Post	−0.049	−0.059	−0.027
p-value	(0.291)	(0.231)	(0.582)
F-P *p*-value	[0.701]	[0.641]	[0.832]
R-squared	0.602	0.604	0.606
Observations	5508	5508	5508
State FE, time FE	Y	Y	Y
Birth control	N	Y	Y
Maternal control	N	N	Y

Placebo outcome: fetal mortality

Placebo outcome: different treatment state

Critique #1: Contemporaneous shocks

- **Mental Health Services Act** passed in CA in 2004

- Assisting residents with MH challenges

- If **MHSA is a contemporaneous shock** that may also have affected PNMR, the decrease in PNMR in California after July 2004 might not be solely attributable to CA-PFL. The effect of CA-PFL on PNMR, claimed in the paper, is **downward biased**. The |coefficient| is **overestimated**, making the effect look **more negative than it truly is**.


Post-neonatal Mortality Rate (PNMR), 2000-2008
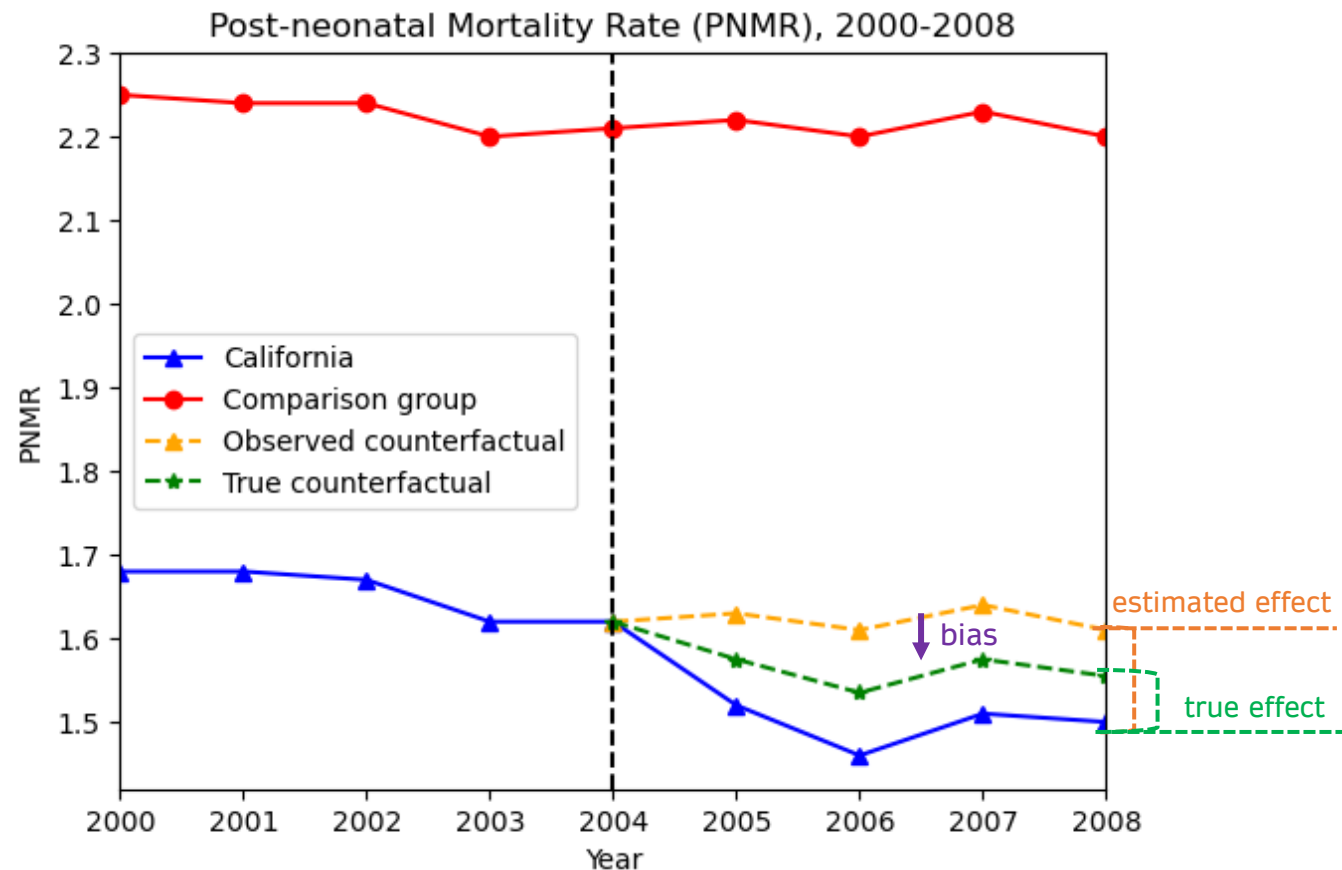
Critique #2: Omitted variables

Post-neonatal Mortality Rate (PNMR), 2000-2008
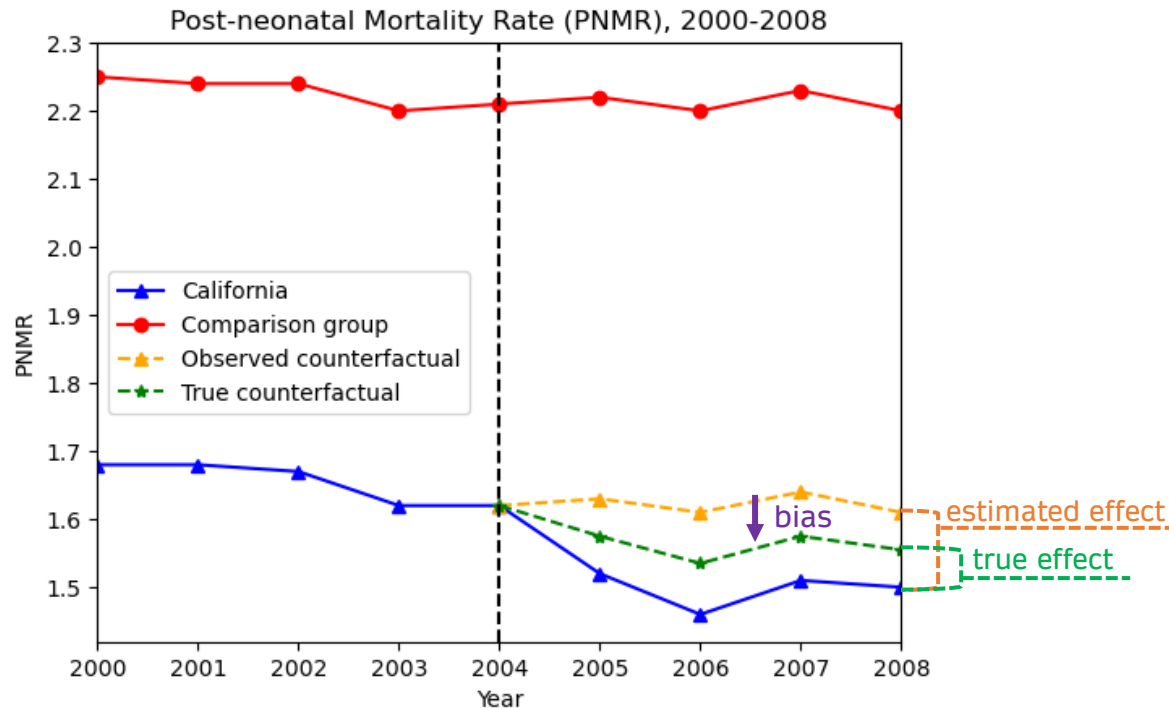
- **Attitudes towards family- and worker-friendliness –** family-friendly environment, advocacy, employer practices
- **California Work & Family Coalition (2002)** – advocated for family-friendly policies, support for working families
- **San Francisco Family Friendly Workplace Ordinance (2002)** supported flexible/predictable work schedule
- Accessible & affordable childcare, on-site facilities (childcare, breastfeeding rooms)
- **Changes in societal attitudes** towards family support and family-friendly workplaces may have both affected CA-PFL and helped reduce PNMR. If that is true, the decrease in PNMR in California after July 2004 might not be solely attributable to CA-PFL and the claimed effect of CA-PFL on PNMR is **downward biased**. The |coefficient| is **overestimated**, making the effect look **more negative than it truly is**.

Critique #3: Migration-induced selection

- **CA-PFL was announced 21 months prior**

- Lower SES families with pregnant women migrate to CA

- CA is different from pre-CA-PFL CA, comparison group is also different from pre-CA-PFL comparison group

- Lower SES is associated with higher PNMR

- If that is true, PNMR in CA after CA-PFL is higher than it would be without migration, and PNMR in the comparison group is lower than it would be without migration. The effect of CA-PFL on PNMR, claimed in the paper, is **upward biased**. The |coefficient| is **underestimated**, making the effect look **less negative than it truly is**.

Post-neonatal Mortality Rate (PNMR), 2000-2008
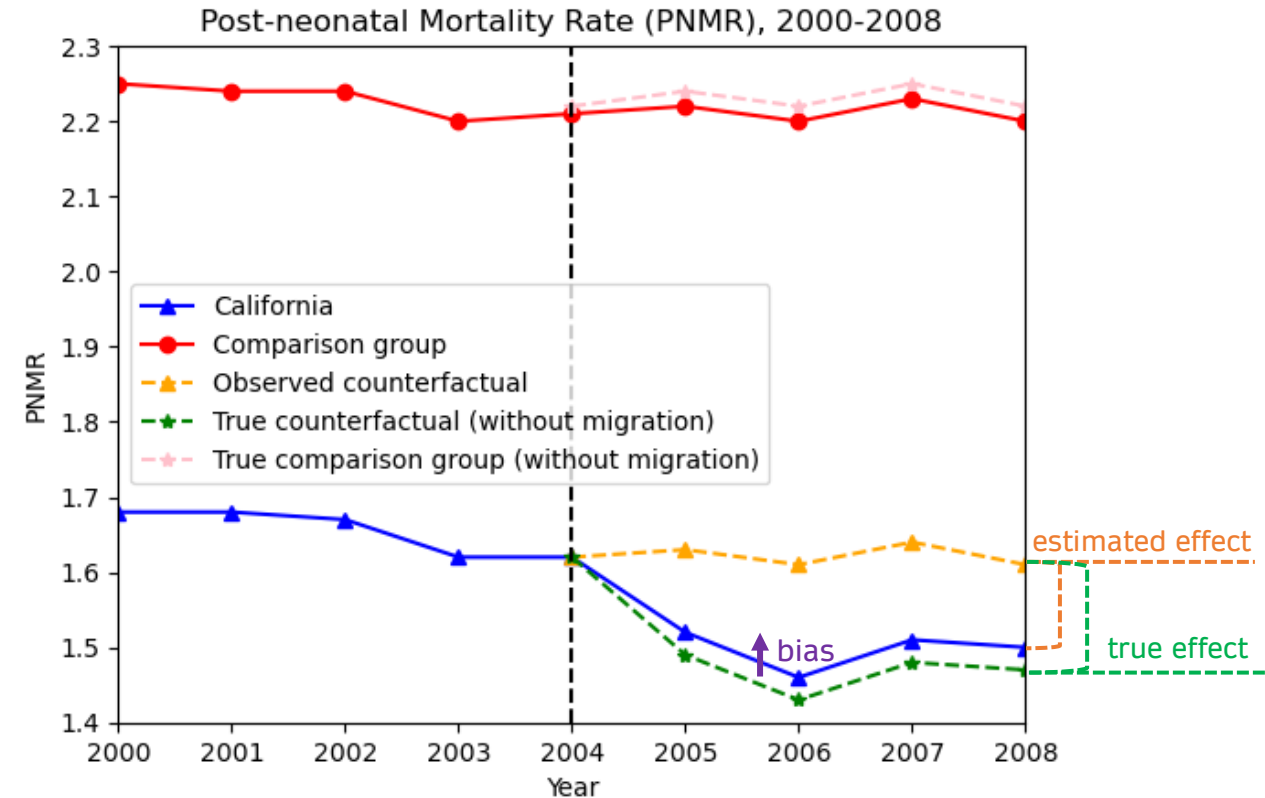
Conclusion

- **Strengths**: reliable data, appropriate method, controls, robustness checks

- Potential **weakness**: most likely downward biased (negative effect overestimated)

- **Suggestion**: could have used a synthetic state instead of the average of all states (too much noise in data)

- May be **externally valid** if threats are addressed and the benefits are adjusted individually for each state

- Overall, compelling enough to inform decision-making on family leave-related policies (with threats addressed)

- What I learned: do not trust even the most comprehensive paper