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## Introduction: Key Question

- Question: Can access to medical marijuana improve parenting?
- Parents with better health → better parenting
- Medical marijuana: painkiller
  - Pro: Treats PTSD, depression, seizures
  - Pro: May substitute worse substances (opioids)
  - Con: may lead to dependence/abuse

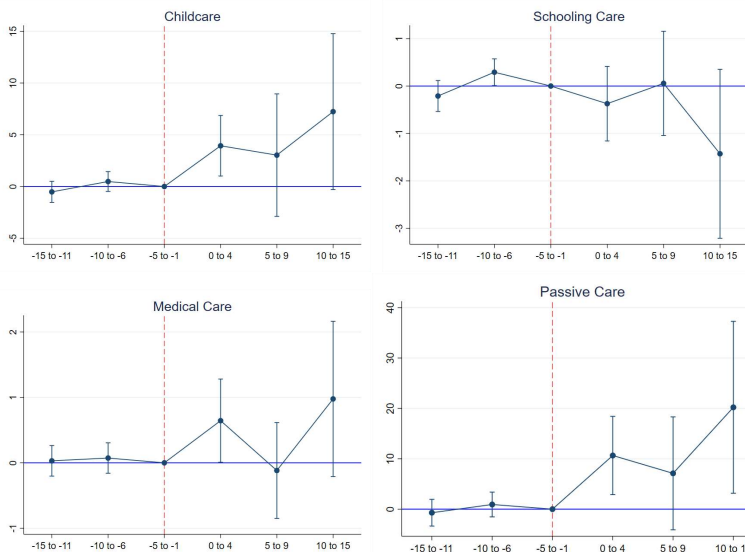
## Medical Marijuana Legalization (MML)

- First legalization: California 1996
- Liberal states do it first: Oregon (1998), Colorado (2000), ...
- Moderate states: Michigan (2008), Illinois (2014), Pennsylvania (2016), ...
- Conservative states keep it illegal: Georgia, Mississippi, Texas, ...
- Timing: MML → dispensary regulations (MMD) → recreational MJ legalization (RML)
  - We study their effects jointly
- International trend: decriminalize (WHO)

## Empirical Strategy

- Data: American Time Use Survey (ATUS) 2003—2019.
- Daily time use in minutes.
- Difference-in-difference (DiD) with staggered timing, event study
- $Y_{i,j,t} = \beta_0 + \beta_1 D_{j,t} + \gamma X_{i,j,t} + \rho_{j,t} + \epsilon_{i,j,t}$
- With state  $j$ , year  $t$ , person  $i$ , treatment indicator  $D_{j,t}$ .
- Effects likely **heterogeneous** across states, over time (culture, economy) → **biased** ATT estimates (Roth et al., 2022), especially with always/never treated groups
- **Solution:**
  1. Sample restriction: states that adopted MML in 2004—2018 (moderate culture states, no always/never treated groups)
  2. Two-stage difference-in-differences (Gardner 2021)

## Results (years from treatment)

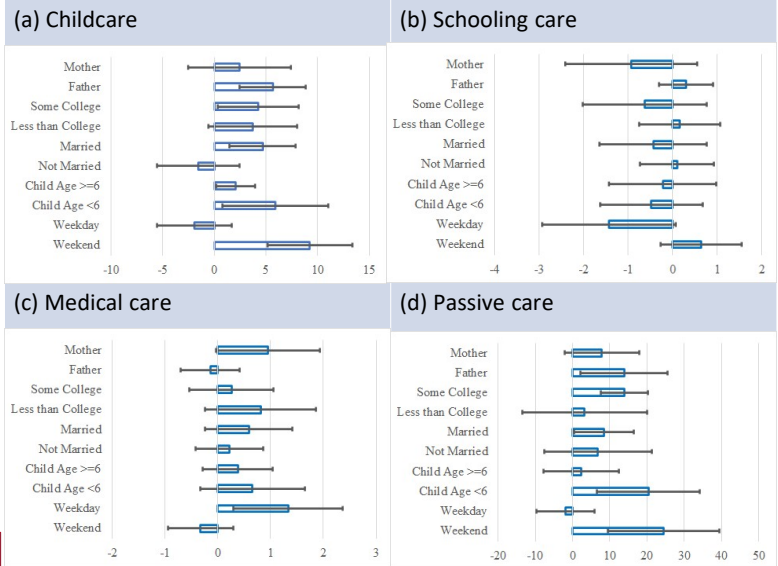


## Contact

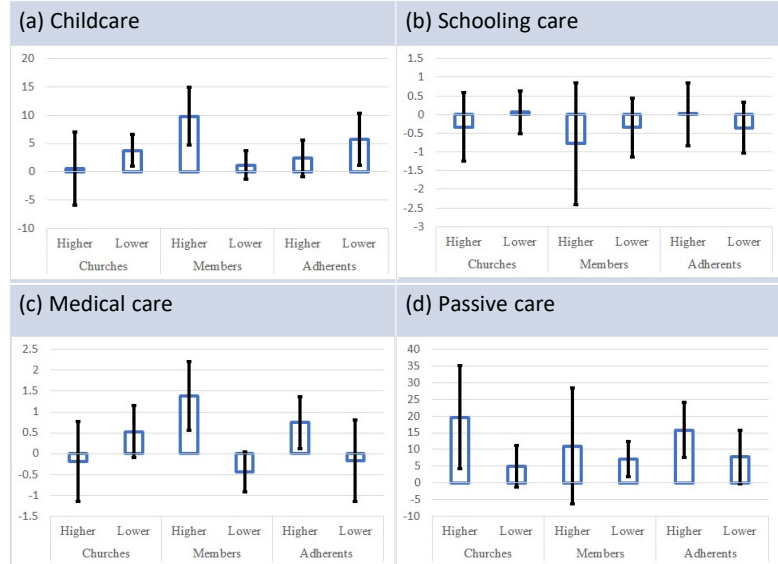
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## Individual Heterogeneity



## State-Level Heterogeneity (by religiosity)



## Discussion

- Childcare, passive care time: big, significant impacts.
- Medical care: small impact. Schooling care: no impact.
- MMD, RML: no effects (in the paper)
- Bigger effects: fathers, better educated, younger children, weekend time
- Bigger effects in states that show, before MML,
  - Higher average religiosity
  - Less average MJ abuse (in the paper)
  - Less average drug-related deaths (in the paper)
- These characteristics related to less MJ abuse
- Suggestive of: **Medical use of MJ → parenting increases**

## References

1. Roth, Jonathan, Pedro HC Sant'Anna, Alyssa Bilinski, and John Poe. "What's Trending in Difference-in-Differences? A Synthesis of the Recent Econometrics Literature." *arXiv preprint arXiv:2201.01194* (2022).
2. Gardner, John. "Two-stage differences in differences." *arXiv preprint arXiv:2207.05943* (2022).