

When Insurance Type Distorts Treatment: Medication Channeling at the Medicaid–CHIP Threshold

Regression-discontinuity (RD) evidence from Medicaid–Children’s Health Insurance Program (CHIP) transitions

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Takeaway. Medication use rises at Medicaid–CHIP threshold; uninsurance stays flat.

pp = percentage points.

+29 pp
Pre, 2016–19

+39 pp
COVID-19

+16 pp
2024

0 pp
Uninsured

1. Why This Margin Matters

Key margin: insurance type, not insurance status. About 1 in 5 children in the United States has a mental, emotional, behavioral, or developmental (MEDB) condition. Roughly **2 million** live near the income line where state rules sort children between **Medicaid** and **separate Children’s Health Insurance Program (CHIP)**.

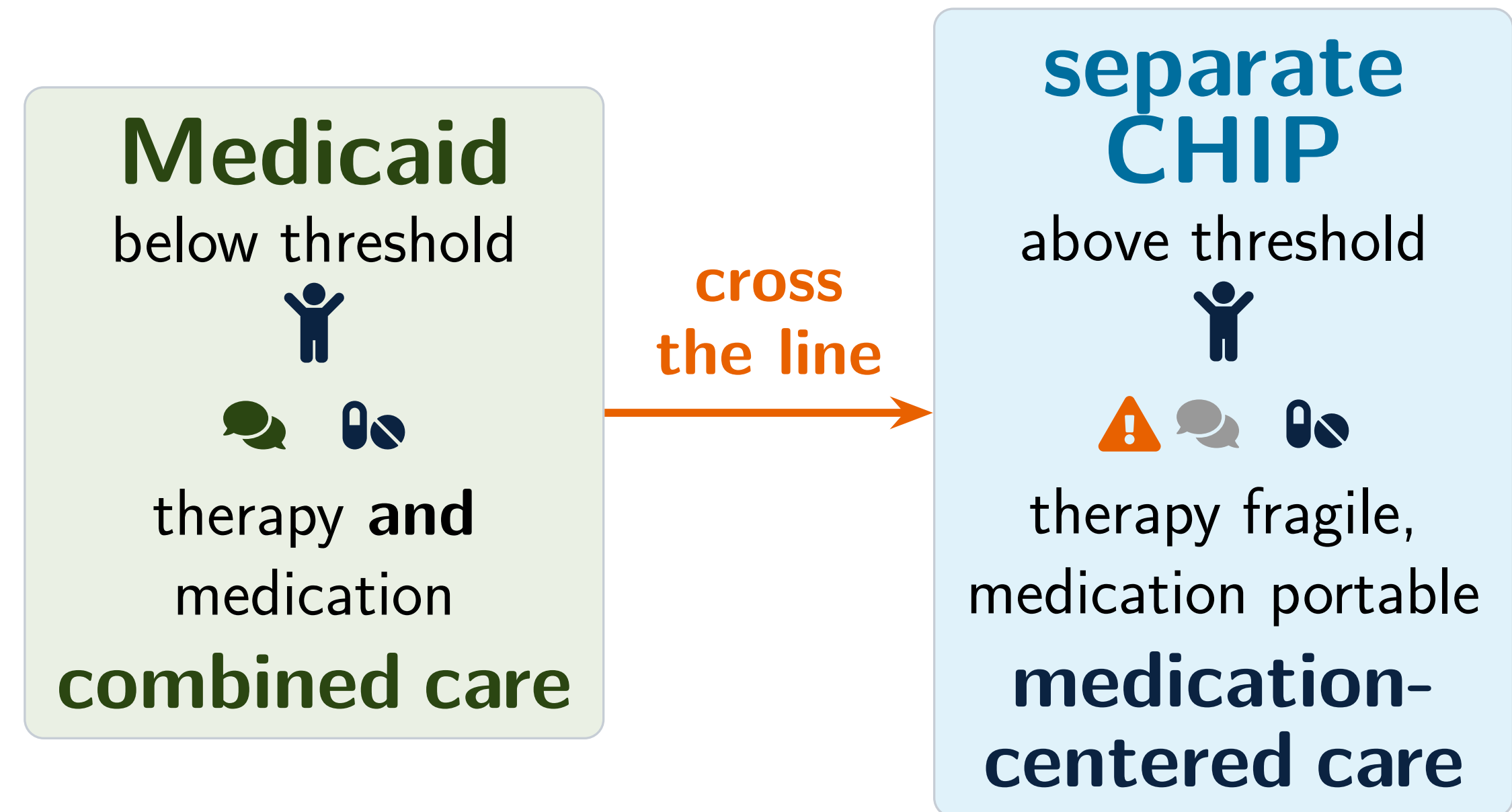
Data: 2016–2024 National Survey of Children’s Health (NSCH) outcomes linked to Kaiser Family Foundation (KFF) Medicaid/CHIP limits and Health Resources and Services Administration (HRSA) local resources.

Both sides are insured. What changes is the **architecture** of coverage, not whether the child is covered. The estimand is therefore the **composition** of care, especially medication-based care.

Does insurance *type* shift the treatment *mix*, even when coverage itself remains?

2. Crossing the Line

At the cutoff, plan architecture changes.



Headline RD estimate: medication use rises by 29 percentage points.

What changes at the line:

EPSDT = Early and Periodic Screening, Diagnostic, and Treatment; BH = behavioral health.

Medicaid (below)

- ▶ EPSDT entitlement
- ▶ No child cost-sharing
- ▶ Broader BH networks

separate CHIP (above)

- ▶ State benchmark benefits
- ▶ Copays up to 5% of income
- ▶ Narrower networks, more prior authorization

Both sides stay insured; only coverage architecture changes. NSCH combines Medicaid, Medicaid-expansion CHIP (M-CHIP), and separate CHIP, so the sort is institutional, not an observed individual transition.

3. Research Design

State-year Medicaid limits define the RD cutoff. Children just below a state’s Medicaid limit get **Medicaid**; those just above get **separate CHIP**. Near the line, the threshold isolates coverage *type*.

Income is measured in Federal Poverty Level (FPL) units; local-linear RD is estimated at $X = 0$:

$$X_{ist} = \text{FPL}_{ist} - \text{MedicaidLimit}_{st},$$

$$Y_{ist} = \alpha + \tau \mathbf{1}[X_{ist} \geq 0] + f(X_{ist}) + Z'_{ist}\gamma + \mu_s + \nu_t + \varepsilon_{ist}.$$

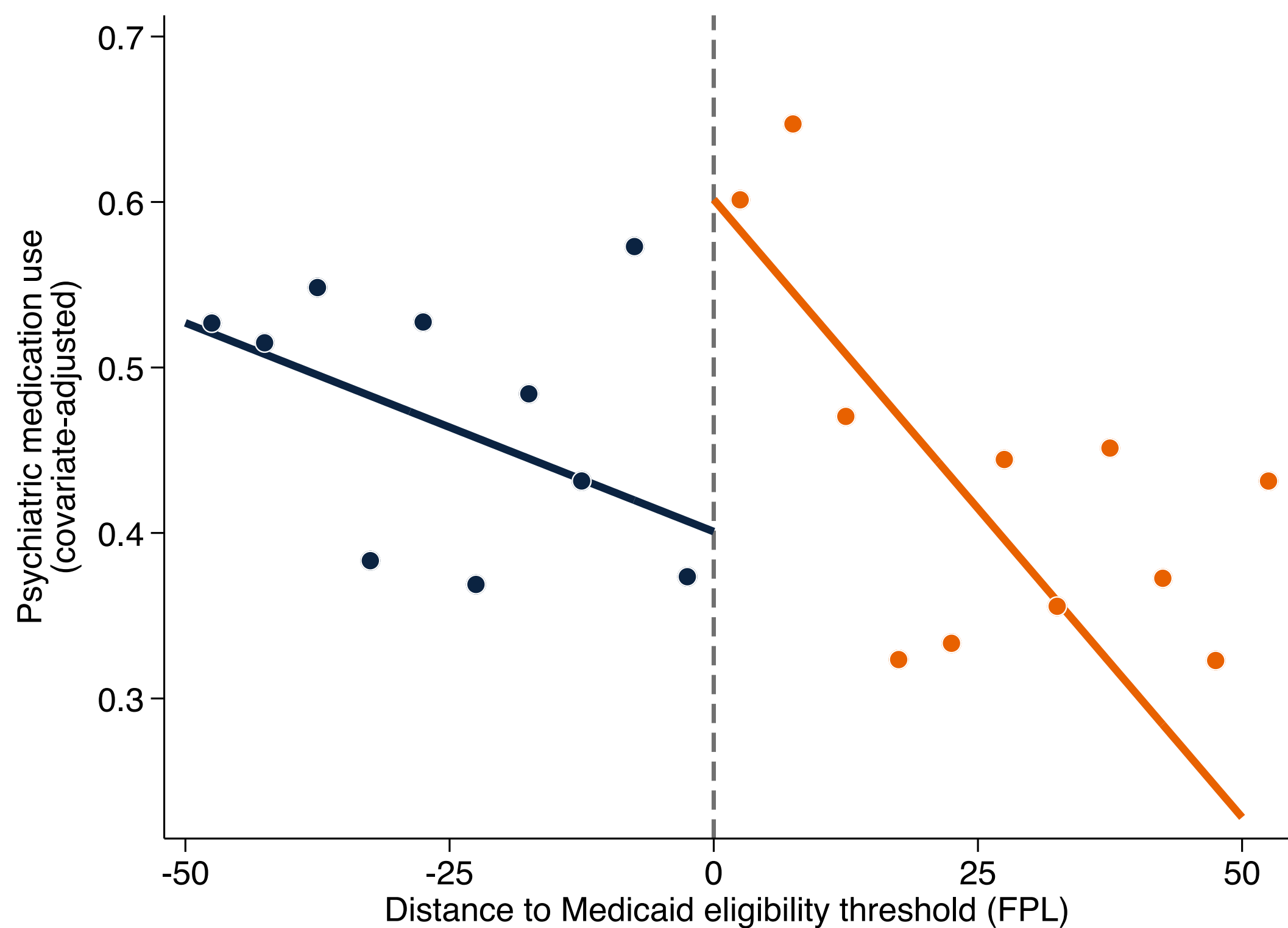
- ▶ **Method:** local-linear RD via rdrobust; triangular kernel, survey weights; $h = 50$, $b = 70$ FPL; bias-corrected confidence intervals (CIs).
- ▶ Covariates, state and year fixed effects; BH and Holm multiple-testing corrections.
- ▶ **Sample:** strict separate-CHIP, non-continuous-eligibility (non-CE), MEDB children, NSCH 2016–2024.

Bandwidth cell	Pre	COVID-19	2024
N_h	998	624	326

τ is the effect on treatment *composition* of crossing into separate CHIP. 2020 and 2023 are dropped as transition years.

4. Headline Result

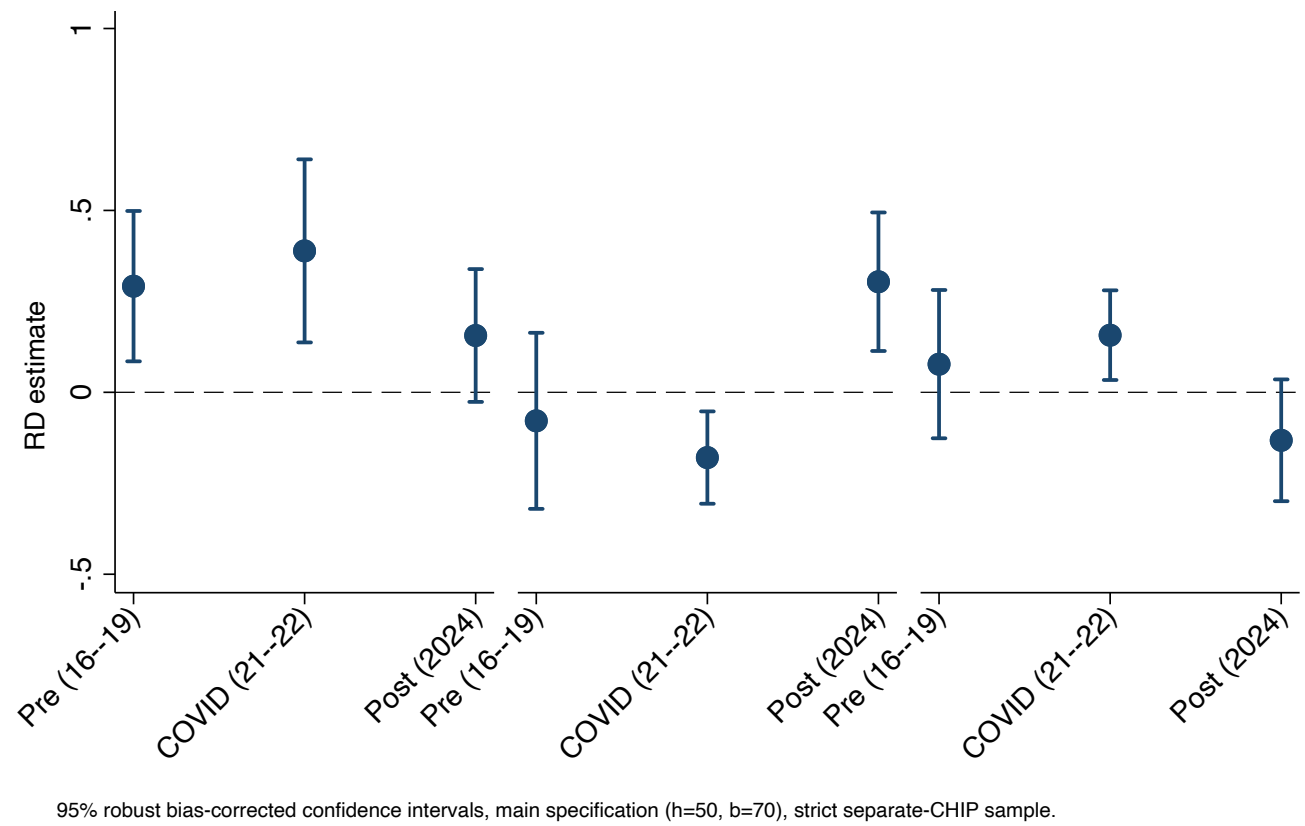
Medication use jumps where Medicaid gives way to CHIP.



Among non-CE MEDB children, covariate-adjusted psychiatric-medication use **steps up where Medicaid gives way to separate CHIP**. The bias-corrected local-linear RD estimate is **+29 percentage points** in the pre period, significant at the 1% level. Uninsurance is flat at the same threshold, so the result points to a change in the **treatment mix**, not coverage loss.

5. Three Regimes, One Pattern

The medication jump persists across policy regimes.



Outcome	Pre	COVID-19	2024
Psychiatric medication	0.292***	0.389***	0.156*
Medicaid/CHIP coverage	−0.078	−0.179***	0.304***
Private insurance	0.077	0.157**	−0.132
Uninsured	0.008	−0.030	0.023

Strict separate-CHIP sample, robust bias-corrected estimates. The 2024 cell is small and marginal, so it stays exploratory. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6. The Mechanism

Therapy-first conditions reveal the mechanism.

Therapy: HIGH cost

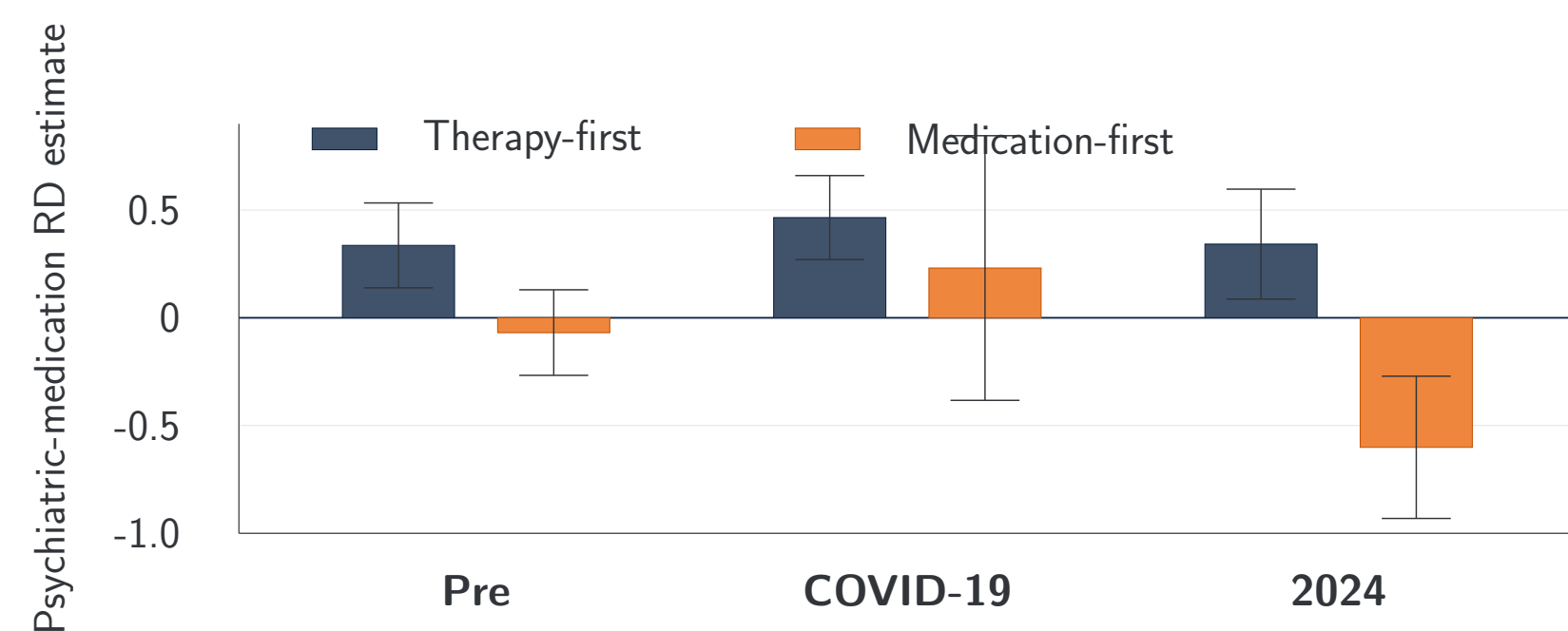
- ▶ Alliance is provider-specific
- ▶ Must be in-network
- ▶ Authorization can restart

Medication: LOW cost

- ▶ Prescription is portable
- ▶ Any prescriber, even the pediatrician
- ▶ Brief medication-management visit

A Medicaid-to-CHIP move can make therapy harder to maintain while medication remains portable. The COVID-19 period sharpened the asymmetry: the Families First Coronavirus Response Act (FFCRA) froze *Medicaid* enrollment but not separate CHIP, and the estimated cliff rose from +29 to +39 percentage points.

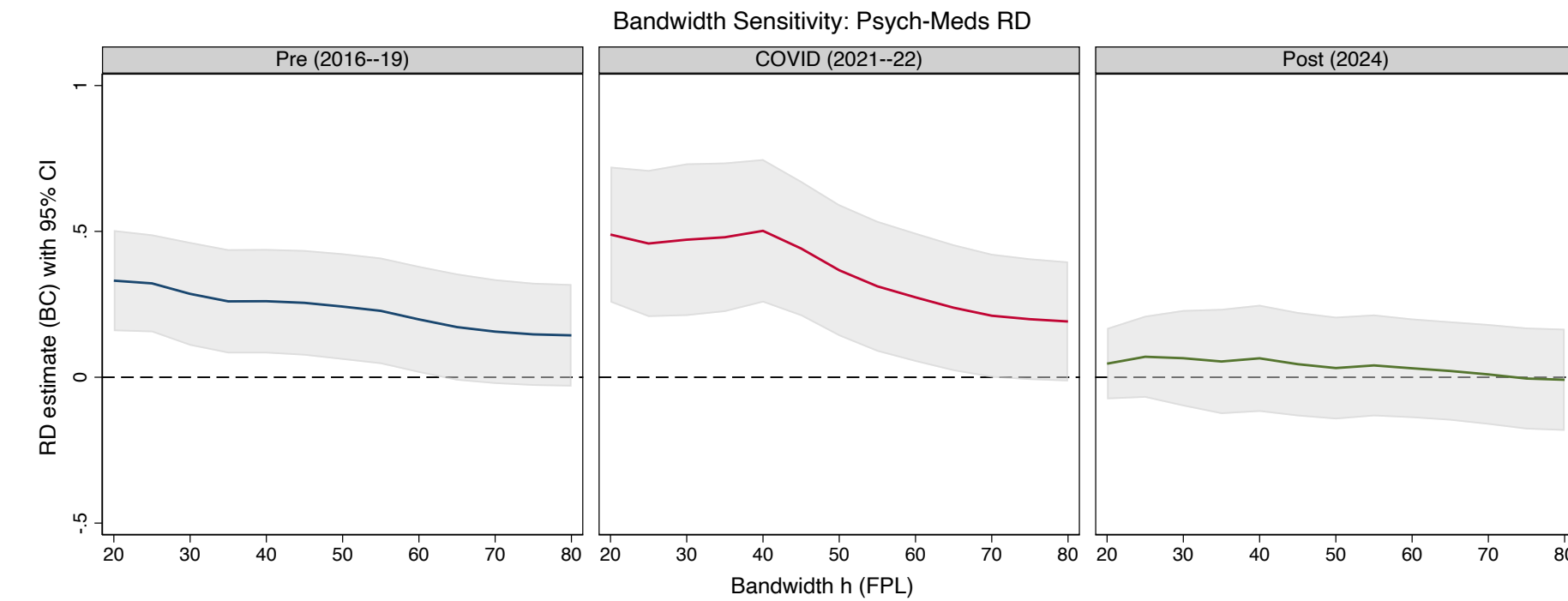
Mechanism prediction. The jump should appear where therapy is usually the clinical first line. It does.



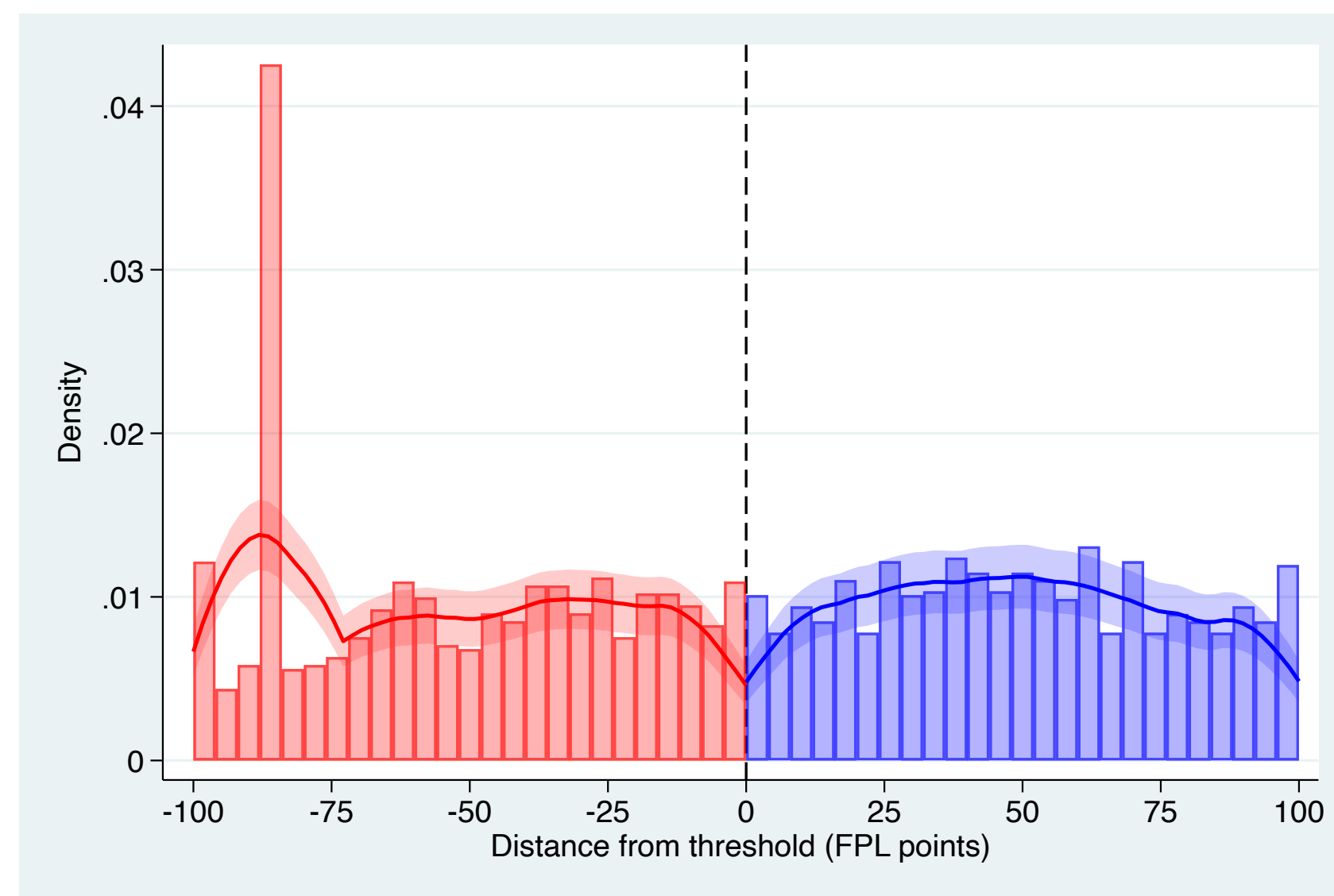
Therapy-first estimates are positive in every regime; isolated ADHD (attention-deficit/hyperactivity disorder) is flat or negative. 95% robust bias-corrected confidence intervals; small ADHD cells make this sign-pattern evidence.

7. Does It Hold Up?

Validity checks support the RD contrast. Stable across bandwidths. The estimate moves little as the estimation window changes.



No sorting at the line. Income density is smooth through the threshold, so families are not manipulating which side they land on.



- ✓ **Non-MEDB null:** no medication jump for children without MEDB conditions.
- ✓ **Covariate balance:** 0/11 reject pre-period; 2024 is read cautiously.
- ✓ **Leave-one-state-out:** pre and COVID-19 estimates stay near the headline.

8. Policy Levers

Continuity policies target the treatment-mix distortion.

1. **Cross-plan credentialing:** preserve therapist relationships across Medicaid ↔ CHIP transitions.
2. **Prior-authorization harmonization:** keep therapy approvals from restarting at plan changes.
3. **Continuous eligibility:** cuts upstream churn; 2024 is not yet powered to confirm attenuation.

Fiscal footprint. About 96,000 children/year in the strict ± 50 FPL band, near 28,000 added medication child-years, roughly \$15–40M/year in gross drug spending.

Bottom line. Insurance type, not coverage loss, changes treatment composition: medication jumps while uninsurance stays flat.

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