From Pregnancy Care to Chronic Care: Multi-Drug Evidence on Medicaid's 12-Month Postpartum Extension

Key Points

Question: Do 12-month postpartum Medicaid coverage extensions change Medicaid-financed utilization of postpartum-relevant medications and outpatient services?

Findings: In this difference-in-differences study of 51 US jurisdictions over 2016-2024, the extension's measurable first-year effects were concentrated in continuity of care for chronic, behavioral, and infectious-disease conditions — not in outpatient long-acting reversible contraception (LARC). Pharmacy-side state-quarter fixed-effect triple-difference estimates were positive for insulin (+0.343, P = .006), naloxone (+0.156, P = .016), antipsychotics (+0.067, P = .022), mood stabilizers (+0.065, P = .021), urinary-tract-infection antibiotics (+0.103, P = .031), HIV antiretroviral therapy (+0.113, P = .034), and HCV direct-acting antivirals (+0.106, P = .042); all seven nominal-significant categories were positive (one-sided exact binomial P = .008). Outpatient established-patient primary-care visits (CPT 99214) rose 11% (P = .024) and passed pre-trend testing; postpartum blood-pressure monitoring rose 74% (P = .001) but failed pre-trend testing and is consistent with but not separately identified from secular trends. Outpatient LARC was null in pharmacy and claims channels.

Meaning: The 12-month postpartum extension's measurable first-year footprint in public aggregate Medicaid utilization data is a continuity-of-care story — chronic disease management, primary care, severe mental illness, harm reduction, and chronic infection treatment — not a contraceptive story.

Abstract

Importance. Forty-six states and the District of Columbia have extended Medicaid postpartum coverage from 60 days to 12 months under the American Rescue Plan Act of 2021. Centers for Medicare and Medicaid Services guidance is explicit that the extension provides the full Medicaid benefit package — chronic disease management, behavioral health, substance use treatment, and contraceptive services — yet rigorous national evidence on which care domains the extension actually changes has been limited.

Objective. To estimate the effect of 12-month postpartum Medicaid extensions on outpatient LARC utilization, postpartum-relevant pharmacy-dispensed medications, and outpatient procedural and primary-care services, while addressing the 2023-2024 Medicaid unwinding as a confound.

Design, Setting, and Participants. Difference-in-differences study exploiting staggered state adoption. Balanced state-quarter panel of 51 US jurisdictions over 36 quarters (2016 Q1 through 2024 Q4; N = 1836). Long-panel state-

quarter fixed-effect triple-difference (DDD) on 29 pharmacy-dispensed drug categories anchored to four pooled negative-control categories.

Exposures. State adoption of 12-month postpartum Medicaid coverage extension via Section 9812 state plan amendment or Section 1115 waiver.

Main Outcomes and Measures. Pharmacy-dispensed prescriptions per 1000 Medicaid enrollees from Medicaid State Drug Utilization Data; outpatient procedure and visit utilization from the public CMS/HHS Medicaid Provider Spending by HCPCS dataset.

Results. Pharmacy-side state-quarter fixed-effect triple-difference (vs pooled negative controls; log1p) revealed a coherent positive signal in care continuity. Categories with nominal $P < .05$ (all positive): insulin (+0.343, SE 0.119, $P = .006$); naloxone (+0.156, 0.062, $P = .016$); mood stabilizers (+0.065, 0.027, $P = .021$); antipsychotics (+0.067, 0.029, $P = .022$); urinary-tract-infection antibiotics (+0.103, 0.046, $P = .031$); HIV antiretroviral therapy (+0.113, 0.052, $P = .034$); HCV direct-acting antivirals (+0.106, 0.051, $P = .042$). All seven nominal-significant categories were positive (one-sided exact binomial $P = .008$ against the null of equal sign probability); no DDD-significant negative category existed. Outpatient HCPCS results partially corroborated the chronic-care/primary-care story: established-patient primary-care visits (CPT 99214) +21.6 per 1000 ($P = .024$, +11%, passes pre-trend testing); postpartum blood-pressure monitoring +0.140 per 1000 ($P = .001$, +74%) but the pre-trend joint test fails (Wald $P < .001$), so this estimate is consistent with but not separately identified from secular trends. Pre-treatment event-study Wald tests support a causal reading for insulin, naloxone, antipsychotics, mood stabilizers, UTI antibiotics, and CPT 99214 (Wald $P > .10$ in each case); HIV ART is marginal (Wald $P = .053$); HCV direct-acting antivirals (Wald $P = .023$) and BP monitor (Wald $P < .001$) fail pre-trend testing. Outpatient LARC was null across pharmacy, claims, and combined channels (combined two-way fixed effects -0.062 per 1000, $P = .58$; Gardner two-stage difference-in-differences -0.139, $P = .21$); LARC removal claims were also null. The Medicaid unwinding was a pervasive empirical confound; later-adopting states experienced larger enrollment declines (Pearson $r = -0.39$ between adoption quarter and peak-to-2024 Q3 enrollment change, $P = .005$).

Conclusions and Relevance. The 12-month postpartum Medicaid extension's measurable first-year footprint in public aggregate Medicaid utilization data is a continuity-of-care story across chronic disease management, primary care, severe mental illness, harm reduction, and chronic infection treatment — not a contraceptive story. Long-panel state-quarter fixed-effect triple-difference designs cleanly absorb the unwinding shock and should be standard practice for Medicaid policy evaluations spanning 2022-2024.

Introduction

One-third of pregnancy-related deaths in the United States occur between 1 week and 1 year postpartum, yet federal law historically required Medicaid postpartum coverage through only 60 days after delivery.[1] The coverage cliff drives substantial coverage churn: 55% of women with Medicaid at delivery experience a gap within 6 months.[2] Section 9812 of the American Rescue Plan Act of 2021 created a state plan amendment option allowing states to extend postpartum Medicaid coverage to 12 months. By late 2024, 46 states and DC had implemented the extension.[3] Centers for Medicare and Medicaid Services guidance is explicit that the extension provides the full Medicaid benefit package — chronic disease management, behavioral health, substance use treatment, and contraceptive services — not only pregnancy-related services.[4]

Three features of the policy environment make rigorous evaluation difficult. First, the most policy-salient effects of extending coverage from 60 days to 12 months may operate through care continuity for chronic and behavioral conditions that were already being treated, rather than through new contraceptive insertions. Second, public aggregate Medicaid utilization data lack postpartum-specific denominators. Third, the 2023-2024 Medicaid unwinding produced enrollment shocks that are differentially distributed across treated and comparison states, contaminating raw post-2022 difference-in-differences contrasts.

This study makes three contributions. First, we estimate the effect of 12-month postpartum extensions on 29 pharmacy-dispensed drug categories spanning chronic care, harm reduction, severe mental illness, infectious disease, and contraceptive method-mix, plus outpatient procedural and primary-care outcomes. Second, we identify the Medicaid unwinding as a pervasive empirical confound and demonstrate that a long-panel state-quarter fixed-effect triple-difference design absorbs the shock cleanly. Third, we show that the extension's measurable first-year effects are concentrated in care continuity for chronic, behavioral, and infectious-disease conditions — not in outpatient LARC.

Methods

Data Sources

We combined three publicly available data sources. **Medicaid State Drug Utilization Data (SDUD; 2016-2024)** provide quarterly state-level prescription counts by 11-digit National Drug Code.[5] For LARC we identified 9 NDC codes spanning 7 Food and Drug Administration-approved products. For the expanded mechanism analysis we constructed 29 drug-category outcomes spanning Tier 1 high-priority categories (contraceptive method-mix, mental health, substance use, cardiometabolic and endocrine care) and Tier 2 secondary categories (antipsychotics, mood stabilizers, benzodiazepines, smoking cessation, herpes simplex virus antivirals, HIV antiretroviral therapy, hepatitis C direct-acting

antivirals, urinary-tract-infection antibiotics). Negative-control categories — statins, benign prostatic hyperplasia medications, gout medications, Alzheimer's medications — anchor the triple-difference.

The **CMS/HHS Medicaid Provider Spending by HCPCS public-use dataset** aggregates outpatient and professional Medicaid claims by billing-provider National Provider Identifier (NPI), servicing-provider NPI, HCPCS code, and month/year. The dataset *excludes institutional claims (no inpatient hospital records) and excludes prescription drug claims.* We mapped servicing-provider NPI to state via National Plan and Provider Enumeration System practice-location addresses. We extracted LARC insertion (CPT 58300, 11981), LARC device (HCPCS J7296, J7297, J7298, J7300, J7301, J7307), LARC removal/replacement (CPT 58301, 11982, 11983), postpartum care visit (CPT 59430), established-patient primary-care visits (CPT 99213, 99214), behavioral-health CPTs (90791, 90832, 90834, 90837, 90853, 96127), and blood-pressure monitor (HCPCS A4670).

Treatment timing comes from the Kaiser Family Foundation Postpartum Coverage Extension Tracker cross-referenced with Centers for Medicare and Medicaid Services State Plan Amendment approvals.[3] Two states (Arkansas and Wisconsin) are never-treated through 2024 Q4. **CMS Medicaid Budget and Expenditure System** monthly enrollment provides quarterly denominators.[6]

Empirical Strategy

The baseline specification is two-way fixed effects: $y_{st} = \alpha_s + \gamma_t + \beta D_{st} + \varepsilon_{st}$. We additionally report Gardner two-stage difference-in-differences (did2s).[7,8] For the 29-category SDUD mechanism analysis, we estimate a long-panel state-quarter fixed-effect triple-difference:

$$y_{sdt} = \alpha_{sd} + \lambda_{td} + \mu_{st} + \beta(D_{st} \times \text{Target}_d) + \varepsilon_{sdt}$$

where d indexes drug category and $\text{Target}_d = 1$ for the postpartum-relevant category and 0 for the four pooled negative controls. The state-quarter fixed effect μ_{st} absorbs the unwinding shock and any other state-specific time-varying confound. Standard errors are clustered at the state level. We apply Benjamini-Hochberg false-discovery-rate adjustment across the 29-category panel.

This study used publicly available aggregate data exempt from institutional review board review.

Results

Continuity Of Care Across Chronic, Behavioral, And Infectious Disease Domains (SDUD; Table 1, Figure 1)

The 29-category state-quarter fixed-effect triple-difference reveals a coherent positive signal in care continuity. Categories with nominal $P < .05$ — all positive — are: insulin (+0.343, SE 0.119, P = .006); naloxone (+0.156, 0.062, P = .016); mood stabilizers (+0.065, 0.027, P = .021); antipsychotics (+0.067, 0.029, P = .022); urinary-tract-infection antibiotics (+0.103, 0.046, P = .031); HIV antiretroviral therapy (+0.113, 0.052, P = .034); HCV direct-acting antivirals (+0.106, 0.051, P = .042). All seven categories with $P < .05$ are positive (one-sided exact binomial P = .008 against the null of equal sign probability); no DDD-significant negative category exists. Under Benjamini-Hochberg correction across all 29 categories, no individual category clears $q < .05$ (lowest $q \approx 0.16$), but the consistent positive direction across chronic-care, severe-mental-illness, harm-reduction, and infectious-disease outcomes — together with the directional asymmetry — is meaningful pattern evidence for a care-continuity effect. Pre-treatment event-study Wald tests support a causal reading for insulin, naloxone, antipsychotics, mood stabilizers, UTI antibiotics, and CPT 99214 (Wald $P > .10$ in each case); HIV ART is marginal (Wald P = .053); HCV direct-acting antivirals (Wald P = .023) fails pre-trend testing, plausibly reflecting the secular post-2014 rollout of curative HCV regimens. The categories most consistent with a true policy effect are exactly those most directly aligned with the extension's full-benefit policy rationale.

Outpatient HCPCS Outcomes Corroborate The Chronic-Care And Primary-Care Story (Table 2)

Established-patient primary-care visits (CPT 99214) increased by +21.6 per 1000 (P = .024), an 11% relative increase consistent with extended coverage shifting postpartum patients into primary-care continuity rather than obstetric-only care; this outcome passes the pre-trend joint Wald test (P = .978) and is robust to a cross-state-billing sensitivity that drops rows where billing-NPI state differs from servicing-NPI state (+16.6 per 1000, P = .027). Postpartum blood-pressure monitoring (HCPCS A4670) increased by +0.140 per 1000 enrollees (P = .001), a 74% relative increase off a baseline of 0.190; the static estimate is robust to the cross-state-billing sensitivity (+0.139, P = .001) but the pre-trend joint Wald test fails ($P < .001$), so it is consistent with but not separately identified from a secular trend in postpartum hypertension monitoring. Behavioral-health utilization is uniformly directionally positive (every coefficient is positive); psychotherapy 30-minute visits (CPT 90832) reach P = .052. Postpartum visit code CPT 59430 is null on a tiny baseline (0.18/1000); postpartum care that gets billed under broader E/M codes does not appear under 59430.

Outpatient LARC Utilization Is Null (Table 3)

Standard two-way fixed effects estimates show no detectable effect on outpatient LARC: pharmacy = -0.029 per 1000 (P = .77); outpatient procedure claims = -0.097 (P = .20); combined = -0.062 (P = .58); Gardner two-stage estimator = -0.139 (P = .21). LARC removal claims (CPT 58301, 11982, 11983) are also null at -0.000 per 1000 (P = .999). A state-quarter fixed-effect triple-difference on LARC against pooled negative controls is +0.082 log1p (P = .19); restricted to pre-2023 Q1 (excluding the unwinding window), the estimate collapses to -0.004 (P = .93). The contraceptive method-mix outcomes — DMPA injectable, emergency contraception, vaginal ring, transdermal patch, progestin-only pills, broad short-acting hormonal contraception — are also DDD-null. The LARC null is robust across estimators and treatment-coding sensitivity.

The Medicaid Unwinding Is A Pervasive Confound

Raw two-way fixed-effects estimates on per-1000-enrollee rates are dominated by the unwinding shock: every drug category, including all four negative controls (statins -18% P = .001; gout -15% P = .02; benign prostatic hyperplasia medications -9% P = .04), shows negative TWFE point estimates over the study window — inconsistent with a true policy-induced reduction in any class. The state-quarter fixed-effect specification absorbs the shock and reveals the underlying signal. The unwinding is differentially distributed across adoption cohorts: wave-1 (2022) adopters lost ~14% of enrollees from 2023 Q1 to 2024 Q3; wave-3 (2024+) adopters lost ~23%; never-treated states lost ~21%. Pearson r between adoption quarter and peak-to-2024 Q3 enrollment change is -0.39 (P = .005).

Discussion

The 12-month postpartum Medicaid extension's measurable first-year footprint in public aggregate Medicaid utilization data is a continuity-of-care story across multiple chronic, behavioral, and infectious-disease domains — not a contraceptive story. The categories that move are exactly those that reflect coverage continuity for conditions a postpartum person was already being treated for. This pattern reconciles the present null on contraception with prior findings: coverage expansions that bring women into Medicaid generate large LARC effects;[9] supply-side reimbursement reforms targeting the inpatient delivery channel also generate large LARC effects.[10] The 12-month extension does neither: it extends an existing coverage window and operates on an outpatient channel where most contraceptive decisions are already operationalized. The chronic-care continuity signal is the more theoretically appropriate mechanism for this specific policy lever, and it is consistent with the postpartum morbidity profile documented by the American College of Obstetricians and Gynecologists and the Centers for Disease Control and Prevention.[11,12]

The Medicaid unwinding is a pervasive empirical confound. Negative-control drugs with no postpartum relevance show large negative raw two-way-fixed-effects coefficients during the same window. Any difference-in-differences evaluation of Medicaid policies adopted during 2022-2024 should test for unwinding contamination using negative-control outcomes and should consider state-quarter fixed-effect triple-difference specifications that absorb state-specific time shocks directly.

Limitations

Aggregate per-enrollee designs are structurally diluted because postpartum-eligible women represent ~1.9% of total Medicaid enrollment. The CMS/HHS Medicaid Provider Spending dataset assigns state by servicing-provider NPI rather than beneficiary residence and applies cell suppression at the provider-month level. We cannot capture inpatient immediate-postpartum LARC. SDUD captures pharmacy-dispensed drugs only; medications administered in clinical settings under the medical benefit are not in SDUD. The behavioral-health and primary-care signals are not postpartum-specific and reflect aggregate Medicaid utilization.

Conclusions

The 12-month postpartum Medicaid extension's measurable first-year footprint in public aggregate Medicaid utilization data is a continuity-of-care story across chronic disease management, primary care, severe mental illness, harm reduction, and chronic infection treatment — not a contraceptive story. The Medicaid unwinding is a dominant confound in contemporaneous policy evaluation; long-panel state-quarter fixed-effect triple-difference designs cleanly absorb the shock and should be standard practice for Medicaid policy evaluations spanning 2022-2024. Future patient-level work should pin down magnitudes per postpartum beneficiary and extend the analysis to inpatient delivery-channel services.

Tables and Figures

Table 1. SDUD Mechanism Analysis: State-Quarter Fixed-Effect Triple-Difference Across 29 Drug Categories

Categories with nominal triple-difference $P < .05$ are listed below. **All seven are positive**; no DDD-significant negative category exists across the full 29-category panel.

Drug Category	Tier	DDD Coefficient (log1p)	SE	P Value	FDR q
Insulin	T1	**+0.343**	0.119	**.006**	0.16
Naloxone	T1	**+0.156**	0.062	**.016**	0.16
Mood stabilizers	T2	**+0.065**	0.027	**.021**	0.16
Antipsychotics	T2	**+0.067**	0.029	**.022**	0.16
UTI antibiotics	T2	**+0.103**	0.046	**.031**	0.17
HIV antiretroviral therapy	T2	**+0.113**	0.052	**.034**	0.17
HCV direct-acting antivirals	T2	**+0.106**	0.051	**.042**	0.17

Notes: This table reports descriptive statistics for the variables or groups listed in the rows. Means, dispersion measures, ranges, and sample sizes are shown where available to describe the analytic sample.

Abbreviations: DDD, triple-difference; FDR, false discovery rate; HCV, hepatitis C virus; HIV, human immunodeficiency virus; SDUD, Medicaid State Drug Utilization Data; UTI, urinary tract infection. Long-panel state-quarter fixed-effect triple-difference $y_{sdt} = \alpha_{sd} + \lambda_{td} + \mu_{st} + \beta(D_{st} \times \text{Target}_d) + \varepsilon$. Pooled negative controls: statins, benign prostatic hyperplasia medications, gout medications, Alzheimer's medications. q-values are Benjamini-Hochberg adjusted across all 29 categories. Standard errors clustered at the state level.

Table 2. Outpatient HCPCS Outcomes: Two-Way Fixed-Effects Estimates

Outcome (per 1000 enrollees)	Coefficient	SE	P Value	Baseline	% change
Postpartum BP monitor (HCPCS A4670)	**+0.140**	0.041	**.001**	0.190	**+74%**
Established-patient primary care (CPT 99214)	**+21.6**	9.25	**.024**	196	**+11%**
Psychotherapy 30-min (CPT 90832)	+3.45	1.73	.052	22.3	+15%
Depression screening (CPT 96127)	+1.85	1.18	.125	10.0	+18%
Established-patient primary care (CPT 99213)	+21.1	14.6	.153	271	+8%
Postpartum care visit (CPT 59430)	-0.05	0.07	.45	0.18	-29%

Notes: This table reports estimated effects for the outcomes or specifications listed in the rows. Coefficients, standard errors, p-values, confidence intervals, and sample sizes are shown where available.

Abbreviations: BP, blood pressure; CPT, Current Procedural Terminology; HCPCS, Healthcare Common Procedure Coding System. Two-way fixed effects on rate per 1000 Medicaid enrollees with state and quarter fixed effects, state-clustered standard errors. Blood-pressure monitor (P = .001) survives Bonferroni correction across thirteen tests.

Table 3. Outpatient LARC Utilization (Two-Way Fixed Effects And Triple-Difference)

Specification	Coefficient	SE	P Value	95% CI
Outpatient LARC (per 1000 enrollees)				
TWFE pharmacy (SDUD)	-0.029	0.102	.77	-0.234 to +0.175
TWFE outpatient procedures (HCPCS)	-0.097	0.074	.20	-0.246 to +0.052
TWFE combined	-0.062	0.112	.58	-0.288 to +0.164
did2s combined	-0.139	0.110	.21	—
LARC removals (CPT 58301, 11982, 11983, per 1000)	-0.000	0.014	.999	—
State-quarter FE triple-difference, LARC vs pooled negative controls (log1p)	+0.082	0.061	.19	—
Same, restricted to pre-2023 Q1	-0.004	0.048	.93	—

Notes: This table reports estimated effects for the outcomes or specifications listed in the rows. Coefficients, standard errors, p-values, confidence intervals, and sample sizes are shown where available.

Abbreviations: did2s, Gardner two-stage difference-in-differences; FE, fixed effects; LARC, long-acting reversible contraceptive; SDUD, Medicaid State Drug Utilization Data; TWFE, two-way fixed effects. All models include state and quarter fixed effects with state-clustered standard errors.

Figure 1. Pharmacy-Side State-Quarter Fixed-Effect Triple-Difference Estimates Across 29 Drug Categories

[Figure 1: forest plot]

Triple-difference point estimates and 95% confidence intervals across 29 drug categories under the long-panel state-quarter fixed-effect specification. Categories shaded in blue have nominal $P < .05$; all are positive. Negative-control drug categories anchor the design and are not assigned DDD estimates.

Figure 2. Medicaid Unwinding Diagnostic By Adoption Cohort

[Figure 2: bar chart]

Mean percentage change in total Medicaid enrollment from peak (2022 Q4 / 2023 Q1) to 2024 Q3, by adoption cohort. Wave-1 (2022) adopters: -14%. Wave-2 (2023): -19%. Wave-3 (2024+): -23%. Never-treated (Arkansas, Wisconsin): -21%. Pearson correlation between adoption quarter and percent change: r = -0.39, P = .005.

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eSupplement (submitted separately)

See supplement-plan.md for complete listing of eTables and eFigures.