Medicaid Enrollment Gaps Before, During, and After Pregnancy: Evidence from Administrative Data

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ABSTRACT

Introduction: Consistent access to health care before, during, and after pregnancy is critical in the United States, where high rates of maternal morbidity and pregnancy-related mortality persist. Medicaid plays a critical role in financing health care coverage for pregnancy and childbirth in the US, including postpartum care.

Methods: We used Wisconsin birth certificate records linked to Medicaid enrollment files for 2009 through 2018 to determine maternal Medicaid coverage spanning the 12 months pre-pregnancy to 12 months postpartum. Covariates included age, race/ethnicity, parity, education, and marital status. Analysis included descriptive statistics and log-binomial regression to predict adjusted risk of postpartum Medicaid coverage loss.

Results: Of 267 416 Medicaid-covered births in our sample, 50.5% (n=134 970) were continuously enrolled while 33.1%, (n=88 425) were never enrolled during the 12 months pre-pregnancy. Most (97.9%, n=261 713) were enrolled at some time during the prenatal period, and a majority of mothers (86.1%, n=230 325) were enrolled consistently throughout the first postpartum year. Postpartum unenrollment peaked in month 3, when 34.2% of unenrollment occurred. Those younger, married, and with lower parity had higher risk of unenrollment. Notably, those reporting non-Hispanic Black were at the lowest risk, while non-Hispanic Asian/Pacific Islanders were at a higher risk of unenrollment.

Conclusions: The extension of postpartum coverage to 90 days may address one-third of the postpartum Medicaid loss observed, postponing coverage loss an additional month. A full 12-month postpartum Medicaid extension would support postpartum health by ensuring health care access during this critical period.

INTRODUCTION

Prenatal care is a central strategy to improve birth outcomes and reduce disparities in infant and maternal mortality. In 2006, recommendations for improvements in preconception care were made by the US Centers for Disease Control and Prevention and the American College of Obstetricians and Gynecologists.[1] Preconception care provides the opportunity to identify and address modifiable risk factors and improve maternal and infant health.[2] More recently, attention has focused on postpartum care, sometimes termed the fourth trimester, which provides follow-up care for delivery complications, family planning, and care for the management of chronic conditions.[3]

Ensuring consistent access to health care before, during, and after pregnancy is especially critical in the US, where high rates of maternal morbidity and pregnancy-related mortality persist.[4,5] Medicaid currently covers pregnancy-related health care for approximately 41% of the nearly 4 million annual births.[6] In addition to traditional Medicaid, the Children's Health Insurance Program (CHIP) is used for pregnancy coverage in some settings. Federal Medicaid requires minimum coverage to extend through the month that includes the 60th postpartum day. Following the passage of the Affordable Care Act (ACA), states that expanded Medicaid did so by expanding adult eligibility up to 138% of the federal poverty level (FPL), which is considerably lower than most states' pregnancy eligibility.[7] Children of mothers eligible for or receiving Medicaid during pregnancy automatically qualify for coverage through the first year of life.

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Given that those with higher income levels can qualify for Medicaid during pregnancy but not after delivery, it is not surprising that enrollment changes and disruptions are common postpartum.[8] Analysis of the Medical Expenditure Panel Survey (pre-ACA) showed about half of those who had been uninsured during 9 months prior to pregnancy acquired Medicaid coverage for prenatal care; however, 5% of women with Medicaid reported coverage disruptions during the first 6 months postpartum.[8] Post-ACA, data from the National Health Interview Survey showed rates of uninsurance during pregnancy fell significantly, especially for low income mothers.[9] However, a study using the Pregnancy Risk Assessment Monitoring System (PRAMS) survey of postpartum mothers in 43 states found 22% of those with a Medicaid-covered live birth were uninsured after 3 months postpartum, and rates of coverage loss were 3 times higher in non-Medicaid expansion states than expansion states.[10] Another study using PRAMS data for 2015-2018 found that over half of mothers with Medicaid-covered births experienced uninsurance in the preconception and postpartum periods.[11]

Table 1. Characteristics of Individuals with Postpartum Medicaid Unenrollment Following a Live Birth, Wisconsin 2009-2018

	Overall N=267 416	Ever Unenrolled Postpartum N = 37 091	Continuous Coverage Postpartum N = 230 325
Variable	**% (n)**	**% (n)**	**% (n)**
Age (years)			
<19	5.7 (15 329)	8.7 (3229)	5.3 (12 100)
19 – 24	44.3 (118 481)	34.6 (12 833)	45.9 (105 648)
25 – 34	41.4 (110 612)	48.6 (18 011)	40.2 (92 601)
35+	8.6 (22 994)	8.1 (3018)	8.7 (19 976)
Race/ethnicity			
non-Hispanic White	54.6 (146 046)	59.0 (21 888)	53.9 (124 158)
non-Hispanic Black	19.4 (51 890)	14.7 (5468)	20.2 (46 422)
Hispanic	16.1 (43 176)	15.1 (5588)	16.3 (37 588)
non-Hispanic Asian/Pacific Islander	1.9 (5171)	2.8 (1036)	1.8 (4135)
non-Hispanic Other/multiple/unknown	2.9 (7727)	3.0 (1131)	2.9 (6596)
Parity			
First birth	55.9 (149 390)	65.2 (24 179)	54.4 (125 211)
Second or greater birth	44.0 (117 681)	34.7 (12 854)	45.5 (104 827)
Marital status			
Married	32.4 (86 774)	42.3 (15 695)	30.9 (71 079)
Unmarried	67.5 (180 625)	57.7 (21 390)	69.1 (159 235)
Completed education			
Not high school graduate	20.6 (55 071)	20.4 (7570)	20.6 (47 501)
High school graduate	41.0 (109 760)	35.8 (13 281)	41.9 (96 479)
Some college or more	37.7 (100 692)	43.1 (15 968)	36.8 (84 724)

Because of differences in state Medicaid eligibility criteria, the duration of postpartum coverage varies across the country.[9,11-13] Since 2014, some states extended postpartum coverage through Section 1115 Waivers.[14] Others shifted towards permanent policy pathways, including provisions in the American Rescue Plan Act (2021) to extend postpartum coverage to 12 months.[15]

In 2022, the State of Wisconsin submitted a 1115 Postpartum Coverage Demonstration Waiver to expand postpartum Medicaid coverage. However, Wisconsin requested a modest extension of coverage from 60 to 90 days.[16] It is of critical importance, therefore, to understand Wisconsin Medicaid insurance loss patterns in the postpartum period to better understand how this policy change may impact access to health care coverage during the postpartum period.

METHODS

Study Setting

We studied all Wisconsin residents delivering in-state live births from 2009 through 2018. Health disparities in Wisconsin are notable; the pregnancy-related maternal mortality ratio is 5 times higher for Black mothers than White mothers, and the Black infant mortality rate is among the highest in the US.[17,18] Though Wisconsin did not expand Medicaid, the state historically has had more generous eligibility thresholds for pregnant people (300% FPL) and adults (100% FPL, previously 200%) than all nonexpansion states, with a threshold for pregnancy coverage on par with the most generous expansion states.[19,20] In 2014, changes in the Wisconsin Medicaid program led to new premiums for some adults with incomes >100% FPL, as well as elimination of prior enrollment waitlists.[21]

During the study period, 3 Medicaid coverage plans were available to pregnant individuals through BadgerCare Plus (BC Plus). BC Plus provided coverage for low-income residents using funding from Medicaid and CHIP. The BC Plus Prenatal Program, funded through CHIP, provided prenatal coverage for those ineligible for BC Plus because of their immigration or incarceration status. BC Plus Emergency Services covered emergency care for those who did not qualify for either BC Plus due to their immigration status or the Prenatal Program. Only BC Plus included comprehensive postpartum coverage through the end of the month in which the 60th day occurs; those covered by the Emergency Services and Prenatal Programs qualify for emergency services coverage only.[22] Individuals not enrolled at the time of obstetrical delivery could receive coverage for delivery services only.

Data Sources and Study Sample

We used data from Big Data for Little Kids (BD4LK), an integrated data source that merges birth certificate records

of all Wisconsin resident in-state live births with the Institute for Research on Poverty's Wisconsin Administrative Data Core, which includes Medicaid claims and enrollment files. Files include coverage from both Medicaid and CHIP sources and, henceforth, coverage from either source is referred to as Medicaid coverage.[23]

This study was approved by the University of Wisconsin-Madison Institutional Review Board. "Mothers" is used throughout this study to align with terminology used in Medicaid policy and previous literature, but we recognize that health care and insurance during the perinatal period includes birthing people of all genders.

The study sample included all 2009-2018 birth records that linked to a paid Medicaid claim for delivery. For plural births, we selected the first delivery; if mothers had multiple live, Medicaid-covered deliveries during our sample period, each was represented as a separate observation. From a sample of 268 011 Medicaid-covered live births to 181 294 unique mothers, we excluded those missing both a clinical estimate of gestational age and last menstrual period (n = 577) because we could not determine the prenatal period and a small number (n=18) of mothers with multiple birth records and birth intervals between 4 and 240 days that were shorter than the gestational age of the later birth, as these records were considered to contain administrative errors. From the original sample (n = 267 416), 99.8% were included in the primary analysis. In the exploratory analysis of infant Medicaid/CHIP coverage, 98.9% of maternal enrollment records (n = 264 372) were linked to an infant enrollment record.

Table 2. Medicaid Enrollment Rates Among all Mothers with a Medicaid-Covered Live Birth, by Coverage Period, Wisconsin 2009-2018

Period	Continuous Coverage[a] % (n)	Some Coverage % (n)	No Coverage % (n)
Pre-pregnancy, 12 months			
All births	50.5 (134 970)	16.5 (44 021)	33.1 (88 425)
First live births	35.2 (52 562)	17.1 (25 573)	47.7 (71 255)
Prenatal			
All births	97.9 (261 713)	n/a[b]	2.1 (5703)
First live births	97.4 (145 467)	n/a[b]	2.6 (3923)
Postpartum, 12 months			
All births	86.1 (230 325)	12.6 (33 669)	1.3 (3422)
First live births	83.8 (125 211)	14.9 (22 213)	1.3 (1966)

[a]Continuous coverage allows for up to 2 months of enrollment gaps (or administrative missingness) during that period.

[b]There is presumptive eligibility for pregnant individuals; as such, we assume continuous coverage throughout the prenatal period once enrolled.

Table 3. Relative Risk of Postpartum Medicaid Unenrollment Following a Live Birth, Adjusted for All Covariates, Wisconsin 2009-2018

Variable	Adjusted Relative Risk (95% CI)[a]
Age Group, years	
<19	1.68 (1.62 – 1.74)
19 – 24	ref
25 – 34	1.12 (1.10 – 1.15)
35+	1.09 (1.04 – 1.13)
Race/ethnicity	
Non-Hispanic White	1.22 (1.18 – 1.25)
Non-Hispanic Black	ref
Hispanic	1.09 (1.05 – 1.13)
Non-Hispanic Asian/Pacific Islander	1.36 (1.29 – 1.43)
Non-Hispanic Other/multiple/unknown	1.18 (1.13 – 1.25)
Parity	
First live birth	1.57 (1.54 – 1.61)
Second or greater birth	ref
Marital status	
Married	1.61 (1.58 – 1.65)
Unmarried	ref

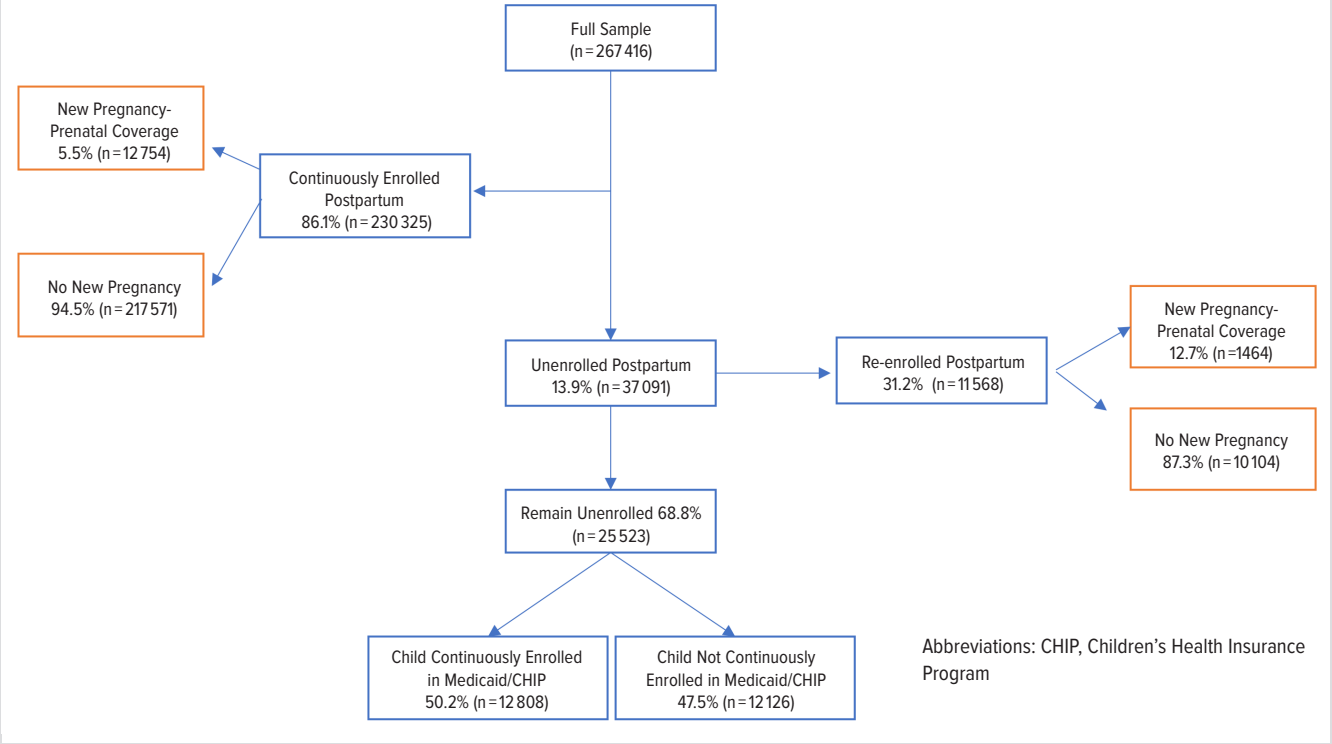
[a]Results from a log-binomial regression where the dependent variable is any postpartum unenrollment (regardless of reenrollment) adjusted for age group, race/ethnicity, parity, and marital status, clustered births from same mother using general estimating equations.

Variables

The preconception period was defined as the 12 months prior to the month of estimated date of conception (EDC); the prenatal period spanned the month of the EDC through the delivery month; and the postpartum period was the 12 months following the delivery month. Therefore, Medicaid enrollment data were extracted for 2008-2019 to represent the full observation period for all mothers. If the clinical estimate of gestational age was missing (n = 309), last menstrual period was used to determine the EDC month.

We used Medicaid enrollment data, which are intended for administrative – not research – purposes. As such, enrollees may have gaps in enrollment for reasons related to eligibility changes or switching plans, not actual disenrollment. We chose to consider a duration of 2 months as administrative missingness based on guidance of those familiar with the Wisconsin Medicaid enrollment data, both at the Institute for Research on Poverty and the Wisconsin Department of Health Services. This definition is more conservative than a 1-month gap, enabling better identification of true disenrollment in Medicaid during the postpartum period. During the 12-month preconception and postpartum periods, mothers were categorized as having continuous coverage if there were no enrollment gaps longer than 2 months, some coverage if unenrolled for 3 or more months, or no coverage if there was no enrollment. Because there is presumptive Medicaid eligibility during pregnancy if enrolled prior to delivery, we assumed continuous coverage throughout the prenatal period for the some

Figure 1. Medicaid Unenrollment During the Postpartum Period Among Mothers With Medicaid-Covered Live Births, Wisconsin 2009-2018



coverage group. We used medical status codes for the Medicaid plan to identify coverage for a subsequent pregnancy during the postpartum year.

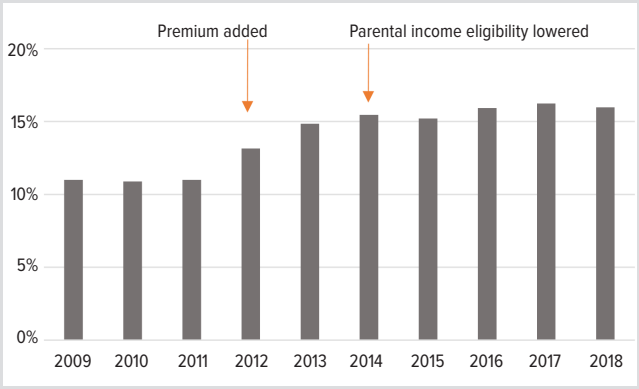
We considered reasons for mothers' changes in enrollment during the first postpartum year by considering their infants' enrollment in Medicaid/CHIP. In Wisconsin, infants are automatically eligible for CHIP coverage for 12 months following a Medicaid-covered delivery. An infant not enrolled in Medicaid/CHIP may have moved out of state or become covered by a parent's private insurance. We explored infant postpartum unenrollment among mothers who unenrolled postpartum as a proxy for a shift from Medicaid to private insurance.

Covariates provided by the birth records included age at delivery (<19, 19-24, 25-34, 35+), race/ethnicity (non-Hispanic White [hereafter White], non-Hispanic Black [hereafter Black], Hispanic, non-Hispanic Asian/Pacific Islander [hereafter Asian/Pacific Islander], and non-Hispanic Other race [hereafter Other], including multiple races), marital status (unmarried, married), completed education (no high school, high school, some college), and parity (first birth, second or greater birth).

Statistical Analysis

We used descriptive statistics to summarize each covariate and outcome. Main effects log-binomial regression models were used to estimate relative risk of postpartum unenrollment associated with maternal demographic characteristics, using generalized estimating equation to account for correlation between births from the same mother. We included parity and demographic characteristics as covariates based on known differences in Medicaid eligibility for childless adults and prior research.[8] We tested the association between birth year and postpartum unenrollment using a chi-square test for trend. All analyses were conducted using SAS software, Version 9.4 (SAS Institute Inc, Cary, North Carolina).

Figure 2. Postpartum Medicaid Unenrollment in Wisconsin by Birth Year, 2009-2018



RESULTS

Table 1 shows the characteristics of the overall sample (N=267 416), those unenrolled postpartum (n=37 091), and those continuously enrolled postpartum (n=230 325). On aver-

age, mothers in the sample were 26 years of age (SD 5.6) at delivery, 54.6% (n=146 046) were White, 55.9% (n=149 390) were primiparous, and 67.5% (n=180625) were unmarried.

Medicaid Enrollment

Mothers' enrollment varied by period (Table 2). During the 12 months pre-pregnancy, approximately half (50.5%, n = 134 970) were continuously enrolled, while a third (33.1%, n = 88 425) were never enrolled. Nearly all were enrolled at some time during the prenatal period (97.9%, n = 261 713), though some were never enrolled (2.1%, n = 5703) and a subset of these were covered for delivery services only, with no other coverage in the pre-pregnancy, prenatal, or postpartum period (0.8%, n = 2026). Enrollment patterns during the pre-pregnancy period varied by parity. Relative to all mothers, first-time mothers had lower continuous coverage during the 12 months prior to pregnancy (35%, n = 52 562) and a higher fraction (47.7%, n = 71 255) were not enrolled in Medicaid at any time during the year prior to conception. Most mothers (86.1%, n=230325) were consistently enrolled throughout the first postpartum year.

Postpartum Unenrollment

As shown in Table 1, of the 37091 mothers who unenrolled postpartum, 48.6% (n=18 011) were age 25 to 34; 14.7% (n = 5468) were Black, 15.1% (n = 5588) were Hispanic, and 59.0% (n = 21 888) were White. Younger age, lower parity, and being married were associated with a greater risk of postpartum Medicaid unenrollment in the adjusted, multivariable log-binomial regression model (Table 3). Notably, those reporting Black were at the lowest risk, while Asian/Pacific Islanders were at a higher risk of unenrollment.

The postpartum enrollment flow diagram (Figure 1) shows the majority of all 267 416 mothers (86.1%, n = 230 325) remained enrolled throughout the 12 months. This included a small number with a new pregnancy (5.5%, n = 12 754) during that year and who may have maintained enrollment because of more generous pregnancy eligibility. The balance, 13.9% (n = 37 091) unenrolled at some point during the postpartum year. A small percentage (1.3%, n = 3422) lost enrollment immediately following delivery. The peak of unenrollment occurred in month 3, when 34.2% of unenrollment occurred, likely reflecting Medicaid loss following the change in eligibility occurring 60 days postpartum. By the fourth postpartum month, more than half (54.3%) were no longer enrolled. Some (31.2%, n = 11568) re-enrolled before the end of the postpartum period, but a majority (68.8% , n = 25 523) remained unenrolled. A small percentage (12.7%, n = 1464) regained enrollment with subsequent pregnancy. On average, mothers who re-enrolled experienced a gap in Medicaid coverage of 5.3 months during the postpartum period.

Most of the 264 372 infants (89.9%, n = 237 575) were continuously enrolled in Medicaid/CHIP for the first year; only a small minority (1.94%, n = 5127) were never enrolled. Among all mothers who remained unenrolled during the postpartum period, 50.2% (n = 12 808) of their children were enrolled in Medicaid/CHIP through the first year of life and, therefore, had not been picked up by parental private insurance (Figure 1), suggesting that half of the women who remained unenrolled after losing Medicaid coverage were likely uninsured.

Postpartum enrollment patterns changed during the study period. As shown in Figure 2, the percentage of mothers who lost enrollment postpartum increased significantly from 11.0% in 2009 to 16.0% in 2018 ($P < .001$). Notable changes were an absolute increase of 4.5% between 2011 and 2014 and another increase of 1.0% between 2015 and 2017.

DISCUSSION

Using linked administrative data for 2009-2018, we described patterns of Wisconsin Medicaid enrollment during the preconception, prenatal, and postpartum periods. We identified significant enrollment gaps before and after pregnancy that may limit access to recommended health care during these critical periods. Our detailed analysis of postpartum enrollment found nearly 14% of mothers delivering a live birth were unenrolled in Medicaid during the first postpartum year. The peak of unenrollment occurred in month 3, when 34.2% of unenrollment occurred, likely reflecting Medicaid loss following the 60-day postpartum threshold.

Our estimates of insurance coverage gaps are consistent with studies using data from PRAMS.[11] While our observed rates of postpartum Medicaid insurance loss are lower than pooled national rates, they do closely mirror those of a state-level analysis of PRAMS that found a larger proportion of Wisconsin mothers reported having maintained postpartum coverage than the average across the 43 US states included in the study.[10] Based on self-reported coverage during 2015-2018, postpartum unenrollment rates in Wisconsin were among the lowest in the US, potentially explained by the state's more generous income limits. However, in contrast to improvements in postpartum coverage seen across Medicaid expansion states, the trend over this study period suggests postpartum coverage loss became more common following the state's 2014 changes in eligibility policies, which lowered adult coverage from 200% to 100% FPL.[21]

Our findings suggest that postpartum Medicaid loss was more likely following first births and among mothers who were younger or married and least common among those who identified as Black. Higher rates of Medicaid loss among younger and new mothers may result from inexperience navigating the benefit system. Additionally, mothers with prior live births likely have larger households, impacting FPL calculations and the possibility of Medicaid coverage. Married mothers may be more likely to move to spousal private insurance following delivery. Unenrollment among married mothers may represent a transition to spousal private insurance following delivery, rather than insurance loss. The

individual demographic factors (eg, race/ethnicity) we found associated with postpartum unenrollment differ somewhat from some prior research.[10,11] Wisconsin ranks 49th in Black-White income disparities, with 39% of Black Wisconsinites living in poverty in 2015.[24] Therefore, it is possible that Black mothers are more likely to maintain postpartum eligibility than non-Black mothers because they continue to meet the income-based eligibility criteria.

There are important limitations to this study. We accounted for 2-month administrative gaps to avoid overestimating preconception and postpartum Medicaid loss. However, it is possible our conservative measures excluded real 1- to 2-month coverage gaps in some cases for the approximately 3% of mothers with this level of missingness. Our definition of unenrollment also includes mothers who were not fully enrolled during the study period; however, as we were interested in examining postpartum coverage for all mothers with a Medicaid-covered delivery, we consider this small subset to be unenrolled postpartum for our purposes.

For both mothers and infants, lack of postpartum enrollment may reflect movement out of state, acquisition of private insurance coverage, or other missingness. Our estimates of postpartum Medicaid unenrollment likely overestimate the percentage of mothers without postpartum health insurance. We attempted to address this limitation by using infant enrollment data to estimate the fraction of mothers who were uninsured. However, our proxy for mother's uninsurance may be inaccurate, as mothers may choose to keep their infant on Medicaid for reasons including the comprehensiveness of Medicaid coverage, the window for newborn enrollment in commercial insurance, the disruption of switching insurance, and, perhaps most importantly, that Medicaid is free or very low cost for infants. Despite this limitation, our rate of maternal postpartum uninsurance is lower than other sources of self-reported uninsurance for Wisconsin new mothers, suggesting our estimate is not inflated.[25]

There are also important strengths. The unique level of granularity and data permits learning opportunities for Wisconsin and other states. Enrollment files permit observation of relevant enrollment patterns that are relevant to the state's recent Section 1115 Waiver. By using birth records and enrollment files, we have the full population—not a weighted sample—and are able to confirm deliveries were paid for by Medicaid. This also ensures that we are not considering limited coverage plans that women may report as comprehensive health insurance in some survey studies. Unlike cross-sectional studies, we can identify the timing of unenrollment and reenrollment during the postpartum period and reenrollment through a subsequent pregnancy.

Policy Implications

Pregnancy is a time when important short- and long-term health risks may be identified, creating opportunities for prevention. Without consistent access to health care, these opportunities for prevention are lost, and needed health care will be provided in expensive acute care settings, which are ill-equipped for follow-up care.

Currently, federal and state policy attention is focused on postpartum Medicaid expansion. Medicaid faced a federal maintenance of eligibility requirement, prohibiting programs from disenrolling Medicaid recipients during the COVID-19 crisis, effectively expanding Medicaid to postpartum individuals. To improve maternal and infant outcomes, as well as reduce racial disparities, the American Rescue Plan Act offered states the opportunity to expand Medicaid coverage through 12 months postpartum. As of January 2023, over half of states have implemented extensions, and Wisconsin has requested approval to increase coverage from 60 to 90 days postpartum.[16]

CONCLUSIONS

While 34% of the postpartum Medicaid loss we observed occurred between 60 and 90 days, the proposed Section 1115 Waiver would, in most cases, add only 1 additional month of coverage. A full 12-month postpartum Medicaid extension would support postpartum health by enabling greater continuity and quality of care over this critical period.

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