Impact of Medicaid Pregnancy Dental Benefits on Prenatal Dental Utilization and Birth Outcomes*

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Abstract

Despite elevated risks for oral health problems, more than half of pregnant women do not visit the dentist at least once during pregnancy. The Medicaid program covers more than 40% of US births and represents an important source of dental coverage with benefits that vary at the state level. We examine the effects of state-level pregnancy dental benefits using a difference-in-differences approach and data from the 2012-2019 Pregnancy Risk Assessment and Monitoring System (PRAMS). We find that providing dental coverage to pregnant Medicaid recipients increases dental cleaning rates by 7.16 percentage points, or 29% relative to baseline. We also examine linked birth certificate data given evidence that poor oral health during pregnancy is associated with adverse pregnancy and birth outcomes. We find suggestive evidence of reductions in small for gestational age and very low birth weight.

JEL Codes: I13, I14, I18, J13

Keywords: Medicaid, Dental care, Pregnant women, Birth outcomes

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1 Introduction

Poor oral health during pregnancy may have long term implications for the oral and overall health of expectant mothers and their children (Dye et al., 2011; Ide & Papapanou, 2013; Jeffcoat et al., 2014; Chaffee et al., 2014; Iheozor-Ejiofor et al., 2017; Nasseh et al., 2017). Oral health problems can cause pain that interferes with eating, speaking, and overall quality of life (Naito et al., 2006; CDC, 2024a). Moreover, poor oral health has been linked to systemic health conditions including cardiovascular disease (Oliveira et al., 2010; Sanz et al., 2020), diabetes (Díaz-Romero et al., 2005; Chee et al., 2013; Nasseh et al., 2017), respiratory conditions (Manger et al., 2017), and adverse pregnancy and birth outcomes (Jeffcoat et al., 2014; Puertas et al., 2018). Despite elevated risks for oral health problems during pregnancy and the availability of effective interventions to address these issues, more than half of pregnant people do not visit the dentist at least once during pregnancy (Kranz & Estrada-Darley, 2022; Lee et al., 2022b), including more than one-third who report experiencing dental problems (Lee et al., 2022b).

Medicaid finances more than 40% of US births and therefore represents an important lever for improving maternal and infant health outcomes (KFF, 2023).Federal law requires coverage of certain services such as hospital and prenatal care, but states retain flexibility over optional benefits including dental, vision, and hearing services. This discretion has resulted in substantial cross-state and temporal variation in program generosity, providing an opportunity to study how benefit design influences maternal health behaviors and perinatal outcomes.

In this paper, we examine the effects of Medicaid pregnancy dental benefits using 2012-2019 data from the Pregnancy Risk Assessment Monitoring System (PRAMS). Our main analysis uses a stacked difference-in-differences approach to account for variation in policy timing and an enhanced dataset compiled via direct state data release requests. We match the month and year of policy implementation with imputed conception dates to define policy exposure. Our primary outcome is reported receipt of a dental cleaning during pregnancy. Given evidence that poor oral health is associated with worse birth outcomes, we also use linked birth certificate data to examine preterm birth, small for gestational age (10th percentile), low birth weight (under 2500 grams), and very low birth weight (under 1500 grams).

We find that exposure to Medicaid dental benefits during pregnancy significantly increases dental cleaning rates by 7.16 percentage points, representing a 29.1% increase relative to the baseline rate (24.6%). We also find suggestive evidence of reductions in adverse birth outcomes, including statistically significant reductions in small for gestational age (1.19 percentage point decrease) and very low birth weight (0.47 percentage point decrease). Results using state-by-year-by-quarter-of-birth level data representative of the universe of US births from CDC Wonder are qualitatively consistent,

though we find a statistically significant reduction in low birth weight (3% reduction) and a non-significant reduction in very low birth weight. Subgroup analyses suggest that most groups experience an increase in dental cleanings and reductions in small for gestational age and very low birth weight with few statistically significant differences, though some estimates are noisy given smaller sample sizes and low frequency birth outcomes.

To account for possible correlation in exposure to pregnancy and pre-conception Medicaid dental benefits, we consider two extensions to our main model. First, we control for exposure to non-pregnancy dental benefits in the year before conception. Second, since pregnancy Medicaid eligibility limits are often substantially higher than eligibility limits for other adults, we replicate our main analysis after excluding women most likely to qualify for non-pregnancy Medicaid coverage. Our estimates for the impacts of pregnancy dental benefits on dental cleanings during pregnancy are very consistent across these specifications. We also continue to observe evidence of reductions in adverse birth outcomes, though interestingly, non-pregnancy dental benefits are associated with borderline significant reductions in small for gestational age and preterm birth that are larger in magnitude than analogous estimates for pregnancy dental benefits.

Event study analyses generally do not indicate a violation of the parallel trends assumption for most outcomes. Results are also generally robust across multiple sensitivity checks such as including births during the COVID-19 pandemic, estimating two-way-fixed effects models, excluding each treatment state in turn, and alternative ways of defining the sample.

A number of quasi-experimental analyses have examined the effects of Medicaid dental benefits, finding increases in dental visits and improvements in oral health (see for example, Choi (2011); Decker & Lipton (2015); Semprini et al. (2024)), reductions in emergency department visits (Elani et al., 2021, 2020; Ranade et al., 2025), and supply-side responses (Buchmueller et al., 2016; Huh, 2021). While less extensive, research has also examined the impacts of other optional Medicaid benefits such as routine vision, telemedicine, smoking cessation, and abortion services (Lipton & Decker, 2015; Kostova et al., 2018; Lipton & Pesko, 2023; Kim et al., 2025). Despite the importance of dental care during pregnancy, we are only aware of one quasi-experimental analysis that found increases in dental cleanings following implementation of comprehensive Medicaid pregnancy dental benefits in Virginia, though this research focused on a single state and included limited pre-policy implementation data (Naavaal & Harless, 2022). We are not aware of any prior research examining impacts on birth outcomes. We build on this research by incorporating multi-state policy variation, conducting a battery of sensitivity tests, examining birth outcomes using the PRAMS and CDC Wonder data, and identifying potential mechanisms.

More broadly, research has shown that expanding Medicaid eligibility and program

generosity increase coverage and prenatal care use during pregnancy with mixed evidence on infant health outcomes (Currie & Gruber, 1996; Wherry et al., 2017; Wherry, 2018; Howell, 2001; Sonchak, 2015). This paper contributes to this line of research by focusing on access to a specific type of prenatal care.

Overall, our findings provide evidence that pregnancy dental benefits induce meaningful increases in dental care use among a population with a high prevalence of oral health problems and a low rate of dental visits. We also find suggestive evidence that dental benefits may improve birth outcomes. While most states currently provide some form of a pregnancy dental benefit, mounting pressure on state Medicaid budgets may prompt reconsideration of optional coverage. As policymakers consider future modifications to Medicaid, this research could inform decisions on whether or not to maintain or expand coverage of dental services for pregnant populations.

2 Background and Mechanisms

2.1 Pregnancy and Oral Health

In a national consensus statement, the Oral Health Care During Pregnancy Expert Workgroup recommended that pregnant people receive prenatal dental care, but pregnant people are less likely to visit the dentist (44%) than reproductive-age people who are not pregnant (65%) (CareQuest Institute for Oral Health, 2023). Moreover, non-Hispanic Black women are less likely to visit the dentist during pregnancy than non-Hispanic White women, and Medicaid-enrolled pregnant people are less likely to visit the dentist than those with private insurance (Lee et al., 2022b).

Oral health problems are common among pregnant people (CDC, 2024b). Hormone fluctuations during pregnancy increase the risk of developing gingivitis, a mild form of gum disease affecting up to three-quarters of pregnant people (Figuero et al., 2013; CDC, 2024b). If left untreated, gingivitis can progress to periodontitis, causing damage to the gums and bone that may lead to tooth loss. Pregnant people are also more susceptible to tooth decay given changes in eating and oral hygiene habits (e.g., reduced tooth brushing and flossing) (Boggess et al., 2010; Hunter & Yount, 2011). Poor oral hygiene and the presence of gum disease during early pregnancy are highly predictive of gum disease in later pregnancy (Gil-Montoya et al., 2023). Moreover, intervention studies suggest nonsurgical periodontal therapy is highly effective in resolving symptoms among pregnant people (Bobetsis et al., 2020; Kaur et al., 2014).

Poor oral health during pregnancy may increase inflammation, worsening systemic health and negatively affecting the fetal environment (Figuero et al., 2020; Horton et al., 2008; Madianos et al., 2013; Offenbacher et al., 2006). Furthermore, periodontal pathogens have been identified in the placenta and amniotic fluid, allowing for the

possibility of direct impacts of maternal oral infection on infant health(Bobetsis et al., 2020). Despite a large body of research examining these impacts, evidence on the relationship between maternal oral health and infant health outcomes remains mixed and uncertain.

Most observational studies find that maternal periodontal disease is associated with higher risks of preterm delivery and low birth weight (de Oliveira et al., 2021; Lee et al., 2022c; Uwambaye et al., 2021; Castaño-Suárez et al., 2024). Moreover, there is some evidence that receiving routine dental care during pregnancy is associated with better outcomes (Lee et al., 2025). In terms of magnitude, some research indicates that the odds of preterm birth are as much as two to six times higher among women with periodontitis compared to those without, while other findings are significant but more modest (Lee et al., 2022c; Uwambaye et al., 2021; de Oliveira et al., 2021). Retrospective cohort studies using linked medical and dental claims also indicate that treatment for periodontal disease at baseline precedes lower healthcare costs, including a large, 74% reduction in spending on atypical pregnancy care (Nasseh et al., 2017; Jeffcoat et al., 2014).

By contrast, results from randomized controlled trials (RCTs) examining the impacts of periodontal intervention during pregnancy are mixed. A recent systematic review and meta-analysis concluded that periodontal intervention was associated with reductions in the inflammatory marker C-reactive protein and preterm deliveries with no significant impacts on other birth outcomes. Overall, periodontal intervention reduced the risk of preterm birth by 23%. However, high-quality multi-center RCT evidence has generally failed to find an impact (Orlandi et al., 2022; Bobetsis et al., 2020; Michalowicz et al., 2006). Periodontal interventions generally occurred during the second or third trimester of pregnancy in this research. We are not aware of RCT evidence where the intervention occurred before conception or during the first trimester, which leaves open the possibility that earlier treatment may be more effective. Furthermore, impacts may differ by population characteristics including socioeconomic status and geographic region. Our analysis complements existing evidence by examining a larger, geographically dispersed, Medicaid-insured population and focusing on policy impacts. We also assess the potential impacts of exposure to pre-conception Medicaid dental benefits in an extension to our main analysis (Iheozor-Ejiofor et al., 2017).

2.2 Medicaid Dental Benefits

Medicaid plays a vital role in providing health coverage to low-income populations in the United States, covering over 40% of all births nationwide (KFF, 2023). However, unlike mandatory benefits such as hospital or prenatal care, adult dental services are considered optional under federal law. As a result, states have broad discretion in determining whether and how to offer dental coverage to adult enrollees, including pregnant people.

All states provide emergency-only dental services to address acute pain or infection during pregnancy, but coverage of preventive and restorative services varies across states and has changed over time. This policy variation creates an opportunity to assess how access to Medicaid dental benefits influences service utilization among pregnant people and possible downstream effects on infant health.

Several recent studies suggest that dental insurance is associated with dental care utilization among pregnant people, although this research is generally correlational (Robison et al., 2021; Lee et al., 2022a), and/or focuses on a single state (Naavaal & Harless, 2022). The only quasi-experimental study we are aware of examined Virginia's 2015 addition of a comprehensive Medicaid pregnancy dental benefit and found that reports of receiving a dental cleaning increased among Medicaid-enrolled pregnant people relative to privately insured pregnant people before and after the policy's implementation (Naavaal & Harless, 2022). A second recent cross-sectional study found that Medicaid-enrolled pregnant people with no Medicaid dental coverage were less likely to have a dental cleaning during pregnancy (27%) when compared to those with limited benefits (e.g., fewer than 100 services or an annual spending cap of less than $1,000) (37%) and extensive benefits (e.g., at least 100 services and an annual spending cap of at least $1,000) (45%) (Lee et al., 2022a). While not examining Medicaid dental benefits directly, one study found that Medicaid eligibility expansions to pregnant people and infants during their first year of life were associated with a significant reduction in permanent tooth loss on reaching young adulthood for non-Hispanic Black cohorts (Lipton et al., 2016). These findings are suggestive of potential improvements in access to dental care among pregnant populations and children and also provide support for the notion of longer run oral health improvements following early life interventions.

While evidence on the impacts of Medicaid pregnancy dental benefits remains somewhat limited, there is a robust body of research on dental benefits for non-pregnant adults and their effects on dental care use, oral health, emergency department utilization, and provider behavior (Choi, 2011; Decker & Lipton, 2015; Abdus & Decker, 2019; Meyerhoefer et al., 2019; Wehby et al., 2019; Lyu et al., 2020; Singhal et al., 2021; Wehby et al., 2022; Lyu & Wehby, 2023; Semprini et al., 2024; Elani et al., 2021, 2020; Ranade et al., 2025; Buchmueller et al., 2016; Huh, 2021). Quasi-experimental estimates of the impacts of Medicaid dental benefits on dental visits range from 6-14 percentage points, see for example, Choi (2011); Decker & Lipton (2015); Abdus & Decker (2019); Lipton (2021) Moreover, other researchers have found that Medicaid dental benefits reduce out-of-pocket spending on dental care (Abdus & Decker, 2019), reduce emergency department visits for oral conditions (Singhal et al., 2015; Elani et al., 2021, 2020; Ranade et al., 2025), and that they induce a supply-side response with dentists increasing their acceptance of Medicaid patients and relocating to counties with larger Medicaid-insured populations

(Buchmueller et al., 2016; Huh, 2021). Finally, Medicaid adult dental benefits have been shown to have spillover effects on children's dental care use (Lipton, 2021; Hill et al., 2022), and this effect appeared to be concentrated among parents who visited a dentist (Lipton, 2021).

2.3 Mechanisms

The primary mechanism for an impact of Medicaid pregnancy dental benefits on dental visits is via a reduction in out-of-pocket costs for pregnant enrollees. According to surveys of dental practitioners, the average cost of a dental cleaning ranges from $90 to $120 and fillings from $100 to $1200 per tooth. In states that provide Medicaid dental benefits, enrollee cost-sharing amounts are typically small, ranging from $1 to $3, representing a substantial reduction in enrollee costs for dental services (Carefree Dental, 2021; Kaiser Family Foundation, 2025). Estimates suggest that providing Medicaid dental benefits to non-pregnant adults results in a reduction in annual out-of-pocket costs of $18.88 on average and $179.28 among those with a dental visit (Abdus & Decker, 2019). In addition, Medicaid dental benefits for non-pregnant adults reduce reports of needing but not receiving dental care due to cost by more than 12 percentage points (Decker & Lipton, 2015). Moreover, changes in Medicaid pregnancy dental benefits may bring salience to the importance of oral health during pregnancy through news coverage and notifications to beneficiaries, further increasing demand for services.

While we cannot directly observe out-of-pocket costs in PRAMS, we find that Medicaid pregnancy dental benefits increase dental insurance rates by 13.3 percentage points. This result suggests both that pregnant enrollees are aware that they have Medicaid dental benefits and that many did not have another source of private dental insurance before gaining Medicaid dental coverage. Given low cost sharing in Medicaid, enrollees who had no other source of dental insurance would be likely to experience a large reduction in out-of-pocket costs for dental services. Furthermore, out-of-pocket costs would likely decline for some enrollees who transitioned from private dental insurance to Medicaid dental coverage, though we are not able to measure these shifts.

We also find a modest increase (2.8 percentage points) in reported awareness of the importance of oral health during pregnancy that is significant at the 10% level. This finding provides some support for the possibility of an information channel in explaining our findings. While not the only plausible explanation, previous research documenting spillover effects on children also suggests that Medicaid adult dental benefits may promote parental oral health knowledge and increase the salience of recommended care for children (Lipton, 2021; Hill et al., 2022).

In addition to demand-side effects, providing Medicaid dental benefits could also have supply side impacts because of changing patient mix and lower Medicaid reimbursement

rates relative to private dental insurance (Gupta & Yarbrough, 2017). Research indicates that when states offer Medicaid dental benefits, dentists are more likely to participate in Medicaid and provide more services to Medicaid-insured patients(Buchmueller et al., 2016). Furthermore, Medicaid dental benefits induce dentists to relocate to counties with higher Medicaid-eligible populations (Huh, 2021).

Our finding that Medicaid pregnancy dental benefits increase dental visits raises the possibility of improvements in oral health among pregnant women. In addition to an increase in dental cleaning rates, we also find a significant increase in reports of receiving advice on how to care for teeth and gums. Thus, Medicaid pregnancy dental benefits may improve oral health both via care received during a dental visit and also through improvements in caring for teeth and gums at home. Previous research focusing on non-pregnant Medicaid enrollees indicates that Medicaid dental benefits reduce untreated tooth decay by about 9.5 percentage points(Decker & Lipton, 2015). Moreover, researchers found that the Affordable Care Act's Medicaid expansion reduced untreated tooth decay by 16.8 percentage points in expansion states that offered dental benefits (Elani et al., 2021).

There are biologically plausible pathways through which treating oral health problems could improve birth outcomes (e.g., via reducing inflammation and exposure to oral bacteria), although the evidence to date is mixed, as described. While we are limited in our ability to examine this pathway in the PRAMS, recent research suggests that dental benefits for non-pregnant adults are associated with improvements in general reported health status, which may serve as a proxy for systemic health (Wehby et al., 2025). We also confirm this finding among reproductive-aged women using data from the Behavioral Risk Factor Surveillance System.

In addition to possible impacts on maternal systemic health and the fetal environment, pregnancy dental benefits could have indirect impacts on infant health by inducing changes to maternal health behaviors. Other types of prenatal care use could increase if dentists counsel pregnant patients on current guidelines for obstetric visits. Conversely, dental visits may crowd out other prenatal care use given time and work constraints. We examine the effects of pregnancy dental benefits on the Kotelchuk index, a measure of prenatal care adequacy, and find no evidence of an effect. Pregnancy dental benefits could also affect other types of health behaviors if dentists counsel pregnant women on dietary or smoking habits, via an income effect, or moral hazard. Given the adverse consequences of smoking during pregnancy, we assess whether pregnancy dental visits affect smoking prevalence and also find no evidence of an impact. However, we note that there is evidence that Medicaid eligibility expansions to pregnant women during the 1980s and 1990s increased smoking behavior (Dave et al., 2019). We study a more recent time period and the addition of a specific type of coverage, which may explain this difference.

3 Data

The data for this study is drawn from the Pregnancy Risk Assessment Monitoring System (PRAMS), a state-based surveillance system managed by the Centers for Disease Control and Prevention (CDC) in collaboration with state health departments. PRAMS collects comprehensive, population-based data on maternal experiences before, during, and shortly after pregnancy, with an emphasis on maternal health behaviors and access to care. The survey samples a state-representative subset of women who have recently given birth, sampling between 1,000 and 3,000 individuals annually from each participating site (typically a state). The dataset includes self-reported measures of dental care access during pregnancy and linked birth certificate information on birth outcomes.

PRAMS data availability varies by year and state, as the CDC only releases data for a given state-year if the site meets a minimum weighted response rate threshold (typically 60%). Additionally, even when a state meets the threshold, its data may not be publicly released unless the site opts to make it available. To ensure more complete coverage, we submitted site-specific data requests to obtain restricted-use PRAMS data for states not included in the standard release files. As a result, our dataset includes restricted-use data from Colorado (2014), Tennessee (2017-2018), South Carolina (2012-2019), Mississippi (2016-2017), Virginia (2012-2014) and West Virginia (2019) . In these cases, South Carolina met response thresholds but did not publicly release their data, while others fell below the CDC's cutoff in certain years, though typically maintained response rates above 40%. Including these restricted-use files enhances the scope and representativeness of our analysis by reducing bias due to selective state participation.

Our primary outcome is an indicator of having received a dental cleaning at any time during the most recent pregnancy. Furthermore, we investigate four main birth outcomes, including small for gestational age (at or below 10^{th} percentile), preterm birth, low birth weight (under 2500 grams), and very low birth weight (under 1500 grams). The PRAMS also provides a rich set of individual and socioeconomic characteristics at the individual level, allowing us to control for potential factors that may influence dental care utilization and pregnancy health.

Our main analysis uses PRAMS data from 2012 to 2019. We begin our analysis in 2012 because this is the first year when the question about dental cleanings during pregnancy is included in the survey. We end our analysis in 2019 to avoid confounding due to the COVID-19 pandemic given evidence of depressed healthcare utilization, interruptions to prenatal care, and infant health impacts (Ferrara et al., 2023; Lee, 2024; Karasek et al., 2025). However we include data through 2021 in a sensitivity analysis. Information about birth outcomes is available in all years from 2012-2021. We also examine related outcomes as possible mechanisms including dental insurance (2012-2015), awareness of the importance of oral health during pregnancy (2012-2015), receipt of counseling on

caring for teeth and gums (2012-2015), the Kotelchuk index of prenatal care adequacy (2012-2019), and smoking during pregnancy (2012-2019). While several of these outcomes are only available in certain survey years (2012–2015), all treatment states in our main analysis implemented policies during this period, allowing us to generate estimates based on meaningful variation.

We focus on individuals aged 21 and older who were enrolled in Medicaid during pregnancy. Medicaid enrollment is identified primarily from the source of payment for delivery on the birth certificate; for records with missing payer information, we supplement with self-reported Medicaid coverage from PRAMS. This restriction allows us to target populations most likely to be affected by Medicaid dental policy changes since all Medicaid enrollees up to age 20 receive dental coverage under the Early and Periodic, Screening, Diagnostic, and Treatment benefit (Centers for Medicare & Medicaid Services, 2024). We use information on the month and year of birth to estimate the timing of conception and match these dates to the month and year of policy implementation.

Our primary policy indicator is equal to one for dates of conception on or after the policy implementation date and zero otherwise. This indicator represents any exposure to Medicaid dental benefits during pregnancy. However, our event study analysis allows us to examine whether treatment effects grow with full exposure. Following prior Medicaid dental benefit research (Decker & Lipton, 2015; Buchmueller et al., 2016; Elani et al., 2020, 2021; Huh, 2021; Singhal et al., 2021; Semprini et al., 2024; Ranade et al., 2025), we consider states that provide at least one preventive or restorative service to pregnant women as having pregnancy dental coverage. Since states that provide any preventive or restorative services generally cover dental cleanings, including all treatment states in our analysis, this measure is arguably most appropriate for examining dental cleaning rates. We documented state policies during 2012–2021 by cross-verifying information from multiple sources, including KFF's Medicaid Benefits database (KFF, 2025), MACPAC reports and compendia (Medicaid et al., 2021), NASHP's state tracker (for State Health Policy, 2022), state Medicaid provider manuals, and State Plan Amendments in the CMS SPA portal (for Medicare & Medicaid Services, 2025). Other research has used the American Dental Association (ADA) classification, which splits non-emergency adult dental coverage into limited (typically fewer than 100 procedures or an annual expenditure cap below $1,000) and extensive (at least 100 procedures or a cap of $1,000 or more) (Singhal et al., 2015; Abdus & Decker, 2019; Wehby et al., 2019; Lyu et al., 2020; Lipton et al., 2021; Wehby et al., 2022). While we explored using this definition in our analysis, states classified as offering limited coverage in other sources did not always meet our minimum criteria of covering at least one preventive or restorative service for pregnant women.

Table 2 presents descriptive statistics summarizing characteristics of the study

population, stratified by Medicaid pregnancy dental benefit adoption status, and for treatment states, pre- and post-policy implementation. The 'pre-policy' period is defined as all births occurring prior to the effective month and year when pregnancy dental benefits were introduced in a given treatment state, while the 'post-policy' period includes all births occurring after implementation.

(Table 2 here)

Approximately 25% of respondents in control states and 27–31% in treatment states reported receiving a dental cleaning during pregnancy, with rates increasing following policy adoption in treatment states. Around 10% of births were classified as low birthweight, 1.6% as very low birthweight, 11% as preterm, and 11–12% as small for gestational age (10th percentile). Birth outcomes remained relatively stable over time in both treatment and control states, except for a nearly 2 percentage point decline in preterm births between pre- and post-policy periods in treatment states. The average maternal age ranged from 27 to 28 years across groups, and approximately 56% of respondents had less than a college education. The sample was racially and ethnically diverse, with 42% identifying as non-Hispanic White, 30% as non-Hispanic Black, and 22% as Hispanic. Roughly 40% of respondents were married, and about three-quarters resided in urban areas.

In addition to PRAMS, we draw on data from CDC Wonder and the Behavioral Risk Factor Surveillance System (BRFSS). CDC Wonder provides aggregated state-year data on birth outcomes from the National Vital Statistics System, representing the universe of U.S. births. We use CDC Wonder to examine rates of low birth weight (birth weight <2,500 grams), very low birth weight (<1,500 grams), and preterm birth (<37 weeks gestation), defined as the number of affected live births per 100 total live births. These outcomes parallel those analyzed in PRAMS and serve as population-level counterparts that allow us to verify that our findings are not driven by changes in sample composition or survey participation rates. BRFSS is a nationally representative, state-based telephone survey administered by the CDC that collects information on health-related behaviors, chronic conditions, and preventive service use among U.S. adults. Since PRAMS does not consistently collect measures of general health status during pregnancy, we use BRFSS data to assess changes in self-reported general health among reproductive-aged women, defined as reporting "good," "very good," or "excellent" health (versus "fair" or "poor"). We focus on reproductive-aged women rather than pregnant women given larger sample sizes and more reliable estimates in BRFSS. This supplemental analysis provides complementary evidence on the impacts of dental benefits on systemic health and well-being, a potential mechanism for effects on birth outcomes.

4 Empirical Strategy

4.1 Stacked Difference-in-differences Approach

This study employs a stacked difference-in-differences (DiD) design, following recent methodological guidance from Wing et al. (2024). In this approach, we define a series of "sub-experiments," each centered around a unique policy adoption date. For each sub-experiment, the treatment group comprises states implementing pregnancy dental benefits on a given date, and the control group consists of states that did not adopt similar benefits within the event window. This design decomposes staggered adoption into a set of two-by-two DiD comparisons, mitigating the bias that can arise in two-way fixed effects models with heterogeneous treatment timing (De Chaisemartin & d'Haultfoeuille, 2020; Goodman-Bacon, 2021; Sun & Abraham, 2021).

We adopt this approach for several reasons articulated in Wing et al. First, our setting includes a moderate number of treated and control states, which facilitates clean sub-experiment construction. Second, policy adoption is monotonic—states added but did not remove dental benefits during the study period—making treatment assignment consistent over time. Third, our main PRAMS data are repeated cross-sections that require survey weights to produce representative estimates. The stacked DiD approach accommodates survey weights and does not require panel tracking of individuals. Taken together, these features make stacked DiD an appropriate and robust choice for our empirical setting.

As Figure 1 shows, five PRAMS states including Colorado, Illinois, South Carolina, Utah, and Virginia began offering pregnancy dental benefits during the study period (shown in green). Twenty-six PRAMS states maintained pre-existing benefits (shown in blue) and nine states did not offer pregnancy dental benefits throughout our entire study period (shown in red). Two states that had not adopted pregnancy dental benefits by 2019 did so after 2019 (West Virginia(2021) and Delaware(2020)). States shown in gray did not consistently contribute to the PRAMS during our period of analysis and are therefore excluded. We also exclude the 26 states with pre-existing dental benefits to avoid confounding arising from continually evolving trends in these "already treated" units, consistent with best practices in stacked DiD designs Wing et al. (2024).

Table 1 summarizes the states included in each sub-experiment used in our primary analysis. We define event windows of up to 36 months before and after policy adoption. Because PRAMS data begin in 2012 and many adoptions occur in 2014, sub-experiments generally have shorter pre-policy periods than post-policy periods. However, this approach allows enough time for supply- and demand-side effects to evolve post-policy implementation. We also consider shorter event windows in sensitivity analyses. For example, Utah's policy adoption in October 2013 forms one sub-experiment with the

event window spanning January 2012 through October 2016. The nine states that did not offer pregnancy dental benefits during this window serve as controls.

(Figure 1 here)

(Table 1 here)

4.2 Estimation

To estimate the overall treatment effect, we run separate two-by-two DiD models within each sub-experiment (Table 1), comparing outcomes before and after policy adoption in treated states to changes in control states during the same period. These sub-experiment estimates are then aggregated using stacked weights, which give greater influence to comparisons with larger sample sizes. We estimate the following stacked difference-in-differences model:

$$Y_{istd} = \mu_{sd} + \omega_1 \text{PregDental}_{istd} + \mathbf{X}_{istd}\boldsymbol{\beta} + \lambda_t + \epsilon_{istd} \tag{1}$$

Where Y_{istd} denotes the outcome of interest for individual i (e.g., dental cleaning or birth outcome) in state s, time t, and sub-experiment d. PregDental_{istd} is a binary indicator equal to one if a respondent is imputed to have any exposure to pregnancy dental benefits during their pregnancy and zero otherwise. $\mathbf{X}_{istd}$ is a vector of individual- and state-level control variables, μ_{sd} represents state-by-sub-experiment fixed effects, and λ_t represents birth quarter-by-year fixed effects. State-by-sub-experiment fixed effects control for time-invariant state-level differences within each policy comparison group, and birth quarter-by-year fixed effects account for common trends in outcomes. Individual-level controls include income, maternal and paternal education, maternal age, race and ethnicity, marital status, and urban versus rural residence, all derived from the Pregnancy Risk Assessment Monitoring System (PRAMS). State-by-year controls capture socioeconomic and healthcare system characteristics, including fertility rate (CDC Vital Statistics), Medicaid managed care enrollment (Centers for Medicare & Medicaid Services, CMS), Medicaid eligibility thresholds (Kaiser Family Foundation, KFF), federally qualified health centers per capita (Health Resources and Services Administration, HRSA), unemployment rate (Bureau of Labor Statistics, BLS), Affordable Care Act implementation indicators (KFF, CMS), and number of dentists per capita (Area Health Resources File, AHRF). Standard errors are clustered at the state level, and estimates incorporate PRAMS survey weights at the individual level to ensure population representativeness.

We also estimate event study models to evaluate outcome pre-trends and the evolution of post-policy implementation effects. These models are specified as follows:

$$Y_{istd} = \mu_{sd} + \sum_{\tau=-\kappa_a}^{-2} \alpha_\tau \cdot 1(TSE_{std} = \tau) + \sum_{\sigma=0}^{\kappa_b} \delta_\sigma \cdot 1(TSE_{std} = \sigma) + \mathbf{X}_{istd}\boldsymbol{\beta} + \lambda_t + \epsilon_{istd} \quad (2)$$

where TSE_{std} denotes the number of months since policy implementation in state s within sub-experiment d, with α_τ and δ_σ capturing pre-policy and post-policy event-time effects, respectively. All other variables are defined as before. Our event study specification aligns birth year and month with the timing of Medicaid dental benefit implementation in each state and groups the pre- and post-treatment periods into three-month intervals. We include eight pre- and post-policy implementation indicators (i.e., covering up to 22 months or more both preceding and following policy changes). The three-month period directly preceding any exposure to Medicaid dental benefits serves as the reference category. This structure allows for a detailed examination of how outcomes evolve over time. The model differentiates between partial policy exposure, observed in the initial post-policy intervals, and full policy exposure, captured in later periods. Given typical gestation lengths, δ_4 and subsequent post-policy indicators capture full policy exposure, with exposure increasing across δ_1 through δ_3. By aligning events temporally within states, this approach provides a clearer understanding of the timing, stabilization, and persistence of policy impacts, offering insights into both short-term effects and longer-term trends.

Equation (2) tests the plausibility of the parallel trends assumption, which is critical to a causal interpretation of our estimates. Significant coefficient estimates for the pre-period(α_τ), or estimates that exhibit an apparent increasing or decreasing trend, would cast doubt on causality. The post-policy coefficients δ_σ capture the dynamic effects of the policy, and in our context, whether impacts differ according to partial vs. full exposure during pregnancy.

For our supplementary analyses using CDC Wonder and BRFSS, we adapt the same stacked DiD and event study framework to reflect differences in data structure. For CDC Wonder, we estimate Equation (1) and Equation (2) at the state-by-month level, weighting by the number of live births in each cell and clustering standard errors at the state level. For BRFSS, we restrict the sample to reproductive-aged women (18–44 years) and estimate analogous models using individual-level data with BRFSS sampling weights, incorporating state and birth quarter-by-year fixed effects and clustering standard errors at the state level. In both cases, the treatment variable, fixed effects structure, and event-time indicators mirror those in the PRAMS analysis to facilitate direct comparison of results across data sources.

In an extension to our main analysis, we account for potential confounding due to exposure to Medicaid dental benefits before conception in two ways. First, we adapt

Equation (1) by including a control for non-pregnancy dental benefits in the year prior to conception. Second, we replicate our main analysis excluding women with family incomes under 138% of the federal poverty level (FPL), the maximum income eligibility limit for non-pregnant adults across the states included in our analysis. Since we only observe income during the calendar year prior to the PRAMS interview, there is a mismatch in the timing of eligibility for pre-pregnancy Medicaid and income measurement. However, we anticipate that women with incomes above 138% FPL during pregnancy would be substantially less likely to have been eligible for Medicaid before conception. Therefore, the results of this analysis may better isolate the impacts of Medicaid dental benefits exposure during pregnancy specifically. We conduct several additional robustness checks to assess the stability of our findings. First, while our primary analysis focuses on individuals enrolled in Medicaid during pregnancy—those directly exposed to Medicaid pregnancy dental benefits—we replicate our results for alternative samples, including all women, women with less than a bachelor's degree and those with a bachelor's degree or higher, and women with household incomes up to $50,000 and with incomes of $75,000 or more. Results for all women and lower-education or lower-income subgroups provide intent-to-treat estimates that do not rely on reported Medicaid enrollment and mitigate concerns about selection into Medicaid when pregnancy dental benefits are offered, while estimates for higher-education and higher-income subgroups are expected to be smaller because women in these groups are less likely to be Medicaid eligible. Second, to address potential confounding from the COVID-19 pandemic, we re-estimate our models including two additional policy changes (Delaware and West Virginia) and incorporating data through 2021. Third, we vary the length of the event window to 18, 24, and 48 months to assess whether results are sensitive to the duration of the pre- and post-policy observation periods used in the stacked DiD design. Fourth, we conduct leave-one-out analyses, sequentially excluding each treated state to ensure that no single sub-experiment drives the overall results. Finally, while our primary measure of Medicaid enrollment is based on payer information from the birth certificate, we replicate our analyses using both self-reported and birth certificate–based Medicaid enrollment information to evaluate the robustness of results to alternative exposure definitions.

5 Results

5.1 Effects of Medicaid Pregnancy Dental Benefits on Dental Cleanings

We estimate that Medicaid pregnancy dental benefits increase the probability of having received a dental cleaning during pregnancy by 7.16 percentage points(Table 3, Column

(1). Given the baseline mean of 24.6%, this estimate represents a 29.1% relative increase. Results for dental cleanings are similar across specifications with and without individual and state-by-year controls, ranging from 6.58 (26.7% increase) to 8.06 (32.8% increase) percentage points (Appendix Table A.1).

(Table 3 here)

Figure 2 provides event study estimates of the impact of Medicaid pregnancy dental benefits on prenatal dental cleaning rates. Before policy implementation, most estimates are relatively small in magnitude and statistically insignificant with no clear trend. After policy implementation, all estimates are positive with significant increases becoming evident between 7 and 9 months post adoption. This timing aligns with a greater duration of exposure to pregnancy dental benefits, albeit not complete exposure. However, while not statistically significant, the fact that initial estimates for up to 3 months and 4 to 6 months of exposure are positive with confidence intervals that overlap subsequent estimates is suggestive that even partial exposure may have some impacts. By the later post-policy months, the effect plateaus at a consistently higher rate of dental cleaning compared to pre-policy levels, indicating a lasting shift in healthcare-seeking behavior among Medicaid-enrolled pregnant individuals.

(Figure 2 here)

We examine heterogeneity in policy impacts across demographic subgroups by estimating stratified versions of Equation (1) and find broadly consistent increases in prenatal dental cleaning following Medicaid pregnancy dental benefit expansions (Figure 4). Effects were somewhat larger among non-Hispanic Black individuals, those with lower pre-pregnancy risk factors, and urban residents, although differences across these groups were not statistically significant. The lack of statistical precision in subgroup differences by race, risk factors, and urbanicity may reflect limited sample sizes within these groups. The only statistically significant subgroup difference emerged by age: individuals aged 26–34 experienced significantly greater increases in dental cleaning rates compared to those aged 21–25. These findings indicate differential responses by age, highlighting age as a potentially important factor in dental care utilization.

(Figure 4 here)

5.2 Effects of Medicaid Pregnancy Dental Benefits on Birth Outcomes

Table 3 presents our main findings for the birth outcomes, Columns (2) to (5). Notably, Medicaid dental benefits significantly reduce the likelihood of a newborn being small for

gestational age by 1.19 percentage points, representing a 9.52% decrease relative to the baseline mean of 12.5%. Additionally, we observe a statistically significant reduction in very low birth weight by 0.47 percentage points, representing a 28% decline relative to the baseline mean (1.7%) . However, the estimated impacts on preterm birth (-0.90 percentage points) and low birth weight (0.50 percentage points) are not statistically significant.

Figure 3 illustrates event study plots for each birth outcome. Before policy implementation, estimates for most outcomes largely hover near zero with overlapping confidence intervals, suggesting parallel trends between treated and control states. One exception is that the estimates for low birth weight deviate from zero prior to policy adoption, indicating potential violations of the parallel trends assumption for this outcome. However, pre-period point estimates for low birth weight are all negative with a relatively flat trend that remains similar in the post period. Post-policy implementation, we consistently observe negative effects for small for gestational age, preterm birth, and very low birth weight. These effects are especially pronounced for small for gestational age and very low birth weight. While the table estimates for preterm birth are imprecise, the event study plots reveal consistent post-policy reductions, suggesting a potential impact not captured in the average effect estimates. In contrast, there is no consistent evidence of impact on low birth weight.

(Figure 3 here)

We assess potential heterogeneity in the effects of Medicaid pregnancy dental benefit expansions on birth outcomes across geographic, racial, and age subgroups. These estimates are somewhat noisy, particularly for lower-prevalence outcomes, and we do not find statistically significant differences across subgroups—an expected result given the limited evidence of subgroup differences in dental cleaning impacts (Figure A.3).

To assess whether the impacts observed in PRAMS are reflected at the population level, we replicate our main birth outcome analyses using aggregated data from CDC Wonder natality files. These analyses show qualitatively similar patterns: Medicaid pregnancy dental benefits are associated with a statistically significant 3% decline in low birth weight relative to baseline, as well as negative but imprecise effects on small for gestational age, preterm birth, and very low birth weight. Event study plots likewise show no evidence of differential pre-trends and a sustained post-policy decline in low birth weight. Although the point estimates for preterm birth lack statistical precision, the dynamic effects display a clear downward shift after implementation. The CDC Wonder analyses yield patterns that closely align with the PRAMS results, reinforcing the population-level nature of the observed associations. (see Appendix Table A.7 and Figure A.4).

5.3 Extensions and Mechanisms

Table 5 examines the joint effects of Medicaid pregnancy dental benefits and broader adult Medicaid dental expansions on prenatal dental cleaning and birth outcomes. This analysis serves to isolate the specific contribution of pregnancy-targeted dental coverage relative to general Medicaid dental eligibility expansions for adults. The results confirm that improvements in prenatal dental cleaning and reductions in very low birth weight are consistent even when controlling for non-pregnancy adult Medicaid expansions. In contrast, the estimated effects for other birth outcomes are sensitive to the inclusion of adult expansions. Notably, adult (non-pregnancy) Medicaid expansions are associated with modest improvements—statistically significant at the 10% level—for small-for-gestational-age births and low birth weight. These findings underscore the unique value of pregnancy-specific dental coverage in driving improvements in maternal oral health, while also suggesting that broader Medicaid expansions may offer complementary, albeit limited, benefits for certain birth outcomes.

(Table 5 here)

Table 6 presents estimates of the effect of Medicaid pregnancy dental benefits on dental cleaning and birth outcomes after excluding individuals classified as low-income. This analysis is intended to test whether the observed effects persist among higher-income populations. The results indicate that even after excluding low-income individuals, Medicaid pregnancy dental benefits are associated with a statistically significant increase in prenatal dental cleaning (8.99 percentage points) and significant reductions in small-for-gestational-age births, low birth weight, and very low birth weight. The effect on preterm birth remains negative but is not statistically significant. These findings suggest that while low-income populations may benefit most strongly from the policy, meaningful improvements are also observed among higher-income individuals, indicating broader relevance of the dental benefit expansion across income levels.

(Figure 6 here)

(Figure 7 here)

Table 7 examines potential mechanisms through which Medicaid pregnancy dental benefits may influence birth outcomes, focusing on prenatal care utilization, dental coverage, oral health knowledge, and maternal smoking behaviors. The estimates show no statistically significant effects on receiving adequate prenatal care, as measured by the Kotelchuck Index, or on maternal smoking before, during, or after pregnancy. In contrast, policy adoption is associated with statistically significant increases in the likelihood of having dental insurance coverage (13.3 percentage points), reporting that dental care is

important (2.8 percentage points), and receiving dental care advice from a provider (5.9 percentage points). These findings indicate that while Medicaid pregnancy dental benefits do not appear to affect prenatal care use or smoking behaviors, they are associated with meaningful increases in dental coverage and oral health awareness.

To provide additional context beyond pregnancy-specific expansions, we also examine how broader adult Medicaid dental expansions affect overall health perceptions among non-pregnant reproductive-age women. Using BRFSS data, we estimate that adult Medicaid dental coverage is associated with a 1.3 percentage point increase in the probability of reporting "feeling good or better" as a general health status measure (Figure 5). Given the absence of a comparable general health measure in PRAMS, this complementary analysis supports the broader argument that increased access to dental care under Medicaid may enhance overall well-being among low-income women, even outside of pregnancy.

5.4 Robustness Checks

To assess the robustness of our main findings, we estimate the impacts of Medicaid pregnancy dental benefits from an intent-to-treat perspective across socioeconomic subgroups defined by education and income (Table 4). These analyses include all individuals, regardless of insurance type, to capture broader population-level effects rather than restricting to those enrolled in Medicaid. Statistically significant increases in prenatal dental cleaning are concentrated among individuals with lower education and those with household incomes below $25,000 and $50,000. These groups are the most likely to be eligible for and directly affected by Medicaid expansions, and the results align with the expectation that policies targeting low-income populations yield the greatest improvements in preventive service use among those facing structural barriers to care. While effects on birth outcomes are generally less precise, we observe a statistically significant reduction in low birth weight among individuals with lower educational attainment. Taken together, these findings reinforce the central role of Medicaid pregnancy dental benefits in improving access to preventive dental services and indicate that the policy's effects are concentrated among the most socioeconomically vulnerable groups.

(Table 4 here)

To evaluate the robustness of our findings, we conduct a range of supplementary analyses presented in the appendix. Event study estimates that include the post-COVID-19 period continue to display patterns consistent with our main results, suggesting that the observed effects are not driven by pandemic-related shocks (Figures A.1 and A.2). Estimates remain stable across both stacked DID and two-way

fixed effects specifications (Tables A.1 and A.2). We also replicate our results using two alternative analytic samples: one based on the full insurance population to reflect an intent-to-treat framework (Table A.4) and another combining self-reported and birth certificate-based Medicaid coverage to increase precision in identifying program exposure (Table A.5). In both cases, the estimated effects on dental cleaning are consistent with our main findings. For birth outcomes, however, the results are less uniform: the intent-to-treat analysis yields a statistically significant increase in low birth weight in the opposite direction of our main estimates, while the combined Medicaid coverage analysis indicates a statistically significant decline in very low birth weight. These differences likely reflect the rarity of these outcomes and the sensitivity of estimates to alternative exposure definitions.Leave-one-out tests confirm that no single treated state drives the results (Table A.6), and covariate balance tests (Table A.8) demonstrate no systematic differences in baseline characteristics between treated and untreated states, further reinforcing the credibility of our identification strategy.

In summary, the robustness checks and supplemental analyses provide strong support for the main findings. The consistent improvements in prenatal dental cleaning across diverse subgroups, along with significant reductions in certain adverse birth outcomes, underscore the effectiveness of Medicaid pregnancy dental benefit expansions. While we find limited evidence for behavioral mechanisms such as prenatal care utilization or smoking cessation, the persistence of effects across income levels and policy combinations suggests that improved access to dental care itself plays a critical role in shaping maternal and neonatal health outcomes.

6 Discussion

This study provides robust evidence that Medicaid pregnancy dental benefits increase access to preventive dental care during pregnancy and improve select birth outcomes. Expanding coverage substantially increased dental cleaning rates, underscoring the central role of insurance coverage in reducing financial barriers to care during pregnancy. We also find that benefit adoption significantly increased the share of pregnant individuals reporting dental insurance coverage, which likely facilitated greater utilization of dental services. These gains were broadly distributed across groups, indicating that effects are not confined to a single subgroup and reflect a broad population-level impact.

The policy's impact on neonatal outcomes aligns closely with evidence from both clinical and policy research. Clinical studies have long documented that treating periodontal disease during pregnancy can reduce adverse birth outcomes, with estimated reductions of 15–25% for preterm birth and related complications (Bobetsis et al., 2020; Orlandi et al., 2022). Parallel evidence from Medicaid and insurance expansion

studies shows that increased coverage during pregnancy improves access to care and leads to modest but meaningful improvements in birth outcomes (Howell, 2001; Sonchak, 2015; Wherry et al., 2017; Brown et al., 2020). Our estimated 9.5% reduction in small-for-gestational-age births and 28% decline in very low birth weight fall within this documented range of impacts, indicating that real-world coverage expansions can yield population-level benefits comparable to those seen in more controlled clinical settings. By linking expanded insurance coverage directly to increased dental utilization and measurable neonatal health gains, this study adds to a growing body of evidence supporting the role of coverage policy in advancing maternal and child health.

Our analysis sheds light on why pregnancy dental benefits may improve birth outcomes. We find no evidence that the observed effects are driven by changes in prenatal care adequacy or maternal smoking behavior, suggesting that conventional behavioral pathways are unlikely to explain the results. Instead, the pattern of findings points to direct oral–systemic health mechanisms—such as reductions in periodontal inflammation and systemic bacterial load—which have been widely documented as risk factors for adverse pregnancy outcomes. This interpretation is reinforced by observed increases in dental insurance coverage, oral health awareness, and provider dental care advice, all of which are likely to facilitate earlier or more consistent dental care during pregnancy—precisely the period when periodontal treatment is most effective in reducing inflammatory burden.

We also find supporting evidence that the effects of dental coverage extend beyond oral health alone. Adult Medicaid dental expansions are associated with modest but statistically significant improvements in self-reported general health among reproductive-age women. This pattern is consistent with the well-established link between improved oral health and systemic health, including inflammation and chronic disease risk. By showing that pregnancy-specific dental benefits generate impacts even after accounting for these broader adult expansions, our results suggest that targeted coverage during pregnancy amplifies these systemic health pathways during a biologically sensitive period, reinforcing its unique contribution to maternal and infant health.

These findings should be viewed within the broader policy environment in which Medicaid operates. Because dental coverage for pregnant individuals is an optional benefit, it remains particularly vulnerable to shifts in political priorities and fiscal pressures. Recent federal legislation and budgetary adjustments—including changes to Medicaid financing—underscore how state-level benefits can be affected by broader economic conditions and federal policy decisions. In times of budget tightening, optional services like dental coverage may be among the first to face cuts or reduced support. Yet the evidence presented here shows that pregnancy dental benefits produce measurable improvements in both utilization and birth outcomes—particularly for

vulnerable populations—positioning this coverage as a high-value component of the Medicaid program. Recognizing these fiscal and political dynamics underscores the urgency of preserving and strengthening pregnancy dental benefits to sustain their health impacts.

In light of these challenges, these findings point to clear and actionable policy priorities: maintaining and expanding Medicaid pregnancy dental benefits can enhance access to preventive care and improve maternal and infant health outcomes. Integrating oral health assessments into prenatal visits, increasing provider participation, and improving coordination between dental and prenatal care could further amplify these effects. Extending postpartum dental coverage could help sustain oral health gains, with potential long-term benefits for both maternal and child health.

Finally, continued monitoring and evaluation are essential to ensure program effectiveness and equity over time. By systematically tracking utilization patterns, disparities, and outcomes, policymakers can make evidence-based adjustments that strengthen the impact of Medicaid dental coverage. As states face competing fiscal priorities, these findings highlight the importance of preserving and expanding pregnancy dental benefits as a cost-effective strategy to support maternal and infant health.

7 Conclusion

This study provides causal evidence that expanding Medicaid dental benefits during pregnancy increases the use of preventive dental services. Leveraging state-level variation in benefit adoption and nationally representative PRAMS data, we find that coverage expansions lead to a 7.16 percentage point increase in dental cleaning rates—a 29% relative improvement over baseline—underscoring the role of insurance coverage in reducing barriers to care. Consistent with clinical evidence on maternal oral health and pregnancy outcomes, we also find suggestive evidence of reductions in small-for-gestational-age and very low birth weight. While these estimates should be interpreted with caution, they point to potential population-level health gains from coverage expansions. Together, these findings highlight Medicaid pregnancy dental benefits as a targeted and potentially cost-effective lever for improving maternal and infant health, particularly among low-income populations.

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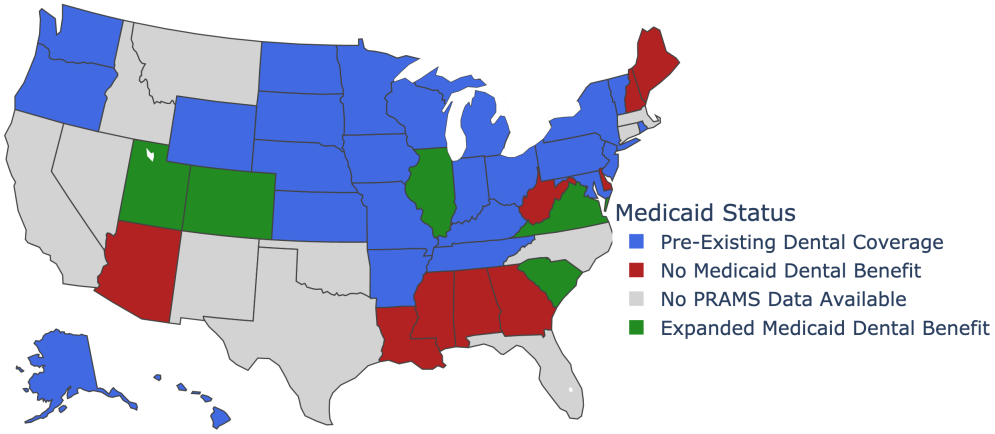
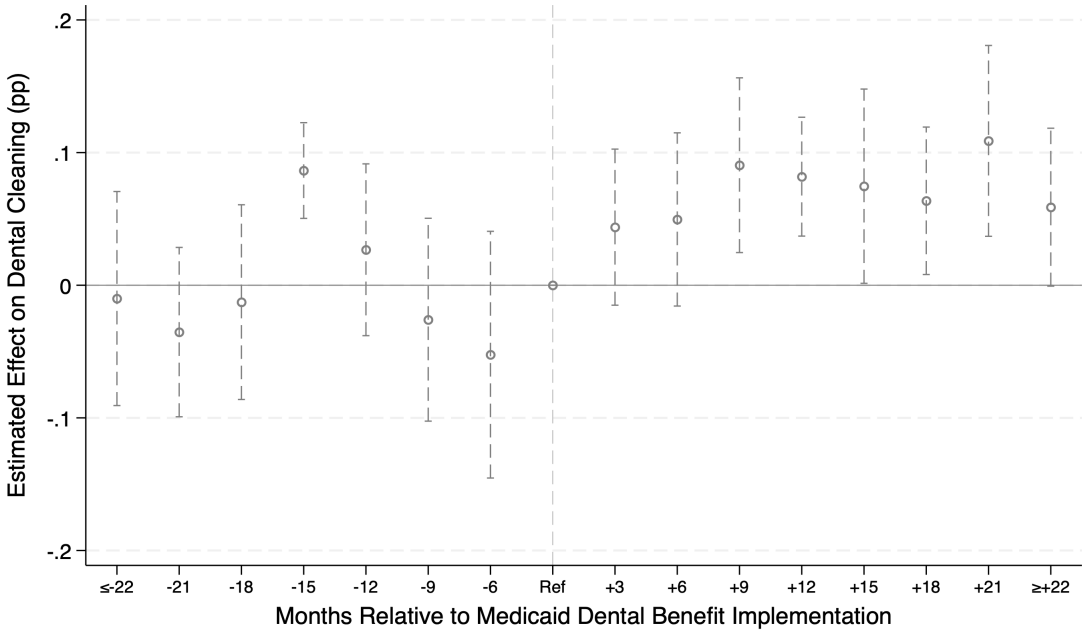
Figure 1: State Variation in Medicaid Pregnancy Dental Benefits, 2012–2019



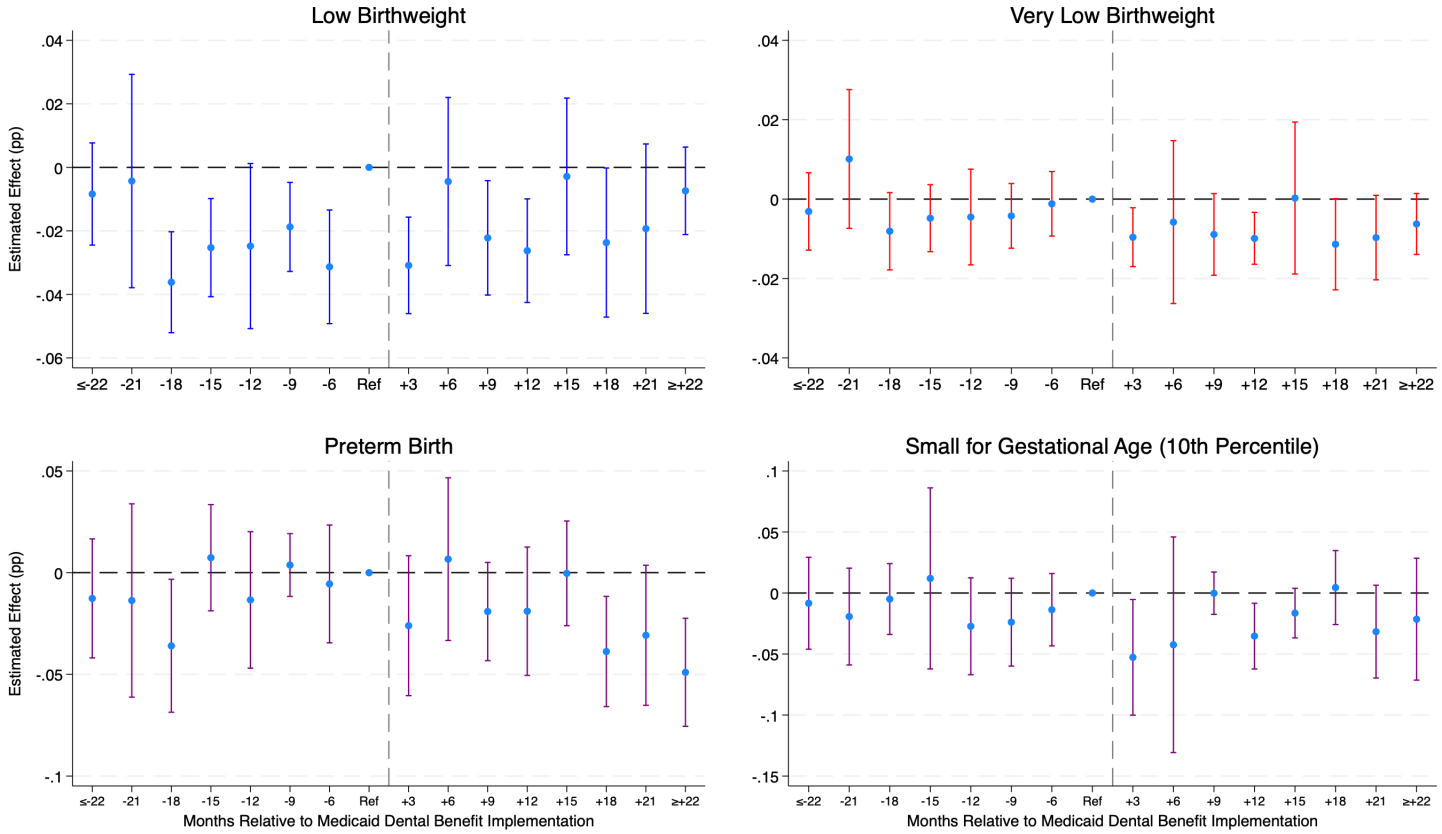
Notes: Data are from the Pregnancy Risk Assessment Monitoring System (PRAMS) and state-level Medicaid policy reports. The figure depicts the Medicaid pregnancy dental benefit status for each state during the study period.

Figure 2: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning: Event Study Estimates



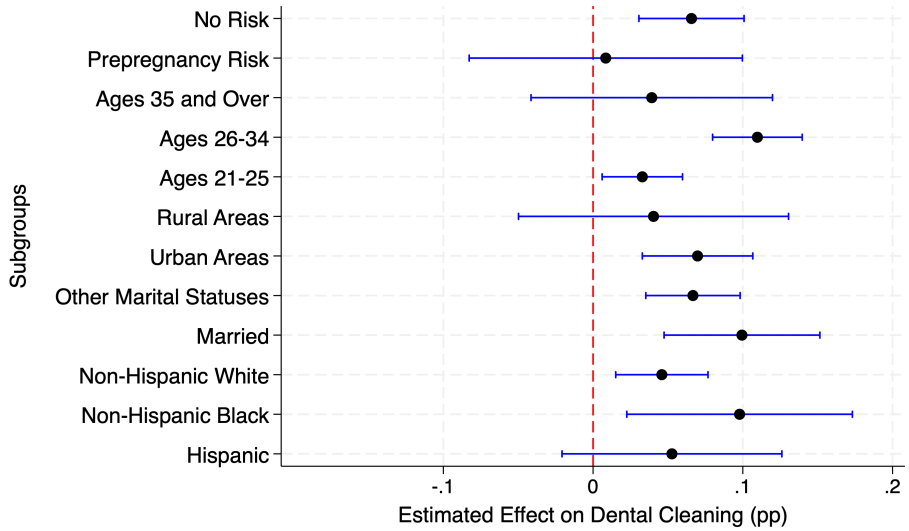
Notes: The figure displays event study estimates of the effect of Medicaid pregnancy dental benefit expansions on prenatal dental cleaning rates, using a stacked difference-in-differences approach. The x-axis represents time in months before and after policy adoption, and the y-axis shows the estimated coefficients. Confidence intervals are indicated by the vertical lines around the point estimates. The reference group is set to 0–3 months before policy implementation, and the estimates test the parallel trends assumption while capturing dynamic treatment effects.

Figure 3: Event Study Estimates: Effect of Medicaid Pregnancy Dental Benefits on Birth Outcomes



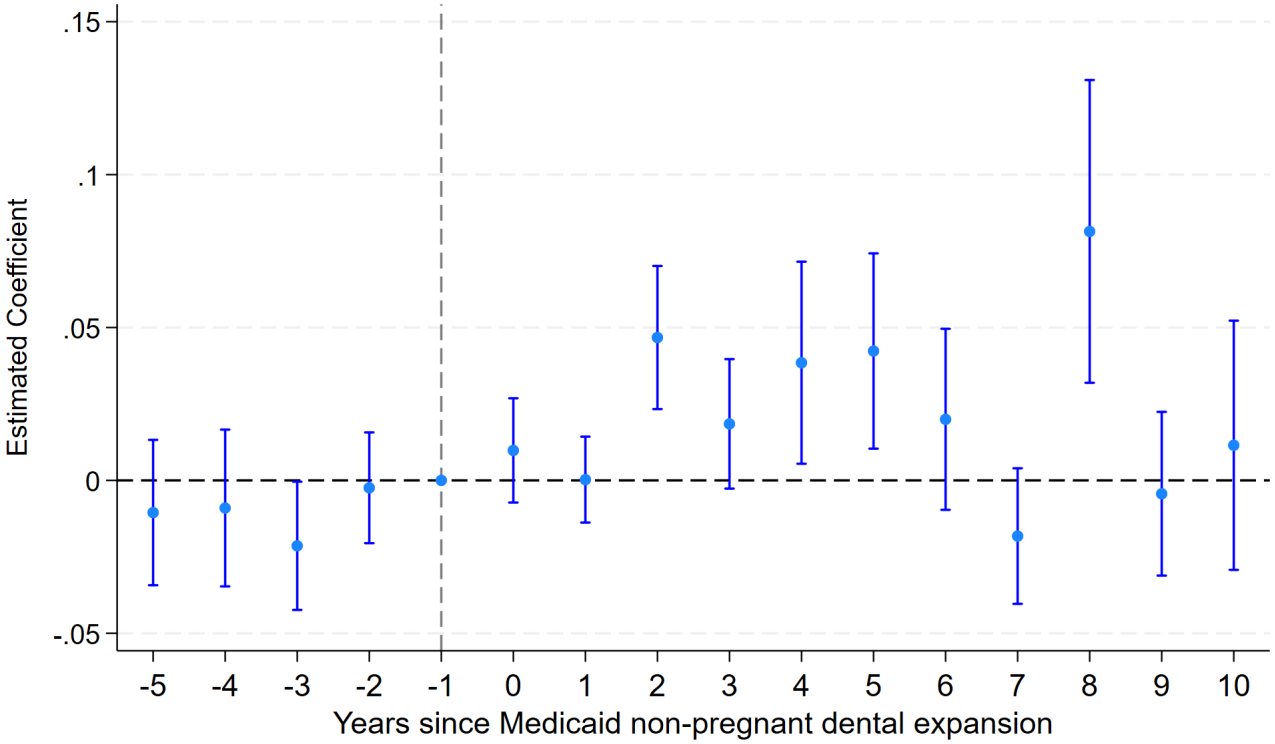
Notes: The figure presents event study estimates of the effect of Medicaid pregnancy dental benefits on key birth outcomes, including low birth weight, very low birth weight, preterm birth, and small for gestational age (10th percentile). Each panel corresponds to a separate outcome variable, with the x-axis representing time in months before and after policy implementation. The y-axis indicates the estimated coefficients, and vertical bars represent 95% confidence intervals. The reference group is set to 0–3 months before policy implementation. These estimates test the parallel trends assumption and provide dynamic treatment effects.

Figure 4: Heterogeneous Effects of Medicaid Pregnancy Dental Benefits on Dental Cleaning by Subgroup



Notes: The figure displays heterogeneous effects of Medicaid pregnancy dental benefits on prenatal dental cleaning rates across key subgroups, including racial/ethnic groups, age groups, marital statuses, and geographic locations. The estimated coefficients are plotted along with 95% confidence intervals. Subgroups with significant positive effects indicate populations that benefit most from the policy, while the vertical red line at zero denotes no effect.

Figure 5: Event Study Estimates: Effect of Medicaid Adult Dental Expansions on Self-Reported General Health



Notes: The figure presents event study estimates of the effect of adult Medicaid dental expansions on self-reported general health among non-pregnant reproductive-age women using BRFSS data. The x-axis indicates event time in years relative to policy implementation (year 0), and the y-axis shows estimated coefficients for each year. Each point reflects the estimated effect for a given year, with vertical bars representing 95% confidence intervals. The vertical dashed line marks the timing of the policy implementation. The average post-expansion effect is 0.013 (SE = 0.006), indicating a statistically significant increase in the probability of reporting "feeling good or better."

Table 1: Sub-experiments of Medicaid dental benefit expansions for pregnant individuals

Sub-experiment Date	Event Window	Treatment States	Control States
10/2013	01/2012–10/2016	UT	DE, GA, ME, TN, WV, NH, AL, LA, MS
04/2014	01/2012–04/2017	CO	DE, GA, ME, TN, WV, NH, AL, LA, MS
07/2014	01/2012–07/2017	IL	DE, GA, ME, TN, WV, NH, AL, LA, MS
12/2014	01/2012–12/2017	SC	DE, GA, ME, TN, WV, NH, AL, LA, MS
03/2015	01/2012–03/2028	VA	DE, GA, ME, TN, WV, NH, AL, LA, MS

Notes: This table summarizes the sub-experiments used in the stacked difference-in-differences design. Each sub-experiment corresponds to a treatment state's Medicaid pregnancy dental benefit adoption date and compares it to a set of control states that did not adopt similar benefits during the event window. This structure decomposes staggered policy timing into two-by-two contrasts and supports aggregation across states and adoption cohorts. Event windows span up to 36 months before and after policy implementation, allowing for estimation of dynamic effects and assessment of pre-trends.

Table 2: Summary Statistics by State Medicaid Dental Policy Adoption and Pre/Post Policy Period

	No Dental Benefit	**Added Dental Benefit**	
	(1)	Pre (2)	Post (3)
Dental Care Utilization			
Received Dental Cleaning	0.253	0.272	0.305
Birth Outcomes			
Low Birthweight	0.101	0.091	0.091
Very Low Birthweight	0.016	0.016	0.016
Preterm Birth	0.114	0.108	0.088
Small for Gestational Age (10th Percentile)	0.124	0.113	0.108
Demographics			
Age of Mother	27.24	27.63	28.08
Lower than College Education	0.597	0.555	0.553
Non-Hispanic White	0.506	0.418	0.368
Non-Hispanic Black	0.285	0.263	0.23
Hispanic	0.116	0.28	0.294
Non-Hispanic Other	0.082	0.013	0.075
Married	0.356	0.403	0.417
Urban Areas	0.706	0.691	0.759
Household Income (Midpoint)	19687.9	18700.73	21777.25
State Controls			
Dentists per Capita	48.02	61.11	63.73
Unemployment Rate	7.66	8.79	6.33
Fertility Rate	61.42	63.39	62.54
Managed Care Organization	59.86	25.24	38.56
Health Centers per Capita	4.36	3.5	3.46

Note: Table reports weighted means of maternal, demographic, and state-level characteristics by Medicaid pregnancy dental benefit policy status and period. "No Dental Benefit" refers to control states that did not adopt pregnancy dental benefits during the study period. "Pre-policy" and "Post-policy" periods correspond to births occurring before and after the effective date of Medicaid pregnancy dental benefit implementation in treatment states. Data come from the Pregnancy Risk Assessment Monitoring System (PRAMS), 2012–2019.

Table 3: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning and Birth Outcomes

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0716***	-0.0119**	-0.00900	0.00503	-0.00470***
	(0.0138)	(0.00518)	(0.00633)	(0.00321)	(0.00147)
Baseline Mean	0.246	0.125	0.112	0.103	0.017
Observations	67068	61317	64282	67132	67132
R-squared	0.038	0.015	0.025	0.023	0.010

Notes: The table presents estimates of the effect of Medicaid pregnancy dental benefits on dental cleaning during pregnancy and key birth outcomes. Each column corresponds to results from a separate regression, with robust standard errors clustered at the state level shown in parentheses. The baseline mean is the average rate of each outcome in states without Medicaid pregnancy dental benefits. Covariates include maternal age, race/ethnicity, education, marital status, urban/rural residence, and pre-pregnancy risk factors, along with state-level controls such as Medicaid eligibility limits, managed care penetration, and broader contextual factors. State and year-by-month fixed effects account for unobserved heterogeneity across states and over time. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Intent-to-Treat Estimates: Effect of Medicaid Pregnancy Dental Benefits

	All Sample	Low Education ($\leq$ Associate)	High Education ($\geq$ Bachelor's)	Income $<$ \$25k	Income $\geq$ \$75k	Income $\leq$ \$50k
Panel A: Dental Cleaning						
Pregnancy Dental Benefit	0.0420***	0.0572***	0.0362**	0.0355*	0.0262	0.0423**
	(0.0110)	(0.0124)	(0.0117)	(0.0184)	(0.0194)	(0.0151)
Observations	148811	54838	93973	56406	35374	84565
R-squared	0.161	0.050	0.135	0.021	0.043	0.042
Panel B: Small for Gestational Age (P10)						
Pregnancy Dental Benefit	-0.00113	0.00442	-0.00342	0.00548	-0.00280	-0.00421
	(0.00539)	(0.0107)	(0.00822)	(0.0109)	(0.0137)	(0.00766)
Observations	135413	50555	84858	51836	31858	77389
R-squared	0.013	0.013	0.009	0.011	0.012	0.013
Panel C: Preterm Birth						
Pregnancy Dental Benefit	0.00116	-0.00853	0.00640	-0.0104	0.00439	-0.00497
	(0.00817)	(0.00984)	(0.00986)	(0.00922)	(0.00585)	(0.00739)
Observations	143090	52829	90261	54203	34210	81203
R-squared	0.018	0.021	0.015	0.024	0.013	0.020
Panel D: Low Birth Weight						
Pregnancy Dental Benefit	-0.00180	-0.0121**	0.00387	-0.00819	-0.00282	-0.00510*
	(0.00248)	(0.00394)	(0.00362)	(0.00495)	(0.00466)	(0.00250)
Observations	148846	54871	93975	56400	35367	84553
R-squared	0.020	0.017	0.019	0.020	0.010	0.018
Panel E: Very Low Birth Weight						
Pregnancy Dental Benefit	0.000368	-0.00189	0.00178	-0.00229	0.00276	-0.000717
	(0.00160)	(0.00138)	(0.00213)	(0.00267)	(0.00179)	(0.00262)
Observations	148846	54871	93975	56400	35367	84553
R-squared	0.007	0.008	0.007	0.009	0.008	0.007

Notes: This table reports intent-to-treat estimates of the effect of Medicaid pregnancy dental benefits on prenatal dental cleaning and birth outcomes, stratified by education and income subgroups. Low education is defined as an associate degree or less; high education is defined as a bachelor's degree or higher. Income categories are based on midpoint estimates of self-reported household income brackets. Estimates are derived using a stacked difference-in-differences framework that accounts for staggered policy adoption. All models include individual demographic covariates, state-level socioeconomic controls, state and year fixed effects, and incorporate PRAMS survey weights to ensure population representativeness. Standard errors are clustered at the state level. Statistical significance is denoted by *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table 5: Effect of Medicaid Pregnancy Dental Benefits and Adult Medicaid Expansions on Dental Cleaning and Birth Outcomes

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0734***	-0.00347	-0.000311	0.00301	-0.00422**
	(0.0269)	(0.00817)	(0.00559)	(0.00430)	(0.00187)
Non-Pregnant Medicaid Expansion	-0.00308	-0.0147*	-0.0151*	0.00349	-0.000819
	(0.0271)	(0.00858)	(0.00803)	(0.00492)	(0.00260)
Observations	67068	61317	64282	67132	67132
R-squared	0.038	0.015	0.025	0.023	0.010

Notes: This table presents estimates of the effects of (i) Medicaid pregnancy dental benefit adoption and (ii) non-pregnancy adult Medicaid expansions on prenatal dental cleaning and selected birth outcomes. Each column reports results from a separate regression controlling for maternal demographics, state-level economic and healthcare characteristics, and COVID-19 related measures. All regressions include state and year fixed effects and are weighted using survey weights. Standard errors clustered at the state level are shown in parentheses. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning and Birth Outcomes (Excluding Low-Income)

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0675***	-0.0131*	-0.0144	-0.00276	-0.00696***
	(0.0168)	(0.00672)	(0.00984)	(0.00580)	(0.00249)
Baseline Mean	0.282	0.109	0.101	0.086	0.014
Observations	40476	37192	38908	40485	40485
R-squared	0.030	0.020	0.031	0.026	0.014

Notes: This table presents estimates of the effect of Medicaid pregnancy dental benefits on prenatal dental cleaning and key birth outcomes, excluding individuals classified as **low income**. Each column corresponds to results from a separate regression, with robust standard errors clustered at the state level shown in parentheses. Covariates include maternal age, race/ethnicity, education, marital status, urban/rural residence, and pre-pregnancy risk factors, along with state-level controls such as Medicaid eligibility limits, managed care penetration, and broader contextual factors. State and year-by-month fixed effects account for unobserved heterogeneity across states and over time. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

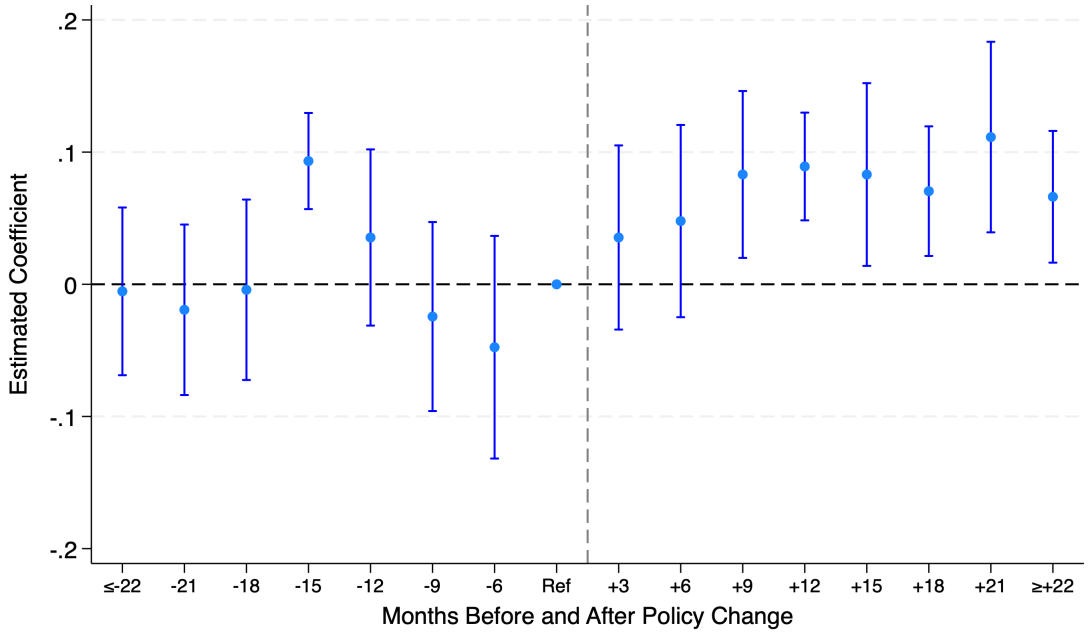
Table 7: Effect of Medicaid Pregnancy Dental Benefits on Prenatal Care, Dental Coverage, and Smoking Behaviors

	Adequate Prenatal Care (Kotelchuck)	Has Dental Insurance	Knows Dental Care is Important	Received Dental Care Advice	Maternal Smoking (Any)	Smoking 3 Months Before	Smoking Last 3 Months of Pregnancy	Non-Smoking After Pregnancy
Pregnancy Dental Benefit	0.00552	0.133***	0.0279*	0.0587**	0.00390	-0.000965	0.0135	-0.000748
	(0.0180)	(0.0284)	(0.0146)	(0.0229)	(0.0133)	(0.0133)	(0.0150)	(0.0110)
Observations	75040	56150	57019	57054	78989	79515	79583	79548
R-squared	0.038	0.111	0.043	0.032	0.171	0.195	0.174	0.170

Notes: This table presents estimated effects of state-level Medicaid pregnancy dental benefit policies on prenatal care utilization, dental insurance coverage, oral health knowledge, receipt of provider dental advice, and maternal smoking behaviors. Each column corresponds to a separate regression controlling for maternal demographics, state-level socioeconomic conditions, and healthcare resource availability. All models include state and year fixed effects. The policy indicator reflects whether Medicaid pregnancy dental benefits were available in a given state and year. Standard errors are clustered at the state level and reported in parentheses. Statistical significance is denoted by *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

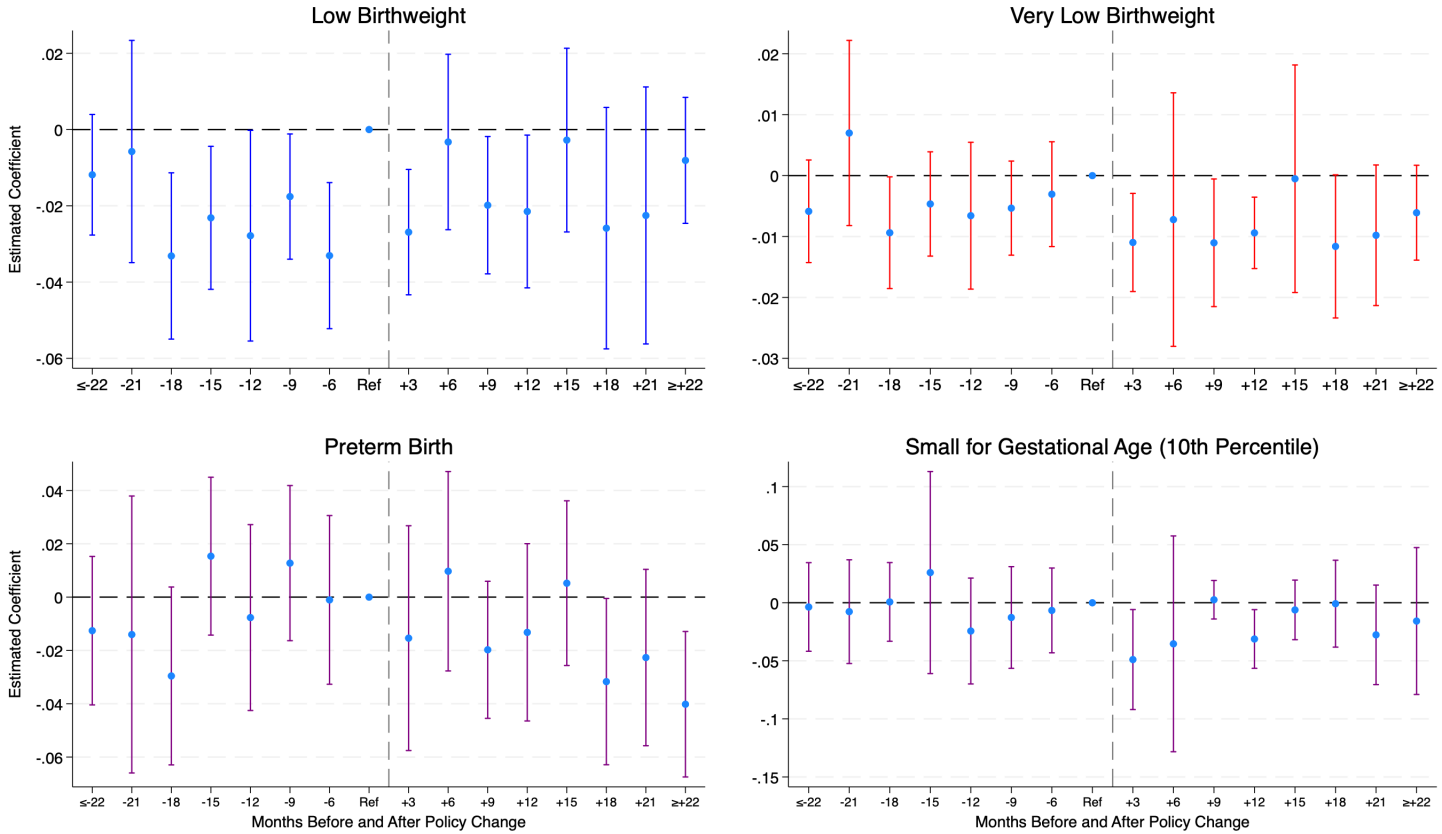
Appendix

Figure A.1: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning: Event Study Estimates (Including Post-COVID-19 Period)



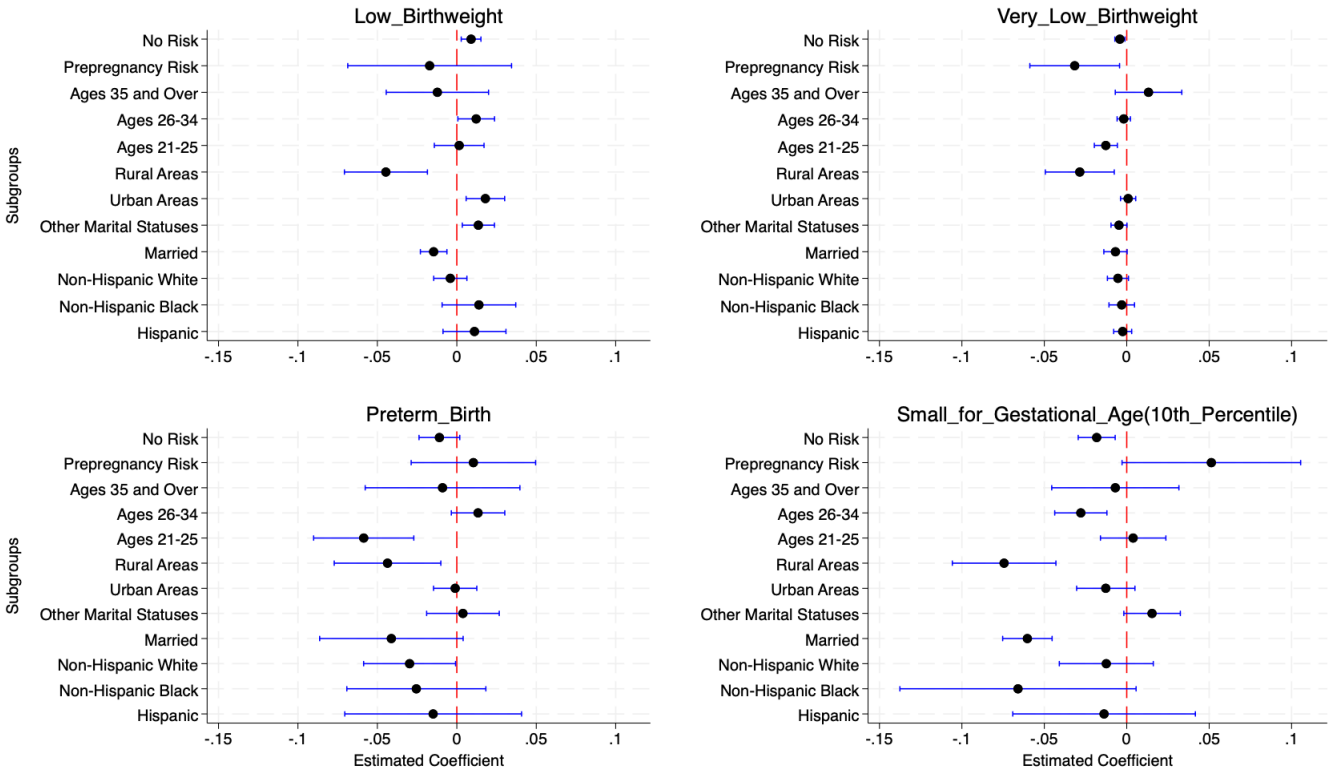
Notes: The figure displays event study estimates of the effect of Medicaid pregnancy dental benefit expansions on prenatal dental cleaning rates, using a stacked difference-in-differences approach with data including the post-COVID-19 period. The x-axis represents time in months before and after policy adoption, and the y-axis shows the estimated coefficients. Confidence intervals are indicated by the vertical lines around the point estimates. The reference group is set to 0–3 months before policy implementation. These estimates test the parallel trends assumption and provide dynamic treatment effects over time.

Figure A.2: Event Study Estimates: Effect of Medicaid Pregnancy Dental Benefits on Birth Outcomes (Including Post-COVID-19 Period)



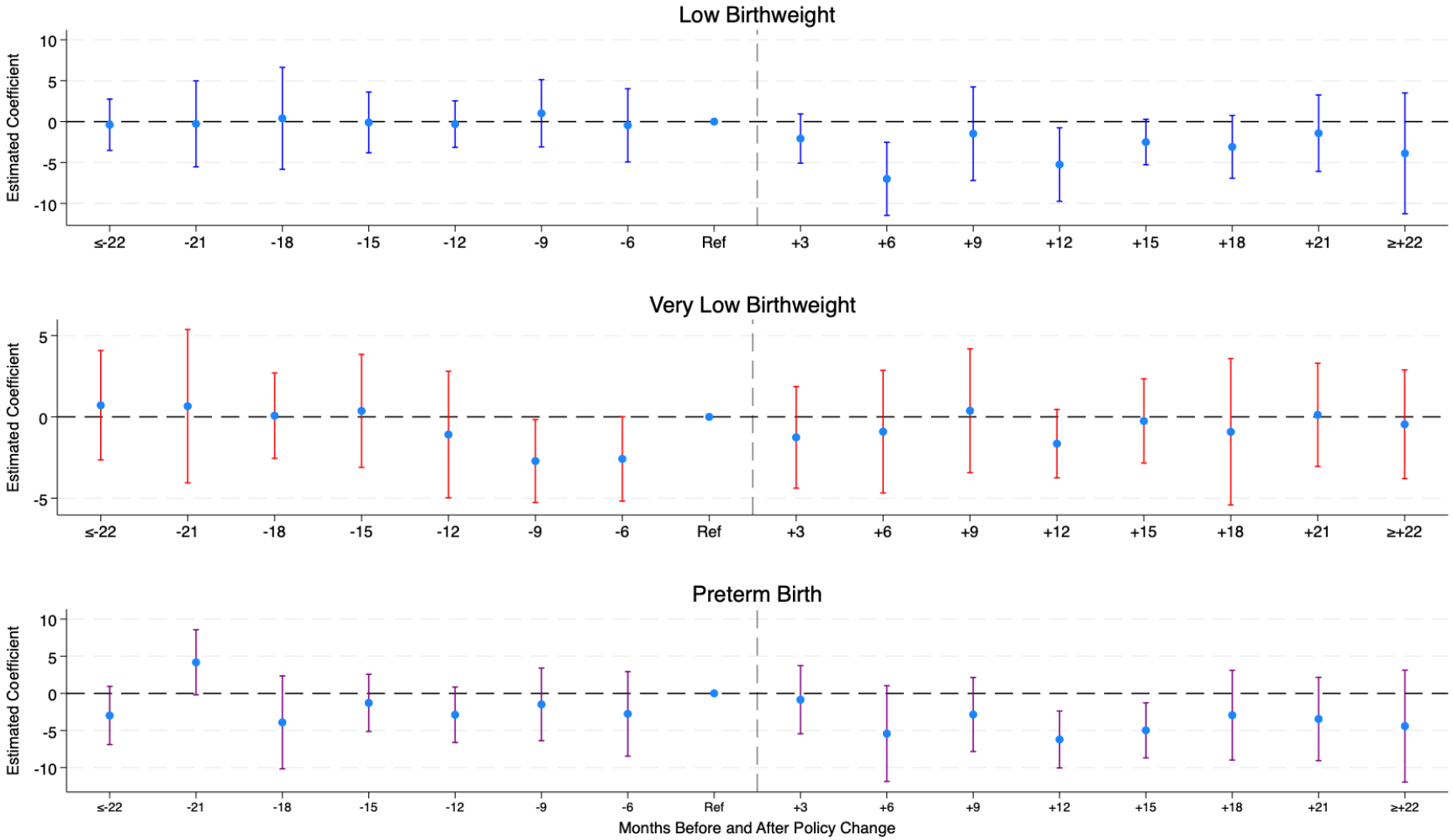
Notes: The figure presents event study estimates of the effect of Medicaid pregnancy dental benefits on key birth outcomes, including low birth weight, very low birth weight, preterm birth, and small for gestational age (10th percentile), using data that includes the post-COVID-19 period. Each panel corresponds to a separate outcome, with the x-axis representing months before and after policy implementation. The y-axis shows the estimated coefficients, and vertical bars indicate 95% confidence intervals. The reference group is set to 0–3 months before policy implementation. These estimates assess the parallel trends assumption and capture dynamic treatment effects.

Figure A.3: Heterogeneous Effects of Medicaid Pregnancy Dental Benefits on Birth Outcomes by Subgroup



Notes: The figure displays the heterogeneous effects of Medicaid pregnancy dental benefits on key birth outcomes across subgroups, including demographic (age, race/ethnicity), geographic (urban vs. rural), and risk-based categories. Estimated coefficients for low birthweight, very low birthweight, preterm birth, and small for gestational age (10th percentile) are presented with 95% confidence intervals. Subgroups showing significant reductions or no changes provide insights into differential impacts. The vertical red line at zero represents no effect.

Figure A.4: Event Study Estimates of Medicaid Pregnancy Dental Benefit Effects on Birth Outcomes Using CDC WONDER Data



Notes: Each panel presents event study estimates from separate regressions evaluating the impact of Medicaid pregnancy dental benefit availability on (1) low birthweight, (2) very low birthweight, and (3) preterm birth rates (per 1,000 births). The reference period is 3–6 months before policy implementation. All models adjust for state-level covariates including fertility rates, managed care penetration, health center availability, unemployment, dental provider supply, ACA expansion, and pregnancy hotline availability. State and year fixed effects are included. Standard errors are clustered at the state level. Shaded vertical line indicates policy implementation.

Table A.1: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning (Stacked DID)

	(1)	(2)	(3)	(4)
Pregnancy Dental Benefit	0.0658***	0.0806***	0.0737***	0.0716***
	(0.0160)	(0.0127)	(0.0148)	(0.0138)
State	YES	YES	YES	YES
Year	YES	YES	YES	YES
Demographics		YES	YES	YES
Contextual Factors			YES	YES
Health Resources				YES
Observations	68840	67068	67068	67068
R-squared	0.016	0.037	0.038	0.038

Notes: The table reports estimates of the effect of Medicaid pregnancy dental benefits on prenatal dental cleaning using a stacked difference-in-differences (SDID) design. Each column corresponds to a separate regression, sequentially adding control variables: demographics, contextual factors, and health resources. All models include state and year fixed effects and are weighted by survey weights. Robust standard errors clustered at the state level are reported in parentheses. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning (TWFE)

	(1)	(2)	(3)	(4)
Pregnancy Dental Benefit	0.0757***	0.105***	0.0974***	0.0776***
	(0.0233)	(0.0168)	(0.0173)	(0.0160)
State	YES	YES	YES	YES
Year	YES	YES	YES	YES
Demographics		YES	YES	YES
Contextual Factors			YES	YES
Health Resources				YES
Observations	30437	28758	28758	28758
R-squared	0.016	0.032	0.032	0.033

Notes: The table reports estimates of the effect of Medicaid pregnancy dental benefits on prenatal dental cleaning using a traditional two-way fixed effects (TWFE) design. Each column adds further controls: demographics, contextual factors, and health resources. Models are weighted and include state and year fixed effects. Standard errors are clustered at the state level. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Effect of Medicaid Pregnancy Dental Benefits on Prenatal Dental Cleaning and Birth Outcomes (Including Post-COVID-19 Period)

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0663***	-0.0149***	-0.00758	0.00693**	-0.00427**
	(0.0151)	(0.00506)	(0.00551)	(0.00304)	(0.00164)
Baseline Mean	0.242	0.123	0.114	0.105	0.017
Observations	95582	87430	91572	95653	95653
R-squared	0.039	0.014	0.026	0.023	0.010

Notes: The table presents estimates of the effect of Medicaid pregnancy dental benefits on dental cleaning during pregnancy and key birth outcomes using data that includes the post-COVID-19 period. Each column corresponds to results from a separate regression, with robust standard errors clustered at the state level shown in parentheses. The baseline mean is the average rate of each outcome in states without Medicaid pregnancy dental benefits. Covariates include maternal age, race/ethnicity, education, marital status, urban/rural residence, and pre-pregnancy risk factors, along with state-level controls such as Medicaid eligibility limits, managed care penetration, and broader contextual factors. State and year fixed effects account for unobserved heterogeneity across states and over time. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Intent-to-Treat Estimates: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning and Birth Outcomes (Full Insurance Sample)

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0350***	0.000495	0.00330	0.00670**	-0.000273
	(0.00807)	(0.00433)	(0.00289)	(0.00252)	(0.00104)
Baseline Mean	0.422	0.101	0.093	0.079	0.013
Observations	148811	135413	143090	148846	148846
R-squared	0.163	0.014	0.019	0.020	0.007

Notes: The table presents intent-to-treat (ITT) estimates of the effect of Medicaid pregnancy dental benefit expansions on prenatal dental cleaning and birth outcomes using the full insurance sample, which includes individuals with Medicaid, private, or other forms of insurance. Each column reports results from a separate regression of the outcome on the dental benefit policy indicator. All models adjust for maternal demographics (age, education, marital status, race/ethnicity, urban/rural residence, pre-pregnancy health risk), state-level characteristics (fertility rate, managed care penetration, dental provider supply, unemployment rate) and health service factors (ACA expansion, dentist availability). State and year fixed effects are included. Robust standard errors are clustered at the state level and reported in parentheses. Baseline means represent average outcomes in states without pregnancy dental benefits. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Effect of Medicaid Pregnancy Dental Benefits on Dental Cleaning and Birth Outcomes (Self-Reported + Birth Certificate Medicaid)

	Dental Cleaning	Small for Gestational Age (P10)	Preterm Birth	Low Birth Weight	Very Low Birth Weight
Pregnancy Dental Benefit	0.0673***	0.000789	-0.00350	0.00880**	-0.00325*
	(0.0133)	(0.00439)	(0.00664)	(0.00426)	(0.00165)
Baseline Mean	0.253	0.122	0.111	0.101	0.016
Observations	74233	67809	71136	74292	74292
R-squared	0.036	0.014	0.022	0.021	0.009

Notes: This table presents estimates of the effect of Medicaid pregnancy dental benefits on dental cleaning during pregnancy and key birth outcomes, using a sample that includes both self-reported Medicaid coverage and birth certificate Medicaid coverage. Each column corresponds to results from a separate regression, with robust standard errors clustered at the state level shown in parentheses. The baseline mean is the average rate of each outcome in states without Medicaid pregnancy dental benefits. Covariates include maternal age, race/ethnicity, education, marital status, urban/rural residence, and pre-pregnancy risk factors, along with state-level controls such as Medicaid eligibility limits, managed care penetration, and broader contextual factors. State and year fixed effects account for unobserved heterogeneity across states and over time. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.6: Leave-One-Out Estimates: Effect of Medicaid Pregnancy Dental Benefits

	Full Sample	Excl. UT	Excl. IL	Excl. CO	Excl. VA	Excl. SC
Panel A: Dental Cleaning						
Pregnancy Dental Benefit	0.0716***	0.0812***	0.0437*	0.0654***	0.0764***	0.0716***
	(0.0138)	(0.00959)	(0.0231)	(0.0173)	(0.0161)	(0.0138)
Observations	67068	65470	64822	65030	66180	67068
R-squared	0.038	0.035	0.043	0.039	0.038	0.038
Panel B: Small for Gestational Age (P10)						
Pregnancy Dental Benefit	-0.0119**	-0.0148***	-0.00295	-0.0108	-0.0162***	-0.0119**
	(0.00518)	(0.00522)	(0.00728)	(0.00677)	(0.00572)	(0.00518)
Observations	61317	59778	59168	59391	60476	61317
R-squared	0.015	0.015	0.015	0.015	0.014	0.015
Panel C: Preterm Birth						
Pregnancy Dental Benefit	-0.00900	-0.00937	-0.0178*	-0.0104*	-0.0169***	-0.00900
	(0.00633)	(0.00736)	(0.00927)	(0.00602)	(0.00464)	(0.00633)
Observations	64282	62684	62039	62246	63393	64282
R-squared	0.025	0.025	0.026	0.026	0.023	0.025
Panel D: Low Birth Weight						
Pregnancy Dental Benefit	0.00503	0.00443	0.00470	0.00606*	0.00604	0.00503
	(0.00321)	(0.00327)	(0.00450)	(0.00357)	(0.00393)	(0.00321)
Observations	67132	65534	64886	65097	66241	67132
R-squared	0.023	0.023	0.022	0.023	0.023	0.023
Panel E: Very Low Birth Weight						
Pregnancy Dental Benefit	-0.00470***	-0.00559***	-0.00609**	-0.00337**	-0.00397**	-0.00470***
	(0.00147)	(0.00147)	(0.00252)	(0.00145)	(0.00157)	(0.00147)
Observations	67132	65534	64886	65097	66241	67132
R-squared	0.010	0.010	0.010	0.010	0.010	0.010

Notes: This table presents leave-one-out stacked difference-in-differences (SDID) estimates of the effect of Medicaid pregnancy dental benefits on various maternal and birth outcomes. Each column excludes one treated state at a time. Standard errors are clustered at the state level and shown in parentheses. Statistical significance is denoted as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Effect of Medicaid Pregnancy Dental Benefits on Birth Outcomes (CDC Wonder Data)

	Very Low Birthweight	Low Birthweight	Preterm Birth
Pregnancy Dental Benefit	-0.113	-3.410***	-2.249
	(0.614)	(1.245)	(1.513)
Baseline Mean	20.735	107.745	117.477
Observations	2090	2906	2906
R-squared	0.523	0.647	0.697

Notes: Table displays regression estimates from models assessing the effect of Medicaid pregnancy dental benefits on birth outcomes using CDC Wonder data. Outcomes are measured as rates per 1,000 live births. All regressions include state and year fixed effects and control for state-level socioeconomic and health infrastructure variables. Standard errors clustered at the state level are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Balance Test: Covariate Differences by Medicaid Pregnancy Dental Benefit Status

	Hispanic	Non-Hispanic Black	Non-Hispanic White	Non-Hispanic Other	Ages 21–25	Ages 26–34	Ages 35 and Over	Married	Other Marital Status	Urban Areas	Rural Areas
Pregnancy Dental Benefit	-0.0404**	-0.00877	0.0227	0.0264	0.0661***	-0.0801***	0.0141*	-0.0174	0.0174	-0.0250*	0.0250*
	(0.0197)	(0.00721)	(0.0488)	(0.0565)	(0.0230)	(0.0211)	(0.00790)	(0.0124)	(0.0124)	(0.0146)	(0.0146)
Observations	67141	67141	67141	67141	67141	67141	67141	67141	67141	67141	67141
R-squared	0.099	0.118	0.130	0.415	0.015	0.009	0.012	0.030	0.030	0.113	0.113
	Low Education	High Education	Low Income	Low Middle Income	Middle Income	Upper Income	High Income	Other Income	Prepregnancy Risk	No Risk	Missing Risk Info
Pregnancy Dental Benefit	0.0280	-0.0280	-0.00710	0.0312**	-0.0330*	0.0291***	-0.000825	0.0291***	-0.0177	0.00323	0.0144
	(0.0332)	(0.0332)	(0.0167)	(0.0126)	(0.0176)	(0.00728)	(0.00285)	(0.00728)	(0.0137)	(0.00552)	(0.0123)
Observations	67141	67141	67141	67141	67141	67141	67141	67141	67141	67141	67141
R-squared	0.011	0.011	0.074	0.017	0.040	0.034	0.006	0.034	0.450	0.018	0.832

Notes: The table reports results from balance tests assessing differences in baseline characteristics between states with and without Medicaid pregnancy dental benefits. Each cell presents the estimated coefficient from a separate regression of the specified characteristic on the Medicaid dental benefit indicator, controlling for time-varying state-level covariates. All models include state and year fixed effects. Standard errors clustered at the state level are shown in parentheses. Statistical significance is denoted by *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.