Public Health Insurance Expansions and the Use of Non-Physician Providers: Evidence from Certified Nurse Midwives

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Abstract: This study considers whether the Affordable Care Act (ACA) Medicaid Expansions resulted in changes in the use of non-physician providers. Medicaid expansions may have impacted both payments to providers as well as insurance availability for patients. Using U.S. birth certificate records, we analyze whether the ACA Medicaid expansions influenced the trade-off between physicians and certified nurse-midwives (CNMs/CMs) for obstetric care. Our findings indicate that the ACA Medicaid expansions led to an increase in the utilization of CNMs/CMs and a decrease in physician-reported deliveries. This shift from physicians to CNMs/CMs is particularly noticeable in states with Medicaid reimbursement parity for CNMs/CMs. These results suggest that health insurance expansions may increase the use of non-physician providers, but only in cases where non-physician providers are reimbursed similarly to physicians.

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1 Introduction

Recent public health insurance expansions through the Affordable Care Act (ACA) have led to sizable increases in healthcare demand and utilization (Barbaresco, 2015; Wherry and Miller, 2016; Sommers et al., 2016; Sommers, 2017; Benjamin D. Sommers, 2017; Ghosh, 2017; Alcalá, 2017; Mazurenko, 2018; Lee, 2018; Gruber, 2019; Kandilov, 2021). Despite the beneficial effects of public insurance expansions, there is some concern that these insurance expansions may overburden the healthcare system, and have "negative spillover" effects through reduced availability of services and higher wait times (Mitchell et al., 2020). Concerns of an overburdened health system are especially salient in the area of obstetrics, where higher demand for early prenatal care and other reproductive services may strain existing resources (ACNM, 2015; ACOG, 2018; Rosenberg, 2019; of Health and Services, 2021).

Certified Nurse Midwives (CNMs/CMs) have been suggested as a key piece of expanding the obstetric workforce to meet provider shortages (ACNM, 2015; ACOG, 2016, 2018). CNMs/CMs provide lower-cost and lower-intensity obstetric care (Eck, 2021; Farb, 2023), with CNM/CM-led care reducing both interventions and complications.[1] Despite the benefits of CNM/CM care, in the United States, physicians attend almost 90% of births, and many insurers fail to even list midwives as options for obstetric care in their provider directories (Farb, 2023). This limited reliance on midwives in the United States differs substantially from the obstetric workforces of comparable high-income countries (Tikkanen et al., 2020). The U.S. has the fewest midwives and the lowest number of obstetric providers per capita compared to similar settings (Tikkanen et al., 2020). For example, in the U.K., a little over 50% of births are midwife-attended (Digital, 2016).

In this paper, we study the effects of new insurance provision through the ACA Medicaid expansions on the use of CNMs/CMs for deliveries. The ACA Medicaid expansions stimulate the demand for health care by giving eligible pregnant individuals access to preconception Medicaid insurance. This increased insurance access should allow patients to start prenatal care earlier, increasing overall demand for obstetric services (Palmer, 2020; Daw et al., 2020; Chatterji et al., 2023),. Due to the earlier access to care, patients may also choose different providers than if they started prenatal care later in pregnancy. To accommodate the higher demand, the obstetric workforce may also reorganize staffing to accommodate any patient influx. In particular, by hiring more CNMs/CMs or using more CNMs/CMs to provide low-intervention (non-

[1] Two recent matched comparisons of CNM/CM-led care have demonstrated lower premature birth, reduced instances of cesarean sections, and lower induction rates with midwifery-led care (Dubay et al., 2020; Wallace, 2023). Overall, CNM/CM care for low-risk pregnancies has been demonstrated to be similar to or higher quality than standard obstetric care (Tikkanen et al., 2020).

cesarean) pregnancy and delivery care.

We use the Natality Detailed File over 2010-2019 to consider whether the ACA influenced the delivery attendant reported on the birth certificate. Using an event-study design, we consider whether the ACA Medicaid expansions impact the use of CNMs/CMs as the listed provider. Our results show the estimates from both the two-way fixed effects specification (TWFE) and the Interaction-Weighted estimator (IW) (Sun and Abraham, 2021).

Our event-study results reveal an apparent increase in CNM/CM-attended births starting two quarters after the Medicaid expansion. The increase in CNM/CM deliveries occurs for all, high-risk, and low-risk pregnancies. CNM/CM deliveries increase the most for the low-risk group, a one percentage point increase in CNM/CM-attended deliveries. This translates into an 11 percent increase in CNM/CM-attended births. While CNM/CM deliveries increase, physician deliveries decline by a similar amount, but the reduction in physician deliveries shows more evidence of a preexisting trend than the increase in CNM/CM deliveries.

Then, we explore the mechanisms behind the rise in CNM/CM-attended deliveries. We demonstrate that CNM/CM-attended births only increase in states with Medicaid reimbursement parity for CNMs. Higher CNM reimbursements relative to physicians under Medicaid are also associated with a more apparent switch to CNMs/CMs after the ACA Medicaid expansions. These results suggest that reimbursements are an essential factor in the switch to CNMs/CMs.

To further disentangle what causes the rise in CNM/CM use, we show that CNM/CM deliveries increase in all groups of prenatal care provision–first, second, third, and no prenatal care. The increase in CNM/CM care in all levels of prenatal care suggests that higher demand for CNM/CM care early in pregnancy does not explain the increase in CNM/CM use. Instead, one of two channels is possible. First, the healthcare system could be adjusting to meet the new demand for obstetric care. For example, hospitals and independent practices may default patients to CNM/CM care upon arrival. Second, the ACA Medicaid expansions may have incentivized better reporting of CNM/CM deliveries in full reimbursement states. However, we cannot disentangle the two mechanisms; either channel could be at play.

Finally, we also rule out substantial changes in CNM/CM supply producing most of the increase in CNM/CM use. Instead, the increase in CNM/CM deliveries appears to result from a switch to existing CNMs/CMs. We also rule out related policies and the interacting effects of the ACA Medicaid expansions and these policies. For

example, similar work (McMichael et al., 2019) has shown that related supply-side policies, such as scope of practice laws, affect the implementation of Medicaid expansions. Though, in our setting, we find little interaction between the ACA Medicaid expansions, scope of practice laws, or other ACA policies (beyond reimbursements).

This paper contributes to a literature studying the supply-side responses to demand-side changes in health insurance access. A large body of work has demonstrated that Medicaid expansions raise patient access to insurance, thereby increasing healthcare utilization (Currie and Gruber, 1996; Busch and Duchovny, 2005; Currie et al., 2008; Choi, 2011; Decker and Lipton, 2015; Wherry and Miller, 2016; Jie Chen, 2016; Sommers et al., 2016; Kosali Simon, 2017; Benjamin D. Sommers, 2017; Gerald F. Kominski, 2017; Courtemanche C, 2018; Thomas C. Buchmueller, 2020). A smaller literature has focused on the response of the supply-side to this higher demand for services. Prior work has shown that higher demand for life-saving healthcare is met with supply-side investments in human capital and technological adoption (Weisbrod, 1991; Acemoglu and Finkelstein, 2008; Finkelstein, 2007; Freedman et al., 2015; Clemens and Gottlieb, 2017). Though, these investments in new technologies only occur when reimbursements are sufficiently high (Freedman et al., 2015).

Studies have also considered supply-side responses in terms of the labor supply of providers. Garthwaite (2012) (focused on SCHIP) demonstrates that in response to Medicaid expansions, physicians reduce the number of hours spent with patients and the patient's office visit time. However, Carey et al. (2020) finds that higher demand for care with the ACA Medicaid expansions did not reduce care for the already-insured and suggests that the demand for healthcare services may have been met with mid-level NPPs. Similarly, in dental services, Buchmueller et al. (2016) shows that Medicaid coverage of dental services modestly increases the supply of dentists, but higher demand is met mainly by dental hygienists.[2] Though the increase in physician and dentist alternatives with Medicaid expansions is not definitive. Barnes et al. (2023) shows that insurance expansions are met with practices hiring fewer NPPs. Our findings add to this literature by demonstrating greater use of non-physician providers in obstetric care after the Medicaid expansions.

Our consideration of CNM/CM use with higher demand for healthcare services also complements existing literature studying supply-side changes in health policy through scope of practice (Markowitz et al., 2017; Hoehn-Velasco et al., 2022; Eck, 2021) and reimbursements (Miller, 2006).[3] Our findings add to this existing work

[2] Huh (2021) also shows that the increase in dentists occurs in poor counties and counties where there is a financial incentive to expand services.

[3] Markowitz et al. (2017); Hoehn-Velasco et al. (2022) both find an increase in CNM/CM-reported deliveries with independent practice for CNMs/CMs. Our findings also complement existing literature studying direct CNM/CM regulations. Miller

studying supply-side regulations by showing that demand-side policies will also influence CNM/CM use, but only when CNM/CMs have reimbursement parity with physicians.[4]

2 Background

2.1 The Affordable Care Act

The Patient Protection and Affordable Care Act (ACA) was signed into law in March 2010. With an aim to achieve nearly universal health coverage (Courtemanche, 2017), the ACA incorporated a range of reforms to overhaul the existing health insurance market and remedy underlying systemic issues within the U.S. healthcare system. A combination of mandates, penalties, and subsidies were introduced to tackle the increase in insurance prices (accompanying higher demand) as well as to mitigate the practice of potential adverse selection stemming from information asymmetry in the market (Blumenthal, 2014).[5]

As part of a much larger plan to increase insurance rates, ACA Medicaid expansions were introduced to cover the population up to 138 percent of the Federal Poverty Line (FPL), including childless adults. Although Medicaid expansions were initially designed to be a nationwide policy, a 2012 Supreme Court ruling gave individual states the discretion to participate in Medicaid expansions. The official rollout began in 2014, and almost a decade later, 41 states, along with the District of Columbia, have opted to implement Medicaid expansions (see Figure I), providing insurance coverage to more than 35 million people (ASPA, 2023; KFF, 2022). Numerous studies have demonstrated the effects of the ACA Medicaid expansions on reducing the uninsurance rate (Garrett, 2016; French and Hickling, 2016; Miller and Wherry, 2017; Courtemanche et al., 2017; Guth, 2020), increasing insurance affordability, raising healthcare utilization (Golberstein, 2015; Mulcahy, 2016; Blavin, 2018; J, 2020; Gotanda, 2020), and increasing provider capacity (Guth, 2020). The ACA also impacted health outcomes, including improving self-reported health status (Courtemanche C, 2018; Courtemanche, 2020), lowering racial disparities (Thomas C. Buchmueller, 2016; Benjamin Sommers, 2016; Heintzman, 2017), and reducing all-cause

(2006) finds higher use of CNMs/CMs with reimbursement mandates for third-party payers. Adams III et al. (2003) similarly finds that reduced regulation for CNMs/CMs increases CNM/CM use.

[4] A large body of work has studied scope of practice, but not directly CNM/CM care. Studies have considered utilization, patient outcomes, and labor supply (Kleiner and Krueger, 2013; Wing and Marier, 2014; Stange, 2014; Timmons et al., 2016; Kleiner et al., 2016; Markowitz et al., 2017; Timmons, 2017; Traczynski and Udalova, 2018; McMichael, 2018; Chen et al., 2018; Alexander and Schnell, 2019; Grecu and Spector, 2019; Markowitz and Adams, 2022; Hughes et al., 2022; McMichael, 2023).

[5] Under the new rules of the ACA, insurance companies were prohibited from denying coverage, charging higher premiums, or placing limitations on benefits for individuals and children below 19 years of age with pre-existing conditions. Further, another effort of the ACA allowed young adults up to age 26 were allowed to remain on their parent's health insurance plans, thereby helping them avoid a potential gap in coverage as they transitioned into adulthood (Rosenbaum, 2011).

mortality (Borgschulte, 2020; Miller, 2021).

Along with the Medicaid expansions, the ACA introduced a new insurance market known as the "health insurance marketplace" or "health insurance exchange." The marketplace was designed to provide affordable insurance options for those individuals and households who were not eligible for Medicaid expansion based on their income (earning between 100 to 400% of FPL) or did not have access to employer-sponsored insurance (Blumenthal, 2014; Long, 2016; Liu, 2017). The marketplace serves as a centralized hub where individuals can conveniently compare, assess, and submit applications for various plans. States have the option to set up their own custom State-Based Marketplaces (SBMs), or utilize the Federal Facilitated Marketplace (FFM), known as Healthcare.gov. However, the primary function of the marketplace remains consistent, offering consumers the chance to evaluate and enroll in plans throughout the enrollment period (Kagan, 2022). As of 2022, 17 states and DC have their own SBM while others operate through FFM (Norris, 2022). The marketplace has allowed nearly 15.6 million individuals to gain insurance coverage (HHS, 2023a).

Along with increasing demand, the ACA legislation also incorporated measures to address systematic issues on the supply side. In an attempt to address the discriminatory policies prevalent in the insurance market, the ACA legislation incorporated stringent rules like mandatory essential health benefits (EHBs) and non-exclusion provisions to prevent private insurers from charging different premiums for the same services (EBSA, 2013; Guo, 2017; CMS, 2021). The ACA required all plans sold within the small group or individual market and government exchanges to cover 10 EHBs,[6] starting from the basic to top-tier plans. The ACA also laid out rules where insurance companies could not deny coverage to individuals or charge higher premiums based on pre-existing conditions HHS (n.d.). The non-exclusion provisions, also known as the "pre-existing condition protections," were a significant step forward in ensuring that people with prior health issues or chronic conditions could still obtain health insurance coverage.

2.2 How the ACA Changed Reproductive Healthcare

The ACA Medicaid expansion has significantly improved access to comprehensive healthcare coverage, particularly for women (ASPE, 2012; Becker and Polsky, 2015; Lipton, 2015; Gunja, 2016; Potera, 2019; Lee, 2020a; Margerison, 2020). While low-income pregnant women were eligible for Medicaid prior to the ACA, in many states, non-pregnant women were ineligible for Medicaid before the start of their preg-

[6] Ambulatory services, emergency, hospitalization, laboratory services, mental health and substance use disorders, pregnancy, maternal, and neonatal care, prescription medications, preventive and wellness services and chronic disease management, pediatric services and rehabilitative and habilitative services (CMS, 2023; Nicholas Bagley, 2014)

nancy (Palmer, 2020; Bellerose et al., 2022; Chatterji et al., 2023). Due to long Medicaid application processes, pregnant women often could not access prenatal care until the second trimester (Cyr et al., 2019). With the ACA Medicaid expansions, non-pregnant people gained access to preconception Medicaid coverage, allowing unrestricted access to early prenatal care (Bellerose et al., 2022).

For those who could not qualify for Medicaid or did not have access to Employer-Sponsored Insurance (ESI), the situation appeared even bleaker. Before the ACA, reproductive healthcare was largely missing in the non-group insurance market. Only 6% of individual marketplace health plans included maternity benefits (Garrett, 2012a). Moreover, pregnancy was categorized as a pre-existing condition that could lead to insurance coverage denial in the individual market. Even if the coverage was available, the choices for coverage benefits were vastly limited. Maternity benefits were exclusively offered as supplementary components known as riders, which could significantly increase the cost of an individual's health insurance plan (Norris, 2023).

Prior to the ACA, women in the non-group market were also routinely charged premiums 30-40% higher than men for the same coverage (Garrett, 2012a; Norris, 2023), forcing women to shoulder elevated premiums. This practice of charging higher premiums based on gender (or gender rating) often left women uninsured or underinsured (Lee, 2020a). The annual cost of gender rating translated into approximately one billion dollars (Garrett, 2012a). The high cost of insurance often resulted in the postponement and under-use of necessary care (Garrett, 2012b; Mostafavi, 2021). Beyond increasing the coverage base, the ACA also prohibited discriminatory policies based on gender or pre-existing conditions, thereby increasing insurance access, especially in pregnancy.

Together, these changes led to more than 7 million women of reproductive age gaining insurance coverage (Sugar S, 2022) from 2010 to 2019. The increased access to coverage has the potential to contribute to improved health outcomes and greater financial security (Lee, 2020b). For example, delays in care (especially due to limited preconception insurance) have been consistently linked with worse outcomes, putting both the mother and child at heightened risk (KFF, 2021; Hueston, 2003; Pacagnella, 2012). Due to better access to coverage, the ACA Medicaid expansions have been demonstrated to improve reproductive health outcomes, such as reducing severe maternal morbidity (Sugar S, 2022).[7]

[7]Though other work in Chatterji et al. (2023) finds little effect of the ACA Medicaid expansions on maternal morbidity.

2.3 How the ACA Could Impact Non-physician Providers

The ACA Medicaid expansion was implemented with the aim of universal coverage, but with this increased demand for healthcare, the shock to the supply of healthcare workers, specifically to non-physician healthcare providers (NPPs), is not well understood. Roughly 20% of Americans live in Health Professional Shortage Areas,[8] and nearly 80% of rural households fall in "medically underserved areas" (HRSA, 2023a). This gap between the higher demand for health care and a shortage of healthcare providers could undermine the objective of rendering insurance more affordable and, in the long term, potentially lead to escalating costs (Huh, 2021).

Several aspects of the ACA were designed to increase provider participation. For instance, the ACA aimed to train more advanced practice registered nurses (APRNs) and nurse practitioners (NPs) by establishing graduate nurse education programs. This increase in the supply of NPs and APRNs targeted the dwindling supply of primary care providers (PCPs) within federally qualified healthcare centers (FQHCs) (Report, 2013). Alongside these efforts to train non-physician providers, the ACA allocated $11 billion in funding to FQHCs from 2011 to 2015 (Hill, 2012).

Furthermore, the ACA legislation established the Prevention and Public Health Fund (PPHF) in 2010 to provide dedicated funding for public health and prevention initiatives (HHS, 2020). PPHF has invested $1.5 billion over the period of 5 years in he National Health Service Corps (NHSC).[9] The allocation has significantly increased the number of corps between 2009 and 2011, including nurse practitioners (Archives, n.d.). PPHF also allocated funds ($5 billion from 2010 to 2015, with an additional annual allocation of $2 billion after 2015 (Hill, 2012)) for various training programs like Nurse Managed Clinics to expand the availability of primary care residency positions and increase utilization of non-physician providers and help alleviate the shortage of healthcare providers (Forsberg, 2012).

In terms of reimbursement, the ACA increased Medicaid payments for NPPs working under the supervision of physicians (Lathrop, 2014) while prohibiting any discrimination among healthcare providers by third-party plans (Allsbrook, 2021). These policies integrated NPPs into the insurance market without bias. Healthcare providers also may make location decisions based on financial incentives and the payment structure of Medicaid (Alexander, 2019; Huh, 2021), suggesting that payments could play a role in increasing the utilization of NPPs. Overall, after accounting for

[8] "A Health Professional Shortage Area (HPSA) is a geographic area, population, or facility with a shortage of primary care, dental, or mental health providers and services" - (HHS, 2023b)

[9] NSHC supports qualified healthcare providers like primary care providers, nurse practitioners, certified midwives, psychiatric nurse specialists, through scholarships and other assistance (HRSA, 2023b)

variation in the scope of practice laws, the NPP utilization rate has increased since the ACA Medicaid expansions (Patel S Y, 2023).

2.4 The ACA and CNM/CMs

The ACA also had several separate provisions that affected CNMs/CMs directly. The ACA generally increased CNM/CM Medicare reimbursements to 100% of physicians (ACA and Act, 2010; ACNM, 2020b). While the majority of deliveries are not directly covered by Medicare, Medicare forms the standard of reimbursement for the health insurance market. Prior work has shown that private insurers closely follow Medicare payments, especially in medically dense areas (Clemens and Gottlieb, 2017). This emphasis on CNM/CM-to-physician payer parity may influence the use of CNMs/CMs with the ACA (ACNM, 2020a). While Hoehn-Velasco et al. (2022) shows that the initial ACA adoption had little effect on CNM/CM deliveries, even in areas with a high uninsured population, this standard of reimbursement may still have downstream effects through the Medicaid program.

The ACA also emphasized other ways of accessing midwife care. The ACA began to mandate birth center coverage by Medicaid (ACNM, 2020b), which could increase CNM/CM deliveries in the out-of-hospital setting. As mentioned previously, the ACA also restricted third-party insurance plans from discriminating against licensed providers (Moore, 2014), including CNMs/CMs, as long as these providers were practicing within their respective state scope of practice regulations. The ACA also provided additional assistance for the education of midwives in an effort to increase the supply of non-physician providers (ACNM, 2020b).

2.5 Certified Nurse-Midwives (CNMs) and Certified Midwives (CMs)

CNMs practice in all 50 states and typically provide reproductive healthcare, though in many states, CNMs/CMs are recognized as PCPs. CNM/CM care includes family planning, general gynecologic care, pregnancy, and childbirth care, as well as newborn care for the first 28 days (ACNM, 2012). CNMs/CMs can also prescribe medications (in certain states) and generally can provide full-service reproductive care throughout the reproductive years. During pregnancy and the postpartum period, CNMs/CMs provide prenatal care, labor & delivery care, and postpartum care (ACNM, 2012). In the United States, in 2014, CNMs/CMs attended 12% of vaginal deliveries and 8% of all U.S. deliveries (ACNM, 2016a).

CNMs are trained in both nursing and midwifery skills. CNMs first become

nurses and then receive graduate-level training in both nursing and midwifery (ACNM, 2012). CNMs also must be certified and obtain recertification every five years (ACNM, 2016b). Certified Midwives (CMs) have similar training and requirements to CNMs, but CMs are not licensed nurses. Still, CNMs/CMs are grouped together in most data sources, and thus, we cannot separate the two into individual categories. Though CMs are relatively infrequent providers and only practice in nine states plus DC.[10]

Because most pregnancies remain low-risk at term (Glance et al., 2014), the majority of pregnancies are well-qualified for lower-intensity CNM/CM care. CNM/CM care for low-risk pregnancies has been demonstrated to be similar to or higher quality than standard obstetric care (Tikkanen et al., 2020), with CNM/CM-led care reducing both interventions and complications.[11] Despite the benefits of CNM/CM care, barriers to access and use of CNM/CMs exist in the United States. CNMs/CMs often receive lower reimbursements (ACNM, n.d.b), face challenges in their ability to practice (Markowitz et al., 2017; Farb, 2023), and have issues attaining unrestricted hospital privileges (ACNM, n.d.a).

Throughout our analysis, we primarily focus on CNMs/CMs, though non-CNM/CM midwives also play a role in maternity care provision. Non-CNM/CM midwives include Certified Professional Midwives (CPMs), Direct Entry Midwives (DEMs), and Lay Midwives (LM). These midwives typically practice outside the hospital and represent a smaller portion of deliveries. Non-CNM/CM births only account for 1.2% of deliveries, and non-CNM/CM midwives practice almost entirely outside the hospital (Marzalik et al., 2018). Unfortunately, the birth certificates capture these non-CNM/CM midwives in a single grouping, which does not allow us to separately consider these midwife types.

3 Data

3.1 Birth Certificate Records

For our primary analysis, we rely on the Natality Detail Files from the Centers for Disease Control (CDC) and the National Center for Health Statistics (NCHS) (NCHS/NVSS, 2004-2020). The Natality Detailed File, or birth certificate records, report all U.S. births, including characteristics of the mother and the newborn. We use the Natality Detailed File for delivery years 2010-2019.

In our main analysis, we include all U.S. states, except two states that passed the

[10] CMs practice in DE, HI, ME, NJ, NY, OK, RI, and VA (ACNM, 2022a).

[11] Two recent matched comparisons of CNM/CM-led care have demonstrated lower premature birth, reduced instances of cesarean section, and lower induction rates with midwifery-led care (Dubay et al., 2020; Wallace, 2023).

ACA Medicaid expansions after 2016 and before 2020. Though the results are similar if we include all states in the analysis (see Figure IV). We primarily focus on low-risk first births as these births are the most liable to receive an unwarranted intervention and will have the least known preexisting risk factors. Subsequent births may experience sorting by the mother's knowledge of prior delivery outcomes. However, we also show the results for other types of births, including the sample of all deliveries, high-risk births, and low-risk subsequent births. Our samples include:

1. **All deliveries**
2. **Low-risk first births (nulliparous)** or those without diabetes or hypertension who delivered a vertex singleton (no breech births or multiple gestations).
3. **Low-risk subsequent births (multiparas)** that include the same selection as the first births.
4. **High-risk deliveries** including deliveries with a non-singleton, hypertension, diabetes, breech or non-vertex presentation (breech).

For the samples above, we also require that the delivery occurs in the residence state, to ensure that the state-level insurance availability matches the delivery setting.

There are several notable limitations of the birth certificate records that affect our analysis. The biggest limitation is that the 2003 birth certificate revision creates an unbalanced panel for certain variables. For example, insurance controls are only reported beginning in the latest revision and are only available for select states early in the sample. A second major limitation is the known underreporting of CNM/CM-attended deliveries (Faucett and Kennedy, 2020; Biscone et al., 2017). Thus, when we consider CNM/CM deliveries, an increase may represent a true increase in CNM/CM use, or an increase may represent better reporting of CNM/CM deliveries on birth certificates.

Despite the under-reporting issue for CNM/CM-attended births, we still consider the provider as a primary outcome in our analysis. This is because CNM/CM deliveries being correctly ascribed to CNM/CMs is still an important indicator of CNM/CM ability to practice. For example, in cases where the physician reports themselves as the delivery attendant, this signals a lack of CNM/CM autonomy. Hospitals also may restrict CNMs/CMs, and require physicians to sign the birth certificate in cases of restrictive hospital bylaws and practice-specific restrictions (Koschwanez et al., 2021).

3.2 Summary Statistics

Figure I presents the ACA expansion years. We show all expansion years through 2023, but only expansions states that passed ACA Medicaid expansions before 2017 are included in the analysis. States that expanded after 2019 are included as controls, but states that expanded between 2017 and 2019 (VA and ME) are excluded from the main analysis. We omit these two states to ensure the event study is balanced, but include them in a robustness check to ensure the omission of these two states does not affect our takeaways.

Summary statistics for the four main samples are shown in Table 1. Each column shows the control states and the ACA expansion states for the collapsed samples– all deliveries, high-risk births, low-risk first births, and low-risk subsequent births. Expansion states have a higher use of CNMs/CMs generally, which could correlate with overall preferences for CNM/CM care in these states. Despite the higher use of CNMs/CMs, the use of non-CNM/CM midwives are similar across expansion and non-expansion states.

4 Event-study Specification

We consider whether the ACA Medicaid expansions influence the choice of the provider by comparing states that expanded Medicaid from 2014 to 2016 against states that had not expanded Medicaid as of 2020. More formally, we consider the effect of Medicaid expansions in an event-study design, which appears as follows:

$$H_{st} = \alpha + \sum_{m=-12}^{12} \beta_m \, 1(\text{ACA Medicaid Expansions})_{sm} + \mathbf{X}_{st}'\gamma + a_s + \eta_t + \epsilon_{st} \qquad (1)$$

where the ACA Medicaid expansions are captured by the event-study indicator variables $1(\text{ACA Medicaid Expansions})_{sm}$. $1(\text{ACA Medicaid Expansions})_{sm}$ represent the impact of the ACA Medicaid Expansions in state s that goes into effect in quarter-year $m = 0$. m ranges from 12 quarters before to 12 quarters after the Medicaid expansion. We choose to consider deliveries by the quarter-year of delivery rather than the quarter-year of conception to capture the fact that insurance status changes immediately with the expansion. This change in insurance status could have an immediate effect on the provider from both the patient's perspective and the hospital's perspective. More patients could choose CNMs/CMs for care, and most hospitals could use CNMs/CMs to meet the higher demand for care.

More formally, m indicates each observation's timing relative to the Medicaid ex-

pansion in each state, which is based on the quarter-year of the delivery. m represents the difference between the quarter-year of the delivery t and the quarter-year of the Medicaid expansion. The main effect of the Medicaid expansion is captured by the periods $m = 0, 1, ..., 12$. We omit period $m = -1$ and include non-expansion states with this period. We also bin the endpoints of the event study at $m = 12$ and $m = -12$. We choose to bin the endpoints at $m = 12$ and $m = -12$ because the event study is only balanced until $m = 12$.[12]

$\mathbf{X}_{st}$ represents the state-level controls. Controls include the share married, the average age, the share of female neonates, the average unemployment rate, the share of each race (Latinx, white non-Latinx, and black non-Latinx), the share of each education level (high school, some college, college, and missing), and the share rural. In samples with multiparas, we include controls for average parity. [13] Throughout the results, we show the estimates from both a canonical two-way fixed effects (TWFE) estimator and the Interaction-Weighed (IW) estimator (Sun and Abraham, 2021). State fixed effects are represented by a_s. The quarter-year of delivery fixed effects are η_t. Throughout the results, the standard errors are clustered at the state level. It is also worth noting that in the main analysis, we use collapsed data. To collapse the data, we take the mean of delivery characteristics for each state and each quarter-year of conception. Then, we weight by the number of observations in each outcome to recover the population-weighted effect.

5 Results

Figure II considers whether Medicaid expansions directly increase CNM/CM-attended deliveries in an event-study design. The plotted points in Figure II suggest a noticeable increase in CNM-attended deliveries in our main sample, the sample of low-risk first deliveries. Physician deliveries also decline, but appear to be on a more noticeable trend than CNM/CM deliveries.

In Panel B, we also show the change in CNM/CM deliveries for all deliveries, low-risk subsequent births, and high-risk deliveries. Reported CNM/CM-deliveries increase in all three samples after the ACA Medicaid expansions. The increase in CNM/CM-attended high-risk births is surprising as it suggests that there is no specialization of physician care in (observably) high-risk pregnancies. It also suggests that physicians are not disproportionately trying to capture the higher payment associated with high-risk pregnancies (Cyr et al., 2019).

[12] We also only include expansions that took place before 2017 in our analysis to ensure balance in our event study.

[13] We do not control for insurance status or the providers per capita because both of these controls may be "bad controls" Angrist and Pischke (2008) and change as a result of the ACA Medicaid expansions. Though, in the robustness, we test whether these controls affect our results.

Why would the ACA Medicaid expansions change CNM/CM use? First, the ACA Medicaid expansions provided new access to preconception Medicaid coverage (Rebecca Myerson, 2020; Bellerose et al., 2022). Having preconception Medicaid coverage allows pregnant individuals to choose their prenatal care provider earlier in pregnancy, increasing overall demand for obstetric services and potentially allowing patients to opt into CNM/CM care (due to availability or preference). Without preconception coverage, long Medicaid application processes may delay care until the second trimester (Cyr et al., 2019). Second, to meet the increased demand from preconception insurance, the supply-side (hospitals and private practices) may have adjusted their use of CNMs/CMs, putting patients in front of CNMs/CMs by default rather than obstetricians. Third, higher demand for healthcare after the Medicaid expansions and private coverage through the ACA marketplace may increase CNMs/CMs (and all healthcare providers) in Medicaid expansion states. We attempt to gauge which of these explanations is most likely in Section 7.[14]

Finally, we explore whether delivery outcomes change with the increase in CNM/CM use. We might expect delivery outcomes to change because related work, such as Markowitz et al. (2017), has shown a reduction in cesarean section with an increase in CNM/CM deliveries. However, Miller (2006) and Hoehn-Velasco et al. (2022) find little change in delivery outcomes with a rise in CNM/CM-attended deliveries. In Figure III, we present the event-study results for births via cesarean and induction. Following the ACA Medicaid expansion, there is a significant increase in inductions for high-risk individuals and a corresponding decline in cesareans. However, for low-risk individuals, there is no significant change in the delivery method. These findings indicate that the increase in CNMs/CMs is not coupled with a dramatic change in delivery outcomes, only a small increase in inductions and decline in cesareans for high-risk individuals.

6 Robustness Checks

6.1 Sensitivity Analyses on CNM/CM-Attended Births

In Figure IV, we test alternative event studies over the low-risk sample of deliveries. We focus on CNM/CM-attended deliveries throughout these results because the clearest effect is for CNM/CM care. Throughout Figure IV, there is an apparent increase in CNM/CM use no matter the specification.

[14] Another explanation is that ACA Medicaid expansions combined with more liberal SOP laws may raise preventative care (McMichael et al., 2019; Baten and Wehby, 2022). However, in Hoehn-Velasco et al. (2022) CNM full practice authority and the ACA were shown to have independent effects on CNM/CM use.

First, in Panel A, we add state-level linear trends. With linear trends, the results weaken but still show an increase in CNM/CM deliveries. Though, there is some question over whether linear trends are appropriate (Borusyak et al., 2021) because the time trend is composed of both the treatment and pre-treatment periods. Second, In Panel B, we show the log of CNM/CM deliveries rather than the linear specification. With the log of the CNM/CM deliveries, the rise in CNM/CM use appears more evident than the baseline, indicating that a log may be more appropriate than the linear form.

Third, in Panel C, we add potentially "bad controls" (Angrist and Pischke, 2008) in the bottom panel. We add controls for both insurance status and WIC receipt to the analysis. We choose not to include insurance controls in our main results for two reasons. First, insurance status likely changes due to the ACA Medicaid Expansions. Second, insurance status is an unbalanced panel of states, with only full reporting of insurance starting in 2016, resulting in a loss of observations in our analysis. Still, even when we add these insurance controls in Panel C, we continue to see a significant increase in CNM/CM deliveries and a reduction in physician deliveries. These results suggest that observable changes in insurance access do not entirely explain the change in CNM/CM care.

Fourth, in Panel D, we remove weights from the specification, which considers the average state-level effect rather than the population-weighted effect. The results in Panel D are similar to the main results. Fifth, in Panel E, we include all states in the sample. In the main results, we exclude states that passed expansions between 2017 and 2020. However, the increase in CNM/CM deliveries is similar if we include later-adopting states in the analysis. Sixth, we also exclude states that passed ACA Medicaid expansions after 2015 in Figure IV. Here, the results are again similar to the baseline.

Seventh, in Panel G, we rule out the influence of full practice authority (FPA) on our results. Markowitz et al. (2017) and Hoehn-Velasco et al. (2022) both show an increase in CNM/CM use with FPA. We exclude states that passed FPA during our sample period to eliminate any effect of the FPA reforms. The ACA Medicaid expansions still affect CNM/CM use even without the states that passed full practice authority. Eighth, in Panel H, we control for provider supply. While provider supply is also endogenous to the reform (similar to insurance), controlling for provider supply still tells us whether the increase in CNM/CM deliveries changes due to an increase in CNM/CM supply (something we directly test in the mechanisms section). While the results weaken slightly, there is still an increase in CNM/CM deliveries even when controlling for per capita APRNs, MDs, and CNMs/CMs.

Ninth, we drop one state at a time from the analysis to ensure the increase in CNM/CM deliveries is not driven by a single large state. Figures A.1 and A.2 show the results across low-risk deliveries excluding one individual treated state at a time. The plotted points reveal that the increase in CNM/CM deliveries is robust to the exclusion of individual U.S. States.

6.2 Related ACA Policies

Then, we also rule out other ACA policies that could affect CNM/CM use. These policies could have increased CNM/CM use outside the Medicaid expansions. Here we test a similar event-study to Equation 1, except we modify the treatment. More formally, we consider the effect of Medicaid expansions in an event-study design as:

$$H_{st} = \alpha + \sum_{m=-12}^{12} \beta_m \, 1(\text{ACA Policy})_{sm} + \mathbf{X}'_{st}\gamma + a_s + \eta_t + \epsilon_{st} \tag{2}$$

where all ACA policies go into effect in January 2014, and thus there is no staggered treatment timing. For the ACA policies we consider provider payment discrimination through Section 2706(a), the ACA marketplace gender discrimination provision, and the ACA marketplace maternity care provision. The remainder of Equation 2 reflects Equation 1

In Figure A.3, we test the effect of the Section 2706(a) third-party payment mandate. Section 2706(a) of the ACA prohibited health insurers from discriminating against health care providers who are providing care within the scope of their practice (McCartney, 2015). Section 2706(a) effectively should promote third-party reimbursement for non-physician providers. We show the effect of this provision in the ACA, which went into effect in January 2014, in Figure A.3. We compare the effect of Section 2706(a) in states without existing third-party payment mandates against states that already had third-party payment mandates (updated from Miller (2006)). Panel A shows this comparison, considering the effect of Section 2706(a) in states without third-party payment mandates relative to states that had third-party mandates in place. There is little change in CNM/CM deliveries with the implementation of this new payment mandate.

Then, in Figures A.4 and A.5, we consider the interaction of the ACA Marketplace in 2014 with two prior state-level policies. Prior to the availability of the ACA marketplace plans, insurance plans frequently chose not to cover maternity care. Figure A.5 shows the effect of the ACA marketplace (in January 2014) in states where all nongroup plans covered maternity care and in states without any nongroup plans

covering maternity care. The results suggest little immediate change in provider use.

Further, before the ACA marketplace, certain states permitted gender discrimination in insurance provisions. Figure A.4 presents similar findings to Figure A.5 except considering whether the state had anti-discrimination laws in place prior to the ACA Marketplace. These results suggest little change in provider use after states with non-group gender discrimination enacted the ACA Marketplace.

6.3 Differences-in-differences with Trends and Wild Cluster Bootstrapped Standard Errors.

Next, we show the results in a difference-in-differences design. The results in Tables A.1 and A.2 show both the delivery attendant and the delivery outcomes. The results suggest a continued increase in CNM/CM deliveries and a decline in physician deliveries for the low-risk sample. The results are robust to the inclusion of trends and alternative standard errors. The low-risk subsequent deliveries are also robust to this alternative specification, but the samples of all and high-risk are not. Overall, these results suggest the clearest increase in CNM/CM deliveries for low-risk births.

We also show subsamples of the difference-in-differences results in Figure V. Here, the largest increase in CNM/CM use occurs for those of younger ages, non-white individuals, Latinx individuals, and those who deliver after 40 weeks gestation. We also see a large increase in large cities, but a less noticeable increases smaller cities. CNM/CM deliveries also do not appear to increase significantly in the sample of induced deliveries or those with labor augmentation.

6.4 Placebo Test.

To conclude, we also conduct a placebo test. In the placebo test, we assign the treatment of the ACA Medicaid expansion randomly across states with the original treatment timing. In this specification, we randomize the treatment timing to states across both the sample of treated and control states in the same staggered setup as the baseline. Then, we test the difference-in-difference specification over the placebo set of states.[15] We run this simulation 1,500 times and choose a different assignment of states to the original staggered setup in each iteration. Figure A.6 displays the placebo estimates. Using the estimates, we calculate a non-parametric p-value. The p-value is based on the cumulative distribution function (CDF) of simulated coefficients compared against the true point estimate. In Figure A.6, the actual coefficient is compared against the placebo estimates, with the actual coefficient displayed by the

[15] We follow Chetty et al. (2009), Buchmueller et al. (2011), Ohrn (2018) and Baron et al. (2020) for this test.

vertical line. The results show that all four coefficients (all deliveries, low-risk first and subsequent deliveries, and high-risk deliveries) are statistically significant with the non-parametric p-value.

7 Mechanisms

In our main results, we find a clear increase in CNM/CM-attended deliveries by one percentage point or 11%. Here, we attempt to unpack what causes the increase in CNM/CM use. In this section, we primarily rule out preconception insurance access resulting in higher CNM/CM use for first-trimester care. We also find no clear increase in CNM/CM labor supply in expansion states. Instead, the most likely explanation appears to be one of two underlying causes. First, hospitals and private practices may use existing CNMs/CMs to care for more patients in labor and delivery. Hospital systems and practices may use CNMs/CMs as first-line providers with the new demand for services created by the ACA. Second, better reporting of CNMs/CMs could also explain the increase in CNM/CM deliveries after the Medicaid expansions. Better reporting is especially plausible if the higher demand for reproductive healthcare places pressure on hospitals and private practices, leading to more CNM/CM autonomy.

7.1 CNM/CM Deliveries Increase Across All Levels of Prenatal Care, Not Only First Trimester Care

First, we show that preconception insurance access for Medicaid patients is likely not the main channel for the increase in CNM/CM use. We consider CNM/CM deliveries by prenatal care receipt in Table 2. The sample is split into deliveries that received care in the first, second, and third trimesters as well as those who received no prenatal care. If preconception insurance access is the primary explanation for the increase in CNM/CM deliveries, we should primarily see an increase in CNM/CM deliveries during first-trimester care. Instead, the increase in CNM/CM care occurs across all trimesters and for those who received no prenatal care. In fact, the largest increase in CNM/CM use occurs for those with third-trimester prenatal care and no prenatal care.

We also show the results split by payment type. In the main results, we choose not to split the sample by payment as the insurance status may be endogenous to the Medicaid expansions. However, as a speculative mechanism, we test whether Medicaid patients increase CNM/CM use with early prenatal care. Contrary to expectation, the results show that Medicaid patients increase CNM/CM use for those receiving care

in the second and third trimesters as well as with no prenatal care. Overall, these results suggest that the main explanation for the increase in CNM/CM deliveries is not Medicaid patients choosing CNM/CM providers in the first trimester.

7.2 Interaction of the ACA Medicaid Expansions with State-level Policies

7.2.1 Empirical Strategy

Next, we consider interactions of the ACA Medicaid expansions and different state-level policies in place. We perform this exercise to determine the underlying mechanisms for the increase in CNM/CM-attended deliveries. In the main text, we focus on reimbursements but show other related policies in the Appendix. We consider the interaction of the ACA with related policies as:

$$\begin{aligned} H_{ist} = \alpha + \beta_1 1(\text{Medicaid Expansion})_{st} \times 1(\text{CNM Reimbursement Parity})_s + \\ \beta_2 1(\text{Medicaid Expansion})_{st} + \mathbf{X}'_{ist}\gamma + a_s + \eta_t + \epsilon_{ist} \end{aligned} \tag{3}$$

where the interaction term $1(\text{Medicaid Expansion})_{st} \times 1(\text{CNM Reimbursement Parity})_s$ captures the effect of the ACA Medicaid expansion in states where CNMs are reimbursed similar to physicians by Medicaid. The remainder of Equation 4 reflects Equation 1.

7.2.2 CNM/CM Reimbursements Matter

Table 3 shows the interaction of CNM/CM Medicaid reimbursements and the ACA Medicaid expansions. Panel A shows the interaction of the Medicaid expansion with CNM Medicaid reimbursement parity, meaning when a delivery is reimbursed similarly whether the attendant is a CNM or a physician. The results here show that CNM Medicaid reimbursement parity is important. CNM/CM deliveries only increase significantly on the interaction term, meaning CNM/CM deliveries only significantly rise in states where CNMs are reimbursed the same as physicians.

Panel B shows the reimbursement ratio or the relative payment for a CNM-to-physician delivery. This reimbursement ratio is a continuous variable between 0 and 1, capturing the reimbursement a CNM would receive over the reimbursement a physician would receive. Panel B reveals that CNM/CM deliveries increase the higher the reimbursement the CNM receives. These findings align with Panel A and suggest that

Medicaid reimbursement equity is essential, but the higher the reimbursement (relative to physicians), the larger the increase in CNM/CM use.[16]

These results reinforce two possible mechanisms for the increase in CNM/CM use. First, CNMs/CMs may become first-line providers with the new demand for services created by the ACA. Practices and hospitals may put CNMs/CMs in front of patients more frequently as CNMs/CMs are lower-cost providers, but this transition only occurs in states with reimbursement parity where CNMs/CMs can be reimbursed similarly under Medicaid. Second, CNMs/CMs may be more frequently recorded as the delivery provider under the ACA Medicaid Expansions. While this would mean that our main effect is not an actual increase in CNM/CM use, it still implies that reimbursement equity is critical for properly recording the CNM/CM delivery on the birth certificate. While we cannot decipher whether the increase in CNM/CM deliveries represents an actual increase in CNM/CM deliveries or a change in reporting, we would still argue that both interpretations of the change in CNM/CM deliveries are important. Even if there is no true increase in CNM/CM deliveries, the ability of a CNM/CM to be listed on the birth certificate represents an essential measure of CNM/CM autonomy.

7.3 Provider Cost Matters Some But Less than Reimbursements

Table A.3 then tests the average state-level cost of the provider in Panels A and B. Panel A presents whether a CNM is a low-cost provider (below median, from Baker et al. (2021)) and Panel B shows the share of CNM-to-physician costs. The interaction terms suggest that state-level provider cost is somewhat influential for physician use in high-risk and higher-parity deliveries, but overall, differences in provider cost across states is less important for the increase in CNM/CM deliveries than CNM reimbursement parity.

Next, we also show the Medicaid margins in Panels C and D. Panel C shows positive (above zero) Medicaid margins for CNMs, and Panel D shows the same for MDs (Baker et al., 2021). Here, only positive physician margins appear to matter, where there is a lower reduction in physician deliveries in states with positive physician margins (for low-risk deliveries). The majority of the remaining interaction terms are insignificant.

Then, in Panel E, we show the interaction with the relative Medicaid to Medicare reimbursement for obstetric services from Zuckerman et al. (2017). These results test

[16] At the same time, in Appendix Table A.6, there are no changes across CNM/CM labor supply. Both the baseline ACA indicator and the interaction term on CNM reimbursements fail to show a significant change in CNM supply. Instead, the main increase is solely for CNM/CM-attended deliveries rather than CNM/CM supply.

whether the generosity of Medicaid reimbursement (relative to Medicare) influences the switch to CNMs/CMs from physicians. The results in Panel E suggest little interaction between the ACA Medicaid expansion and the Medicaid-to-Medicare payment ratio.

7.4 There is Little Interaction with Full Practice authority or CPM Licensing Laws

Then, in Table A.4, we also rule out the importance of related policies, such as full practice authority and CPM licensing laws. Panel A interacts the Medicaid expansions with a variable that captures both existing full-practice authority and states that changed to full-practice authority over the study period. The results suggest little interaction with full practice authority, similar to the findings in Hoehn-Velasco et al. (2022). Hoehn-Velasco et al. (2022) considers the interaction of the passage of full practice authority and the ACA Medicaid expansion and found little interacting effect of the two, only independent effects of the Medicaid expansions and the passage of full practice authority.

Then, we also show the interaction with CPM licensing laws in Panel B. CPM licensing may affect the trade-off between CNM/CMs and CPMs. However, Panel B shows little interaction with CPM licensing laws. In Panel C, we then show an interaction with whether a CNM/CM can serve as a PCP in a state, where the results suggest little interacting effect.

7.5 The Non-Group Market Does Not Explain All of the Increase in CNM/CM Deliveries

Next, in Table A.5, we show interactions of the ACA Medicaid expansions and related policies implemented with the ACA. Panel A shows the interaction of Medicaid expansions with the provider payment pump, which occurred just after the ACA Medicaid expansions. This provider payment bump expanded payments for PCP providers and could have raised Medicaid payments to Medicare rates for either physicians or CNMs/CMs acting as PCPs. Here there is again no interacting effect of the Medicaid expansions and the provider payment bump.

Panels B and C show the interaction of the ACA Medicaid expansions and the policies in the ACA non-group market, those considered directly in the robustness tests. In Panels B and C, we show the interaction with the states that permitted gender discrimination in the non-group market prior to the ACA. Gender discrimination could affect insurance status for women in states where discrimination was allowed

prior to the ACA. However, Panels B and C show little interacting effect with changes to gender discrimination in the non-group market. Then, in Panel D, we interact the ACA Medicaid expansions with an indicator capturing whether all non-group plans included maternity care prior to the ACA Marketplace. While the interaction term shows some interacting effect, the ACA Medicaid expansions alone appear more consistently important for provider choice than the change in access to maternity care in the non-group market.

Together, these results suggest that the increase in CNM/CM deliveries is coming from a change in Medicaid access, and through the Medicaid expansions, rather than other policies, such as changes in the nongroup market.

7.6 CNM/CM-Attended Births by County-level Characteristics

Next, we consider whether the increase in reported CNM/CM-attended deliveries is related to prior local access to insurance or local medical resources. The within-state impact of the ACA Medicaid expansions should reveal whether the increase in CNM/CM-attended deliveries arises from areas with lower healthcare resources or areas with limited insurance access prior to the Medicaid expansions.

We turn to a county-level specification to test whether the increase in CNM/CM-attended deliveries adjusts by more in areas with lower prior access to medical care or insurance. We interact the Medicaid expansion status with a county-level indicator for whether the county is below the state-level 25th percentile or above the 75th percentile in terms of average county-level characteristics. Formally, this specification appears as:

$$\begin{aligned} H_{ijst} = \alpha + \beta_1 1(\text{Medicaid Expansion})_s \times 1(\text{Low Insurance Access})_j + \\ \beta_2 1(\text{Medicaid Expansion})_s + \mathbf{X}'_{ijst}\gamma + a_j + \eta_t + \epsilon_{ijst} \end{aligned} \tag{4}$$

where $1(\text{Medicaid Expansion})_s$ captures the effect of a Medicaid Expansion in state s. $1(\text{Medicaid Expansion})_s \times 1(\text{Low Insurance Access})_j$ tests whether the Medicaid expansion has a larger effect in areas with lower health insurance access prior to the ACA, which we measure as below the 25th percentile. Our measure of insurance access is based on the pre-ACA (2013) state-level percentile.[17] In the results, we also show "high" access, which is above the state-level 75th percentile.

In this analysis, the county is based on the residence county instead of the delivery county, because the delivery county could change as a result of the ACA if provider

[17] The state-level percentile is calculated from county-level averages.

access changes. We control for local characteristics that are fixed over time by adding resident county fixed effects (a_j instead of state fixed effects). We also cluster the standard errors at the resident county level (to match the level of the fixed effect, Abadie et al. (2017)). The remainder of equation 4 reflects Equation 1.

Table A.9 presents the effect of the ACA Medicaid expansions across county-level access to insurance and healthcare resources in the mother's resident county. The coefficients suggest that the ACA Medicaid expansions uniformly increase CNM/CM-attended births. However, there are some notable heterogeneities by county-level access. CNM/CM deliveries increase by more in areas with low Medicaid prevalence prior to the ACA. CNM/CM deliveries also increase by less in areas with lower levels of CNM/CM-attended births prior to the ACA. Though notably, there is no difference by the share without insurance (prior to the ACA).

7.7 CNM/CM Labor Supply is Mostly Unchanged

Then, we conclude by considering whether the ACA Medicaid expansions affect CNM supply. We consider the ARHF's measure of CNM/CM presence in a given state. Instead of a quarterly event study, we switch to an annual event study for the majority of the analysis. Each specification is weighted by the state-level population.

Figure VI presents the impact of the ACA Medicaid expansions on CNM/CM labor supply, considering the log of CNM/CM deliveries, the CNM/CMs per MD, and the CNM/CM-attended births per CNM/CM. In Panel A, there is no change in CNM/CM supply after the ACA Medicaid expansion. In Panel B, we show the ratio of CNMs/CMs-to-MDs. The results suggest a small increase in CNMs/CMs per MD after the Medicaid expansions, but the impact is statistically insignificant.[18]

Finally, in Panel C, we return to our main quarterly event study and consider the CNM-attended births per CNM/CM. Here, we see that the number of CNM/CM-attended births per CNM/CM increase after the ACA Medicaid expansions. Thus, the results are not entirely explained by changes in CNM/CM labor supply. While there may be some small rise in CNMs/CMs, the increase in CNM/CM providers does not appear to explain our main findings.

[18] We also examine interactions of reimbursements with the log of CNM/CM providers, and find no change in provider supply. Our results here run slightly contrary to Huh (2021), which found an increase in the supply of dentists, especially in areas with greater financial incentives. Though CNMs/CMs are quite different than Huh (2021) because they rely on existing hospitals and physicians (for cesareans).

8 Conclusion

In this paper, we examine the impact of the ACA Medicaid expansions on CNM/CM-attended births. We find that Medicaid expansions increased the use of non-physician providers (CNMs/CMs), especially in states with Medicaid reimbursement parity. The importance of CNM/CM Medicaid reimbursements suggests that the likely channel for the increase in CNM/CM use is through either better reporting of CNMs/CMs on birth certificates or greater use of (existing) CNMs/CMs for deliveries.

While the most likely explanation for our findings is better preconception insurance availability, allowing patients to choose CNMs/CMs earlier in care, we find little evidence supporting this explanation. Instead, CNM-attended deliveries increase no matter the prenatal care receipt, including in deliveries occurring without any prenatal care. The increase in CNM/CM deliveries for those with no prenatal care suggests a change in the supply-side placement of CNMs/CMs at delivery. At the same time, we do not see an increase in CNM/CM labor supply, suggesting the change in CNM/CM deliveries is not due to large increases in CNM/CM supply in expansion states. Instead, the increase in CNM/CM use appears through changes in the use of existing CNMs/CMs. A possible explanation for these findings is hospitals and practices defaulting new patients into CNM/CM care. However, this change in supply-side practice patterns only occurs when CNMs/CMs can receive similar reimbursements to physicians.

Still, a limitation of our study is that we cannot fully rule out the effect being driven by changes in the reporting of CNM/CM deliveries. Though, CNM/CM reporting is still a beneficial gauge of the ability of CNMs/CMs to practice with autonomy in the healthcare system. Even if our results are entirely driven by a change in reporting, our findings are still important because they demonstrate a supply-side adjustment in how CNMs/CMs operate within the healthcare system. CNM/CM ability to sign a birth certificate represents a measure of CNM/CM autonomy, and if our findings are driven by reporting, these results reveal that demand-side pressures may increase the ability of CNMs/CMs to practice, but only in states with reimbursement parity for CNMs.

These findings add to existing studies by providing evidence that increases in the demand for healthcare may be met by non-physician providers, such as CNMs/CMs. These results align with findings showing the importance of dental hygienists in meeting demand for dental services (Buchmueller et al., 2016), and speculation by Carey et al. (2020) on the importance of NPPs in preventing negative spillovers of public insurance expansions to the already insured. Our findings also show that reimbursement

parity is important for the use of CNMs/CMs, and demonstrate that supply-side responses may differ by financial incentives, aligning with prior work in Freedman et al. (2015); Huh (2021).

Still, why should we care about CNM/CM use and autonomy? The use of non-physician alternatives could be considered beneficial for a few reasons. First, CNMs/CMs are lower-cost providers who still provide high-quality care that is (at least) on par with obstetrician care (Sakala, 2006; Sakala and Corry, 2008; Miller et al., 2016; Tikkanen et al., 2020; Dubay et al., 2020; Wallace, 2023). Second, the use of obstetricians could be seen as overuse of care, when a CNM/CM can provide similar care to obstetricians, without trading off patient safety (Markowitz et al., 2017; Dubay et al., 2020; Hoehn-Velasco et al., 2022). In fact, CNMs/CMs may actually provide safer care for low-risk, well-qualified deliveries (Dubay et al., 2020; Wallace, 2023). Third, even if our findings represent only a reporting change, reporting of CNM/CM care represents an important metric of autonomy. If reporting is the sole channel for the observed increase in CNM/CM deliveries, it still suggests that higher demand for obstetric services may shift autonomy to CNMs/CMs, but only when reimbursements are on par with physicians.

9 Tables

Table 1: Means of All, Low-risk, and High-Risk Deliveries by Expansion Status

	All		Low-Risk Nulliparous		Low-Risk Multipara		High-Risk	
	Control	Expansion	Control	Expansion	Control	Expansion	Control	Expansion
Characteristics								
Married	0.561	0.606	0.482	0.543	0.590	0.629	0.589	0.627
Female Neonate	0.489	0.488	0.487	0.487	0.489	0.488	0.491	0.490
High School	0.270	0.223	0.264	0.216	0.276	0.231	0.261	0.215
Some College	0.275	0.265	0.264	0.250	0.276	0.270	0.291	0.284
Education Missing	0.044	0.081	0.047	0.078	0.044	0.076	0.040	0.069
College	0.252	0.294	0.278	0.336	0.236	0.275	0.263	0.307
Latinx	0.278	0.223	0.260	0.210	0.293	0.235	0.261	0.201
White non-Latinx	0.468	0.545	0.490	0.561	0.461	0.541	0.469	0.542
Black non-Latinx	0.201	0.121	0.190	0.105	0.198	0.123	0.216	0.136
Rural	0.147	0.129	0.141	0.123	0.150	0.134	0.148	0.131
Payment-Medicaid	0.474	0.417	0.454	0.377	0.491	0.441	0.456	0.402
Payment-No Insurance	0.060	0.034	0.056	0.029	0.067	0.039	0.050	0.025
Payment-Other	0.061	0.049	0.056	0.052	0.058	0.048	0.061	0.047
Age	27.772	28.631	24.829	25.821	28.723	29.462	29.094	29.991
Provider								
CNM/CM Attendant	0.067	0.093	0.073	0.103	0.074	0.104	0.034	0.049
Physician Attendant	0.917	0.892	0.914	0.885	0.906	0.877	0.959	0.945
Any Midwife Attendant	0.075	0.100	0.079	0.109	0.085	0.113	0.035	0.050
Non-CNM/CM Midwife Attendant	0.008	0.007	0.007	0.006	0.011	0.010	0.001	0.002
Birth Center	0.005	0.004	0.006	0.004	0.007	0.005	0.001	0.001
Delivery								
Cesarean	0.345	0.313	0.262	0.231	0.303	0.267	0.575	0.551
Induced	0.258	0.243	0.300	0.269	0.227	0.210	0.293	0.308
Forceps/Vacuum	0.027	0.035	0.049	0.065	0.019	0.024	0.021	0.026
Neonatal								
Adverse	0.158	0.148	0.153	0.144	0.117	0.107	0.282	0.267
Premature (<37 Weeks)	0.128	0.110	0.089	0.074	0.099	0.081	0.264	0.241
Term Gestation	0.476	0.501	0.523	0.527	0.506	0.539	0.324	0.359
41+ Weeks	0.051	0.053	0.061	0.066	0.052	0.053	0.037	0.037
APGAR<7	0.020	0.019	0.019	0.020	0.013	0.013	0.039	0.038
Less than 2500 grams	0.088	0.078	0.063	0.054	0.054	0.046	0.217	0.201
NICU Admission	0.081	0.084	0.064	0.071	0.053	0.055	0.185	0.187
Death	0.003	0.003	0.002	0.002	0.002	0.001	0.006	0.006
SGA	0.257	0.245	0.282	0.272	0.224	0.210	0.316	0.309
VSGA	0.103	0.096	0.113	0.106	0.083	0.076	0.146	0.140
Seizures	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Continuous								
Gestation	38.473	38.690	38.913	39.152	38.659	38.873	37.350	37.544
Birth Weight	7.132	7.229	7.173	7.257	7.301	7.404	6.598	6.694
APGAR	8.790	8.797	8.787	8.785	8.854	8.858	8.628	8.639
Prenatal								
First Trimester Prenatal	0.714	0.776	0.718	0.782	0.703	0.768	0.743	0.794
Second Trimester Prenatal	0.207	0.169	0.202	0.165	0.215	0.175	0.192	0.159
Third Trimester Prenatal	0.053	0.042	0.053	0.043	0.057	0.043	0.045	0.036
No Prenatal Care	0.025	0.013	0.026	0.010	0.025	0.014	0.020	0.011
Prenatal Visits	10.873	11.416	10.996	11.553	10.655	11.161	11.334	12.004
Other								
Labor Augmentation	0.191	0.218	0.265	0.297	0.181	0.201	0.125	0.165
Labor Anesthesia	0.766	0.709	0.813	0.767	0.732	0.668	0.811	0.765
Maternal Transfer	0.004	0.005	0.003	0.004	0.002	0.003	0.009	0.013
Infant Transfer	0.010	0.011	0.009	0.010	0.008	0.009	0.019	0.021
Weekend	0.182	0.214	0.208	0.245	0.176	0.207	0.164	0.191
Born 9pm-6am	0.240	0.291	0.282	0.333	0.227	0.281	0.220	0.264
N	400	1,560	400	1,546	400	1,546	400	1,560

SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: *All* includes all deliveries occurring in the birth certificate records during the given timeframe where the residence state matches the delivery state. *Low-risk first births (nulliparous)* includes those without diabetes or hypertension who delivered a vertex singleton (no breech births or multiples). All samples subset to where the delivery occurs in the resident state. *Low-risk subsequent births (multiparas)*, include the same sample selections as low-risk first births. *High-risk deliveries* are those with either hypertension, diabetes, non-vertex presentation (breech), or non-singleton.

Table 2: Mechanisms: Increase in CNM/CM Use by Prenatal Care Receipt, Low-risk First Deliveries

	Outcome: CNM/CM-Attended Deliveries Across Prenatal Care Subsamples			
	(1) 1st	(2) 2nd	(3) 3rd	(4) None
Panel A: All				
1(ACA Medicaid Expansion)	0.0090***	0.0150***	0.0185***	0.0187*
	(0.0031)	(0.0038)	(0.0043)	(0.0101)
N	6,725,248	1,538,353	400,910	128,346
Adjusted R-squared	0.028	0.032	0.034	0.045
Mean Dependent	0.095	0.102	0.109	0.055
	(1)	(2)	(3)	(4)
Panel B: Private				
1(ACA Medicaid Expansion)	0.0097***	0.0114**	0.0091**	0.0103
	(0.0033)	(0.0049)	(0.0041)	(0.0153)
N	3,896,189	497,902	105,713	29,798
Adjusted R-squared	0.037	0.040	0.052	0.065
Mean Dependent	0.094	0.103	0.123	0.051
	(1)	(2)	(3)	(4)
Panel C: Medicaid				
1(ACA Medicaid Expansion)	0.0032	0.0098**	0.0181***	0.0200**
	(0.0048)	(0.0037)	(0.0060)	(0.0098)
N	2,318,148	883,808	230,139	67,477
Adjusted R-squared	0.037	0.039	0.042	0.043
Mean Dependent	0.090	0.095	0.103	0.053
	(1)	(2)	(3)	(4)
Panel D: Other Payment				
1(ACA Medicaid Expansion)	0.0043	0.0213	0.0264**	0.0245*
	(0.0131)	(0.0141)	(0.0126)	(0.0125)
N	510,911	156,642	65,058	31,068
Adjusted R-squared	0.049	0.049	0.051	0.055
Mean Dependent	0.128	0.138	0.110	0.062
State and Quarter-Year FE	X	X	X	X
Controls	X	X	X	X

NOTES: Outcome is CNM/CM-attended deliveries. Sample split by prenatal care receipt. The first column shows the sample of those receiving care in the first trimester. The second column shows those receiving care in the second trimester. The third column presents those who received care in the third trimester. The fourth column displays the sample that received no prenatal sample. Reflects grouped post-period from Figure II. OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Controls for maternal factors include marital status, indicators for grouped educational attainment (high school, some college, college or higher, and missing, with less than high school excluded), indicators for maternal age, race (Latinx, Black non-Latinx, and white non-Latinx), and an indicator for a female neonate. County-level controls include indicators for the resident county size and the unemployment rate. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. Low-risk sample of first deliveries, which includes those without a history of hypertension or diabetes who have a singleton vertex delivery and deliver in their residence state. Robust standard errors are clustered at the state level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels.

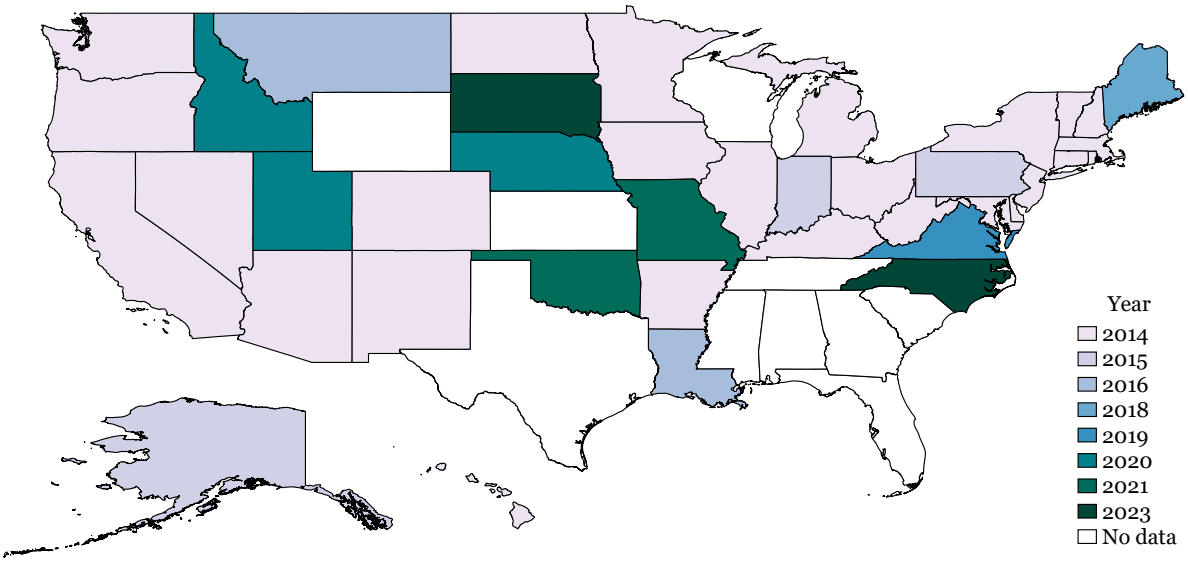
Table 3: Mechanisms: Interactions of the ACA Medicaid Expansions and State-level Medicaid Reimbursements for CNMs/CMs

	Low Risk First		High Risk		Low Risk Subsequent	
	(1) 1(CNM/CM)	(2) 1(Physician)	(3) 1(CNM/CM)	(4) 1(Physician)	(5) 1(CNM/CM)	(6) 1(Physician)
Panel A: Medicaid Reimbursement Parity						
1(Medicaid Expansion)=1	0.0056	-0.0029	0.0038	-0.0010	0.0047	-0.0008
	(0.0035)	(0.0030)	(0.0027)	(0.0024)	(0.0041)	(0.0030)
1(Medicaid Expansion)=1 × 1(CNM Full Medicaid Reimbursement)=1	0.0097***	-0.0105***	0.0073**	-0.0073**	0.0106***	-0.0108***
	(0.0034)	(0.0032)	(0.0032)	(0.0030)	(0.0036)	(0.0031)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.956	0.970	0.914	0.927	0.960	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	9.582	11.257	9.387	5.620	14.351	11.753
P-value from Joint F-test	0.000	0.000	0.000	0.006	0.000	0.000
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Share CNM-to-Physician Medicaid Reimbursement						
1(Medicaid Expansion)=1	-0.0352*	0.0376**	-0.0269*	0.0273*	-0.0372*	0.0398**
	(0.0189)	(0.0181)	(0.0158)	(0.0153)	(0.0195)	(0.0174)
1(Medicaid Expansion)=1 × CNM Reimbursement Rate	0.0502**	-0.0504**	0.0378**	-0.0352**	0.0519**	-0.0506***
	(0.0204)	(0.0194)	(0.0169)	(0.0164)	(0.0201)	(0.0181)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.956	0.969	0.913	0.927	0.960	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	8.794	10.466	9.788	5.587	12.842	10.817
P-value from Joint F-test	0.001	0.000	0.000	0.007	0.000	0.000
State and Quarter-Year FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

NOTES: Reflects grouped post-period from the main analysis in Figure II, except considering the interaction of the ACA with CNM Medicaid reimbursements (see Equation 3). Panel A is an indicator capturing CNM Medicaid reimbursement equal to a physician reimbursement (or reimbursement parity, which is not time-varying). Panel B shows the share of Medicaid reimbursements that CNMs receive relative to physicians. Reimbursement data are a combination of NASHP (2023) and ACNM (2022b). The states that reimburse CNMs less than physicians include AL (80%), AK (85%), AZ (90%), AR (80%), CT (90%), FL (80%), HI (75%), ID (85%), IN (75%), IA (85%), KS (75%), KY (75%), LA (80%), MA (85%), MS (90%), MT (90%), NC (98%), ND (75%), NV (88%), NJ (95%), NY (85%), TN (90%), TX (92%). Note that certain states, CT, NJ, ND, and NC, now have reimbursement parity (after the study period).

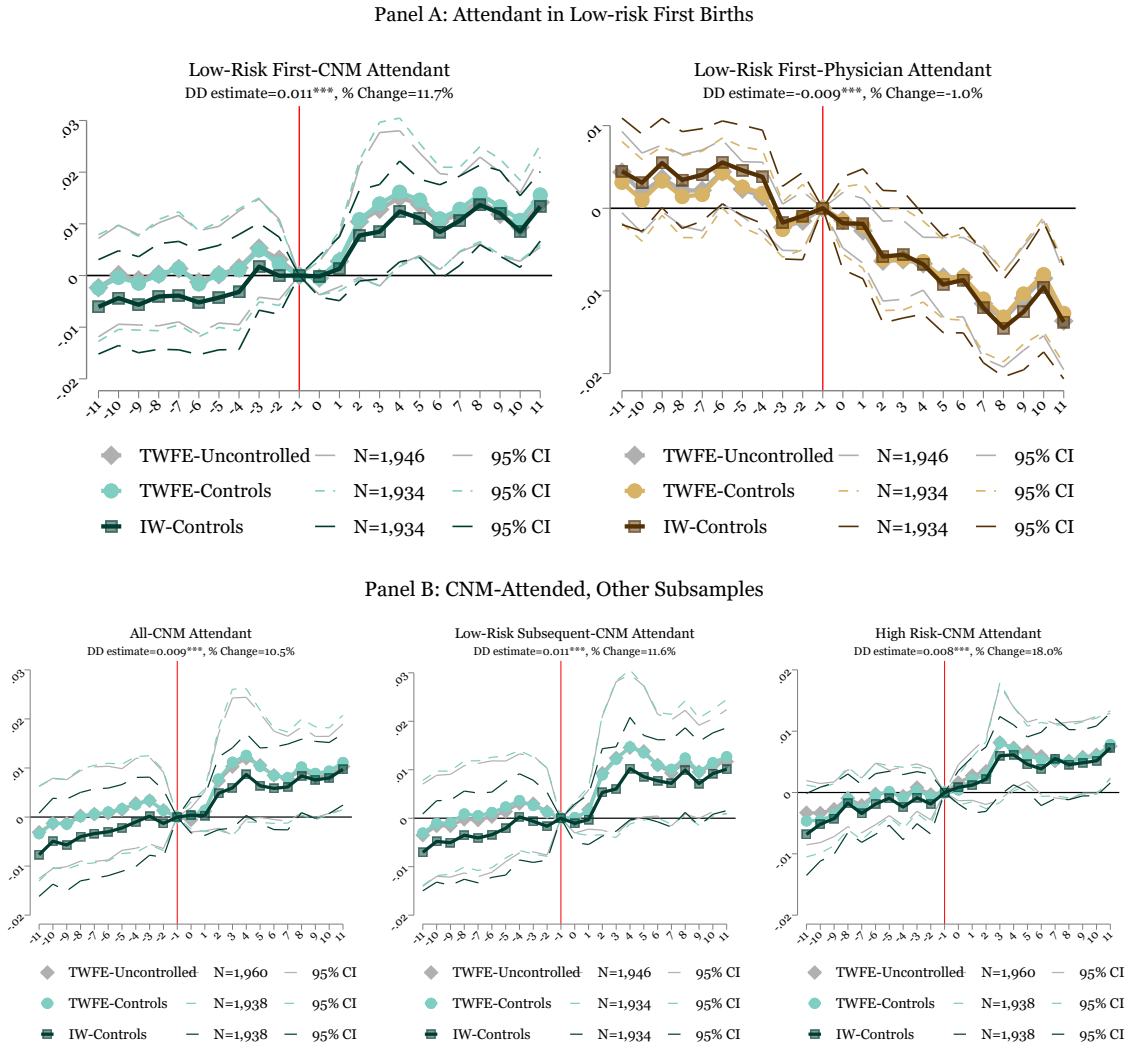
10 Figures

Figure I: ACA Medicaid Expansion Dates



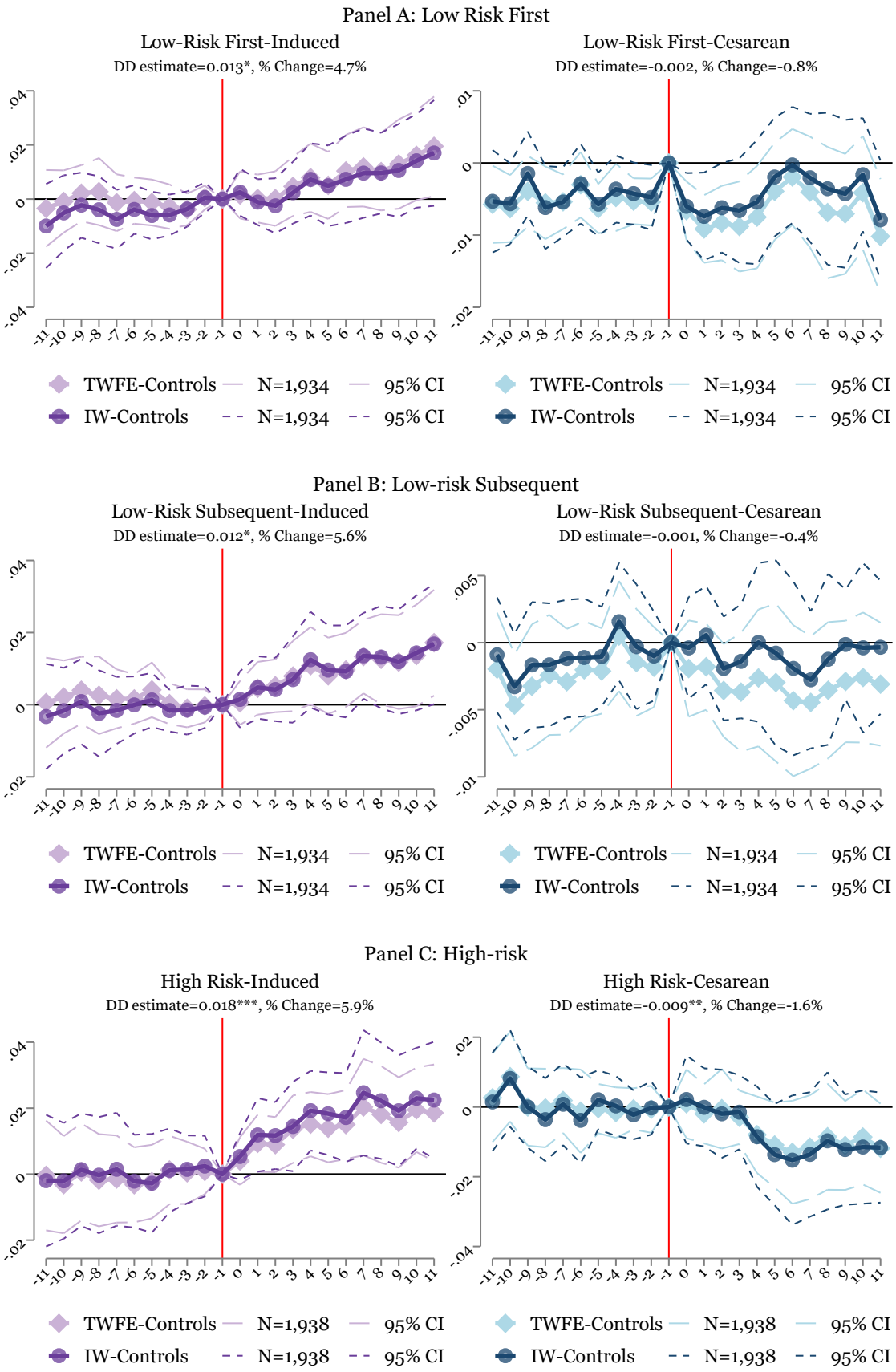
SOURCE: Map of dates of ACA expansions from Kaiser Family Foundation, https://www.kff.org/medicaid/issue-brief/status-of-state-medicaid-expansion-decisions-interactive-map/. Only states that implemented before 2017 included as expansion states in the main analysis. The two states that expanded afterward, Maine and Virginia, are excluded from the analysis. The remainder of the states that expanded after 2019 (the end of our sample) are included as control states.

Figure II: ACA Medicaid Expansions and Provider at Delivery



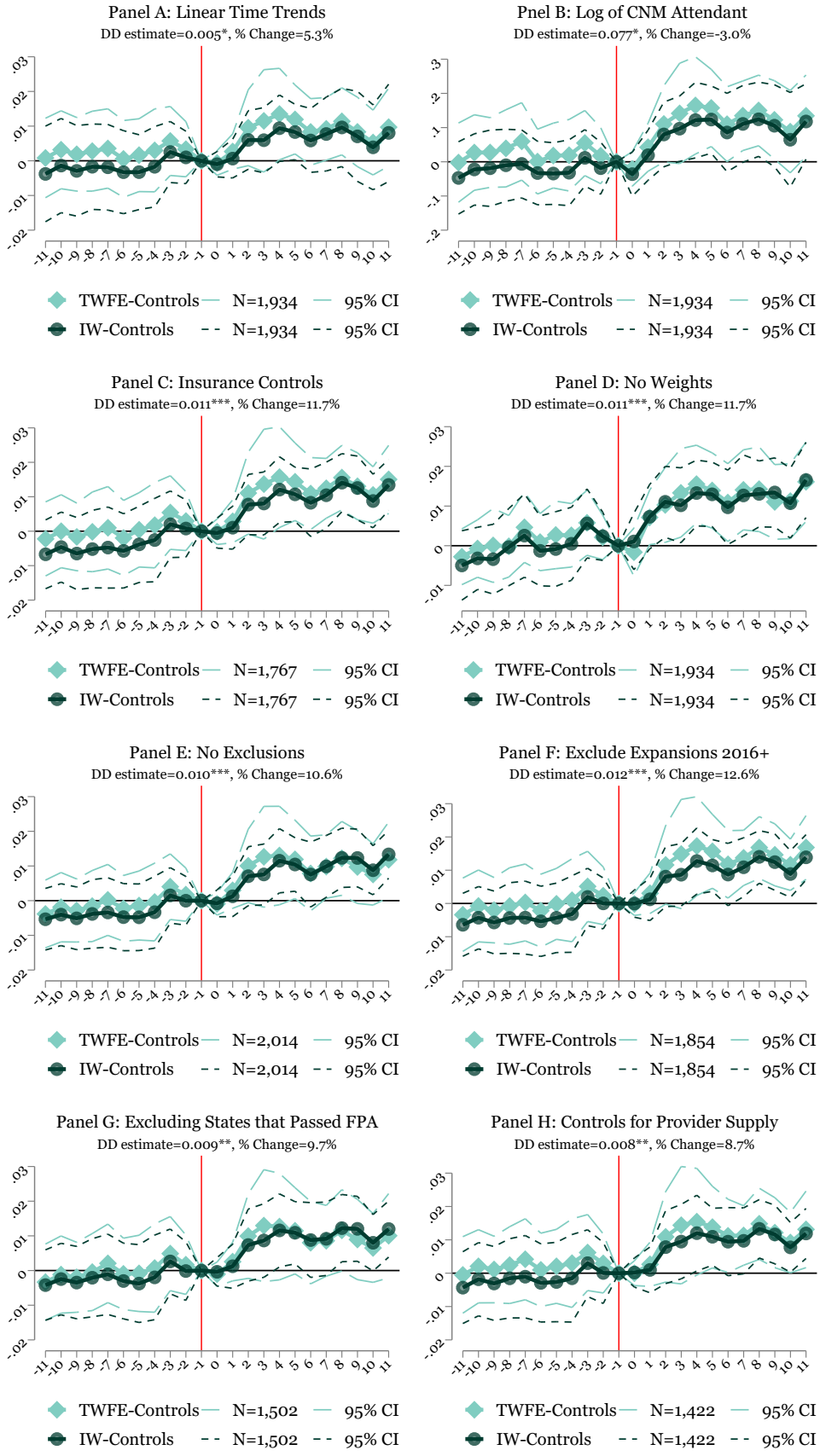
SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Plotted points represent coefficients on dummy variables representing each quarter-year of delivery before and after the Medicaid expansion. $m = -1$ is the excluded period. Solid lines represent point estimates. Dashed and dotted lines display the 95 percent confidence intervals, with robust standard errors clustered at the state level. Endpoints binned at $m = -11$ and $m = 11$. TWFE represents two-way fixed effects. IW represents the Interaction Weighted estimator from Sun and Abraham (2021). Data collapsed at the quarter-year of delivery and state level and regressions are weighted by the number of observations in each outcome. Controls include the share married, the average age, the share of female neonates, the average unemployment rate, the share of each race (Latinx, white non-Latinx, and black non-Latinx), the share of each education level (high school, some college, college, and missing), and the share rural. In samples with multiparas, we include controls for average parity. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. The years of the sample include 2010 to 2019 *All* includes all deliveries occurring in the birth certificate records during the given timeframe where the residence state matches the delivery state. *Low-risk first births (nulliparous)* includes those without diabetes or hypertension who delivered a vertex singleton (no breech births or multiples). All samples subset to where the delivery occurs in the resident state. *Low-risk subsequent births (multiparas)*, include the same sample selections as low-risk first births. *High-risk deliveries* are those with either hypertension, diabetes, non-vertex presentation (breech), or non-singleton.

Figure III: ACA Medicaid Expansions and Major Delivery Outcomes



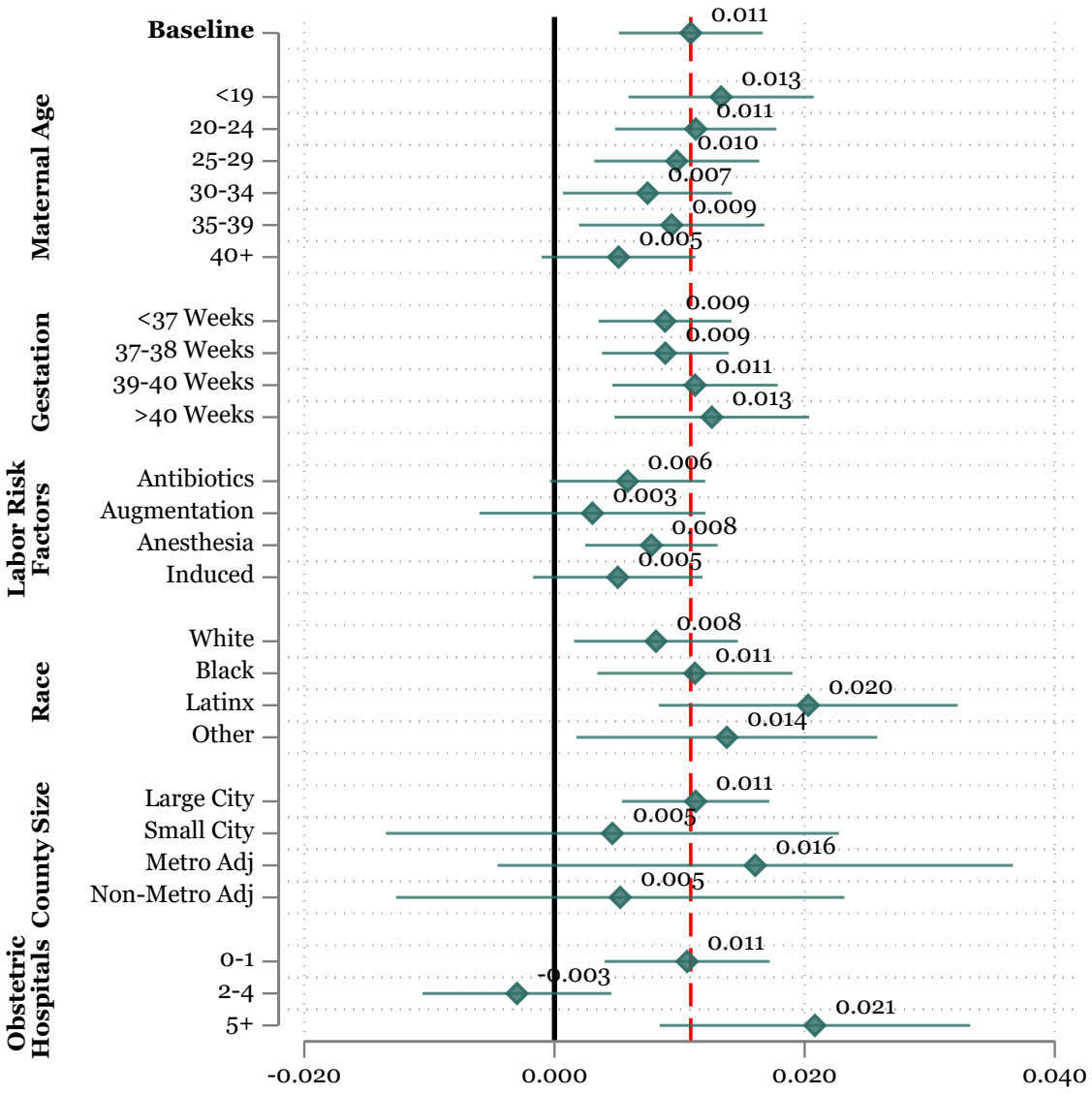
NOTES: Reflects Figure II except considering delivery outcomes.

Figure IV: Robustness: CNM/CM Deliveries and ACA Medicaid Expansions, Alternative Event Studies for the Low-risk First Delivery Sample



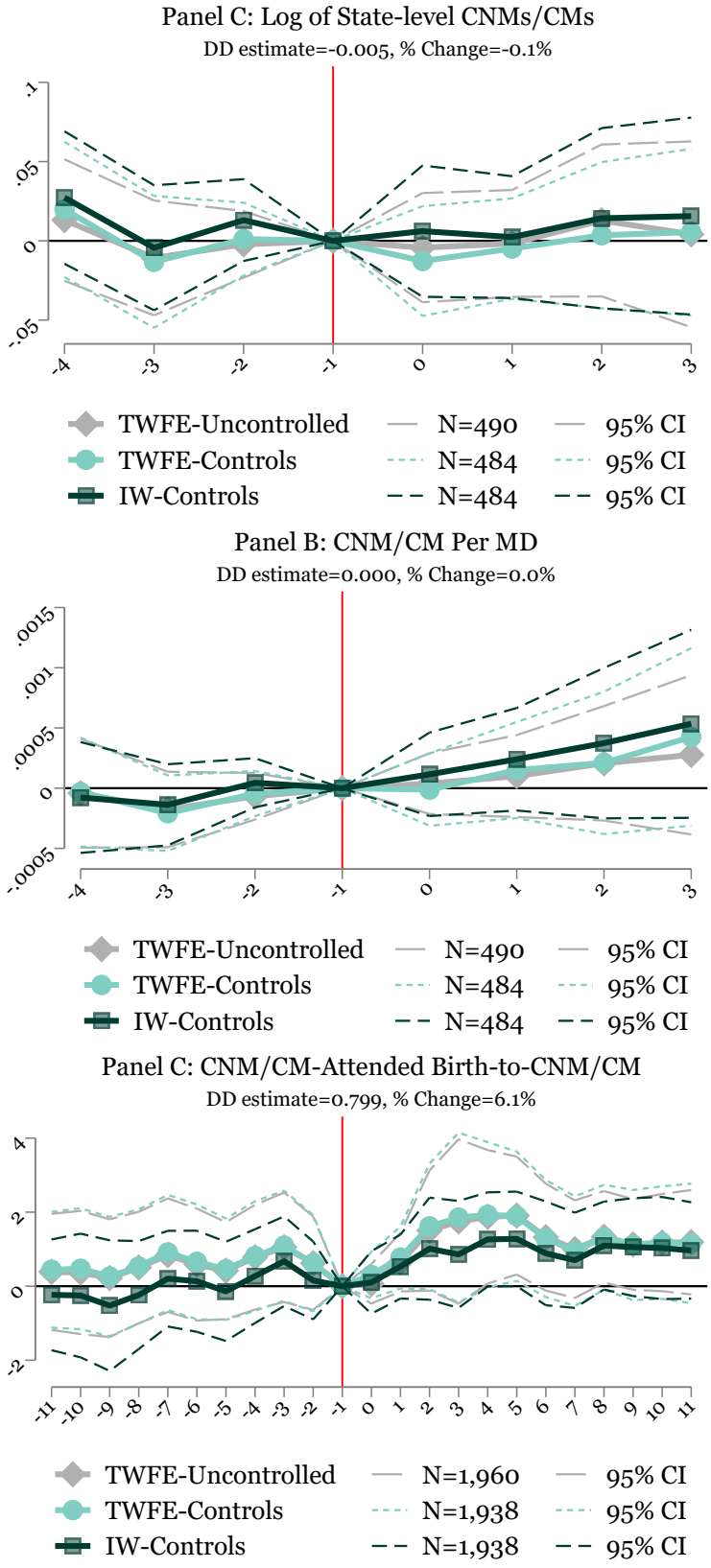
NOTES: Reflects Figure II except with time trends (Panel A), log of CNM/CM births (Panel B), insurance controls (Panel C), without weights (Panel D), without sample exclusions based on the ACA expansion date (Panel E), excluding states that expanded in 2016 onward (Panel F), excluding states that passed full practice authority in the sample period (Panel G) based on Markowitz et al. (2017), and controlling for per capita CNMs, MDs, and APRNs (Panel H).

Figure V: Robustness: Difference-in-Differences Subsamples, Low Risk First Deliveries



NOTES: Reflects difference-in-differences point estimates in Figure II, except with various subsamples and using the individual-level data and the sample of low-risk first births. OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Controls for maternal factors include marital status, indicators for grouped educational attainment (high school, some college, college or higher, and missing, with less than high school excluded), indicators for maternal age, race (Latinx, Black non-Latinx, and white non-Latinx), and an indicator for a female neonate. County-level controls include indicators for the resident county size and the unemployment rate. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. Low-risk sample of first deliveries, which includes those without a history of hypertension or diabetes who have a singleton vertex delivery and deliver in their residence state. Robust standard errors are clustered at the state level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels.

Figure VI: ACA Medicaid Expansions and CNM/CM Labor Supply



SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects Figure II except considering annual labor supply for CNMs/CMs. To adjust for the annual specification, results consider five years before and four years after the Medicaid expansions. Panel A shows the outcome as the CNMs/CMs per medical doctors in the county. Panel B shows the log of the state-level CNM/CMs. Panel C shows the number of CNM/CM-attended births divided by the number of CNMs/CMs in the state. Panel C is the same specification as in Figure II.

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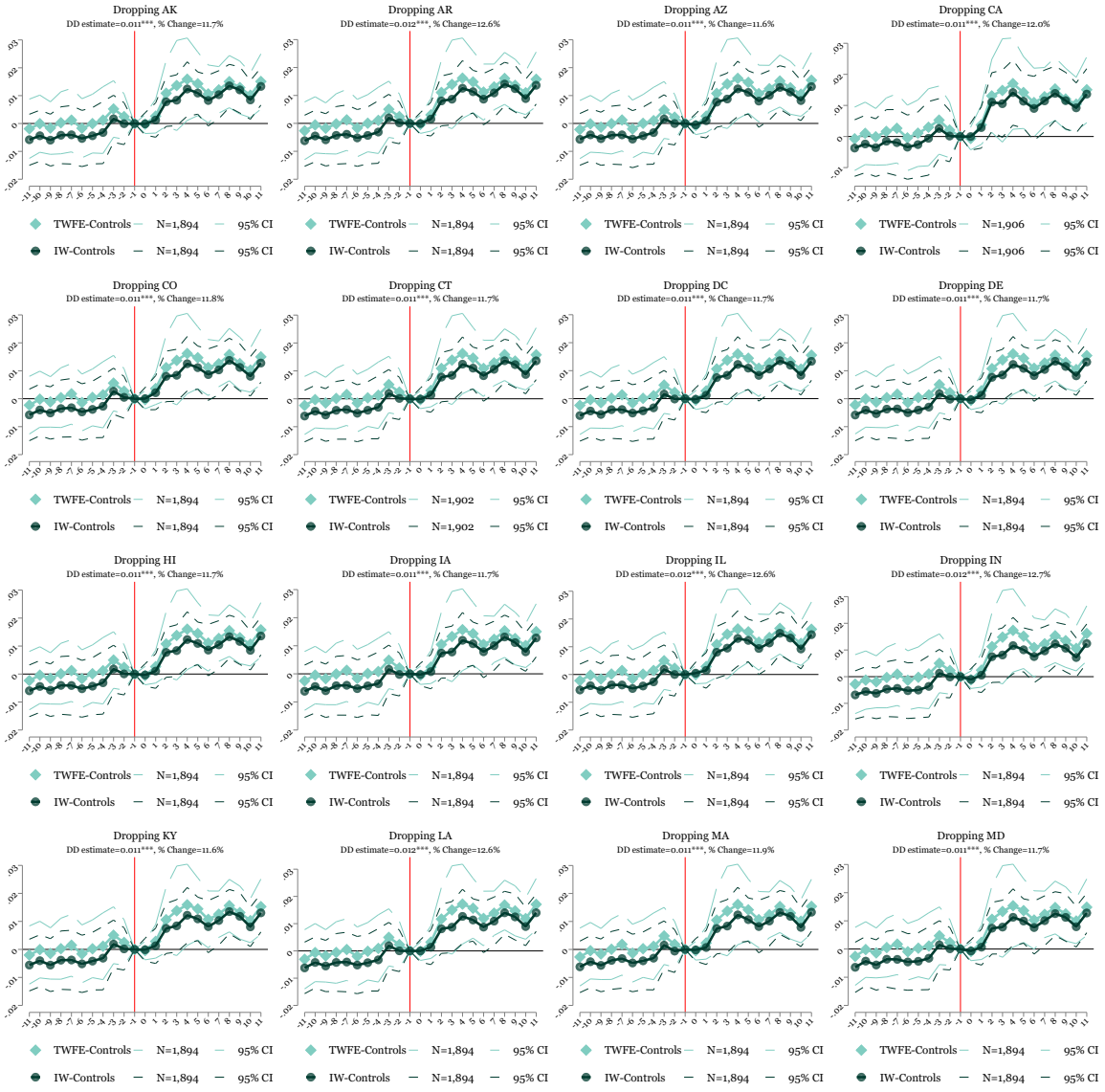
Online Appendix

A Appendix

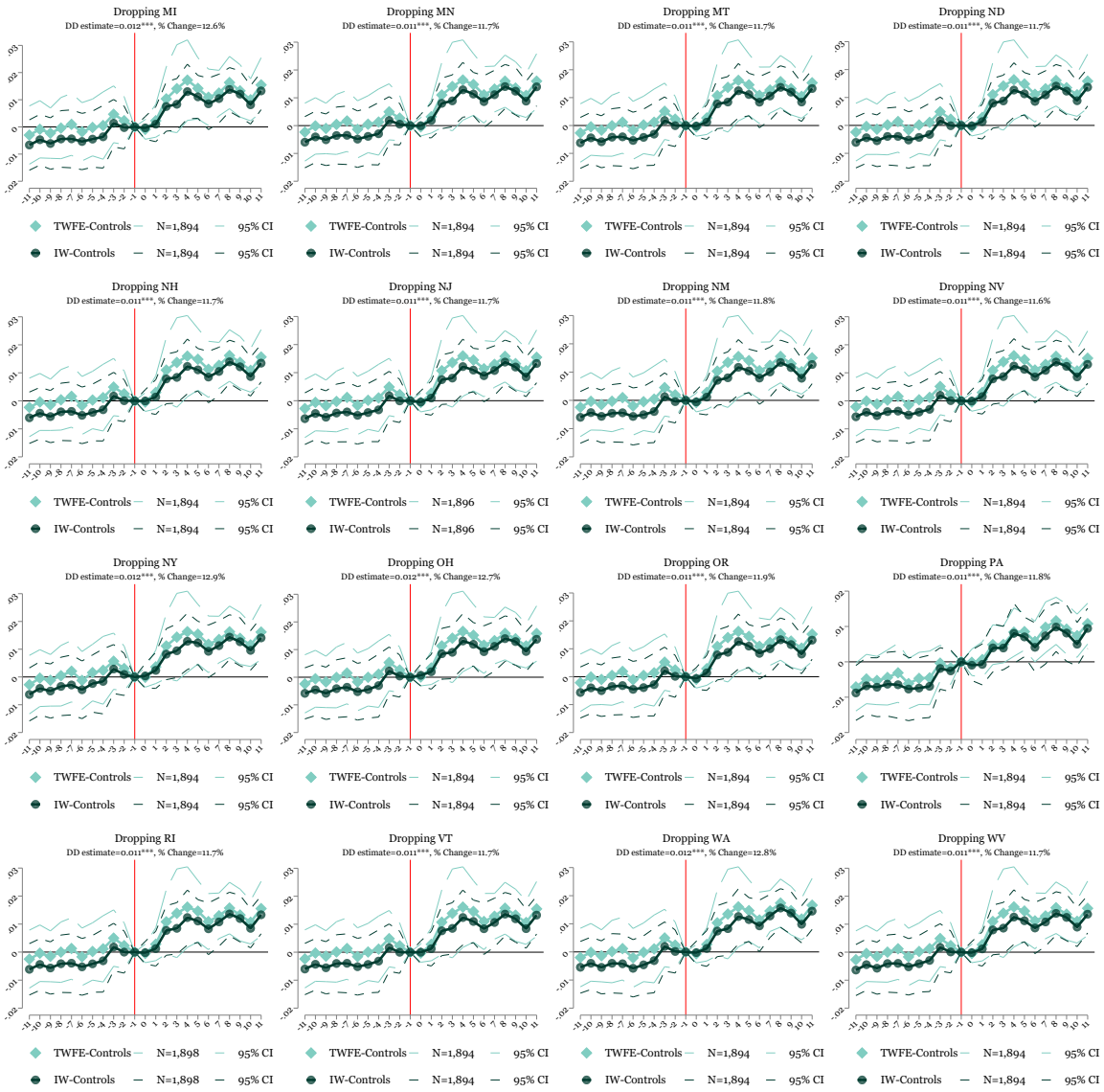
A.1 Additional Robustness

Figure A.1: Main Event Study, Dropping One State at a Time (II), CNM/CM Deliveries in the Low-Risk Sample of First Deliveries



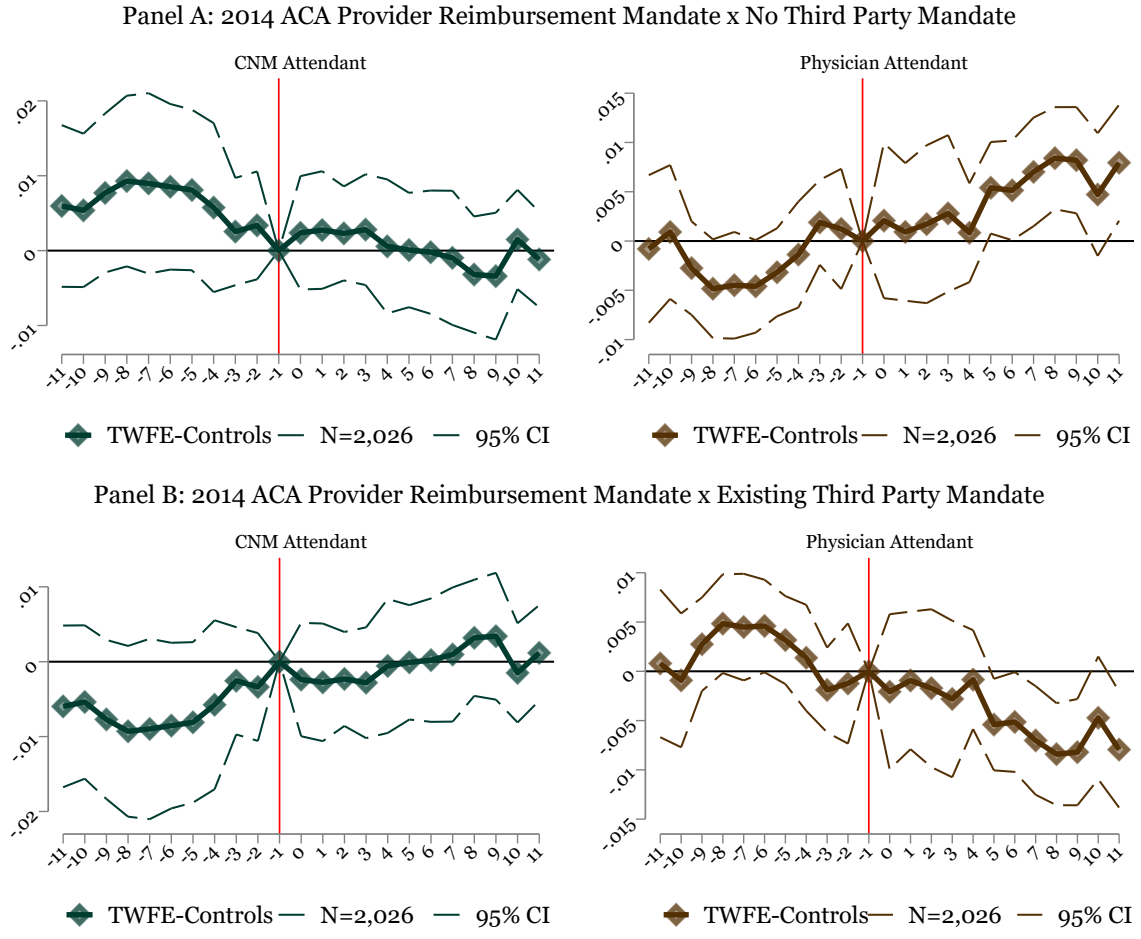
SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects Figure II except dropping one state at a time from the analysis.

Figure A.2: Main Event Study, Dropping One State at a Time (II), CNM/CM Deliveries in the Low-Risk Sample of First Deliveries



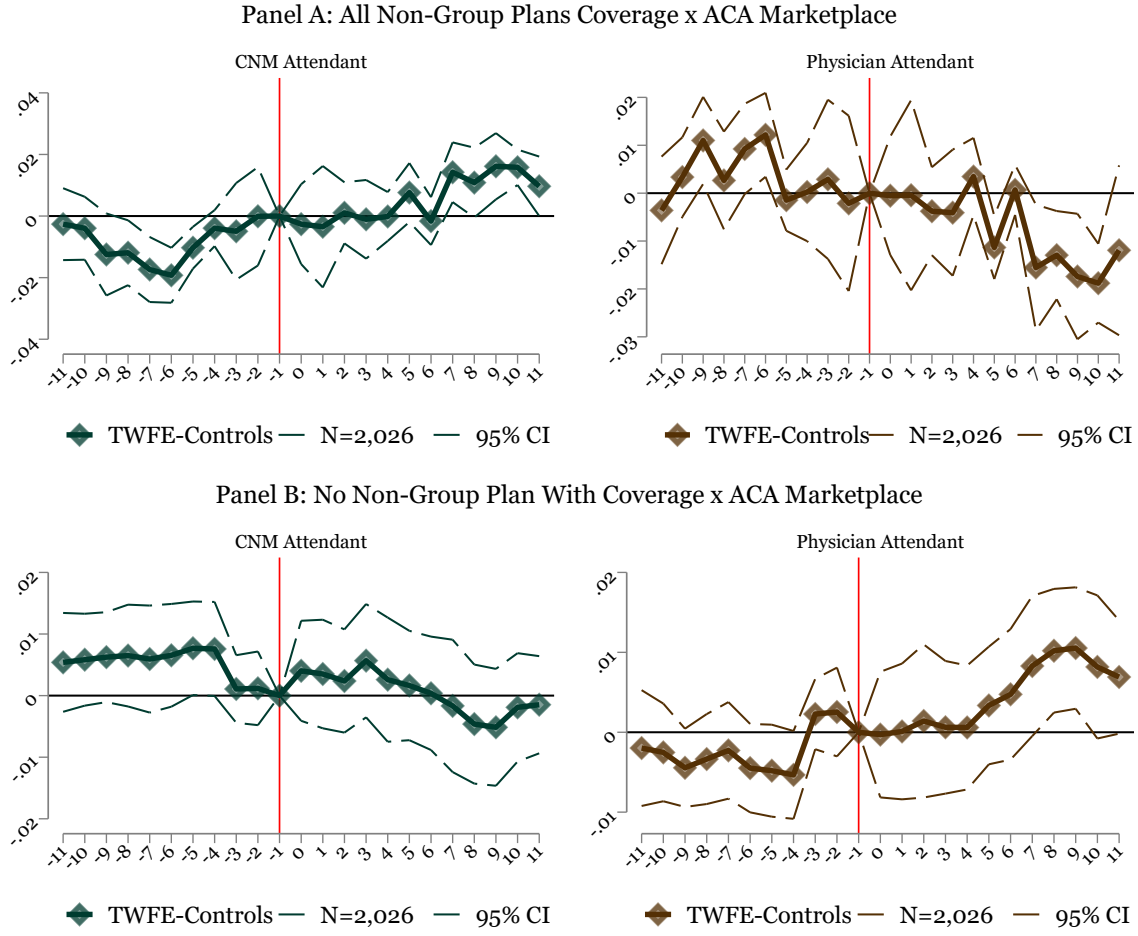
SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects Figure II except dropping one state at a time from the analysis.

Figure A.3: Effect of ACA Mandated Third-Party Payments (Section 2706(a)) X Preexisting State Third-Party Payment Policies



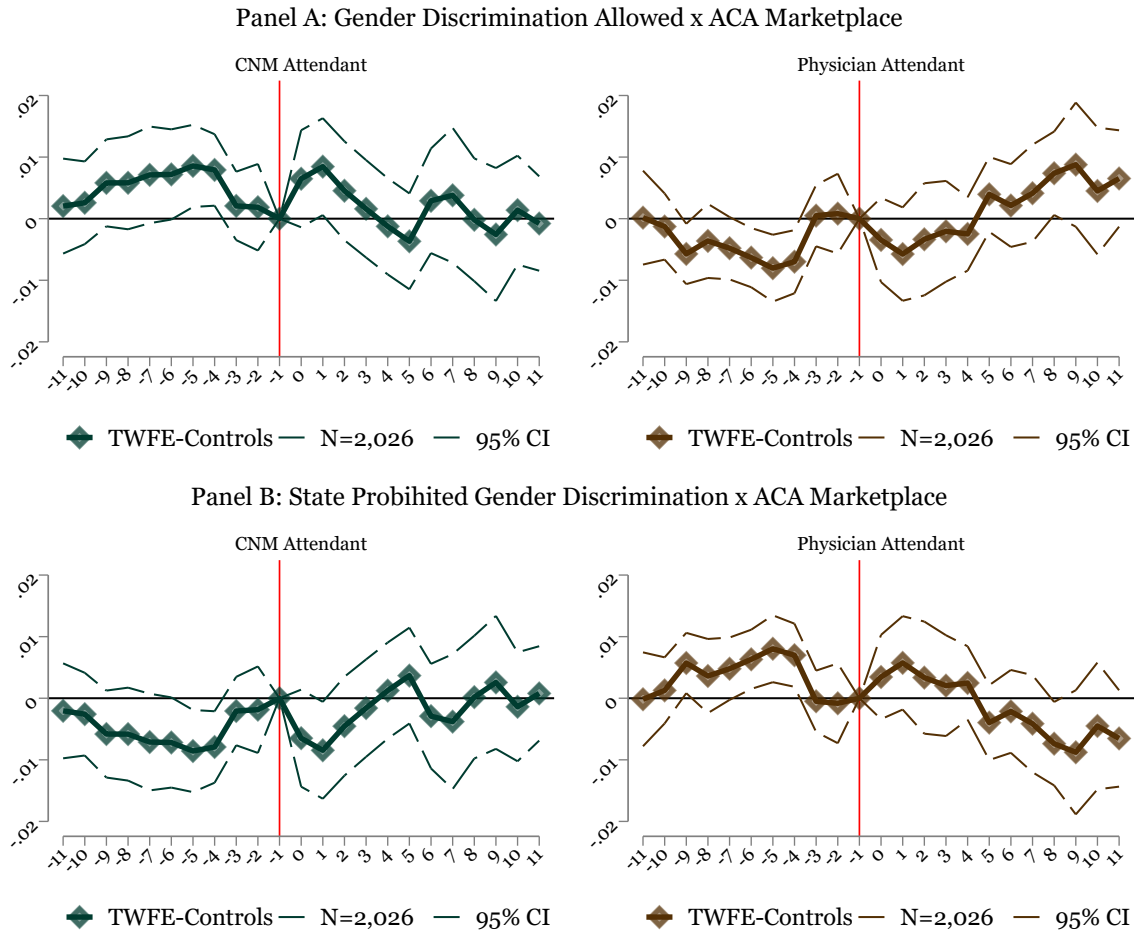
SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Considers the effect of Section 2706(a) in states without third-party mandates (Panel A) (McCartney, 2015). This specification reflects our main event study in Figure II, except for the modifications shown in Equation 2 and taking the treated states as those without third-party mandates. The effective date for this policy is January 2014. The control states in this specification are those with third-party mandates in place. Panel B performs the opposite, considering states with third-party mandates already in place and what happens to provider use after third-party mandates in January 2014. Data updated from Miller (2006). States without third-party mandates include AR, DC, GA, ID, IL, IN, KY, MI, NE, OK, SC, TX, VT, WI, and WY.

Figure A.4: Effect of ACA Marketplace by Pre-ACA Non-Group Market Maternity Coverage



SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects Figure A.3 and Equation 2 except considering the effect of the ACA Marketplace in 2014 by prior maternity care access. Panel A considers the effect of the ACA Marketplace in states where all non-group plans have maternity coverage before the ACA Marketplace. Panel B considers the effect of the ACA Marketplace in states without any plans providing maternity care before the ACA Marketplace. Data from Garrett et al. (2012) Table 4. States with no maternity coverage include AL, AK, AR, CT, DE, FL, GA, IN, KS, KY, LA, MS, MO, NE, NV, NH, NM, NC, OH, OK, SC, TN, TX, VA, WI. States where all plans have maternity care include CO, MA, MT, OR, and VT.

Figure A.5: Effect of ACA Marketplace by the Whether the State Had Anti-Gender Discrimination Laws



SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects Figure A.3 except considering the effect of the ACA Marketplace in 2014 by whether the state had anti-discrimination laws in place. Panel A considers the effect of the ACA Marketplace in states where states allow gender discrimination in the non-group market. Panel B considers the effect of the ACA Marketplace in states where gender discrimination was prohibited prior to the ACA Marketplace. Data from Garrett et al. (2012) Table 3. CA, CO, ME, MA, MN, NH, NJ, NY, OR, RI, VT, and WA prohibited gender discrimination.

Table A.1: Robustness: Effect of ACA Medicaid Expansions on the Delivery Attendant

	CNM/CM Deliveries			Physician Deliveries		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: All						
1(Medicaid Expansion)	0.0101***	0.0093***	0.0029	-0.0088***	-0.0062**	-0.0022
	(0.0031)	(0.0030)	(0.0020)	(0.0028)	(0.0024)	(0.0022)
N	1,960	1,938	1,938	1,960	1,938	1,938
Adjusted R-squared	0.956	0.959	0.980	0.972	0.977	0.988
Mean Dependent	0.094	0.094	0.094	0.889	0.889	0.889
Wild-Bootstrapped P-Value	0.008	0.005	0.156	0.010	0.015	0.348
Percent Change	11.8%	10.9%	3.4%	-1.0%	-0.7%	-0.2%
Panel B: High-Risk						
1(Medicaid Expansion)	0.0089***	0.0081***	0.0021	-0.0076***	-0.0055**	-0.0017
	(0.0028)	(0.0024)	(0.0021)	(0.0026)	(0.0022)	(0.0022)
N	1,960	1,938	1,938	1,960	1,938	1,938
Adjusted R-squared	0.909	0.913	0.953	0.921	0.925	0.956
Mean Dependent	0.052	0.052	0.052	0.941	0.941	0.941
Wild-Bootstrapped P-Value	0.004	0.005	0.365	0.010	0.026	0.500
Percent Change	20.1%	18.2%	4.7%	-0.8%	-0.6%	-0.2%
Panel B: Low-Risk						
1(Medicaid Expansion)	0.0120***	0.0112***	0.0049*	-0.0111***	-0.0089***	-0.0052*
	(0.0031)	(0.0033)	(0.0028)	(0.0030)	(0.0026)	(0.0028)
N	1,946	1,934	1,934	1,946	1,934	1,934
Adjusted R-squared	0.953	0.955	0.972	0.965	0.968	0.979
Mean Dependent	0.104	0.104	0.104	0.882	0.882	0.882
Wild-Bootstrapped P-Value	0.003	0.002	0.091	0.005	0.003	0.094
Percent Change	12.7%	11.9%	5.2%	-1.2%	-1.0%	-0.6%
Panel D: Low-Risk Multipara						
1(Medicaid Expansion)	0.0123***	0.0106***	0.0044*	-0.0110***	-0.0072***	-0.0026
	(0.0035)	(0.0032)	(0.0023)	(0.0030)	(0.0024)	(0.0020)
N	1,946	1,934	1,934	1,946	1,934	1,934
Adjusted R-squared	0.956	0.959	0.978	0.971	0.975	0.986
Mean Dependent	0.105	0.105	0.105	0.873	0.873	0.873
Wild-Bootstrapped P-Value	0.006	0.006	0.074	0.004	0.008	0.216
Percent Change	12.9%	11.2%	4.6%	-1.2%	-0.8%	-0.3%
Number Treated	39	39	39	39	39	39
Number of States	49	49	49	49	49	49
State and Quarter-Year FE	X	X	X	X	X	X
Controls		X	X		X	X
State x Quarter-Year Trend			X			X

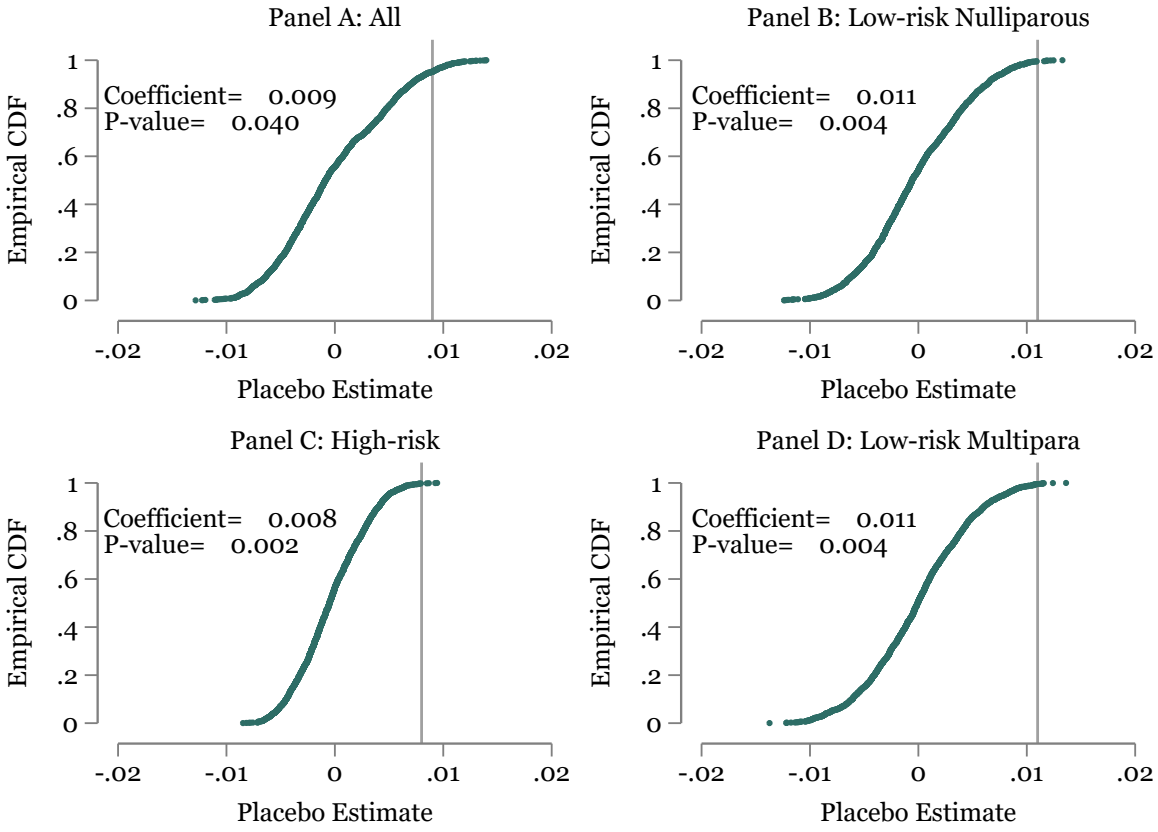
SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Outcome is the share of deliveries by CNM/CMs and Physicians in the state. OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Data collapsed at the quarter-year of delivery and state level and regressions weighted by the number of observations for each outcome. Robust standard errors are clustered at the state level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels. Controls include the share married, the average age, the share of female neonates, the average unemployment rate, the share of each race (Latinx, white non-Latinx, and black non-Latinx), the share of each education level (high school, some college, college, and missing), and the share rural. In samples with multiparas, we include controls for average parity. Panel A shows all deliveries for those that deliver in their residence state. Panel B shows high-risk deliveries (deliveries with diabetes, hypertension, breech, or non-singleton). Panel C shows low-risk first births, and Panel D shows low-risk subsequent births.

Table A.2: Robustness: Effect of ACA Medicaid Expansions on Delivery Outcomes

	Inductions			Cesareans		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: All						
1(Medicaid Expansion)	0.0149**	0.0159**	0.0009	-0.0025	-0.0003	-0.0003
	(0.0070)	(0.0072)	(0.0036)	(0.0020)	(0.0016)	(0.0014)
N	1,960	1,938	1,938	1,960	1,938	1,938
Adjusted R-squared	0.929	0.945	0.973	0.968	0.975	0.982
Mean Dependent	0.265	0.265	0.265	0.308	0.308	0.308
Wild-Bootstrapped P-Value	0.105	0.071	0.808	0.238	0.885	0.837
Percent Change	6.0%	6.4%	0.4%	-0.8%	-0.1%	-0.1%
Panel B: High-Risk						
1(Medicaid Expansion)	0.0151**	0.0184***	0.0066	-0.0216**	-0.0087**	-0.0013
	(0.0068)	(0.0062)	(0.0056)	(0.0087)	(0.0043)	(0.0048)
N	1,960	1,938	1,938	1,960	1,938	1,938
Adjusted R-squared	0.928	0.933	0.950	0.874	0.902	0.925
Mean Dependent	0.327	0.327	0.327	0.543	0.543	0.543
Wild-Bootstrapped P-Value	0.092	0.026	0.302	0.014	0.110	0.812
Percent Change	5.0%	6.1%	2.2%	-3.9%	-1.6%	-0.2%
Panel B: Low-Risk						
1(Medicaid Expansion)	0.0196**	0.0133*	0.0020	-0.0030	-0.0018	-0.0019
	(0.0093)	(0.0070)	(0.0047)	(0.0025)	(0.0025)	(0.0029)
N	1,946	1,934	1,934	1,946	1,934	1,934
Adjusted R-squared	0.907	0.930	0.962	0.903	0.919	0.939
Mean Dependent	0.295	0.295	0.295	0.226	0.226	0.226
Wild-Bootstrapped P-Value	0.104	0.096	0.678	0.235	0.483	0.567
Percent Change	7.0%	4.8%	0.7%	-1.3%	-0.8%	-0.8%
Panel D: Low-Risk Multipara						
1(Medicaid Expansion)	0.0099	0.0120*	-0.0028	-0.0047**	-0.0012	-0.0019
	(0.0064)	(0.0066)	(0.0037)	(0.0020)	(0.0016)	(0.0020)
N	1,946	1,934	1,934	1,946	1,934	1,934
Adjusted R-squared	0.922	0.940	0.970	0.964	0.972	0.978
Mean Dependent	0.231	0.231	0.231	0.261	0.261	0.261
Wild-Bootstrapped P-Value	0.168	0.130	0.457	0.049	0.514	0.412
Percent Change	4.6%	5.6%	-1.3%	-1.7%	-0.4%	-0.7%
Number Treated	39	39	39	39	39	39
Number of States	49	49	49	49	49	49
State and Quarter-Year FE	X	X	X	X	X	X
Controls		X	X		X	X
State x Quarter-Year Trend			X			X

NOTES: Reflects Table A.1 except considering delivery outcomes, induction and cesarean section. The outcome is the share of each delivery method in the state.

Figure A.6: Robustness: Full Practice Authority Placebo Test, CNM/CM Attendant Across Subsamples



SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Actual point estimates reflect Column (2) of Table A.1. To perform the placebo test, we randomly assign the quarter-year of the ACA Medicaid expansions across both the treated and control states. We assign the treatment timing in the same staggered treatment setup as the baseline but vary the states assigned to each quarter-year of treatment. The randomization of states across the staggered setup is performed 1,500 times. In each case, we choose a different set of placebo treatment states. The plotted CDF represents the distribution of estimates from these placebo simulations, with the estimated coefficient for our 'actual' difference-in-differences estimate indicated by the vertical line. The non-parametric p-value is calculated as the number of placebo observations that are greater than the estimated effect, divided by the sample size of all permutation estimates.

A.2 Additional Mechanisms

Table A.3: Mechanisms: Interactions of Medicaid Expansions and Provider Cost, Provider Margins, Provider Payments

	Low Risk First		High Risk		Low Risk Subsequent	
	(1) 1(CNM/CM)	(2) 1(Physician)	(3) 1(CNM/CM)	(4) 1(Physician)	(5) 1(CNM/CM)	(6) 1(Physician)
Panel A: CNM/CM Low Cost Provider						
1(Medicaid Expansion)=1	0.0117***	-0.0074***	0.0076***	-0.0039*	0.0112***	-0.0051**
	(0.0033)	(0.0025)	(0.0025)	(0.0022)	(0.0034)	(0.0024)
1(Medicaid Expansion)=1 × Below Median CNM Cost=1	-0.0017	-0.0064	0.0035	-0.0077*	-0.0003	-0.0091*
	(0.0059)	(0.0052)	(0.0062)	(0.0046)	(0.0078)	(0.0047)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.969	0.912	0.927	0.958	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.449	6.656	6.209	3.891	6.178	5.761
P-value from Joint F-test	0.003	0.003	0.004	0.027	0.004	0.006
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Share CNM-to-Physician Cost						
1(Medicaid Expansion)=1	0.0069	-0.0308**	0.0245	-0.0336**	0.0066	-0.0314*
	(0.0174)	(0.0146)	(0.0195)	(0.0160)	(0.0232)	(0.0166)
1(Medicaid Expansion)=1 × Share CNM-to-Physician Cost	0.0071	0.0366	-0.0265	0.0460*	0.0074	0.0397
	(0.0282)	(0.0234)	(0.0309)	(0.0252)	(0.0369)	(0.0269)
N	1,906	1,906	1,910	1,910	1,906	1,906
Adjusted R-squared	0.956	0.969	0.912	0.927	0.958	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	5.943	6.857	5.958	3.946	6.067	5.491
P-value from Joint F-test	0.005	0.002	0.005	0.026	0.005	0.007
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Positive CNM Medicaid Margins						
1(Medicaid Expansion)=1	0.0109***	-0.0080***	0.0069**	-0.0038	0.0106**	-0.0057*
	(0.0036)	(0.0030)	(0.0028)	(0.0024)	(0.0040)	(0.0031)
1(Medicaid Expansion)=1 × Positive CNM/CM Margin=1	0.0009	-0.0026	0.0040	-0.0047	0.0014	-0.0046
	(0.0039)	(0.0036)	(0.0047)	(0.0039)	(0.0048)	(0.0032)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.969	0.912	0.926	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.099	7.402	6.786	3.817	6.443	10.030
P-value from Joint F-test	0.004	0.002	0.003	0.029	0.003	0.000
	(1)	(2)	(3)	(4)	(5)	(6)
Panel D: Positive Physician Medicaid Margins						
1(Medicaid Expansion)=1	0.0118***	-0.0096***	0.0083***	-0.0057**	0.0114***	-0.0076***
	(0.0033)	(0.0026)	(0.0024)	(0.0023)	(0.0033)	(0.0025)
1(Medicaid Expansion)=1 × Positive MD Margin=1	-0.0078	0.0091*	0.0008	0.0014	-0.0033	0.0035
	(0.0061)	(0.0049)	(0.0055)	(0.0026)	(0.0062)	(0.0049)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.956	0.969	0.911	0.925	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.788	7.092	6.273	3.624	6.126	4.551
P-value from Joint F-test	0.003	0.002	0.004	0.034	0.004	0.015
	(1)	(2)	(3)	(4)	(5)	(6)
Panel E: Ratio CNM/CM Medicaid-to-Medicare Payment for Obstetric Services						
1(Medicaid Expansion)=1	0.0084	-0.0038	-0.0024	0.0070	0.0102	-0.0014
	(0.0102)	(0.0088)	(0.0098)	(0.0079)	(0.0114)	(0.0084)
1(Medicaid Expansion)=1 × Ratio Medicaid to Medicare Payment Obstetric	0.0041	-0.0071	0.0136	-0.0160*	0.0017	-0.0081
	(0.0117)	(0.0099)	(0.0121)	(0.0095)	(0.0136)	(0.0094)
N	1,906	1,906	1,910	1,910	1,906	1,906
Adjusted R-squared	0.956	0.969	0.912	0.927	0.958	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.568	8.657	7.055	5.386	6.443	7.110
P-value from Joint F-test	0.003	0.001	0.002	0.008	0.003	0.002
State and Quarter-Year FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

NOTES: Reflects grouped post-period from the main analysis in Figure II, except considering the interaction of the ACA with related policies (see Equation 3). Panel A presents whether a CNM is a low-cost provider (below median), where the costs are from Baker et al. (2021). Panel B shows the share of CNM-to-physician costs from Baker et al. (2021). Panel C shows positive (above zero) Medicaid margins for CNMs, and Panel D shows the same for MDs (Baker et al., 2021). Panel E shows the ratio of CNM/CM Medicaid-to-Medicare payment for obstetric services from Zuckerman et al. (2017) Table 1 (column obstetric care).

Table A.4: Mechanisms: Interactions of the ACA Medicaid Expansions and Related CNM/CM and CPM Policies

	Low Risk First		High Risk		Low Risk Subsequent	
	(1) 1(CNM/CM)	(2) 1(Physician)	(3) 1(CNM/CM)	(4) 1(Physician)	(5) 1(CNM/CM)	(6) 1(Physician)
Panel A: Practice Authority						
1(Medicaid Expansion)=1	0.0101**	-0.0066**	0.0063**	-0.0030	0.0100***	-0.0055**
	(0.0038)	(0.0029)	(0.0028)	(0.0022)	(0.0037)	(0.0025)
1(Medicaid Expansion)=1 × 1(Changed to FPA)	0.0043	-0.0029	0.0044	-0.0036	0.0088**	-0.0066
	(0.0045)	(0.0044)	(0.0048)	(0.0051)	(0.0042)	(0.0041)
1(Medicaid Expansion)=1 × 1(Always FPA)	0.0006	-0.0050	0.0027	-0.0049	-0.0030	-0.0009
	(0.0054)	(0.0051)	(0.0059)	(0.0055)	(0.0060)	(0.0051)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.968	0.911	0.925	0.959	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	5.737	3.827	4.694	1.667	11.304	5.832
P-value from Joint F-test	0.006	0.029	0.014	0.200	0.000	0.005
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: CPM Licensing						
1(Medicaid Expansion)=1	0.0105***	-0.0074**	0.0070***	-0.0037	0.0121***	-0.0067***
	(0.0032)	(0.0028)	(0.0024)	(0.0023)	(0.0032)	(0.0024)
1(CPM Licensing Law)=1	-0.0035	0.0040	-0.0053**	0.0064**	-0.0016	0.0014
	(0.0053)	(0.0039)	(0.0025)	(0.0026)	(0.0051)	(0.0038)
1(Medicaid Expansion)=1 × 1(CPM Licensing Law)=1	0.0014	-0.0027	0.0023	-0.0030	-0.0014	-0.0010
	(0.0033)	(0.0033)	(0.0033)	(0.0032)	(0.0037)	(0.0033)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.968	0.911	0.925	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.272	6.134	6.259	2.959	7.347	4.778
P-value from Joint F-test	0.004	0.004	0.004	0.061	0.002	0.013
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: CNM/CM PCP						
1(Medicaid Expansion)=1	0.0075	-0.0065	0.0123	-0.0107	0.0108	-0.0100
	(0.0083)	(0.0084)	(0.0078)	(0.0077)	(0.0094)	(0.0084)
1(Medicaid Expansion)=1 × 1(CNM/CM PCP)=1	0.0047	-0.0029	-0.0046	0.0061	0.0006	0.0033
	(0.0086)	(0.0086)	(0.0080)	(0.0078)	(0.0100)	(0.0088)
N	1,788	1,788	1,792	1,792	1,788	1,788
Adjusted R-squared	0.957	0.970	0.914	0.928	0.959	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.441	7.293	5.665	2.825	5.954	4.658
P-value from Joint F-test	0.004	0.002	0.006	0.070	0.005	0.015
State and Quarter-Year FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

SOURCE: Birth Certificate Records from the NVSS/CDC Natality Detail File.
NOTES: Reflects grouped post-period from the main analysis in Figure II, except considering the interaction of the ACA with related policies (see Equation 3). In Panels A and B we also omit policy controls. Panel A presents the interaction with full practice authority, dates from Markowitz et al. (2017). Panel B shows CPM licensing law from the MANA website via the Big Push. During the study period the following states licensed CPMs, AL (2017), DC (2020), HI (2019), ID (2009), IN (2013), KY (2019), MD (2015), ME (2016), MI (2016), OK (2020), RI (2014), SD (2017), WY (2010). Panel C shows whether the CNM/CM can serve as a PCP in a given state from NASHP (2023). States where CNMs/CMs can not serve as PCPs include AR, CO, CT, DE, FL, GA, ID, LA, MS, MT, NH, OK, SC, VA, and WY. Missing information exists for ME, NE, NJ, NV, and WV.

Table A.5: Mechanisms: Interactions of the ACA Medicaid Expansions and Other Related ACA Policies

	Low Risk First		High Risk		Low Risk Subsequent	
	(1) 1(CNM/CM)	(2) 1(Physician)	(3) 1(CNM/CM)	(4) 1(Physician)	(5) 1(CNM/CM)	(6) 1(Physician)
Panel A: Provider Pay Bump						
1(Medicaid Expansion)=1	0.0104***	-0.0086***	0.0096***	-0.0064**	0.0104**	-0.0077**
	(0.0036)	(0.0032)	(0.0031)	(0.0028)	(0.0042)	(0.0030)
1(Provider Payment Bump)=1	-0.0005	0.0002	0.0049	-0.0039	-0.0010	-0.0003
	(0.0044)	(0.0034)	(0.0033)	(0.0030)	(0.0052)	(0.0037)
1(Medicaid Expansion)=1 × 1(Provider Payment Bump)=1	0.0018	-0.0011	-0.0011	0.0006	0.0013	0.0007
	(0.0046)	(0.0041)	(0.0037)	(0.0034)	(0.0051)	(0.0038)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.968	0.912	0.926	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	6.387	6.412	6.161	3.431	5.915	4.220
P-value from Joint F-test	0.003	0.003	0.004	0.040	0.005	0.021
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: No Prior Discrimination Provision						
1(Medicaid Expansion)=1	0.0111**	-0.0104	0.0067**	-0.0029	0.0065***	-0.0079***
	(0.0049)	(0.0081)	(0.0026)	(0.0031)	(0.0018)	(0.0024)
1(ACA Marketplace x Gender Discrimination)=1	-0.0015	0.0011	-0.0034	0.0051	-0.0057	0.0017
	(0.0056)	(0.0084)	(0.0035)	(0.0037)	(0.0040)	(0.0035)
1(Medicaid Expansion)=1 × 1(ACA Marketplace x Gender Discrimination)=1	-0.0007	0.0029	0.0005	-0.0011	0.0039	0.0023
	(0.0055)	(0.0084)	(0.0038)	(0.0039)	(0.0036)	(0.0033)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.969	0.912	0.926	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	7.116	4.843	7.325	1.958	11.044	8.001
P-value from Joint F-test	0.002	0.012	0.002	0.152	0.000	0.001
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Prior Discrimination Provision						
1(Medicaid Expansion)=1	0.0104***	-0.0075***	0.0072**	-0.0040*	0.0104***	-0.0056**
	(0.0032)	(0.0026)	(0.0027)	(0.0023)	(0.0033)	(0.0024)
1(ACA Marketplace x Gender Discrimination Prohibitted)=1	0.0015	-0.0011	0.0034	-0.0051	0.0057	-0.0017
	(0.0056)	(0.0084)	(0.0035)	(0.0037)	(0.0040)	(0.0035)
1(Medicaid Expansion)=1 × 1(ACA Marketplace x Gender Discrimination Prohibitted)=1	0.0007	-0.0029	-0.0005	0.0011	-0.0039	-0.0023
	(0.0055)	(0.0084)	(0.0038)	(0.0039)	(0.0036)	(0.0033)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.955	0.969	0.912	0.926	0.958	0.975
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	7.116	4.843	7.325	1.958	11.044	8.001
P-value from Joint F-test	0.002	0.012	0.002	0.152	0.000	0.001
	(1)	(2)	(3)	(4)	(5)	(6)
Panel D: Prior Non-Group Maternity Coverage						
1(Medicaid Expansion)=1	0.0103***	-0.0084***	0.0069***	-0.0042**	0.0095***	-0.0060**
	(0.0032)	(0.0025)	(0.0023)	(0.0020)	(0.0033)	(0.0023)
1(ACA Marketplace x All Plans Prior Maternity Coverage)=1	0.0021	0.0040	0.0140***	-0.0151***	0.0138***	-0.0059*
	(0.0041)	(0.0044)	(0.0037)	(0.0036)	(0.0037)	(0.0035)
1(Medicaid Expansion)=1 × 1(ACA Marketplace x All Plans Prior Maternity Coverage)=1	0.0091**	-0.0108**	0.0051	-0.0026	0.0054	-0.0095**
	(0.0045)	(0.0047)	(0.0040)	(0.0035)	(0.0044)	(0.0041)
N	1,946	1,946	1,950	1,950	1,946	1,946
Adjusted R-squared	0.956	0.969	0.917	0.929	0.960	0.976
Mean Dependent	0.094	0.893	0.044	0.949	0.095	0.885
F-stat from Joint F-test	21.120	16.080	16.489	6.683	24.179	18.138
P-value from Joint F-test	0.000	0.000	0.000	0.003	0.000	0.000
State and Quarter-Year FE	X	X	X	X	X	X
Controls	X	X	X	X	X	X

NOTES: Panel A shows the provider payment bump. For this specification, we include all states in the provider payment bump for 2013 and 2014. Then after 2015, AL, IA, ME, MS, NE, NM, SC, FL, GA, MI, NJ, OR, VT, CO, ID, IN, MD, NV, and UT continued some form of higher payment (Zuckerman et al., 2017). Panel B presents the effect of the 2014 ACA non-group market for states that allowed gender discrimination in the non-group market prior to the ACA. Panel C displays the effect of the 2014 ACA non-group market for states that prohibited gender discrimination in the non-group market before the ACA. Panel D shows the interaction with whether all non-group plans in a state covered maternity care in the non-group market before the ACA. Panels B-D comes from Garrett et al. (2012), see specific list of states in each policy in Figures A.4 and A.5.

Table A.6: Mechanisms: Interactions of the ACA Medicaid Expansions and State-level Medicaid Reimbursements for CNMs/CMs

	Log of CNMs/CMs	CNM/CM Per MD	CNM-Attended Birth-to-CNM/CM
	(1)	(2)	(3)
Panel A: Medicaid Reimbursement Parity			
1(Medicaid Expansion)=1	0.0115	0.0002	0.3836
	(0.0367)	(0.0003)	(0.6061)
1(Medicaid Expansion)=1 × 1(CNM Full Medicaid Reimbursement)=1	-0.0179	0.0002	0.7319
	(0.0311)	(0.0003)	(0.4966)
N	1,950	1,950	1,950
Adjusted R-squared	0.997	0.962	0.912
Mean Dependent	5.208	0.007	13.088
F-stat from Joint F-test	0.196	0.687	2.810
P-value from Joint F-test	0.822	0.508	0.070
	(1)	(2)	(3)
Panel B: Share CNM-to-Physician Medicaid Reimbursement			
1(Medicaid Expansion)=1	0.0252	-0.0011	-1.4092
	(0.1377)	(0.0013)	(3.0101)
1(Medicaid Expansion)=1 × CNM Reimbursement Rate	-0.0265	0.0015	2.4044
	(0.1393)	(0.0014)	(3.1106)
N	1,950	1,950	1,950
Adjusted R-squared	0.997	0.962	0.912
Mean Dependent	5.208	0.007	13.088
F-stat from Joint F-test	0.018	1.030	1.916
P-value from Joint F-test	0.982	0.365	0.158
State and Quarter-Year FE	X	X	X
Controls	X	X	X

NOTES: Reflects Table 3 except considering labor supply outcomes from Figure VI.

Table A.7: Mechanisms: Interaction of ACA Medicaid Expansions with Below Median Access to Insurance and Health Care Resources

	Outcome: 1(Delivery Attended by CNM/CM)										
	(1) Share Private Insurance	(2) Share Medicaid Insurance	(3) Share Without Insurance	(4) OB Hospitals	(5) P.C. CNMs	(6) P.C. OBs	(7) Share CNMs Providers	(8) Share CNM Attended Births	(9) CNM Ascribed Deliveries	(10) Share Cesarean Births	(11) Share Out-Of-Hospital
Panel A: Bottom 25th Percentile											
1(ACA Medicaid Expansion)	0.0152***	0.0114***	0.0142***	0.0135***	0.0131***	0.0134***	0.0137***	0.0147***	0.0163***	0.0132***	0.0130***
	(0.0027)	(0.0029)	(0.0027)	(0.0025)	(0.0024)	(0.0024)	(0.0026)	(0.0025)	(0.0031)	(0.0025)	(0.0024)
1(Medicaid Expansion) x 1(Bottom Quartile)	-0.0099**	0.0072**	-0.0037	-0.0051	0.0110	-0.0096	-0.0039	-0.0115***	-0.0032	-0.0000	0.0127
	(0.0044)	(0.0036)	(0.0063)	(0.0062)	(0.0151)	(0.0093)	(0.0067)	(0.0031)	(0.0048)	(0.0049)	(0.0147)
N	8,558,029	8,558,029	8,558,029	9,412,234	9,412,234	9,412,234	8,948,034	9,412,234	7,737,611	9,412,234	9,412,234
Adjusted R-squared	0.088	0.088	0.088	0.090	0.090	0.090	0.088	0.090	0.083	0.090	0.090
Mean Dependent	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
F-stat from Joint F-test	15.845	17.409	14.587	15.234	15.336	15.429	14.267	18.293	14.251	15.165	15.517
P-value from Joint F-test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel B: Top 75th Percentile											
1(ACA Medicaid Expansion)	0.0134***	0.0155***	0.0125***	0.0090***	0.0146***	0.0140***	0.0157***	0.0143***	0.0148***	0.0142***	0.0138***
	(0.0029)	(0.0027)	(0.0029)	(0.0032)	(0.0028)	(0.0036)	(0.0026)	(0.0025)	(0.0032)	(0.0027)	(0.0026)
1(Medicaid Expansion) x 1(Top Quartile)	0.0013	-0.0119***	0.0060	0.0063*	-0.0037	-0.0014	-0.0187***	-0.0059	0.0049	-0.0036	-0.0026
	(0.0038)	(0.0041)	(0.0039)	(0.0035)	(0.0036)	(0.0039)	(0.0054)	(0.0056)	(0.0047)	(0.0034)	(0.0037)
N	8,558,029	8,558,029	8,558,029	9,412,234	9,412,234	9,412,234	8,948,034	9,412,234	7,737,611	9,412,234	9,412,234
Adjusted R-squared	0.088	0.088	0.088	0.090	0.090	0.090	0.088	0.090	0.083	0.090	0.090
Mean Dependent	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
F-stat from Joint F-test	14.546	16.655	17.424	16.049	15.558	15.332	19.668	16.641	14.761	15.092	15.154
P-value from Joint F-test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
County and Quarter-Year FE	X	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X	X

NOTES: Shows the results from Equation 4, considering the within state impact of the ACA. Quartiles calculated based on the average for each resident county within each state in 2013. The indicator for the top quartile is equal to one if the county is above the 75th percentile in the state. Indicator for the bottom quartile equal to one id below the 25th percentile. Resident county fixed effects and quarter-year of delivery fixed effects are included. Controls for maternal factors include marital status, indicators for grouped educational attainment (high school, some college, college or higher, and missing, with less than high school excluded), indicators for maternal age, race (Latinx, Black non-Latinx, and white non-Latinx), and an indicator for a female neonate. County-level controls include indicators for the resident county size and the unemployment rate. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. Robust standard errors are clustered at the county level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels.

Table A.8: Mechanisms: Interaction of ACA Medicaid Expansions with Below Median Access to Insurance and Health Care Resources

	Prenatal Month	Prenatal Visits	1(1st Trimester Prenatal)	1(2nd Trimester Prenatal)	1(3rd Trimester Prenatal)	No Prenatal Care	Cross County	1(Maternal ICU)	1(Maternal 3rd/4th Degree Laceration)	1(Labor Augmen-tation)	1(Pain Manage-ment)	1(Maternal Transfer)	1(Vacuum or Forceps)	1(Week end)	1(9pm-6am)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Panel A: ACA and Low-Risk Deliveries															
1(ACA Medicaid Expansion)	-0.0416	0.0245	0.0023	-0.0019	-0.0006	0.0002	-0.0244**	0.0003	0.0017	0.0035	0.0278***	0.0004	0.0028	-0.0004	0.0000
	(0.0292)	(0.0988)	(0.0109)	(0.0068)	(0.0026)	(0.0029)	(0.0100)	(0.0002)	(0.0016)	(0.0106)	(0.0083)	(0.0003)	(0.0019)	(0.0010)	(0.0000)
N	8,636,434	9,157,865	8,636,434	8,636,434	8,636,434	8,636,434	9,412,620	8,865,352	8,865,352	8,872,116	8,872,116	8,867,424	9,408,358	9,412,620	9,412,620
Adjusted R-squared	0.054	0.062	0.080	0.050	0.016	0.018	0.192	0.000	0.006	0.014	0.042	0.004	0.007	0.005	1.000
Mean Dependent	2.949	11.392	0.764	0.175	0.046	0.015	0.253	0.001	0.018	0.288	0.782	0.003	0.060	0.234	0.462
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Panel B: Interaction with Reimbursements															
1(ACA Medicaid Expansion)=1	-0.0760*	0.0276	0.0199*	-0.0149**	-0.0032	-0.0018	-0.0089	0.0001	0.0033*	0.0262***	0.0225	0.0004	0.0015	0.0008	0.0000
	(0.0407)	(0.0848)	(0.0108)	(0.0067)	(0.0028)	(0.0028)	(0.0072)	(0.0002)	(0.0017)	(0.0089)	(0.0156)	(0.0003)	(0.0037)	(0.0009)	(0.0000)
1(ACA Medicaid Expansion)=1 × 1(CNM/CM Full Reimbursement)=1	0.0494	-0.0048	-0.0253**	0.0187**	0.0039	0.0028**	-0.0245*	0.0003***	-0.0024	-0.0325***	0.0077	-0.0000	0.0022	-0.0017	-0.0000
	(0.0401)	(0.1181)	(0.0106)	(0.0078)	(0.0025)	(0.0012)	(0.0144)	(0.0001)	(0.0015)	(0.0112)	(0.0168)	(0.0004)	(0.0038)	(0.0012)	(0.0000)
N	8,636,434	9,157,865	8,636,434	8,636,434	8,636,434	8,636,434	9,412,620	8,865,352	8,865,352	8,872,116	8,872,116	8,867,424	9,408,358	9,412,620	9,412,620
Adjusted R-squared	0.054	0.062	0.080	0.050	0.016	0.018	0.193	0.000	0.006	0.014	0.042	0.004	0.007	0.005	1.000
Mean Dependent	2.949	11.392	0.764	0.175	0.046	0.015	0.253	0.001	0.018	0.288	0.782	0.003	0.060	0.234	0.462
State and Quarter-Year FE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

NOTES: Reflects difference-in-differences point estimates in Figure II, except with various outcomes and using the individual-level data and the sample of low-risk first births. OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Controls for maternal factors include marital status, indicators for grouped educational attainment (high school, some college, college or higher, and missing, with less than high school excluded), indicators for maternal age, race (Latinx, Black non-Latinx, and white non-Latinx), and an indicator for a female neonate. County-level controls include indicators for the resident county size and the unemployment rate. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. Low-risk sample of first deliveries, which includes those without a history of hypertension or diabetes who have a singleton vertex delivery and deliver in their residence state. Robust standard errors are clustered at the state level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels.

Table A.9: Mechanisms: CNM/CM Labor Supply and Interaction of ACA Medicaid Expansions with Below Median Access to Insurance and Health Care Resources

	1(NICU)	1(Death)	1(SGA)	1(VSGA)	1(Seizures)	Gestation	1(Preterm)	1(Term)	1(Postterm)	Low Apgar	Low Birth Weight	Birth Weight	1(Infant Transfer)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panel A: ACA and Low-Risk Deliveries													
1(ACA Medicaid Expansion)	0.0018	0.0006	0.0040**	0.0007	0.0000	-0.0277*	-0.0005	0.0001	-0.0064*	0.0007	-0.0005	-0.0160***	0.0011**
	(0.0021)	(0.0006)	(0.0019)	(0.0013)	(0.0000)	(0.0138)	(0.0013)	(0.0048)	(0.0037)	(0.0014)	(0.0006)	(0.0050)	(0.0005)
N	8,863,188	8,860,709	9,406,618	9,406,618	8,863,188	9,406,618	9,407,878	9,406,618	9,406,618	9,385,279	9,412,620	9,412,620	8,868,707
Adjusted R-squared	0.006	0.001	0.030	0.017	0.000	0.016	0.009	0.005	0.005	0.004	0.009	0.046	0.004
Mean Dependent	0.069	0.002	0.275	0.108	0.000	39.082	0.078	0.526	0.064	0.020	0.057	7.232	0.009
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panel B: Interaction with Reimbursements													
1(ACA Medicaid Expansion)=1	0.0078**	0.0006	0.0011	-0.0011	0.0001	-0.0196	0.0002	-0.0001	-0.0041	0.0019	-0.0005	-0.0104	0.0006
	(0.0036)	(0.0006)	(0.0029)	(0.0016)	(0.0000)	(0.0151)	(0.0018)	(0.0042)	(0.0033)	(0.0018)	(0.0010)	(0.0078)	(0.0005)
1(ACA Medicaid Expansion)=1 × 1(CNM/CM Full Reimbursement)=1	-0.0086**	-0.0000	0.0045	0.0028	-0.0000	-0.0127	-0.0011	0.0004	-0.0037	-0.0020	-0.0000	-0.0087	0.0008
	(0.0037)	(0.0002)	(0.0038)	(0.0018)	(0.0001)	(0.0170)	(0.0016)	(0.0047)	(0.0033)	(0.0016)	(0.0009)	(0.0091)	(0.0005)
N	8,863,188	8,860,709	9,406,618	9,406,618	8,863,188	9,406,618	9,407,878	9,406,618	9,406,618	9,385,279	9,412,620	9,412,620	8,868,707
Adjusted R-squared	0.006	0.001	0.030	0.017	0.000	0.016	0.009	0.005	0.005	0.004	0.009	0.046	0.004
Mean Dependent	0.069	0.002	0.275	0.108	0.000	39.082	0.078	0.526	0.064	0.020	0.057	7.232	0.009
State and Quarter-Year FE	X	X	X	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X	X	X	X

NOTES: Reflects difference-in-differences point estimates in Figure II, except with various outcomes and using the individual-level data and the sample of low-risk first births. OLS coefficients reported. Baseline fixed effects include state-of-occurrence fixed effects and quarter-year-of-delivery fixed effects. Controls for maternal factors include marital status, indicators for grouped educational attainment (high school, some college, college or higher, and missing, with less than high school excluded), indicators for maternal age, race (Latinx, Black non-Latinx, and white non-Latinx), and an indicator for a female neonate. County-level controls include indicators for the resident county size and the unemployment rate. Policy controls include the scope of practice laws (supervisory and collaborative practice from Markowitz et al. (2017)) as well as CPM licensing laws. Low-risk sample of first deliveries, which includes those without a history of hypertension or diabetes who have a singleton vertex delivery and deliver in their residence state. Robust standard errors are clustered at the state level. ***, **, * represent statistical significance at 1, 5, and 10 percent levels.