Driving the Distance: How Abortion Access Affects Infant and Maternal Health*

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September 2026

Updated Version

Abstract

Abortion clinic closures lower abortion rates and raise birth rates, in part by increasing the continuation of high-risk, non-viable, and unintended pregnancies. But do these shifts have downstream effects on infant and maternal health? Using 2009-2019 U.S. national vital statistics and facility data from the Myers Abortion Facility Database, I find that a 100-mile increase in driving distance to the nearest abortion provider leads to a 5% increase in deliveries past 42 weeks of gestation, a 2% increase in high birth weight, and a 28% rise in congenital heart disease. Additionally, fetal and infant mortality due to developmental complications increases by 31% and 23%, respectively and infant mortality due to premature birth increases by 14%. Maternal health is also adversely affected as the prevalence of gestational diabetes and vaginal tearing at birth increases.

Keywords: abortion, maternal health, birth outcomes
JEL Codes: I12, I14, J13

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*I thank Ben Chartock, Donna Ginther, Graham Gardner, Mandy Gaulke, Andie Hall, Misty Heggeness, Anupam Jena, Kelly Jones, Caitlin Myers, Mayra Pineda-Torres, David Slusky, and Aimee Wilson for their helpful comments. I also thank conference participants at the Economic Demography Workshop, Kansas Health Economics Conference, American European Health Economics Study Group, American Society of Health Economists, Southern Economic Association, and the Association for Public Policy Analysis and Management, seminar participants at the University of Kansas, Kansas State University, UMKC Bloch School of Management, American University, Texas State University, and the University of Akron, and members of the Reproductive Equity Action Lab at University of Wisconsin-Madison. This research was supported by the Madison and Lila Self Graduate Fellowship. A previous version of this paper circulated under the title "The Effect of Abortion Access on Infant and Maternal Health at Birth."

1 Introduction

Even prior to the 2022 Supreme Court *Dobbs* decision overturning a federal right to an abortion, abortion access varied significantly based on where an individual lived. Other legal restrictions including mandatory waiting periods, parental notification requirements, and other Targeted Regulations of Abortion Providers (TRAP) laws caused abortion clinics to close (Lindo et al. 2020; Jones and Pineda-Torres 2024), limiting individuals' abortion access. Similarly, even individuals living in states where abortion is legally permitted can still face varying levels of access to abortion depending on where they live in the state.

As abortion access declines in some parts of the country, public concern has grown about how that diminishing access may affect the already poor aggregate health of infants and pregnant individuals in the U.S. (Presser et al. 2025; Belluck 2025; Edwards et al. 2024). The U.S. has some of the worst infant and maternal health outcomes – including one of the highest infant mortality rates – among OECD countries (Gunja et al. 2023). The aggregate effects mask the large racial and income disparities in infant and maternal health in the U.S. with births to Black, American Indian & Alaskan Native (AIAN), and Native Hawaiian or Pacific Islander women experiencing higher rates of pre-term delivery, low birth weight, and mortality (Hill et al. 2024). If reductions in abortion access adversely affect infant and maternal health, it is possible the U.S. will experience further elevated levels of poor infant and maternal health, and that those racial and income disparities will persist or even worsen.

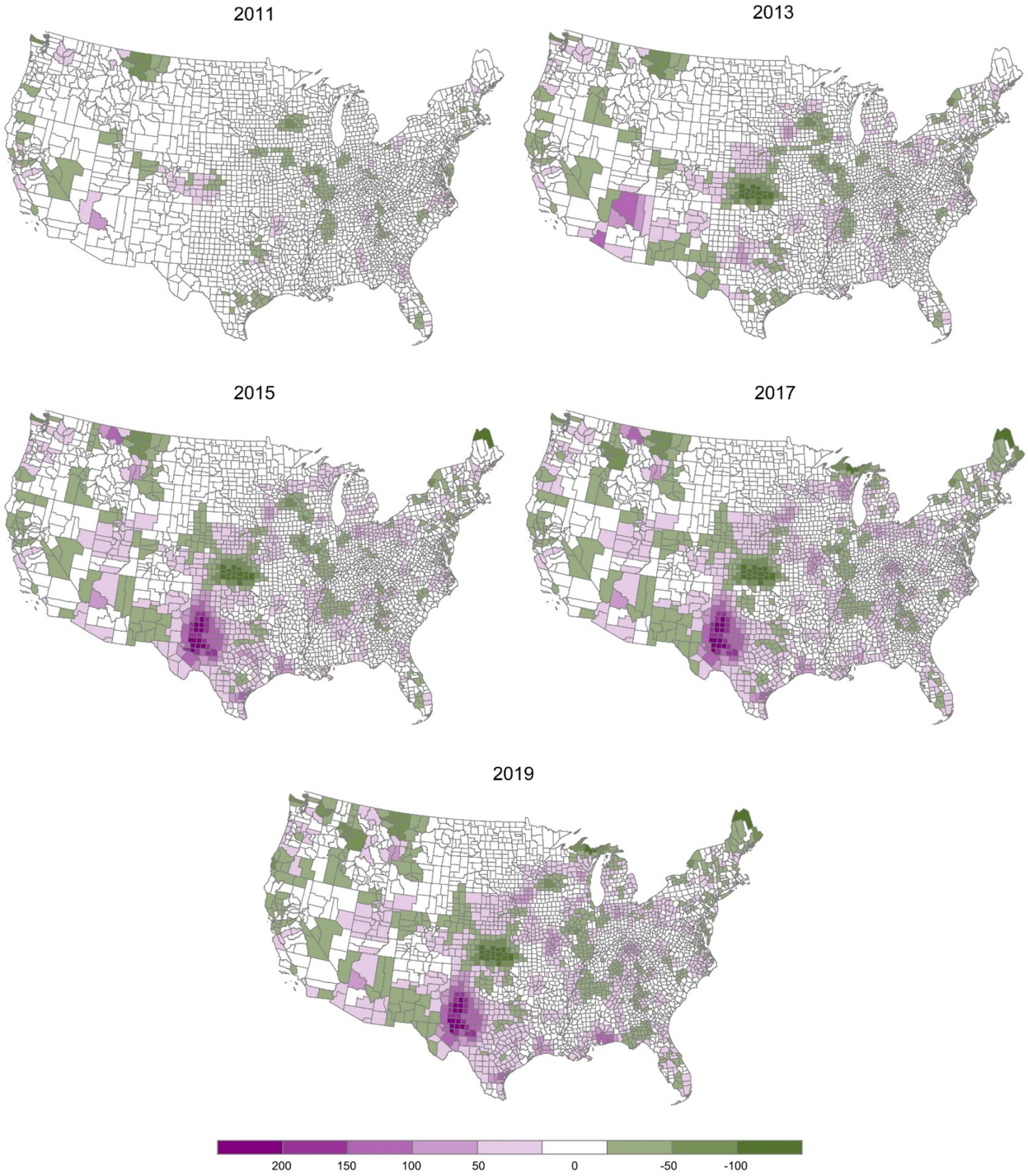
Given the growing concern in how changes in abortion access may affect infant and maternal health, I estimate how changes in the driving distance to the nearest abortion provider affect infant and maternal health at birth. Using driving distance to the nearest abortion provider as a proxy for abortion access allows me to capture both within-state variation in access to abortion and cross-state travel, an increasingly common way to access abortion. Changes in the distance to abortion providers increase in the cost of obtaining an

abortion and can prevent some individuals from accessing desired abortions, leading to an increase in continued unplanned or non-viable pregnancies which can adversely affect infant and maternal health. These changes in access could harm infant and maternal health through selection, as more high-risk pregnancies may be carried to term and infants may be born into worse living circumstances (Gruber et al. 1999), and through changes in the experience during pregnancy, as pregnancy-related behavioral changes may be delayed and mothers carrying unwanted or risky pregnancies may experience additional stress. These potential changes motivate an empirical investigation into whether changes in abortion access and specifically changes in the driving distance to the nearest abortion provider have a significant effect on infant and maternal health outcomes.

I use restricted natality and infant/fetal mortality administrative data from the United States from 2009 to 2019 and variation in a measure of driving distance to the nearest abortion provider from the Myers Abortion Facility Database to estimate the effect of changes in abortion access on infant and maternal health at birth. The Myers Abortion Facility Database is a county-by-month panel that tracks the distance between the population centroid of each county in the U.S. and the nearest facility that publicly advertises providing abortions. As my study predates the *Dobbs* decision, I can isolate the effect of provider proximity on infant and maternal health. I use the substantial variation in driving distance across counties in the U.S. (**Figure 1**) to estimate linear and Poisson fixed effects regressions to evaluate the effect of changes in abortion access on birth outcomes, maternal health, fetal mortality (deaths occurring after 20 weeks of gestation but prior to birth), and infant mortality (deaths occurring prior to the infants' first birthday). I use a continuous distance measure scaled to 100s of miles, first introduced to this literature by Joyce et al. (2013), rather than discrete binned estimates since the continuous distance measure preserves more detailed information and avoids introducing bias by selecting bin ranges.

I find that increases in the driving distance to the nearest abortion facility adversely

Figure 1: Difference from 2009 Distance to Nearest Abortion Provider (in miles)



Note: Data comes from Myers Abortion Facility Database. Differences in distance for each county is calculated as the difference between the July 2009 distance to the nearest abortion provider and the distance to the nearest abortion provider in July of the map year.

affects infant and maternal health and fetal and infant mortality. Overall, I find that a 100-mile increase in the driving distance corresponds to a 0.0017 and a 0.0084 point reduction in the birth outcomes and maternal health index, respectively. Specifically, I find a 5.2% increase in the incidence of post-term delivery (over 42 weeks of gestation) and a 1.9% increase in high birth weight ($>$ 4,000 grams).[1] Both outcomes can have long-term health implications including increased rates of childhood obesity, hypertension, and diabetes. I also find a 0.02 percentage point increase in congenital heart disease (a 28% increase relative to the mean). In terms of maternal health, I find a 4.2% increase in the prevalence of gestational diabetes and a 14% increase in perineal laceration (vaginal tearing during labor). Fetal and infant mortality due to fetal developmental complications rises by 30.6% and 22.7% respectively, and infant mortality due to premature birth increases by 13.9%. These results suggest that reducing the distance to an abortion facility to within 50 miles for each county during the sample period would have allowed approximately 1,500 pregnancies to end in an abortion instead of an uncontrolled fetal or infant death.

I next explore two potential mechanisms driving these results: a compositional change in people who carry their pregnancy to term and a change in the experience of those who are pregnant. I find evidence of a shift in the composition of mothers who give birth as driving distance increase where first-time mothers are younger and mothers overall have more children, are less educated, and are less likely to be receiving nutritional support. I also find evidence of a change in birth spacing with a 100-mile driving distance increase leading to a 2.3% increase in likelihood that individuals will have a short interval between pregnancies (less than 18 months), a characteristic associated with poor infant and maternal health (Beyene et al. 2025; Wang et al. 2022). Similarly, the increase in congenital heart disease and infant and fetal mortality due to fetal developmental complications likely reflects a change in who could (not) obtain an abortion. In term of the experience during pregnancy, I find a 4% reduction in the likelihood of obtaining prenatal care in the first trimester, an intervention

[1] I find no statistically significant aggregate effect on (very) pre-term or (very) low birth weight infants.

shown to directly improve birth outcomes (Yan 2020). Similarly, individuals that carry unexpected or unplanned pregnancies may have a delay in modifying their behaviors such as smoking and drinking. While I am unable to directly measure it, elevated maternal stress (which may accompany a reduction in abortion access) has been medically associated with an increase in post-term delivery and high birth weight (Melancon et al. 2020; O'Donnell and Behie 2015; Margerison-Zilko et al. 2015), and stress can influence a pregnant individual's diet and behavior which may have a further effect on health. In all, it is likely both mechanisms influence the results and are therefore not easily separable.

This paper specifically builds on Myers (2024b) and Gardner (2024) by expanding our understanding of how changes in driving distance to the nearest abortion provider affects a wide spectrum of infant and maternal health and infant and fetal mortality rates. Using the Myers Abortion Facility Database, Myers (2024b) provides the first nationwide estimates of how increases in the driving distance to nearest abortion provider reduces abortion rates and increases birth rates. Gardner (2024) then finds that the same increase in distance increases rates of maternal chronic hypertension and reduces rates of low birth weight infants, though the estimate is only marginally significant. I evolve Gardner (2024) discussion by identifying the effect of changes in driving distance on all available infant and maternal health measures in the natality data. I then take it a step farther and am the first to investigate how those distance changes affect infant and fetal mortality rates, disaggregating by cause of death. Further, I also expand Myers (2024b)'s discussion of how the composition of pregnant individuals change as driving distance changes by evaluating additional demographic and socioeconomic measures beyond race, ethnicity, and age and connecting how those changes likely influence the effects on infant and maternal health.

More broadly, the paper also speaks to the growing literature on how abortion access influences infant health and mortality by employing more detailed vital statistics data and county-level variation in abortion access. Prior studies using state-level gestational age bans

have linked reductions in abortion access to increased infant mortality (Gemmill et al. 2025; Caraher 2024; Gemmill et al. 2024; Singh and Gallo 2024; Pabayo et al. 2020). I leverage both within- and between-county variation in driving distance to abortion providers to causally identify an effect on overall and infant and fetal mortality. I then identify the specific causes of death that are impacted by changes in abortion access. Importantly, I am the first to demonstrate that restrictions in abortion access increase fetal mortality, making a significant contribution to the policy debate surrounding the legal status of the fetus. Additionally, by taking into account the non-monotonic relationships birth weight and gestational age have with health, I am the first to identify the effects of abortion access on the incidence of post-term delivery and high birth weight, outcomes that have received relatively limited attention in prior work (Gardner 2024; Caraher 2024)

I also contribute to research on how abortion access affects maternal health by evaluating a broader set of outcomes related to health during pregnancy and labor and delivery than what has been previously studied. Existing research has established that restricting abortion access reduces preventive care use (Ellison et al. 2021; Slusky 2017; Lu and Slusky 2016) and increases rates of hypertension (Gardner 2024) and sepsis (Presser et al. 2025). I extend this literature by using individual-level natality data to assess additional maternal health indicators including perineal laceration, gestational diabetes, and a composite maternal health index. My findings complement international evidence showing that abortion legalization improves maternal health outcomes (Clarke and Mühlrad 2021; Londoño-Vélez and Saravia 2025).

Finally, I contribute to the discussion of the causal pathways of abortion restrictions by outlining selection and changes in the pregnancy experience as the potential mechanisms behind abortion restrictions adverse effect on infant and maternal health. Prior work has shown that abortion access improves children's short and long-term living circumstances and reduces poverty, welfare dependence, and child maltreatment and abuse (Gruber et al. 1999;

Ananat et al. 2009; Bitler and Zavodny 2004 2002a; Sen 2007; Bitler and Zavodny 2002b; Piette Durrance et al. 2025; Aslim et al. 2025). Using more contemporary individual-level data I find a pattern of changes in maternal characteristics that suggests restricting abortion access can shift the composition of mothers in a way that could influence health. Additionally, I find that abortion restrictions shorten interpregnancy intervals, decrease the likelihood of obtaining first trimester prenatal care, and increase the continuation of nonviable pregnancies, all of which are medically associated with adverse health outcomes. I also provide a robust discussion of the potential link between elevated maternal stress and adverse health outcomes.

The rest of the paper is as follows. Section 2 outlines how changes in abortion access affect abortion and birth rates and the downstream effects of those changes. Sections 3 and 4 provide details on the data and methodology. Section 5 presents the results followed by a mechanism analysis in Section 6. Results are discussed in Section 7 and Section 8 concludes.

2 Background

Changes in abortion access affect both abortion and birth rates (Myers et al. 2025; Dench et al. 2024; Myers 2024b; Jones and Pineda-Torres 2024; Venator and Fletcher 2021; Lindo et al. 2020; Fischer et al. 2018; Quast et al. 2017; Lahey 2014; Joyce et al. 2013) with increasing attention being paid to the distance an individual has to travel to obtain an abortion. Increasing the driving distance to the nearest abortion facility has been found to reduce abortions 10–31% (Myers 2024b; Venator and Fletcher 2021; Lindo et al. 2020; Fischer et al. 2018; Quast et al. 2017) with some evidence of a non-linear effect, meaning that the effect of increasing travel distance on abortions is smaller when the nearest clinic is already far away (Myers 2024b; Lindo et al. 2020). These distance changes and the subsequent reductions in abortion then translate into increases in the birth rate by 0.7%–3.2% (Fischer et al. 2018; Myers 2024b; Venator and Fletcher 2021). Myers et al. (2025) couple driving

distance to the nearest abortion facility with the total abortion bans enacted post-Dobbs and find a total abortion ban that increase the driving distance by 100 miles increases births in the county by 1.8%.

Given the binding effect that changes in abortion access has on births, several studies have documented the downstream effects of restricting access to abortion. As previously mentioned, restricting abortion access increases infant mortality (Gemmill et al. 2025; Caraher 2024; Gemmill et al. 2024; Singh and Gallo 2024; Pabayo et al. 2020) and adversely affects maternal health (Gardner 2024; Farin et al. 2024; Clarke and Mühlrad 2021; Ellison et al. 2021; Slusky 2017; Lu and Slusky 2016). Evidence from the Turnaway study, which followed women who just made or just missed the gestational cutoff for receiving an abortion, found that women who were denied a wanted abortion were more likely to experience poverty and financial hardship (Foster et al. 2018; Miller et al. 2023; Foster et al. 2018), and have worse mental health measures (Biggs et al. 2017) than women who obtained the wanted abortion. Reduced abortion access is also associated with higher rates of cases of child maltreatment and child welfare involvement (Aslim et al. 2025; Piette Durrance et al. 2025).[2]

3 Data

3.1 Natality Data

The birth and maternal health outcomes I use are from the CDC National Center for Health Statistics Restricted-Use Natality file which provides data for the population of births in the US. Crucially the restricted-use data include the mother's county of residence. I use data from 2009 to 2019, which corresponds to the beginning of the driving distance dataset and stops prior to the COVID-19 pandemic.[3] I look at seven birth outcomes including

[2] For a broad history of abortion policies over the last 50 years in the United States see Myers (2025) and for a full literature review of the economics of abortion policy see Clarke (2024).

[3] Since Andersen et al. (2025) finds that COVID-19 restrictions reduced visits to abortion clinics, even in states with greater access to abortion, I end my study period in 2019.

indicators for very preterm (between 28 and 32 weeks of gestation), preterm (less than 37 weeks of gestation), and post-term (over 42 weeks of gestation), indicators for very low birth weight ($<$ 1,500 grams), low birth weight ($<$ 2,500 grams), and high birth weight ($>$ 4,000 grams), and an indicator for congenital anomalies.[4,5] I then examine measures of maternal health during both pregnancy and labor/delivery including if the mother has gestational hypertension and gestational diabetes and during if delivery there was perineal laceration (vaginal tearing), a ruptured uterus, or an unplanned hysterectomy.[6]

Since some of the birth and maternal health outcomes listed above are likely correlated with each other and to address the subsequent possibility of an increased probability of false positivities due to multiple hypothesis testing, I construct an index of birth outcomes and an index of maternal health. I follow Miller et al. (2023) in the construction of z-score standardized indices

$$Index_i = \frac{1}{N} \sum_{j=1}^{N} \frac{Y_{ij} - \mu_j}{\sigma_j} \tag{1}$$

where Y_{ij} is the value of outcome j for individual i, μ_j is the mean of outcome j, σ_j is the standard deviation of outcome j, and N is the number of outcomes in the index.[7] The birth outcomes index includes the birth weight and gestational length indicators and each of the individual congenital defect indicators. The maternal health index includes the indicators for

[4] I evaluate the effect on the gestational age and birth weight using indicator variables instead of a continuous measure because the relationships between these measures and health are not monotonic. While infants that are born earlier than 37 gestational weeks or below 2,500 grams can experience health complications, the same is true for infants that are born after 42 gestational weeks or above 4,000 grams. Using a continuous measure of gestational age and birth weight masks this underlying effect.

[5] The congenital anomalies indicator includes down syndrome, suspected chromosomal disorder, hypospadias, limb reduction, cleft lip, cleft palate, anencephaly, spina bifida, congenital heart disease, congenital diaphragmatic hernia, omphalocele, and gastroschisis.

[6] Prior work has raised concerns about misreporting or mismeasurement in some of the birth data variables (summarized in Backes et al. (2020)). However, since these are dependent variables in my model, this mismeasurement would be classified as classical measurement error meaning that the estimation parameters would be unbiased, but the precision of the estimation would decrease as the standard errors increase. Therefore, concerns about mismeasurement should be focused on the statistical significance of the estimation not the estimations themselves.

[7] Outcomes were reoriented so the higher values represented a better outcome.

gestational hypertension and diabetes, perineal laceration, ruptured uterus, and unplanned hysterectomy.

3.2 Fetal and Infant Mortality Data

I obtain the fetal and infant mortality from the restricted-use fetal deaths and linked birth/infant deaths data from the CDC National Center for Health Statistics. Fetal deaths are constituted as any spontaneous intrauterine death that occurs during pregnancy. As such, fetal deaths include stillbirths but do not include intentional terminations of pregnancy (i.e., abortions). The fetal death data is an aggregation of state's reported fetal deaths. Most states require reporting of deaths of fetuses that are 20+ weeks, 350+ grams at delivery, or a combination of both measures, though some states report fetal deaths regardless of the period of gestation.[8] I aggregate individual-level data into a panel of the number of fetal deaths in the mother's county of residence for the fetus' delivery month and year. To construct the fetal mortality rate, I divide the number of fetal deaths in the month by the sum of live births and fetal deaths in the month.

I obtain infant mortality data from the linked birth/infant death data set which links birth certificate information from live births to infant deaths, constituted as a death that occurred prior to the infant's first birthday. Linkage rates between the birth and death certificate vary by state, but in general are very high (over 95%). I construct the infant mortality variable in a manner analogous to the fetal mortality outcome by aggregating the individual-level data into a panel of the count of infant deaths in the mother's county of residence for the infant's birth month and year. Infant mortality rates are constructed by dividing the number of infant deaths by the number of live births in the month.

[8] My sample only include fetal deaths that have the "20 Weeks or more (include)" CDC-created flag checked. This indicator creates a sample of fetal deaths that are comparable across states.

3.3 Controls

I include several county-level controls in both the individual and county-level models.[9] Using the NIH National Cancer Institute SEER data, I include the share of the annual county female 15-44 population that is non-Hispanic White, non-Hispanic Black, Hispanic, Asian, and American Indian/Native American and that is 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44 years old. I also include several county economic indicator controls including the share of the county population in poverty and the median household income (logged and in 2019 dollars) both from the Small Area Income and Poverty Estimates from the Census Bureau and the monthly unemployment rate from the St. Louis Federal Reserve FRED database.

3.4 Abortion Facility Driving Distance

Each county's distance to the nearest abortion facility comes from the public use Myers Abortion Facility Database.[10] This county by month panel includes a measure of travel (driving) distance from the county to the nearest abortion facility. The driving distance is measured as the distance between the population center of the county, designated by the US Census Bureau, and the geocoordinates of the nearest abortion facility.[11,12] To be constituted as an abortion facility, the facility either has to publicly advertise that it provides abortions or be easily identifiable a facility that provides abortions to general public.[13] The measure

[9] I do not include individual level controls like the mother's age, race, and other demographic and behavioral controls because changes in abortion access may lead to a compositional change in the mothers who give birth. Therefore these individual controls would be considered "bad controls" (Angrist and Pischke 2009) and not included in the regression.

[10] I am using the July 2025 vintage (the most up-to-date as of the time of analysis).

[11] The distance is calculated using Stata's georoute module which takes into account the road networks and traffic conditions. For states without an extensive road network (such as Alaska and Hawaii) the distance is calculated using Stata's geonear module. See Myers (2024b) for a more detailed explanation of the calculation of the driving distances.

[12] Since Alaska and Hawaii do not have extensive road networks and since changes in driving distance has a different interpretation for these states, I follow Myers (2024b) and exclude Alaska and Hawaii from my analysis.

[13] This dataset does not take into account the provision of medication abortion over telehealth. However, since the FDA lifted the in-person requirement for mifepristone (one of the drugs used in medication abor-

was first used in the Texas setting where increases in the driving distance to the nearest abortion provider was found to reduce abortion rates and increase birth rates (Lindo et al. 2020; Fischer et al. 2018; Quast et al. 2017). Similar effects were found in Wisconsin as well (Venator and Fletcher 2021). The measure was shown to be externally valid nationwide in Myers (2024b) which found that a 100-mile increase in driving distance reduced abortion by 19.4% and increased birth rates by 2.2%. Using the driving distance to the nearest abortion provider allows me to capture the within-county variation in abortion access as well as the possibility for cross-state travel to obtain an abortion. I use a continuous distance measure that shows the effect of a 100-mile change in the distance as my treatment variable rather than discrete binned estimates to retain the full detail in the distance measure and to avoid introducing bias through choosing bin values. The continuous distance measure was first introduced to the reproductive health literature by Joyce et al. (2013) and has been used by in a variety of other work since (Myers et al. 2025; Myers 2024b; Gardner 2024; Aslim et al. 2025; Venator and Fletcher 2021; Quast et al. 2017; Lu and Slusky 2016).[14]

Table 1 shows the summary statistics for the individual natality data and **Table 2** shows them for the infant and fetal mortality data (**Panel A** and **Panel B** respectively). On average in the individual-level natality data, counties are 57.1% non-Hispanic white, 14.7% non-Hispanic Black, and 20.47% Hispanic with fairly even shares of the population in the 5-year age band between 15 and 44 years old. Around 15% of the population is in poverty and the average monthly unemployment rate is 6.6%. The average county in the infant and fetal mortality data looks mostly similar though the average share of the female

tion) only in 2021 (Belluck 2021), telehealth medication abortion was not legal during the sample period. Therefore, individuals seeking a medication abortion were still required to go to a clinic to obtain the medication. Additionally, while Jones and Friedrich-Karnik (2024) find that while medication abortion increased during my sample period, from 17% in 2008 to 39% in 2017, medication abortion was not the predominant method of abortion during my sample period.

[14] One assumption that data set relies on is that individuals seeking an abortion choose to go to the nearest abortion clinic. While there is no way to specifically test this assumption, Card et al. (2023) show that pregnant individuals are most likely to choose to give birth at the nearest hospital. It is likely that a similar logic applies for abortions.

Table 1: Natality Data Summary Statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum
Distance to Nearest Provider (miles)	40,933,165	25.21	39.56	0.18	392.60
Very Low Birth Weight	40,893,408	0.0141	0.1180	0	1
Low Birth Weight	40,893,408	0.0814	0.2735	0	1
High Birth Weight	40,893,408	0.0772	0.2669	0	1
Very Pre-Term Delivery	40,895,900	0.0119	0.1086	0	1
Pre-Term Delivery	40,895,900	0.1163	0.3206	0	1
Post-Term Delivery	40,895,900	0.0530	0.2241	0	1
Congenital Anomalies	37,746,486	0.0031	0.0552	0	1
Gestational Hypertension	40,933,165	0.0520	0.2221	0	1
Gestational Diabetes	37,885,502	0.0564	0.2308	0	1
Perineal Laceration	37,786,898	0.0084	0.0914	0	1
Ruptured Uterus	37,759,388	0.0003	0.0173	0	1
Unplanned Hysterectomy	37,786,898	0.0004	0.0207	0	1
Share of female 15-44 population that is:					
White	40,926,522	0.5714	0.2311	0.0208	1
Black	40,911,364	0.1471	0.1413	0.0002	0.9307
Hispanic	40,926,076	0.2068	0.1899	0.0012	0.9724
Asian	40,907,454	0.0653	0.0664	0.0003	0.4271
American Indian/Alaska Native	40,895,513	0.0094	0.0380	0.0002	0.9142
15-19 Years Old	40,926,522	0.1677	0.0225	0.0273	0.5256
20-24 Years Old	40,926,522	0.1705	0.0332	0.0213	0.5006
25-29 Years Old	40,926,518	0.1714	0.0215	0.0571	0.3333
30-34 Years Old	40,926,522	0.1672	0.0163	0.0409	0.3016
35-39 Years Old	40,926,522	0.1616	0.0153	0.0376	0.3826
40-44 Years Old	40,926,522	0.1617	0.0211	0.0332	0.3265
Share of Population in Poverty	40,933,165	14.9900	5.4743	2.6	62.0
Median Household Income (logged)	40,933,165	11.0054	0.2543	10.0205	11.9304
Monthly Unemployment Rate	40,495,777	6.5522	2.9616	0.8	32.3

Note: Very preterm is between 28 and 32 weeks of gestation. Preterm is less than 37 weeks of gestation. Post-term is greater than 42 weeks of gestation. Very low birth weight is less than 1,500 grams. Low birth weight is less than 2,500 grams. High birth weight is greater than 4,000 grams.

Table 2: Mortality Data Summary Statistics

	Observations	Mean	Std. Dev.	Minimum	Maximum
Panel A – Infant Mortality					
Infant Mortality Rate	377,264	6.4337	23.5325	0	1000
Distance to Nearest Provider (miles)	391,170	76.48	62.76	0.18	392.60
Share of female 15-44 population that is:					
White	391,170	0.7558	0.2143	0.0208	1
Black	385,002	0.1017	0.1604	0.0002	0.9307
Hispanic	390,714	0.1056	0.1510	0.0012	0.9724
Asian	382,980	0.0188	0.0283	0.0003	0.4271
American Indian/Alaska Native	382,626	0.0207	0.0741	0.0002	0.9142
15-19 Years Old	391,170	0.1837	0.0239	0.0273	0.5256
20-24 Years Old	391,170	0.1665	0.0395	0.0213	0.5006
25-29 Years Old	391,134	0.1589	0.0192	0.0571	0.3333
30-34 Years Old	391,170	0.1606	0.0175	0.0409	0.3016
35-39 Years Old	391,170	0.1625	0.0190	0.0376	0.3826
40-44 Years Old	391,170	0.1679	0.0240	0.0332	0.3800
Share of Population in Poverty	391,170	16.2651	6.3761	2.6	62.0
Median Household Income (logged)	391,170	10.8254	0.2393	10.0205	11.9304
Monthly Unemployment Rate	390,769	6.3912	3.1196	0.8	32.3
Panel B – Fetal Mortality					
Fetal Mortality Rate	382,326	6.1445	24.2553	0	1000
Distance to Nearest Provider (miles)	397,380	76.54	62.79	0.18	392.60
Share of female 15-44 population that is:					
White	397,380	0.7560	0.2143	0.0208	1
Black	391,020	0.1017	0.1604	0.0002	0.9307
Hispanic	396,908	0.1055	0.1510	0.0012	0.9724
Asian	389,012	0.0187	0.0282	0.0003	0.4271
American Indian/Alaska Native	388,652	0.0207	0.0741	0.0002	0.9142
15-19 Years Old	397,380	0.1838	0.0239	0.0273	0.5256
20-24 Years Old	397,380	0.1663	0.0395	0.0213	0.5006
25-29 Years Old	397,344	0.1589	0.0192	0.0571	0.3333
30-34 Years Old	397,380	0.1605	0.0175	0.0409	0.3016
35-39 Years Old	397,380	0.1625	0.0190	0.0376	0.3826
40-44 Years Old	397,380	0.1681	0.0240	0.0332	0.38
Share of Population in Poverty	397,380	16.2663	6.3767	2.6	62
Median Household Income (logged)	397,380	10.8252	0.2393	10.0205	11.9304
Monthly Unemployment Rate	396,973	6.4347	3.1424	0.8	32.3

Note: Infant mortality rate calculated by dividing number of infant deaths by number of live births multiplied by 1,000. Fetal mortality rate is calculated by dividing the number of fetal deaths by the sum of live births and fetal deaths multiplied by 1,000.

15-44 population that is non-Hispanic white and American Indian/Alaska Native is higher, 75.6% and 2.1% respectively.

In the natality data, the average distance from a mother's county of residence to the nearest abortion provider is 25.21 miles. When considering the infant mortality panel data, each county is on average 76.5 miles from the nearest abortion provider. The average is similar for the fetal mortality panel data. The average distance for individuals is smaller than the average distance for each county since more individuals in my sample live in cities or suburbs, which tend to be closer to abortion facilities, than in rural areas, which drives the average distance downwards. However, the county distance average is not affected by a similar pseudo-weighting effect. Further, these averages mask the wide heterogeneity in the driving distance to the nearest abortion provider in the United States with the closest abortion provider from the county's population centroid only 0.18 miles away (Duval County, Florida) while the farthest provider is 392.6 miles away (Divide County, North Dakota).

4 Methodology

To evaluate the effect that distance to the nearest abortion provider has on infant and maternal health, I estimate several fixed effects regressions similar to those in Gardner (2024), Myers (2024b), and Lindo et al. (2020). During my sample period, the supply of abortion providers changed as abortion facilities opened and closed across the country. These supply shocks changed the driving distance to the nearest abortion facility. Therefore, my causal identification strategy relies on the variation in the driving distance to the nearest abortion provider in the county over time. **Figure 1** maps the counties that experience changes in the driving distance. Each map estimates the difference in the driving distance from 2009 to the year shown in the map. Counties in white experienced no change while counties in purple had an increase in distance and counties in green had a decrease in distance. Of the 3,108 counties in the sample, 1,793 counties experienced a change in the driving distance to

the nearest abortion facilities during the sample period.

Since the vast majority of abortions occur prior to 15 weeks of gestation, (95.6% in 2019, per Kortsmit et al. (2021)), I use the distance from six months prior to the month of birth as my treatment variable for the birth and maternal health outcomes and infant mortality. Six months prior to the birth month would translate to around 12 to 16 weeks of gestation. Since the fetal mortality results include fetal deaths at any gestational age between 20 weeks and birth, to use a measure of distance at a similar gestational age as the birth, maternal health and infant mortality outcomes I calculate the mean of the fetal gestational age at death. Since the mean is 28.61 weeks, I use the distance from four month prior to the fetal death as my treatment variable for fetal mortality.[15]

Using the individual-level natality data, I estimate the following specification to examine the effect of driving distance on birth outcomes and maternal health

$$Y_{ictm} = \beta\, distance_{ctm-6} + \delta \mathbf{X}_i + \alpha_t + \alpha_m + \alpha_c + \epsilon_{itmc} \tag{2}$$

where Y_{itmc} is the outcome variable, either the birth outcome or measure of maternal health, for infant/mother i in mother's county of residence c, year t and month m. $distance_{(ctm-6)}$ is the driving distance (per 100 miles) to the nearest abortion facility from the mother's county of residence six months prior to month of delivery. $\mathbf{X}_i$ is the set of control variables which includes each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. α_t, α_m, and α_c are year, month, and mother's county of residence fixed effects respectively. Including both

[15] As a robustness check, **Appendix Figure A1** and **Appendix Figure A2** show the results for 3 different prior distance measures: 6, 7, and 8 months prior to birth for birth outcomes, maternal health, and infant mortality and 4, 5, and 6 months prior to month of fetal death for fetal mortality. When using farther distance lags (e.g. 8 months prior to birth) some of the magnitudes of the estimates grow slightly larger likely reflecting that most abortion occur in the first few months of pregnancy. However, overall, each distance measure returns approximately the same result. Since some abortions do occur later in the first trimester or early in the second trimester and since the estimates using data from six months prior to birth and four months prior to fetal death are the most conservative, I use those distance lags in my primary specifications.

month and year fixed effects allows me to control for the seasonality of births.[16] Standard errors are clustered at the county level. The coefficient of interest is β which identifies the average treatment effect (ATE) that a 100-mile change in distance has on the outcomes

Unlike Gardner (2024), I do not include state-year fixed effects in the model since absorption of states' enactment of TRAP laws likely makes them "bad controls" (Angrist and Pischke 2009). TRAP laws primarily influence access to abortion through changes in the supply of abortion providers (i.e. clinic closures) (Jones and Pineda-Torres 2024; Arnold 2022). Abortion clinic closures mechanically change the distance to the nearest abortion provider and primarily cause the identifying variation in the Myers Abortion Facility Database. Therefore, state-year fixed effects would have an influence on the treatment variable of the driving distance to the nearest abortion facility making them "bad controls". I instead follow Myers (2024b) and include a vector of time-varying economic and population controls.

When estimating the effect of the driving distance on fetal and infant mortality due to count nature of the data, I follow Myers (2024b), Farin et al. (2024), and Lindo et al. (2020) and estimate a fixed-effects Poisson regressions.[17] Since Poisson models are discrete count models, estimating the effect of driving distance on the fetal and infant mortality rates outright would mechanically increase the effect magnitude. Given that changes in abortion access affects the number of birth (and pregnancies) that occur, I include the population of women between 15 and 44 years old in the county as an exposure term.[18] With this exposure, the effect from the Poisson model can be interpreted as the absolute change in

[16] Results are robust to specifications that include month-year fixed effects instead of month and year fixed effects.

[17] A fixed effect Poisson drops counties where the value of all observations for a county is zero. Therefore, the samples for the fetal (infant) mortality rate Poisson models include all counties that have had at least one fetal (infant) death during my sample period.

[18] Specifically, the model includes the natural log of the exposure term and mechanically constrains the coefficient to be 1 allowing the effect to be interpreted as a rate.

fetal and infant mortality that women of reproductive age experience.[19]

$$E[Y_{ctm}|distance_{ctm-4(6)}, \mathbf{X_{tc}}, \alpha_t, \alpha_m, \alpha_c] = exp(\beta\, distance_{ctm-4(6)} + \theta \mathbf{X}_{tc} + \alpha_t + \alpha_m + \alpha_c) \quad (3)$$

where Y_{ctm} is either the fetal or infant mortality for mother's county of residence c in year t and month m, $\mathbf{X}_{tc}$ is the vector each county's female population race and age shares, monthly unemployment rate, logged median household income, and share of population in poverty, and the fixed effects are as defined above. As mentioned above, the driving distance measure is 4 months prior to the month of death for the fetal mortality and is 6 months prior to the month of birth for infant mortality. β estimates the ATE of a 100-mile change in driving distance on the fetal (infant) mortality.

To ensure that prior to the driving distance changing, the counties that experience a change mirror the counties that never experience a change, I estimate a series of event studies to evaluate the pre-trends for each outcome. For each county that experiences changes in driving distance, I identify the year that the county experienced its first change in driving distance during the sample period. Since the first driving distance change occurred in various years for my treated counties, I estimate county-level staggard-adoption event studies based on Callaway and Sant'Anna (2021) for each outcome including the vector of controls from Equation (2) and Equation (3). The Callaway and Sant'Anna (2021) event studies use the counties that never experienced a change in the driving distance as the comparison group, avoiding the problem outlined in Goodman-Bacon (2021) of comparing later treated counties to earlier treated counties. **Appendix Figure A3** shows the Callaway and Sant'Anna event studies for the pre-period for each outcome along with the p-value associated with the null hypothesis that all pretreatment group-time average treatment effect on the treated

[19] I also estimate the Poisson models with an exposure variable that is the traditional denominator for the fetal mortality rate (number of fetal deaths + number of live births) and the infant mortality rate (number of live births). The number of live births is calculated by aggregating the natality data into a panel of lives births in the mother's county of residence for each month and year. These models estimate the conditional change in fetal and infant mortality as abortion access changes.

(ATTGT) are equal to zero. Each outcome's event study visually shows a lack of pre-trends, and I am unable to reject the null hypothesis that the pre-period ATTs are all equal to zero. Therefore, it is likely that, conditional on the demographic and economic county controls, prior to the first driving distance change, counties that experienced a change were on the same path as counties that never experienced a change.

Another potential threat to my identification strategy is if other factors that may affect infant and maternal health at birth change while the driving distance changes. Likely the largest concern is that changes in driving distance proxy an overall change in access to healthcare which could influence infant and maternal health outcomes itself. There is some evidence that increasing the distance or the travel time to the nearest women's health or family planning clinic reduces women's preventative care services such as breast exams, Pap tests, and mammograms (Ellison et al. 2021; Slusky 2017; Lu and Slusky 2016). To understand if changes in driving distance to the nearest abortion facility are correlated to an overall reduction in maternal healthcare services, I estimate the effect of the driving distance to the nearest abortion provider on an indicator that the county experienced a maternity ward closure (**Appendix Table A1**).[20] There is no association between maternity ward closures and an increase in the driving distance. Further, many of the types of facilities that are included in the Myers Abortion Facility Database, such as Planned Parenthood clinics, do not provide obstetric care outside of a initial appointments and referrals. These points emphasize that the driving distance from the Myers Abortion Facility database is not a direct proxy for changes in overall healthcare access.

[20] I follow the procedure outlined in Battaglia (2025) to estimate if a county experienced a maternity ward closure. I aggregate the number of hospitals births in the linked birth/infant deaths data to the county-year and calculate the three-year average of the number of births prior to year t (years included are $t-1$, $t-2$, $t-3$) and the three-year average of the number of births post year t (years included are t, $t+1$, and $t+2$). A county is considered to have a maternity ward closure if the three-year average prior to year t is greater than 15 births and the three-year average after year t is less than 5 births. Given the need to calculate three-year averages, the sample period in the maternity ward closure model is 2012-2017.

5 Results

5.1 Infant Health

I first estimate the effect of changes in the driving distance to the nearest abortion facility on different measures of infant health at birth. **Table 3** illustrates the effect on the birth outcomes index and the indicators for gestational length, birth weight, and the presence of congenital defect.[21] I find that a 100-mile increase in the driving distance to the nearest abortion providers decreases the birth outcome index by 0.0017 standard deviations (statistically significant at the 99% level). The adverse effect on birth outcomes can be partially attributed to the 5.2% increase in the likelihood that an infant will be post-term and the 1.9% increase in the prevalence of high birth weight infants.[22] I also find a marginally significant increase in the presence of congenital defects. I find no effect for very preterm, preterm, very low birth weight, and low birth weight.

Given that the indicator for having a congenital defect was marginally significant and to ensure that an effect on a specific congenital defect is not masked by the indicator variable, I estimate the effect of the change in driving distance on each congenital defect identified in the birth data. **Table 4** shows that the increase in congenital defects is driven primarily by an increase in congenital heart disease, a 100-mile increase in driving distance increases incidence of congenital heart disease by 0.02 percentage points or 28% relative to the mean. There is also suggestive evidence that the increase in driving distance also increases the likelihood of an infant being born with a cleft palate by 0.003 percentage points or 15% relative to the mean.

[21] **Appendix Table A3** presents the results for the model without controls which are robust to the preferred specification with county-level controls.

[22] The increase in high birth weight is robust to conditioning on infants that were not born post-term.

Table 3: Effect of Driving Distance on Infant Birth Outcomes

VARIABLES	Birth Outcomes Index (1)	Very Pre-Term (2)	Pre-Term (3)	Post-Term (4)	Very Low Birth Weight (5)	Low Birth Weight (6)	High Birth Weight (7)	Congenital Defects (8)
Distance to nearest provider (per 100 miles)	-0.0017***	0.00008	0.0004	0.00279***	0.00013	-0.00046	0.00144**	0.00021*
	(0.00051)	(0.00013)	(0.00083)	(0.00102)	(0.00014)	(0.00065)	(0.00069)	(0.00012)
R-squared	0.00006	0.00004	0.00021	0.00027	0.00002	0.00005	0.00009	0.00001
Dependent Variable Mean		0.0120	0.1167	0.0532	0.0141	0.0814	0.0771	0.003
Percent Change		0.67%	0.34%	5.24%	0.92%	0.57%	1.87%	7.0%
Observations	37,181,855	40,394,452	40,394,452	40,394,452	40,391,907	40,391,907	40,391,907	37,259,376

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Birth outcomes index is the average of the individual's reoriented and standardized outcomes. Very preterm is between 28 and 32 weeks of gestation. Preterm is less than 37 weeks of gestation. Post-term is greater than 42 weeks of gestation. Very low birth weight is less than 1,500 grams. Low birth weight is less than 2,500 grams. High birth weight is greater than 4,000 grams. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

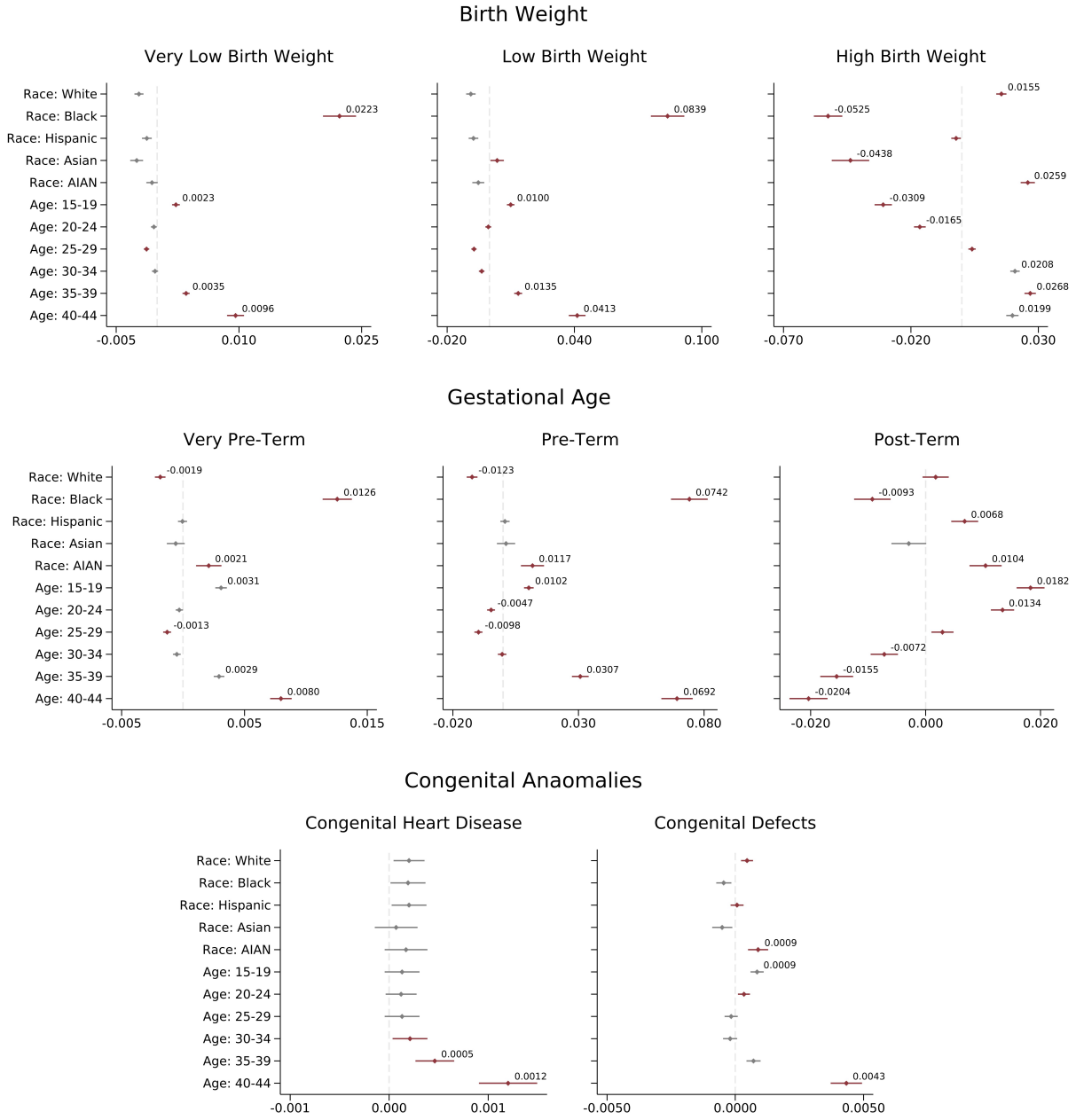
Table 4: Effect of Driving Distance on Congenital Defects

	Distance to nearest provider (per 100 miles)	Mean	Percent Change	Observations
Down Syndrome	-0.00002	0.0002	-10%	37,247,749
	(0.00002)			
Suspected Chromosomal Disorder	0.00001	0.0001	10%	37,248,806
	(0.00001)			
Hypospadias	-0.00001	0.0006	-1.67%	37,259,376
	(0.00003)			
Limb Reduction Defect	0.00001	0.0001	10%	37,259,376
	(0.00002)			
Cleft Lip	-0.00001	0.0005	-2%	37,259,376
	(0.00003)			
Cleft Palate	0.00003*	0.0002	15%	37,259,376
	(0.00002)			
Anencephaly	-0.00001	0.0001	-10%	37,259,376
	(0.00002)			
Spina Bifida	-0.000004	0.0001	-4%	37,259,376
	(0.00002)			
Congenital Heart Disease	0.000196**	0.0007	28%	37,259,376
	(0.00009)			
Congenital Diaphragmatic Hernia	0.000001	0.0001	1%	37,259,376
	(0.00002)			
Omphalocele	-0.000001	0.0001	-1%	37,259,376
	(0.00001)			
Gastroschisis	0.00003	0.0003	10%	37,259,376
	(0.00002)			

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Since prior work has found differential effects of abortion access on birth and abortion rates for different groups (Myers 2024b; Farin et al. 2024; Gardner 2024; Lindo et al. 2020; Quast et al. 2017), I interact the driving distance to the nearest abortion provider with several demographic categorical variables and regress those on the birth outcomes from **Table 3** and congenital heart disease. **Figure 2** shows these interactions where the label (Race or Age) at the beginning of the demographic category indicates which regression the

Figure 2: Heterogeneous Effect of Driving Distance on Fetal and Infant Mortality



Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility interacted with a variable for the demographic category. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Estimates in red are statistically different (at the 95% level) from the other estimates in the category.

results are from and group estimates that are in red are statistically different from the other groups in the category. Several patterns emerge in these figures. First, while there is no overall increase in very low birth weight or low birth weight, non-Hispanic Black mothers experience a rather sizable increase in the prevalence of those conditions as distance to the nearest abortion provider increases. This effect is likely masked in the aggregate result since non-Hispanic Black mothers only make up about 16% of the sample. A differential effect on birth weight indicators has previously been found in Gardner (2024) and Caraher (2024), but these results establish that while when abortion access is restricted that non-Hispanic White mothers may experience a decrease in (very) low birth weight, they experience an increase with high birth weight. Similarly, there is an inverse pattern for (very) low birth weight and high birth weight for maternal age as mothers who are 15-19 and 35-44 experience increases in the prevalence of low birth weight but decreases in the incidence of high birth weight. A similar pattern for maternal age exists for (very) pre-term and post-term delivery. Again, non-Hispanic Black mothers experience an increase in very pre-term and pre-term delivery as distance increases but a decrease in post-term delivery. There effects are masked by the increase in post-term delivery that non-Hispanic White and Hispanic mother see. Finally, the increase in congenital heart disease appears to be driven by older mothers (those 35-44). Overall, the heterogeneity results indicate that while all infants to all mothers experience an adverse affect on infant health as the distance to the nearest abortion provider increases those negative effects present in different conditions based on the mother's demographics.

Turning to fetal and infant mortality panel data, **Table 5** shows that a 100-mile increase in driving distance from the mother's county of residence to the nearest abortion facility does not have an effect on the all-cause fetal or infant mortality rate. **Appendix Figure 3** shows the heterogeneous effect of a 100-mile increase in the driving distance to the nearest abortion facility on fetal and infant mortality rates. I largely do not find any effect on all-cause fetal or infant mortality across maternal race and age groups outside of an increase in infant mortality for Hispanic mothers.

Table 5: Effect of Driving Distance on Fetal and Infant Mortality

	All-Cause	Heart Condition	Still Births	Premature Birth	Sepsis	Fetal Developmental Complications	Down Syndrome
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Fetal Mortality							
Distance to nearest provider (100 miles)	0.0044	-0.5469	-0.1406	0.3588		0.2669***	-0.6382
	(0.0185)	(0.4820)	(0.1001)	(0.3009)		(0.1010)	(0.4627)
Observations	370,517	23,280	139,164	31,080		132,408	18,540
Number of Counties	2,945	388	2,320	518		2,207	309
Panel B: Infant Mortality							
Distance to nearest provider (100 miles)	0.0266	0.0879		0.1300***	-0.0168	0.2043**	-0.2654
	(0.0191)	(0.0650)		(0.0473)	(0.0968)	(0.1014)	(0.2778)
Observations	365,401	241,626		292,825	181,867	202,093	50,412
Number of Counties	2,951	1,925		2,337	1,447	1,602	402

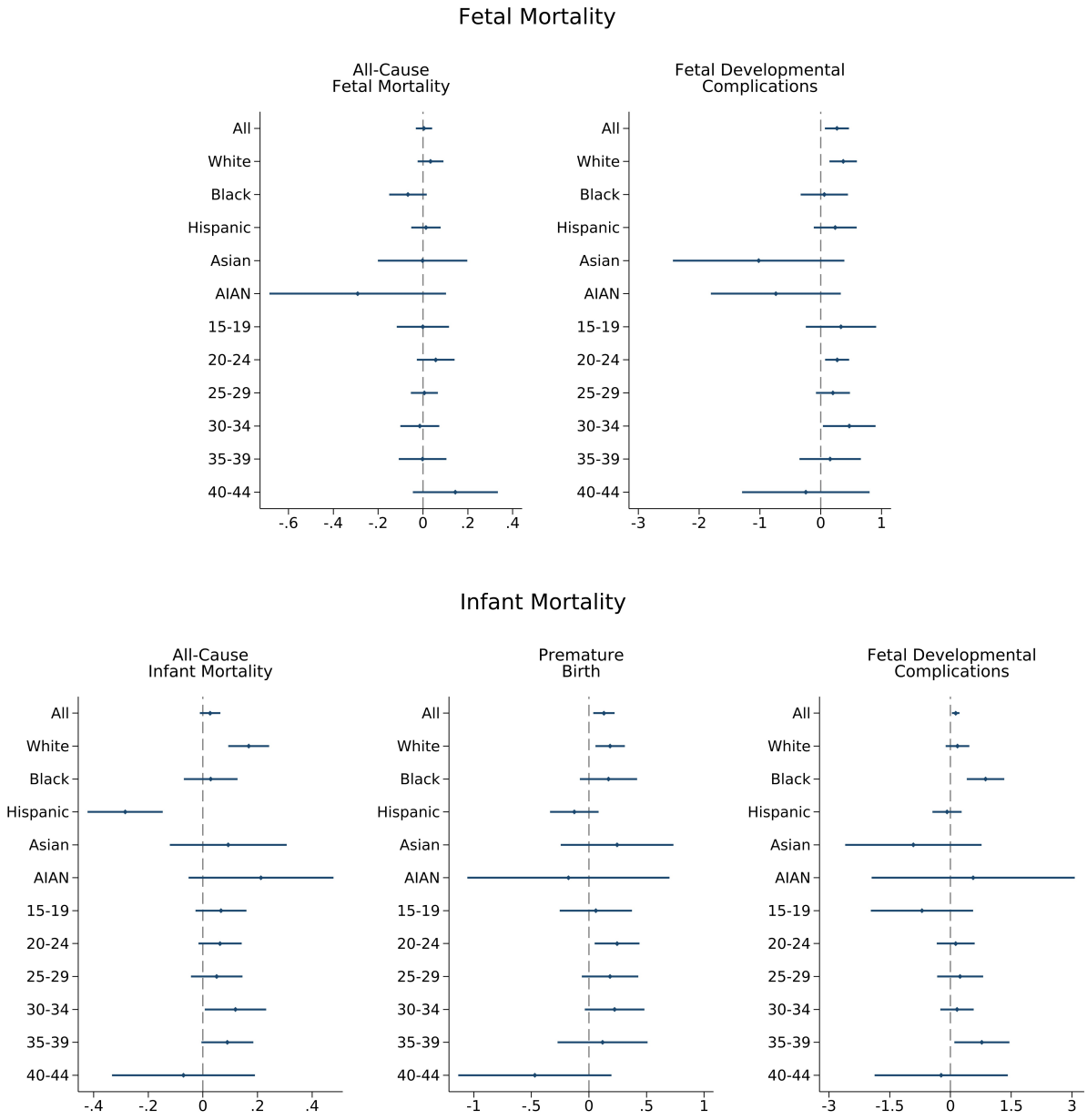
Fetal mortality distance measure is from four months prior to month of fetal death. Infant mortality distance measure is from six months prior to month of birth. Each model includes year, month, and mother's county of residence fixed effects. Additional controls include each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable is the county female 15-44 population. The following ICD-10 codes were used to identify each cause of death: heart condition (Q24 & P29), still births (P95), premature birth (P072 and P073), sepsis (P36 and A41), fetal developmental complications (P02), and down syndrome (Q90). Since fixed effects Poisson models drop counties where all observations are zero, the sample size varies for each model and includes only counties that have had at least one fetal (infant) death during the period. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

To ensure that the effect on other specific causes of death that could be affected by a change in abortion access is not being masked in the all-cause result, I estimate the effect of driving distance to the nearest abortion provider on several causes of fetal and infant death that could be related to abortion access. **Table 5** shows those results. In **Panel A** I find a 30.6% increase in fetal deaths due to fetal developmental complications in the placenta, umbilical cord, and fetal membrane to women of reproductive age. In **Table 5 Panel B** I also find that a 100-mile increase in the driving distance to the nearest abortion provider increases the absolute risk of infant mortality due to premature birth to infants born to women of reproductive age by 13.9%. Similar to the increase in fetal mortality, I find a 22.7% increase in infant mortality due to fetal developmental complications.[23]

Figure 3 presents the heterogeneity results for the fetal and infant mortality measures. Each coefficient presents the effect of a 100-mile increase in the distance to nearest abortion provider from a separate regression where the mortality measure captures only deaths to mothers in the demographic group from the label. While there is no big difference among maternal race or age for all-cause fetal mortality, non-Hispanic White mothers and mothers who are 20-24 and 30-34 years old are driving the increase in fetal mortality due to fetal developmental complications. Non-Hispanic White mothers also appear to be driving the increase in infant mortality , primarily through an increase infant mortality due to premature birth. Non-Hispanic Black mothers are driving the increase in infant deaths due to fetal developmental complications. Hispanic mothers experience a decrease in infant mortality though those decreases are not evident in plots for premature birth or fetal developmental complications.

[23] **Appendix Table A5** shows the effect of changes in the driving distance to the nearest abortion provider on the conditional fetal and infant mortality rates (calculated using the number of fetal deaths and live births as the exposure for fetal mortality and the number of live births as the exposure for infant mortality). There is no effect on all-cause fetal and infant mortality. I find a 28% increase in fetal mortality due to fetal developmental complications and a 11.4% increase in infant mortality due to premature birth. I also find suggestive evidence of an increase in infant mortality due to fetal developmental complications. Therefore, while there is some evidence of a change in fetal mortality conditional on being pregnant, the overall increase in the rate of reproductive age women experiencing a fetal or infant death as the driving distance to the nearest abortion provider increases likely comes from changes in the number of pregnancies and live births.

Figure 3: Heterogeneous Effect of Driving Distance on Fetal and Infant Mortality



Note: Distance measure for fetal (infant) mortality is from 4 (6) months prior to month of death (birth). Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility and are from Poisson models that include month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable is the sum of live births and fetal deaths for fetal mortality and number of live births for infant mortality.

5.2 Maternal Health

Turning towards maternal health, **Table 6** shows the effect of increases in the driving distance on the maternal health index and each outcome included in the index.[24] I find that a 100-mile increase in the driving distance to the nearest abortion provider leads to a statistically significant 0.0082 standard deviation decrease in the maternal health index indicating that increases in the distance to the nearest abortion provider adversely affect maternal health. The decrease in the index is driven by the 0.237 percentage point, or 4.2% relative to the mean, increase in the prevalence of gestational diabetes and a 14% increase in perineal laceration (vaginal tearing during labor and delivery). I do not find a statistically significant effect on the other maternal health outcomes.

To identify if there is a differing effect for different subpopulations, I construct a similar heterogeneity analysis plot to **Figure 2** for the maternal health measures. **Figure 4** shows that the increase in gestational diabetes is driven by an increase in the prevalence for Asian mothers. I also find that as maternal age increases so does the likelihood of experiencing gestational diabetes as driving distance increases. While I do not find an aggregate effect on gestational hypertension, I find that as distance to the nearest abortion provider increases non-Hispanic Black mothers experience an increase in gestational hypertension. This increase is likely masked in the aggregate results by the decline that Asian mothers experience. Non-Hispanic White and Asian mothers drive the increase in perineal lacerations (likely related to the increase in high birth weight infants). Again while I do not find an overall effect on incidence of having a ruptured uterus or unplanned hysterectomy when driving distance increases, in the heterogeneity analyses I find an increase in ruptured uteruses for non-Hispanic Black mothers and an increase in unplanned hysterectomies or Asian mothers and mothers between 40-44 years old.

[24] The results for the model without controls are presented in **Appendix Table A4**. The coefficients are largely unchanged, but the statistically significant drops to the 90% level for perineal laceration.

Table 6: Effect of Driving Distance on Maternal Health

VARIABLES	Maternal Health Index (1)	Gestational Hypertension (2)	Gestational Diabetes (3)	Perineal Laceration (4)	Ruptured Uterus (5)	Unplanned Hysterectomy (6)
Distance to nearest provider (per 100 miles)	-0.00824***	0.00192	0.00237**	0.00120**	0.00002	0.00004
	(0.00302)	(0.00183)	(0.00116)	(0.00055)	(0.00002)	(0.00003)
R-squared	0.00135	0.00451	0.00115	0.00010	0.000003	0.000004
Dependent Variable Mean		0.0509	0.0559	0.0085	0.0003	0.0004
Percent Change		3.77%	4.24%	14.12%	6.67%	10.00%
Observations	37,272,914	40,431,487	37,395,271	37,300,419	37,272,914	37,300,419

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls include each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Maternal health index is the average of the individual's reoriented and standardized outcomes. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5.3 Robustness Checks and Sensitivity Analyses

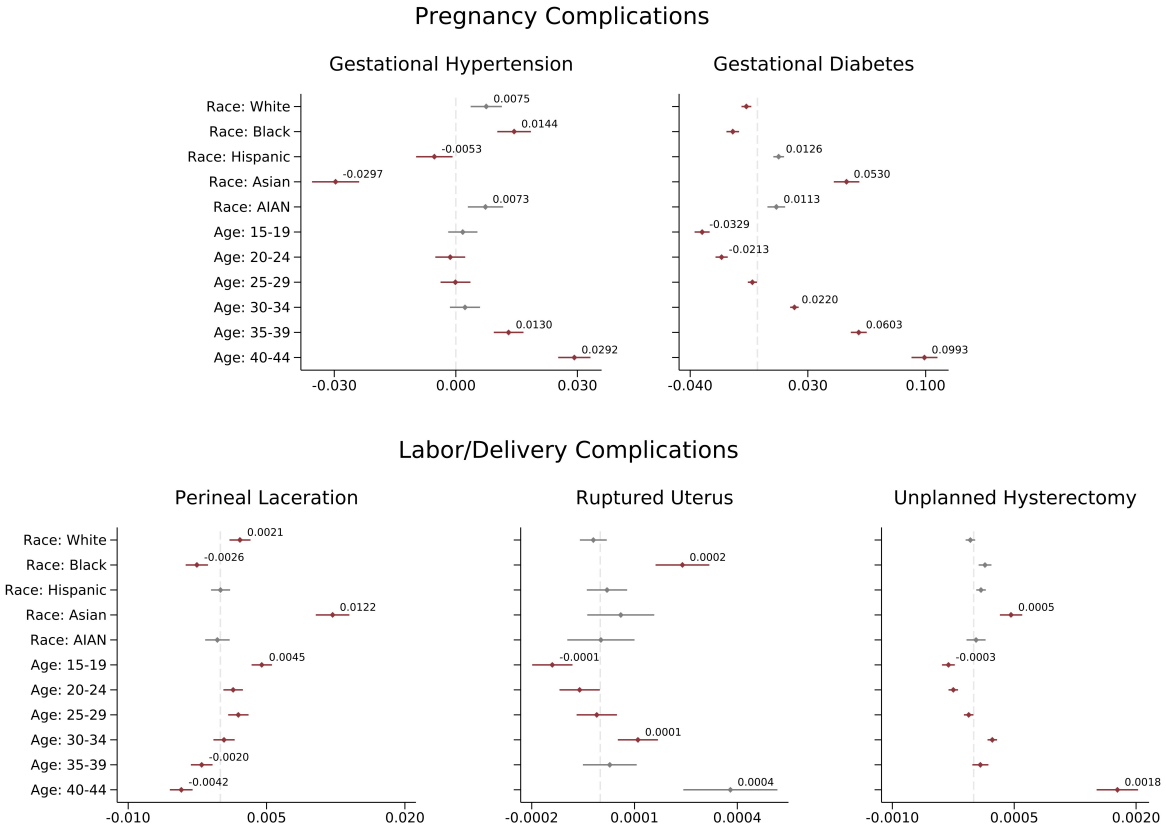
To establish if my results are reliant on a certain population, I estimated a series of sensitivity analyses (**Appendix Table A2**). Columns (1) and (2) show the different effects for mothers based on birth parity. I find that both first births and repeat births experience similar effects for post-term delivery and congenital heart disease while first births are most likely to experience an increase in high birth weight incidence when the driving distance increases. Mother who have had a prior birth are more likely to experience the increase in the likelihood of experiencing gestational diabetes. While magnitude of the increase in perineal laceration is higher for first time mother than for mothers with a prior birth, the coefficient is only significant at the 90% level. To understand if larger geographic counties where a clinic closure may mechanically cause a large change in driving distance to the nearest abortion provider are driving my results, in Column (3) of **Appendix Table A2** I estimate the infant and maternal health outcomes on a sample without the 100 largest counties by geographic area and find that the results are largely unchanged.[25]

To understand the importance of each state in my results, I estimated a leave-one-out state analysis for the significantly affected infant and maternal health outcomes and for the fetal and infant mortality rates. **Appendix Figure A4** and **Appendix Figure A5** shows the estimate and confidence intervals for the models excluding the state listed on the x-axis. In general, my results are robust to the exclusion of each state excepting a few states such as Texas and Kansas. As **Figure 1** shows, by 2019, essentially every county in these states experience some change in distance, so it follows that excluding these counties attenuates the results.

Given that some prior work has found that measures of distance to the nearest abortion provider can exhibit non-linear effects on abortion and birth rates (Myers 2024b; Lindo et al. 2020; Quast et al. 2017), I estimated Equation (2) and Equation (3) using distance indicators

[25] Counties areas were obtained from the 2010 Census Gazetteer File – Counties.

Figure 4: Heterogeneous Effect of Driving Distance on Maternal Health



Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility interacted with a variable for the demographic category. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Estimates in red are statistically different (at the 95% level) from the other estimates in the category.

instead of the continuous measure (birth outcomes in **Appendix Table A6**, maternal health in **Appendix Table A7**, and fetal and infant mortality in **Appendix Table A8**). The results, while noisy, largely show a linear effect as distance increases similar to the effect found in Gardner (2024).

6 Mechanisms

The effect of changes in driving distance to the nearest abortion provider on infant and maternal health are likely channeled through a change in who does (not) obtain an abortion and a change in the experience of pregnancy. Increases in the driving distance can change the characteristics of people who carry their pregnancy to term as well as the characteristics of those pregnancies that are carried to term or a spontaneous termination (like a fetal death). Similarly, changes in abortion access can change the experiences of people who are pregnant through increased maternal stress and delays in pregnancy-related behavioral changes. In the following sections, I outline evidence for each effect, with the understanding that these mechanisms are likely concurrently present and, as such, are difficult to separate.

6.1 Change in the Composition of Pregnant People

When abortion access is restricted, abortions in general tend to decrease (Myers 2024b; Fischer et al. 2018), so it follows that as the distance to the nearest abortion facility increases the composition of who gives birth will change. These changes in the composition of births are one potential pathway to the adverse effects on infant and maternal health at birth that I have identified above.

Given that abortion restrictions have been found to differentially affect demographic groups (Myers 2024b; Farin et al. 2024; Gardner 2024; Lindo et al. 2020; Quast et al. 2017), I estimate the effect of driving distance on birth rates by race and age group to understand if there is a demographic shift in the composition of births. **Appendix Figure A6** shows the

effect of a 100-mile increase on birth rates for each group from a Poisson model analogous to Equation (3) where the only difference is that the relevant female population race (age) shares for each age (race) is interacted with quadratic year trends to model the trend in population for each county (similar to the model in Myers (2024b)). I find a 2.1% increase in the overall monthly county birth rate, a similar result to that found in Myers (2024b). I find a statistically significant increase in births to White, Black, and Hispanic mothers. I also find the birth rate for mothers of all age groups increases. Black mothers experience the largest increase (2.6%) in births compared to the other racial groups, while mothers 15-19 years old (3.2%) and 40-44 years old (3.7%) have the largest increases in birth rates among the age groups. These groups historically have experienced adverse birth outcomes, so the increase in these birth rates may partially contribute to the previously stated negative effects on infant and maternal health.

In addition to changes in birth rates, restricting abortion access could adversely affect the living circumstances of mothers and children on average as pregnant people would use abortion to avoid having an unwanted child, increasing aggregate living circumstances (Gruber et al. 1999). To identify if this change bears out, I estimated a series of regression analogous to those from Equation (2) looking at a variety of maternal characteristics. As shown in **Appendix Table A9** when looking at the mother's demographics, I find a reduction in the age at first birth as well as increase in the number of prior live births and the number of prior terminations. In terms of maternal socioeconomic characteristics, I find that a 100-mile increase in the driving distance reduces the likelihood of receiving support from WIC during pregnancy and reduces the likelihood that the mother has a bachelor's or advanced degree. Taken together, these changes in maternal characteristics indicate a shift in the composition of people who give birth where first-time mothers are younger and mothers overall have more prior children, are more likely to have had an abortion before, are less likely to receive nutritional support during pregnancy, and are less educated, all of which could negatively affect the health of the infant and mother.

As shown above, increases in the driving distance to the nearest abortion provider increase birth rates by 2.1%. Some of this increase could be due in part to individuals who are no longer able to space out their pregnancies as abortion access diminishes. The American College of Obstetricians and Gynecologists recommends at least 18 months between pregnancies with shorter pregnancy intervals, especially those less than 18 months, found to be medically associated with poor infant and maternal outcomes including low birth weight, pre-term delivery, congenital defects, perinatal mortality, and maternal anemia (Beyene et al. 2025; Wang et al. 2022). Further, Gemmill and Lindberg (2013) find that short pregnancy intervals are more common among individuals experiencing an unintended pregnancy and show that preventing unintended pregnancies would reduce the percentage of short pregnancy intervals. To understand if changes in birth spacing are driving my results, I estimate a model analogous to Equation (2) for three birth spacing outcomes: interval since last birth in months, interval since last pregnancy in months, and an indicator for a short (less than 18 months) interval since last pregnancy. In **Appendix Table A10** I show that a 100-mile increase in the driving distance to the nearest abortion facility decreases the interval between pregnancies by 0.3 months (0.7% relative to the mean). While the intensive effect is small in magnitude, I find a 2.3% increase in the likelihood that individuals will have a short interval between pregnancies. Therefore, it is likely that the reductions in birth spacing, specifically an increase in short interpregnancy intervals, is partially driving the increase in poor infant and maternal outcomes that accompanies the increase in driving distance to the nearest abortion provider.

Turning towards the individual results, I find that a 100-mile increase in driving distance to the nearest abortion facility increases infant and fetal mortality due to fetal developmental complications by 22.7% and 30.6%. Since these complications are diagnosed prenatally, the period in which pregnant individuals who have access to abortion can decide to terminate a nonviable pregnancy, the increase in fetal and infant mortality due to placenta, umbilical cord, and membrane complications likely reflects a change in who has access to abortion.

As the driving distance to the nearest abortion facility increases, there will be a group of pregnant individuals who are no longer able to obtain an abortion even if their fetus is diagnosed with a terminal condition. A subset of these pregnancies then end in a spontaneous termination (i.e. a fetal death). An analogous argument can be made for the 28% increase in congenital heart disease found in live births. In countries where abortion access is limited there is a higher share of live births with congenital heart disease (Bakker et al. 2019). As such, the increase in congenital heart disease that I find likely reflects in part a reduction in abortions of fetuses that have been prenatally diagnosed with congenital heart disease.

While I do find that the driving distance to the nearest abortion facility increases the incidences of gestational diabetes and perineal laceration, due to data constraints, I am unable to fully comment on the effect that changes in abortion access has on maternal health. Because the data on maternal health only includes individuals that experienced a live birth, I am unable to evaluate the effect of an increase in driving distance to the nearest abortion facility on individuals who experienced a fetal death. It is possible that, like the compositional changes in births, the increase in driving distance changed the composition of individuals who experienced a fetal death such that some of the adverse effects on maternal health of that increase in driving distance are distributed in the sample experiencing fetal deaths. In general, gestational hypertension and diabetes are medically associated with an increased risk of placenta, umbilical cord, and membrane developmental complications (Menter et al. 2024; Dubetskyi et al. 2023). If the increase in driving distance increased gestational hypertension and diabetes for individuals that experienced a fetal death due to fetal developmental complications, I am not able to capture that increase in my data. Thus, there may be detrimental health effects of increases in driving distance for pregnant individuals that I am unable to illustrate here.

6.2 Change in the Experience of Pregnant People

Pregnant individuals who are carrying an unplanned or riskier pregnancy and who no longer have access to abortion services may experience higher levels of stress during their pregnancy. Individuals experiencing an unwanted pregnancy are at an increased risk of depression during pregnancy, postpartum depression, and interpersonal violence (Nelson et al. 2022). Additionally, all pregnant individuals regardless of if they are currently seeking an abortion may experience an increase in stress as their choices regarding their pregnancy are constrained. Given that prior work shows that stress experienced during pregnancy negatively affects infant health (Currie et al. 2024; Persson and Rossin-Slater 2018; Almond and Currie 2011; Lauderdale 2006), increased stress during pregnancy could be a pathway for the adverse effect that increases in the distance to the nearest abortion provider has on infant health.

In particular, maternal stress has been medically associated with increased instances of post-term delivery and high birth weight. When compared to mothers with lower reported stress levels, mothers with intermediate and high stress during pregnancy experienced a higher risk of high birth weight infants by 23% and 76% respectively (Melancon et al. 2020). O'Donnell and Behie (2015) also found that mothers that were exposed to the stress associated with Australian wildfires were more likely to deliver high birth weight infants. Similarly, pregnant individuals in the U.S. that were exposed to the stress of the September 2001 terrorist attack were more likely to deliver post-term (Margerison-Zilko et al. 2015). Given this medical connection, it is possible that elevated maternal stress due to reductions in abortion access is partially responsible for the increase in post-term delivery and high birth weight I find.

In addition an increase in maternal stress, reductions in abortion access (through an increase in the driving distance to the nearest abortion provider) can lead to delays in pregnancy-related behavioral changes, especially for individuals that are carrying an unex-

pected or unplanned pregnancy. Prenatal care, especially take-up of prenatal care in the first trimester, has been found to improve infant health (Yan 2020; Balsa and Triunfo 2015; Sonchak 2015). To investigate the effect of changes in driving distance on prenatal usage, I estimate an analogous model to Equation 2 where the dependent variable is one of three measures of prenatal care (an indicator for any prenatal care, an indicator for beginning prenatal care in the first trimester, and the number of prenatal visits)[26] In **Appendix Table A1** I find that as driving distance increases there is an increase in the overall take-up of prenatal care (around a 0.3% increase for a 100-mile increase in driving distance) but the magnitude of the effect is not economically or clinically meaningful. However, I find a reduction in the likelihood of beginning prenatal care during the first trimester (around 4%). There is also a 0.9% reduction in the total number of prenatal visits, likely reflecting the reduction in first trimester visits. The reduction in prenatal care in the first trimester is potentially related to an increase in individuals carrying unplanned pregnancies since there is a chance those individuals do not recognize they are pregnant until later in the pregnancy. Further since early take-up of prenatal care has been found to be one of the more meaningful ways that prenatal improve birth outcomes (Yan 2020), this reduction in first semester prenatal care usage could be partially responsible for the adverse effect that changes in the driving distance has on infant health.

Changes in abortion access can also have behavioral responses that are not recorded in the natality data. If, due to higher stress level, pregnant individuals change their diet in such a way that it reduces that intake of key nutrients, they and their infants could be at an increased risk of certain health complications. For instance, low levels of folate (which is found naturally in foods like leafy greens and legumes or taken as a prenatal supplement in the form of folic acid) have been found to be medically associated with an increased risk of congenital heart disease (Qu et al. 2024). Further, increased stress levels

[26] The number of prenatal visits appears in the natality data starting in 2014, so this model only includes observations from 2014-2019.

may manifest in physical symptoms that are not recorded in the natality data or may not manifest as a physical symptom at all. Similarly, if there is an increase in unexpected or unplanned pregnancies, individuals may delay changing their smoking and drinking habits if they discover that they are pregnant later in their pregnancies. Thus, while I am unable to directly quantify it, changes in the experiences of pregnant people as the driving distance to the nearest abortion facility increases are likely responsible for some of the adverse infant and maternal health effects.

7 Discussion

Several of the results I find when the driving distance to the nearest abortion provider increases either complement or influence each other, underscoring the widespread effect that changes in abortion access can have on infant and maternal health. The increase in the incidence of infants born post-term naturally relates to the increase in high birth weight infants (though the effect remains when conditioned on not being born post-term) and maternal perineal laceration. Similarly, a common complication of gestational diabetes is high birth weight since glucose can stimulate fetal growth if it passes the placental barrier (Waldman 2023). The connected, if not causal, relationship between several of these health outcomes highlights the how reductions in abortion access may increase the intensity with which some pregnant individuals have to interact with the healthcare system.

The adverse effects on high birth weight, post-term delivery, and congenital heart disease I find have some precedence in the broad infant health literature. In general, it is difficult to compare the magnitude of the effects on high birth weight and post-term delivery I found to the effects of other policies or characteristics since both outcomes are relatively understudied. However, my effect (1.9% increase in high birth weight) is smaller than the 17.4% increase (1.5 percentage point increase compared to the 0.086 full sample mean) in high birth weight that mothers working in a moderate-intensity occupation during pregnancy

experienced compared to mothers working in light-intensity occupations (Dave and Muzhe 2022), likely since individuals are exposed to the physical requirements of their occupation near daily. Conversely, prior work has similarly found that gestational limit abortion bans increase the incidence of other congenital defects (Mellquist et al. 2024; Elmore et al. 2024). In a simulation of if abortion was completely banned throughout the United States, Miller et al. (2023) predicted that there would be a 53.7% increase in congenital heart disease. The 28% increase I find when driving distance increases 100 miles, is smaller since a national ban would be a much larger shock to abortion access than changes in driving distance.

The adverse effects on infant birth outcomes as driving distance increase can have lasting implications. Infants born with high birth weights are at an increased risk of childhood obesity, hypertension, and diabetes (Magnusson et al. 2021) and mothers may experience a more complicated labor and delivery process. Infants delivered post-term have a higher risk of also being high birth weight (and are subject to the aforementioned effects). Mothers that give birth post-term are at higher risk of perineal lacerations, unplanned caesarean deliveries, endomyometritis (inflammation of the inner and outer layers of the uterus), and postpartum hemorrhage (Caughey et al. 2007; Caughey and Bishop 2006). While medical advancements mean that most infant born with congenital heart disease survive into adulthood, most infants with these conditions require some sort of medical intervention (ranging from cardiac surgery and catheterization to less invasive in-patient treatments) early in life. If not planned for, an increase in infants born with congenital heart disease can place a heavier burden on the health care system especially as these conditions become chronic and require management for the rest of the individual's life.

Unlike prior work that evaluated the effect of abortion bans (Gemmill et al. 2025; Singh and Gallo 2024; Gemmill et al. 2024) I do not find that a change in driving distance to the nearest abortion provider increases all-cause infant mortality. Abortion bans or gestational age limits likely have a larger effect on infant and maternal health since the bans are more

likely to effect other aspects of maternal and reproductive health, such as provider behavior, in a way that changes in driving distance do not. Since abortion bans likely affect the maternal and fetal care for all pregnancies it follows there that would be a larger effect on all-cause infant mortality. However, I do find evidence of a 22.7% increase in infant mortality due to fetal developmental complications and a 13.9% increase due to premature birth. I also document that a 100-mile increase in driving distance increases fetal mortality due to fetal developmental complications by 30.6%. Mine is the first paper to demonstrate any effect of abortion restrictions on fetal mortality.

As stated earlier, the increase in infant and fetal mortality that I find likely largely represents a substitution away from obtaining an abortion and towards carrying the pregnancy to term and experiencing an infant death or carrying the pregnancy to a spontaneous termination in the form of a fetal death. This substitution has potential mental and physical ramifications for parental health. Though the direct comparisons of pregnant people who obtain an abortion after fetal complications are discovered to those who experience a fetal death is relatively rare in the literature, Salvesen et al. (1997) finds that women that obtained an abortion after a diagnosis of fetal anomalies were statistically less likely to experience depressive symptoms than women who experienced a fetal death after the diagnosis. More generally, in the period directly following an infant or fetal death, parents report higher levels of psychological distress and overall worse health (Heazell et al. 2016; Song et al. 2010). Mothers with a prior poor pregnancy outcome, such as a fetal death, are at an increased likelihood of health challenges during future pregnancies. Armstrong (2004) reports that 88% of mothers that experienced a previous perinatal loss (fetal death) had elevated levels of stress related to that loss during a subsequent pregnancy. Conversely, Biggs et al. (2017) finds that, in general, women who obtained an abortion had similar if not better mental heath outcomes than women that were denied a wanted abortion. Therefore, there are downstream effects, some of which are lasting, on both the mental and physical health of mothers that experience this potential substitution from an abortion to a fetal or

infant death.

In a similar vein as prior work (Londoño-Vélez and Saravia 2025; Gardner 2024; Lu and Slusky 2016), I find that reduction in abortion access have an adverse affect on maternal health, specifically an increase in gestational diabetes and perineal laceration. Comparing my results directly to Gardner (2024) I find that the 100-mile increase in driving distance leads to a smaller increase in gestational hypertension (3.8% compared to the 9% increase in Gardner (2024)) though both estimates are statistically insignificant. In results available upon request, I again find a smaller effect on chronic hypertension (9.9% compared to 16%). The difference in the results likely follows from differences in the estimation models since I do not include state-time fixed effects and instead include several county-level controls for reasons stated earlier. The increase in perineal laceration has yet to be documented in the abortion literature.

The increase in gestational diabetes and perineal laceration can also have several short and long-term health consequences. In the short-term and directly related to the pregnancy, mothers with gestational diabetes are at an increased risk of excessive fetal growth (evident in the increase in the prevalence of high birth weight infants that I also find), serious perinatal complications, and other pregnancy-related hypertensive disorders (McIntyre et al. 2019; Crowther et al. 2005). In the longer term, pregnant individuals that experienced gestational diabetes are at an increased risk of gestational diabetes in subsequent pregnancies, Type 2 diabetes overall, and cardiovascular disease and infants born to individuals with gestational diabetes are more likely to experience Type 2 diabetes, obesity, and other co-comorbidities (Sheiner 2020). In general, less severe cases of perineal laceration (first and second-degree tears) that are treated promptly often do not have lasting effects, but third and fourth-degree tears can lead to incontinence and pelvic floor dysfunction (Ramar et al. 2025). Regardless of the severity of the tear, individuals that experience perineal laceration report adverse effects on their well-being and ability to care for their infant in the immediate weeks post-delivery.

While the effect on the individual measures of maternal health except for gestational diabetes and perineal laceration is statistically insignificant, I do find a statistically significant 0.0079 standard deviation reduction in the maternal health index for a 100-mile increase in driving distance (**Table 6**). The magnitude on this index, which is larger than that of the birth outcome index, suggests a potential effect on maternal health outside of the increase in gestational diabetes and perineal laceration. As mentioned above, it is possible that an adverse effect on maternal health is concentrated among mothers that experience a fetal death and who are not measured in the natality data. Additionally, the measures of maternal health in the natality data tend to be underreported (Backes et al. 2020) which empirically could inhibit my ability to find statistically significant effects. Further research using electronic health records, which will also have a larger range of maternal health measures, is necessary to solidify the complete effect of changes in driving distance on maternal health. Finally, it is also possible that changes in driving distance to the nearest abortion provider alone may not be large enough change to affect maternal health. Models that use more recent data and that incorporate both the post-*Dobbs* abortion bans and changes in driving distance (like in Myers et al. (2025)) may be more suited to find the effect of mothers potentially carrying more risky pregnancies to term.

To state the effect that changes in driving distance have on these health measures in tangible terms, I employ a back of the envelope counterfactual exercise, where the counterfactual was if all individuals lived within 50 miles of an abortion facility. 50 miles would likely be the upper bound of the driving distance before driving to the nearest facility would be considered an undue burden, the standard at which abortion restrictions were judged under *Roe v. Wade* and *Planned Parenthood v. Casey*. I estimated the average distance reduction that would need to occur for all individuals/counties to be within 50 miles of an abortion facility for each data source and evaluated the effect on that data source's outcomes at that average distance. If the driving distance to the nearest abortion facility changed so that all counties were within 50 miles of a facility, 814 fetal deaths (due to fetal developmen-

tal complications) and 728 infant deaths (due to premature birth and fetal developmental complication) could have been substituted to an abortion allowing the pregnant person more control over their pregnancy and subsequent personal health. Similarly, the average driving distance change required so each individual would live within 50 miles of an abortion facility would result in 10,293 fewer post-term deliveries, 4,689 fewer high birth weight infants, 575 fewer infants with congenital heart disease, 6,855 fewer cases of gestational diabetes, and 3,399 fewer cases of perineal laceration.

While I find that increases in the distance to the nearest abortion provider adversely affect infant and maternal health, the period of this study ends prior to the overturning of Roe v. Wade, meaning that the effects found here were estimated during the period when there was federal protection for abortion. Given the increasingly fractured landscape of abortion access today, it is possible that these effects may have changed. Another potential limitation of this work is that national natality and mortality data has been shown to be subject to underreporting, specifically in regard to maternal mortality (MacDorman and Declercq 2018). Further work should be done using more recent state natality and mortality records and electronic health records, which can be more detailed and may not suffer from similar mortality underreporting, to confirm and further explore the ramifications of changes in the driving distance to the nearest abortion facility.

8 Conclusion

As access to abortion becomes increasingly more varied across states, especially after the Supreme Court's decision in *Dobbs v. Jackson Women's Health Organization*, it is vital to understand how differences in access affect the health of both mothers and their infants. Using data from 2009 to 2019, I estimate the effect of the driving distance to the nearest abortion facility on infant health (including birth outcomes and infant and fetal mortality rates) and maternal health. I find that a 100-mile increase in the driving distance to the

nearest abortion provider increases the incidence of post-term deliveries by 5.2%, high birth weight by 1.9%, and congenital heart disease by 28%. I show that a 100-mile increase in the driving distance leads to a 30.6% increase in fetal mortality due to fetal development complications and a 13.9% and 22.7% increase in infant mortality due to premature birth and fetal developmental complications, respectively. I also find a 4.2% increase in gestational diabetes and a 14% increase in perineal laceration. The average change in driving distance so that all individuals lived within 50 miles of an abortion facility would result in approximately 1,500 pregnancies that could been ended in an abortion instead of a fetal or infant death.

Overall, increases in the driving distance to the nearest abortion provider, a proxy for abortion access, adversely affects infant and maternal health at birth and increases the fetal and infant mortality rates. The health effects of changes in driving distance to the nearest abortion facility found here provide guidance for shaping public policy in the wake of the increasingly fragmented abortion access landscape in the United States. It is also likely that the adverse effects I find in my pre-*Dobbs* setting are a lower bound of the effects in a post-*Dobbs* landscape. It is likely that the total abortion bans that have been implemented in 13 states (as of March 2026) will affect not only driving distance to the nearest abortion provider but also provider behavior as providers may become more cautious in the types of care they suggest and practice. In response to the bans, the healthcare infrastructure in those states should be expanded to ensure that they have the capacity to care for an increase in infants and mothers experiencing health challenges surrounding pregnancy and childbirth, some of which, like the increase in congenital heart disease, may require long-term care to manage. Further, to potentially mitigate some of the adverse health effects of increases in driving distance to the nearest abortion facility, states with abortion bans could ensure that there are exemptions for nonviable pregnancies or pregnancies that pose a serious health risk to the infant or mother.

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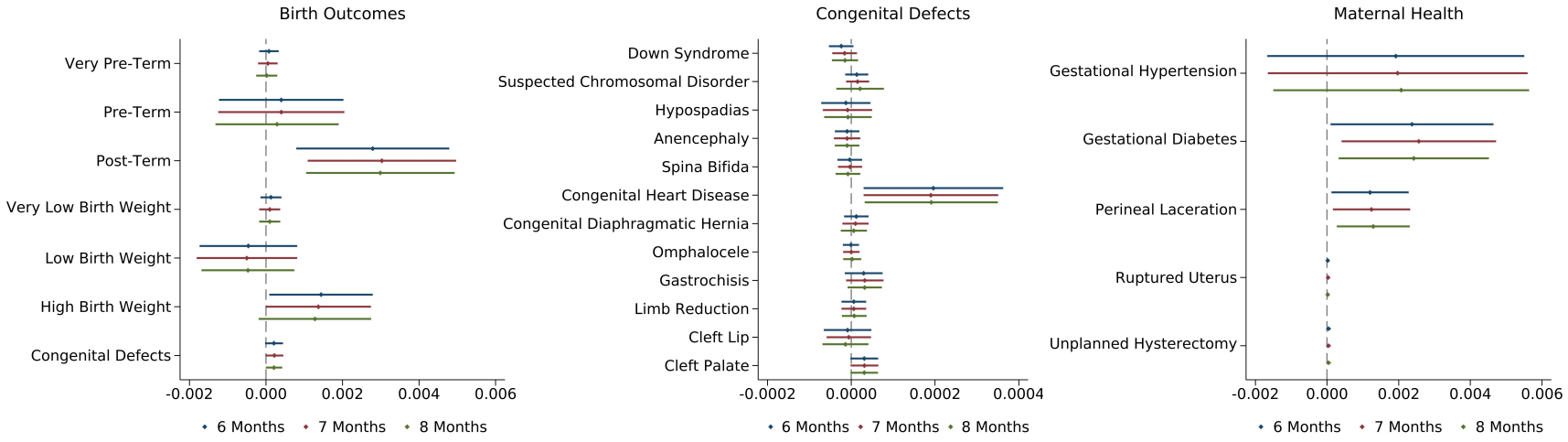
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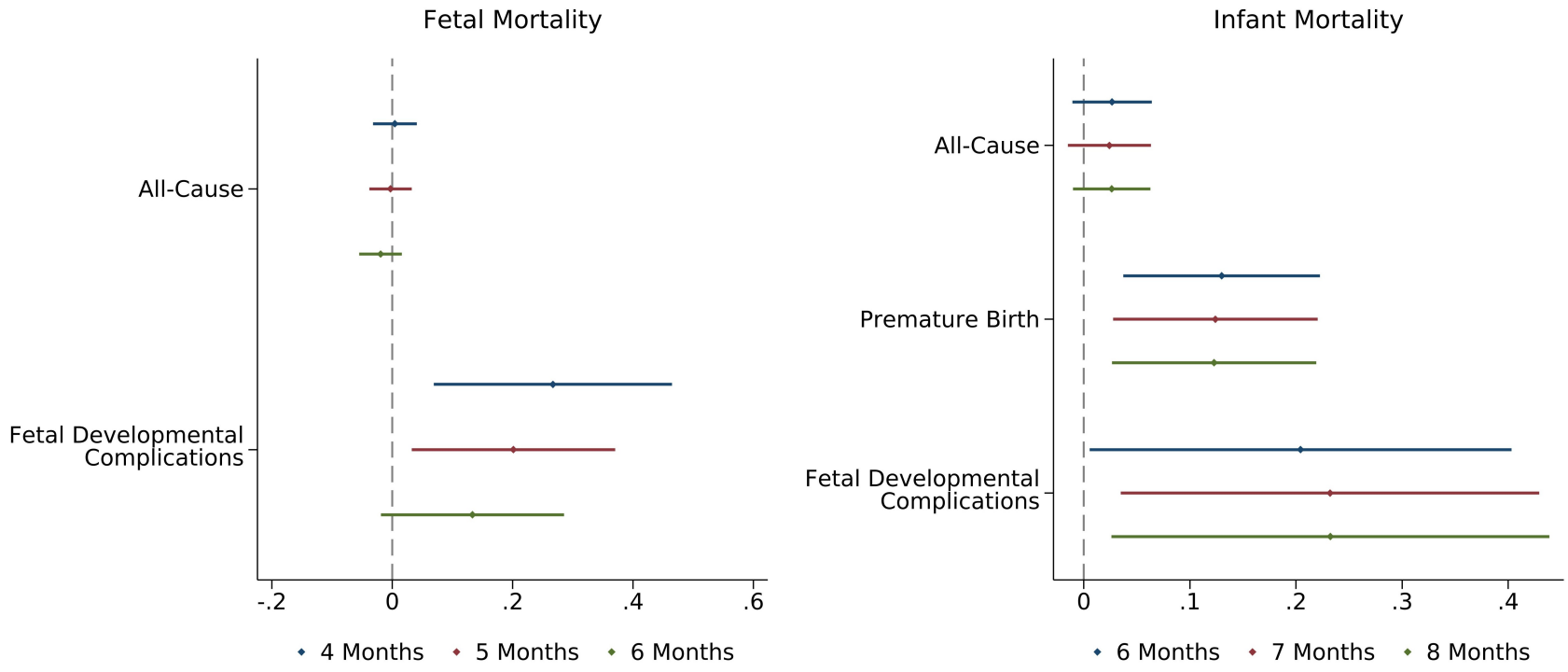
Appendix Figures

Figure A1: Effect of Driving Distance (Months Prior to Birth or Death) - Individual-Level Outcomes



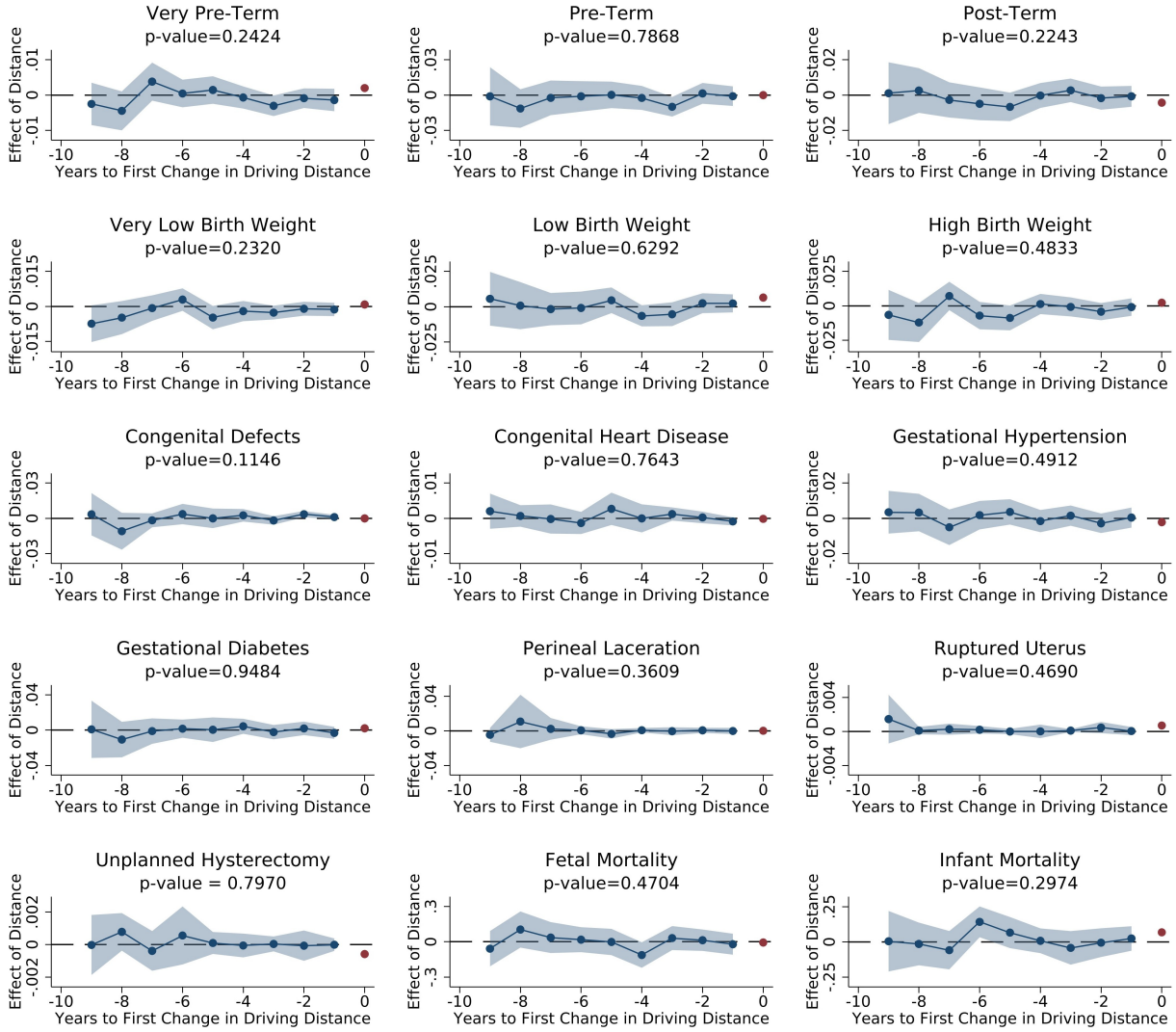
Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty.

Figure A2: Effect of Driving Distance (Months Prior to Birth or Death) - County-Level Outcomes



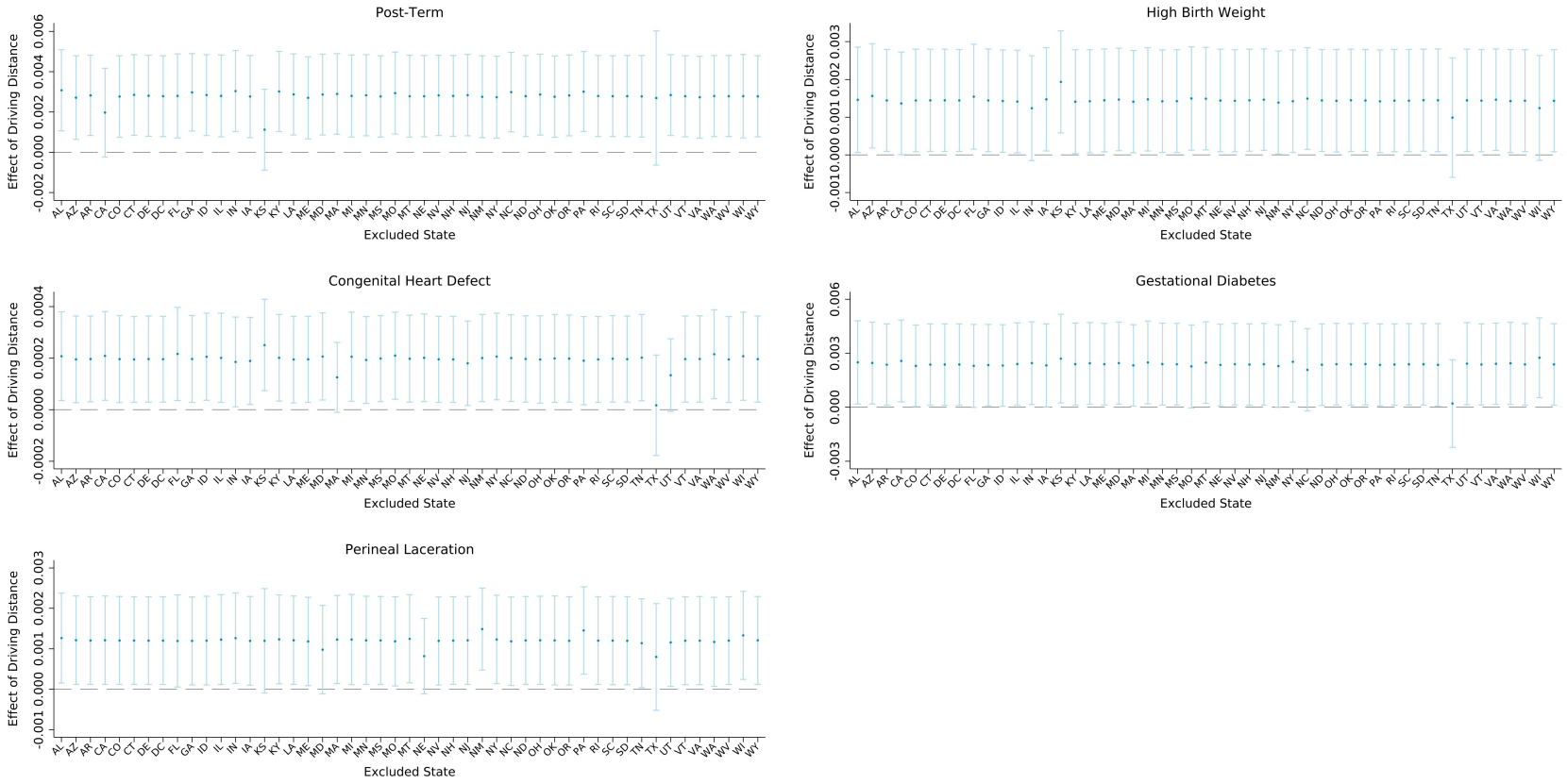
Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable the sum of live births and fetal deaths for fetal mortality and number of live births for infant mortality.

Figure A3: Pre-Period Event Studies



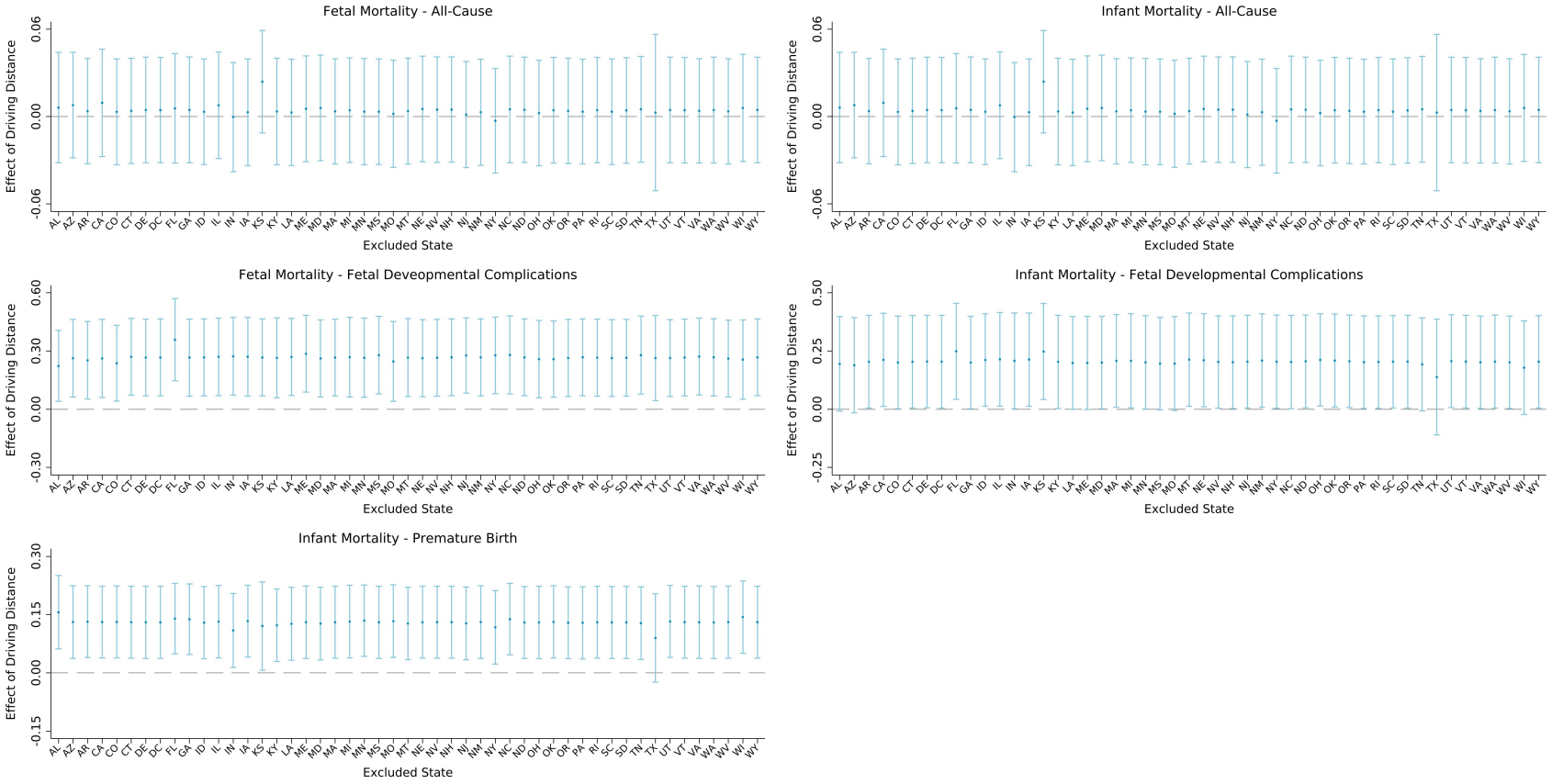
Note: Estimates are county-level Callaway and Sant'Anna event studies. Birth outcomes and maternal health event studies include ccontrols for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. p-value for null hypothesis that all the ATTs for the pre-treatment periods are equal to zero.

Figure A4: Leave-One-Out State - Individual Outcomes



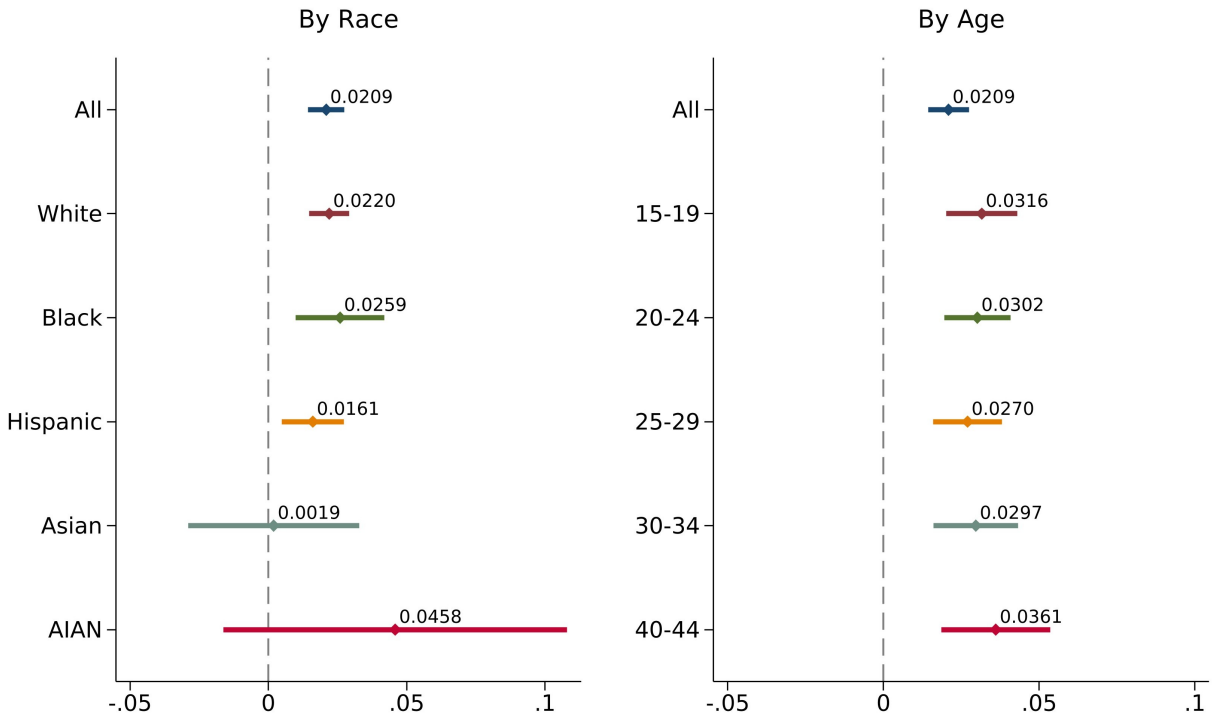
Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility and are from linear models that include month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty.

Figure A5: Leave-One-Out State - Mortality Outcomes



Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility and are from Poisson models that include month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable is the county female 15-44 population.

Figure A6: Effect of Driving Distance on Birth Rates



Note: Estimates are the effect of a 100-mile increase in the driving distance to the nearest abortion facility and are from models that includes month, mother's county of residence, and state-year fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Distance measure is from six months prior to the birth month.

Appendix Tables

Table A1: Effect of Driving Distance on Access to Other Healthcare

	Maternity Ward Closure	Any Prenatal Care	1st Trimester Prenatal Care	Total Prenatal Visits
VARIABLES	(1)	(2)	(3)	(4)
Distance to nearest provider (per 100 miles)	0.0020	0.0031**	-0.0278***	-0.1019***
	(0.0018)	(0.0015)	(0.0122)	(0.0386)
R-squared	0.0073	0.0004	0.0415	0.0004
Dependent Variable Mean	0.0037	0.9852	0.6783	11.4726
Percent Change	54.05%	0.31%	-4.1%	-0.89%
Observations	23,187,629	39,209,314	39,843,447	21,678,517

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Maternity ward closure model only includes observations from 2012–2017. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A2: Sensitivity Analyses

VARIABLES	First Births (1)	Repeat Births (2)	Without Large Area Counties (3)
Post-Term	0.0024**	0.0030***	0.0024**
	(0.0012)	(0.0010)	(0.0011)
High Birth Weight	0.0015***	0.0013*	0.0016***
	(0.0008)	(0.0007)	(0.0007)
Congenital Heart Disease	0.0002**	0.0002**	0.0002**
	(0.0001)	(0.0001)	(0.0001)
Gestational Diabetes	0.0016*	0.0027**	0.0027**
	(0.0010)	(0.0013)	(0.0012)
Perineal Laceration	0.0022**	0.0007**	0.0011**
	(0.0011)	(0.0003)	(0.0006)

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A3: Effect of Driving Distance on Infant Birth Outcomes – No Controls

VARIABLES	Birth Outcomes Index (1)	Very Pre-Term (2)	Pre-Term (3)	Post-Term (4)	Very Low Birth Weight (5)	Low Birth Weight (6)	High Birth Weight (7)	Congenital Defects (8)	Congenital Heart Disease (9)
Distance to nearest provider (per 100 miles)	-0.0016***	0.00012	0.00057	0.00244***	0.00022	-0.00033	0.0017**	0.00017	0.00016**
	(0.0005)	(0.0001)	(0.0009)	(0.0010)	(0.0001)	(0.0007)	(0.0007)	(0.0001)	(0.0001)
R-squared	0.00004	0.00003	0.00019	0.00017	0.00002	0.00004	0.00008	0.00001	0.00002
Dependent Variable Mean		0.0120	0.1167	0.0532	0.0141	0.0814	0.0771	0.003	0.0007
Observations	37,668,541	40,895,900	40,895,900	40,895,900	40,893,408	40,893,408	40,893,408	37,746,486	37,746,486

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects. Birth outcomes index is the average of the individual's reoriented and standardized outcomes. Very preterm is between 28 and 32 weeks of gestation. Preterm is less than 37 weeks of gestation. Post-term is greater than 42 weeks of gestation. Very low birth weight is less than 1,500 grams. Low birth weight is less than 2,500 grams. High birth weight is greater than 4,000 grams. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A4: Effect of Driving Distance on Maternal Health– No Controls

VARIABLES	Maternal Health Index (1)	Gestational Hypertension (2)	Gestational Diabetes (3)	Perineal Laceration (4)	Ruptured Uterus (5)	Unplanned Hysterectomy (6)
Distance to nearest provider (per 100 miles)	-0.00824**	0.00157	0.00225**	0.00093*	0.00002	0.00004
	(0.0030)	(0.0017)	(0.0011)	(0.0005)	(0.00002)	(0.00003)
R-squared	0.00135	0.00438	0.00111	0.00006	0.000003	0.000004
Dependent Variable Mean		0.0509	0.0559	0.0085	0.0003	0.0004
Observations	37,272,914	40,933,165	37,885,502	37,786,898	37,759,388	37,786,898

Note: Distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects. Maternal health index is the average of the individual's reoriented and standardized outcomes. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A5: Effect of Driving Distance on Fetal and Infant Mortality - Conditional Effect

VARIABLES	All-Cause (1)	Heart Condition (2)	Still Births (3)	Premature Birth (4)	Sepsis (5)	Fetal Developmental Complications (6)	Down Syndrome (7)
Panel A: Fetal Mortality							
Distance to nearest provider (100 miles)	-0.0173	-0.5656	-0.1611	0.3502		0.2467**	-0.6645
	(0.0191)	(0.4864)	(0.1012)	(0.3073)		(0.0992)	(0.4641)
Observations	369,129	23,279	138,930	31,075		132,183	18,538
Number of Counties	2,945	388	2,320	518		2,207	309
Panel B: Infant Mortality							
Distance to nearest provider (100 miles)	0.0073	0.0685		0.1081**	-0.0397	0.1820*	-0.2817
	(0.0192)	(0.0646)		(0.0469)	(0.0978)	(0.1011)	(0.2744)
Observations	360,001	241,457		292,583	181,809	201,970	50,403
Number of Counties	2,981	1,925		2,327	1,447	1,610	402

Fetal mortality distance measure is from four months prior to month of fetal death. Infant mortality distance measure is from six months prior to month of birth. Each model includes year, month, and mother's county of residence fixed effects. Additional controls include each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable is the number of live births and fetal deaths (fetal mortality) and the number of live births (infant mortality). The following ICD-10 codes were used to identify each cause of death: heart condition (Q24 & P29), still births (P95), premature birth (P072 and P073), sepsis (P36 and A41), fetal developmental complications (P02), and down syndrome (Q90). Since fixed effects Poisson models drop counties where all observations are zero, the sample size varies for each model and includes only counties that have had at least one fetal (infant) death during the period. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A6: Effect of Driving Distance on Infant Birth Outcomes – Distance Indicators

VARIABLES	Very Pre-Term (1)	Pre-Term (2)	Post-Term (3)	Very Low Birth Weight (4)	Low Birth Weight (5)	High Birth Weight (6)	Congenital Defects (7)	Congenital Heart Disease (8)
Distance 50-100 miles	-0.00013	-0.00026	-0.00059	-0.0001	-0.00004	0.00043	0.00026*	0.00016**
	(0.00022)	(0.00101)	(0.00099)	(0.00018)	(0.00053)	(0.00058)	(0.00014)	(0.00007)
Distance 100-150 miles	0.00008	0.00038	-0.00069	0.00025	0.00035	0.00264***	0.00011	0.0001
	(0.00029)	(0.00141)	(0.00117)	(0.00026)	(0.00074)	(0.00092)	(0.00024)	(0.0001)
Distance 150-200 miles	0.00023	0.00371***	0.00666**	-0.00026	0.00152	0.00043	-0.00007	<0.00001
	(0.00044)	(0.00141)	(0.00301)	(0.00034)	(0.00105)	(0.00112)	(0.00022)	(0.00013)
Distance over 200 miles	0.00053	-0.0003	0.00836***	0.0006	-0.00343*	0.0042**	0.00074**	0.00066***
	(0.00039)	(0.00257)	(0.00286)	(0.00045)	(0.00198)	(0.0021)	(0.00035)	(0.00024)
R-squared	0.00004	0.00021	0.00027	0.00002	0.00005	0.00009	0.00002	0.00004
Dependent Variable Mean	0.012	0.1167	0.0532	0.0141	0.0814	0.0771	0.003	0.0007
Observations	40,394,452	40,394,452	40,394,452	40,391,907	40,391,907	40,391,907	37,259,376	37,259,376

Note: Distance 0-50 miles is the reference, and distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Very preterm is between 28 and 32 weeks of gestation. Preterm is less than 37 weeks of gestation. Post-term is greater than 42 weeks of gestation. Very low birth weight is less than 1,500 grams. Low birth weight is less than 2,500 grams. High birth weight is greater than 4,000 grams. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A7: Effect of Driving Distance on Maternal Health – Distance Indicators

VARIABLES	Gestational Hypertension (1)	Gestational Diabetes (2)	Perineal Laceration (3)	Ruptured Uterus (4)	Unplanned Hysterectomy (5)
Distance 50-100 miles	0.00255	0.00099	0.00118**	-0.00001	0.00006
	(0.00239)	(0.0016)	(0.00053)	(0.00004)	(0.00004)
Distance 100-150 miles	-0.00019	0.00163	0.00018	-0.00006	0.000001
	(0.00258)	(0.00184)	(0.00054)	(0.00005)	(0.00006)
Distance 150-200 miles	-0.00207	-0.00016	0.00082	-0.00007	0.00003
	(0.00254)	(0.00138)	(0.00063)	(0.00005)	(0.00008)
Distance over 200 miles	0.00972*	0.00827***	0.00348**	0.0001	0.00016**
	(0.00503)	(0.00295)	(0.00145)	(0.00007)	(0.00008)
R-squared	0.00452	0.01241	0.00019	0.00003	0.00021
Dependent Variable Mean	0.051	0.056	0.008	0.0003	0.0004
Observations	40,431,487	37,395,271	37,300,419	37,272,914	37,300,419

Note: Distance 0-50 is the reference, and distance is from the six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A8: Effect of Driving Distance on Fetal and Infant Mortality – Distance Indicators

	All-Cause	Fetal Developmental Complications	Premature Birth
VARIABLES	(1)	(2)	(3)
Panel A: Fetal Mortality			
Distance 50-100 miles	0.0011	0.1420	
	(0.0217)	(0.0880)	
Distance 100-150 miles	0.0344	0.2698*	
	(0.0350)	(0.1382)	
Distance 150-200 miles	-0.0328	0.2671	
	(0.0606)	(0.1800)	
Distance over 200 miles	-0.0340	0.4519	
	(0.0658)	(0.5196)	
Observations	370,517	132,408	
Number of Counties	2,945	2,207	
Panel B: Infant Mortality			
Distance 50-100 miles	0.0004	0.0286	0.0797
	(0.0229)	(0.1195)	(0.0561)
Distance 100-150 miles	0.0435	0.4106**	0.1613*
	(0.0298)	(0.1651)	(0.0896)
Distance 150-200 miles	-0.0071	0.0352	0.0112
	(0.0471)	(0.2136)	(0.1323)
Distance over 200 miles	0.0763	0.7833**	0.3725**
	(0.0703)	(0.3478)	(0.1693)
Observations	365,401	202,093	292,825
Number of Counties	2,951	1,610	2,337

Note: Distance 0-50 is the reference. Distance for fetal mortality is from four months prior to birth month. Distance for infant mortality is from six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Exposure variable is the county female 15-44 population. Since fixed effects Poisson models drop counties where all observations are zero, the sample size varies for each model and includes only counties that have had at least one fetal (infant) death during the period. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A9: Effect of Driving Distance on Maternal Characteristics

	Effect	Mean	Observations
Maternal Demographics			
Mother's Age	0.0050	28.326	40,431,487
	(0.0137)		
Mother's Age at 1st Birth	-0.0524***	26.164	15,693,118
	(0.0198)		
Prior live births (n)	0.0182***	2.110	40,243,375
	(0.0038)		
Prior terminations (n)	0.0135***	0.401	40,125,117
	(0.0047)		
Maternal Socioeconomic Characteristics			
Living in a City	0.0192	0.334	40,431,487
	(0.0191)		
Married	0.0078	0.303	40,431,487
	(0.0075)		
WIC	-0.0110***	0.423	36,725,065
	(0.0030)		
Educational Attainment			
High School or Less	-0.0035	0.374	39,956,327
	(0.0082)		
Bachelor's Degree	-0.0070**	0.176	39,956,327
	(0.0034)		
Advanced Degree	-0.0055***	0.101	39,956,327
	(0.0023)		
Birth Payment Source			
Medicaid	-0.0165*	0.396	40,029,086
	(0.0095)		
Private Insurance	-0.0086	0.440	40,029,086
	(0.0086)		
Self-Pay	0.0005	0.038	40,029,086
	(0.0016)		

Note: Distance measures are from six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A10: Effect of Driving Distance on Birth and Pregnancy Intervals

VARIABLES	Birth Interval (1)	Pregnancy Interval (2)	Short Pregnancy Interval (3)
Distance to nearest provider (100 miles)	-0.0965	-0.3024***	0.0044***
	(0.0891)	(0.0933)	(0.0012)
R-squared	0.0005	0.0003	0.0002
Observations	20,937,836	20,425,947	20,425,947
Percent Change	-0.19%	-0.70%	2.33%
Dependent Variable Mean	49.829	43.448	0.189

Note: Distance measures are from six months prior to birth month. Each model includes month, year, and mother's county of residence fixed effects and controls for each county's female population race and age shares, monthly unemployment rate, logged median household income, and the share of population in poverty. Short pregnancy interval is an indicator for less than 18 months between pregnancies. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$