Downstream Effects of Post-*Dobbs* Abortion Bans: Birth Rates and WIC*

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Abstract

Abortion bans tend to impact the cohorts of women that are eligible for the supplement nutrition program WIC the most. I use synthetic difference-in-differences models and 2017-2023 monthly state-level CDC and USDA data to estimate if states with total abortion bans experience a change in birth rates and WIC participation. I find that states that implemented a total abortion ban by the start of 2023 experience a 2% increase in the overall birth rate in the first 6 months of the year and a 2.1% and 4.2% increase in monthly infant and postpartum women WIC participation respectively, leading to a total additional $8.9 million in food costs.

JEL Codes: I38, I18, J13

Keywords: abortion, Dobbs, fertility, WIC, abortion ban, Roe

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1 Introduction

Since the Supreme Court overturned the federal right to abortion with the *Dobbs* decision on June 24, 2022, there has been wide speculation how the now legal total abortion bans in several states would impact birth rates. While the *Dobbs* decision seemed poised to diminish the number of abortions in the United States, 2023 saw the highest number of abortions performed in the United States in over a decade (Maddow-Zimet & Gibson 2024). This increase coupled with the expanding availability of contraceptives (Belluck 2024b) may counteract the expected increase in birth rates.

Historically, the group that is most impacted by abortion restrictions and bans are low-income women, younger women, and women of color (Myers 2024, Jones & Pineda-Torres 2024, Sanger-Katz et al. 2021). This cohort intersects almost uniformly with Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants. Mothers that use WIC are less likely to be highly educated, employed, or married, and are more likely to be younger and to have used public assistance in the last year (Currie & Rajani 2015, Bitler & Currie 2005). Given the overlapping groups, it is possible that if these women are prevented from obtaining an abortion and see the birth to term that there will be an increase in WIC participation in states with total abortion bans. Thus, I evaluate the impact that state-level total abortion bans have on birth rates and WIC participation in states with total abortion bans.

Using monthly 2017-2023 state-level natality data and USDA WIC participation, I estimate a synthetic difference-in-differences model to evaluate the impact that total abortion bans have on the total birth rate, the birth rate by mother's educational attainment, and WIC participation. Due to the complexity of state abortion policy, I focus on the extremes, states that have implemented a total abortion ban and states that have protected abortion access. The remaining states are excluded. See **Appendix Table 1** for a list of the states included in the analysis.

I find that states with total abortion bans experience a 2% increase in the monthly birth rate relative to if the total bans were not implemented and enforced in the first 6 months of the year, driven by women whose highest educational attainment is a high school diploma. I then find a 2.1% increase in monthly infant WIC participation, driven by fully-formula fed infants, and a 4.2% increase in monthly WIC participation for postpartum (non-breastfeeding) women. The increase in WIC participation translates to an additional $8.9 million in food costs in 2023 in aggregate for states that implemented a total abortion ban by the start of 2023. Thus, the total abortion bans that were instituted after the *Dobbs* decision had a small but meaningful impact on monthly birth rates and a downstream effect on WIC participation.

I contribute to several strands of the literature, the first of which is how abortion restrictions impact fertility. Prior work has found that abortion restrictions or policies that effectively restrict abortion (i.e. TRAP laws, provider requirements, clinic closures) increase fertility (Jones & Pineda-Torres 2024, Lu & Slusky 2019, Myers 2024, Fischer et al. 2018) and do reduce recorded abortions (Lindo et al. 2020, Myers 2024). The only paper to look at the impact of the *Dobbs* decision as of yet is Dench et al. (2024). The authors find that states that implement a total abortion ban experience a 2.3% increase in fertility with larger increases occurring for younger women and women of color. I expand on their work by replicating their total birth rate finding with the full year of data and estimating the heterogenous impacts on birth rate by mother's educational attainment as a proxy for socioeconomic status.

This study also adds to the existing work that identifies how WIC participation changes due to shifts in eligibility requirements or other external shocks. Given that women, infants, and children that qualify for certain other welfare programs are automatically income eligible for WIC, several papers have found that eligibility expansion for Medicaid (Ko 2024) and SNAP (Han 2020) led to increases in WIC participation. The shift to electronic benefit transfer (EBT) cards has had mixed results with EBT cards leading to an increase in redemption of WIC benefits (Hanks et al. 2019) but reducing overall participation by pregnant women by 5.2% (Meckel 2020). There is also evidence that having a WIC clinic and a small WIC vendor in the mother's geographic area leads to an increase in WIC participation (Meckel et al. 2023, Rossin-Slater 2013). In terms of state policies, Bitler et al. (2003) found that WIC participation is higher in states that reduce the transaction costs associated with using the program and lower in states with stricter program requirements. To my knowledge, I am the first to look at how state-level abortion policies impact WIC participation.

The remainder of the paper is as follows. Section 2 provides details on abortion access in the United States and the WIC program. Sections 3 and 4 describe the data and methodology respectively. Section 5 presents the results with a discussion following in Section 6. Section 7 concludes.

2 Background

2.1 Abortion Access

For almost 50 years, the Supreme Court case *Roe v. Wade* provided federal protection for abortion access. The *Roe* decision stated that abortion could not be banned in the first trimester.[1] In June 2022, the Supreme Court overturned both *Roe* and *Casey* with its decision in *Dobbs v.*

[1] The trimester system was removed in the 1992 Supreme Court case *Planned Parenthood v. Casey* which established that states could not impose a restriction that would create an "undue burden" on a woman seeking an abortion and created a more nuanced definition of fetal viability (Planned Parenthood of Southeastern Pennsylvania v. Casey 1992).

Jackson Women's Health Organization. In the ruling, the Court gave states the autonomy to decide the legality of abortion within their borders. With this ruling, the Court removed any federal protection for abortion access.

Since the ruling in June 2022, the landscape of abortion access across the country has become even more fragmented and complex. Prior to the *Dobbs* decision, 13 states passed so-called "trigger laws" which would, in the event that *Roe* was overturned, ban abortion immediately. As of March 2025, 12 states have completely banned abortion (Guttmacher Institute 2025). Several more states have implemented near-total bans as well. On the other hand, 24 states have protected abortion access through either state statutes, state supreme court rulings, or voter referendums (Center for Reproductive Rights 2025).

2.2 WIC

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a federal nutritional program that provides support to pregnant, postpartum, and breastfeeding women, infants, and children up to 5 years old. The program is a federally funded but is administered primarily at the state level. Participants in WIC receive checks or vouchers (most states now use electronic benefit transfers) to purchase qualified food. In fiscal year 2023, there were 6,576,000 annual participants with an average monthly food cost per person of $56.09 (Food and Nutrition Service 2024b). Overall, WIC has been found to improve birth outcomes (Currie & Rajani 2015, Hoynes et al. 2011, Bitler & Currie 2005) and increase prenatal care (Bitler & Currie 2005).

To qualify for WIC support, eligible applicants must satisfy both an income and nutrition risk requirement. To be income eligible for WIC, applicants cannot have an income that is above the standard set by their state. The income standard is anywhere between 100% and 185% of the federal poverty line (Food and Nutrition Service 2024a). However, applicants that are already enrolled in certain other federal welfare programs (including SNAP, Medicaid, and TANF) are deemed automatically income eligible, also known as adjunctive eligibility (Food and Nutrition Service 2024a). Finally, applicants must prove that they have a nutrition risk by seeing a certified health professional. This examination can be done either at a WIC clinic or at another qualified health professional. Being at nutrition risk involves either having a medical condition (e.g. anemia, underweight, prior poor pregnancy outcome) or a dietary condition such as a poor diet or food insecurity (Food and Nutrition Service 2024a). In practice, Bitler et al. (2003) found that essentially all applicants that satisfy the income requirements would meet the nutritional risk criteria.

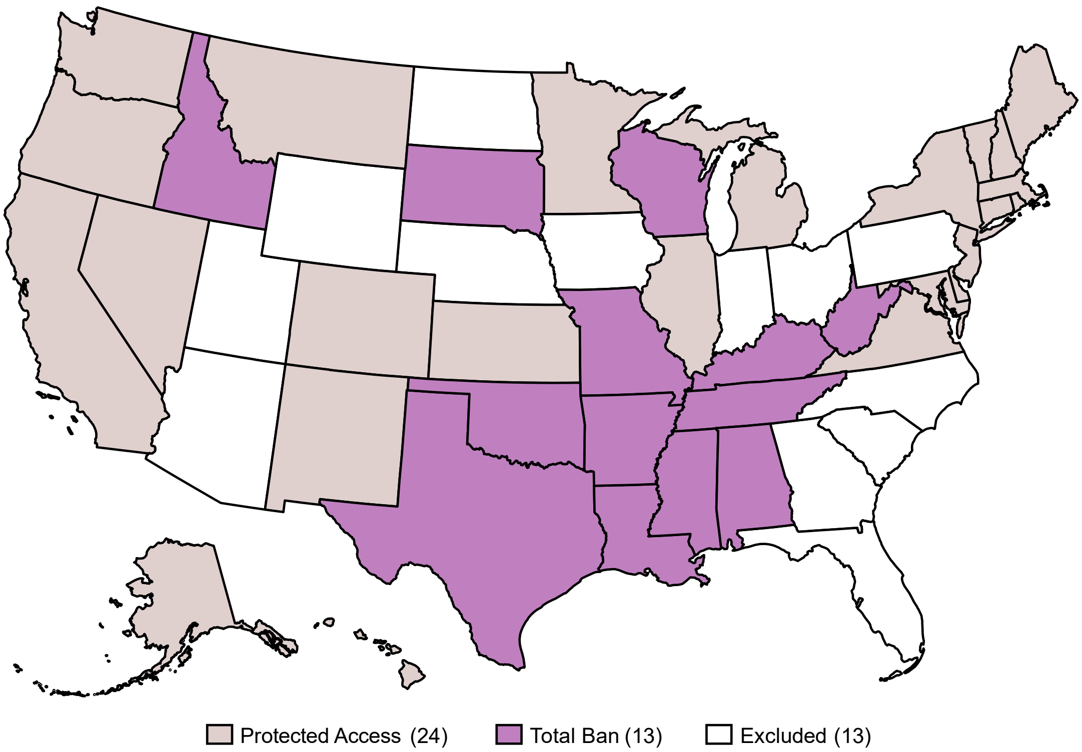
Though WIC is federally funded, it is not an entitlement program, so there is a possibility that not every eligible individual will receive WIC benefits (Food and Nutrition Service 2023a). Due to its financing structure, some states' WIC agencies do not have enough funding to provide benefits to everyone who applies so there is a wait list. Those WIC agencies then use priority systems to grant benefits to the most at risk population first (Food and Nutrition Service 2023b). If WIC participation increases due to the implementation of total abortion bans, it is possible that more states will have to either implement or expand the wait list.

3 Data

3.1 Sample Construction

Since there is wide variation and complexity in state-level abortion restrictions, I follow Dench et al. (2024) and only focus on states that either protect abortion access or who have implemented a total abortion ban. While excluding states with more complex abortion policies (e.g. 6-week abortion, state supreme court injunctions preventing a ban from implementation), may underestimate the full impact of abortion bans on birth rates and WIC participation, comparing the two extremes allows for a cleaner identification strategy. Using Dench et al. (2024)'s characterization, which is based on information from the Center for Reproductive Rights, the Guttmacher Institute, and specific state statutes, there are 24 states that protect abortion access and 13 states that implemented a total abortion ban.[2] The remaining 13 states are excluded from my sample.[3] The states included in my sample are shown in **Figure 1** below and in **Appendix Table A1**.

Figure 1: States' Abortion Status



Note: Classification is based on Dench et al. (2024).

3.2 Birth Data

[2] These classifications reflect the status of abortion access for each state in 2022.

[3] Washington DC and Puerto Rico and excluded for similar reasons.

Data on each state's total number of births and births by educational attainment from 2017 to 2023 were obtained from the CDC National Center for Health Statistics' WONDER natality database. Only live births are included in the database. The data is obtained at the monthly state-level. Births by mother's educational attainment were broken down into 5 categories: less than high school (includes "8th grade or less" and "9th through 12th grade with no diploma"), high school diploma (includes GED completion), some college (includes "Some college credit, but not a degree" and "Associate degree"), bachelor's degree, and graduate degree (includes master's, doctoral, and professional degrees). Births with unknown or unreported mother's educational attainment were excluded from this model. I then use annual state-level population estimates from the U.S. Census Bureau to calculate birth rates.[4] Each birth rate was seasonally adjusted.[5]

3.3 WIC Data

State-level WIC participation data was retrieved from the USDA Food and Nutrition Service's WIC Monthly Data – State Level Participation by Category tables. The data are provided in fiscal year format spanning from October to September meaning the data in my sample span from fiscal year 2017 to fiscal year 2024. Data from fiscal years 2023 and 2024 are still preliminary.[6]

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[4] Birth rates were calculated by dividing the number of births in the category (i.e. births to mother with high school education) by the female population between 15 and 44 years old then multiplying by 1,000. Each birth rate is then births per 1,000 women ages 15 to 44 in the state.

[5] Birth rates were regressed on a vector of month dummy variables. The residual from each regression was taken to be the seasonally adjusted birth rate. This process was completed for each individual state.

[6] In calendar year terms data from October 2022 to December 2023 are considered preliminary. However, the data is updated on a quarterly basis, so data from late 2022 and early 2023 is closer to their finalized totals than data from the last quarter of 2023. Data was obtained on September 13, 2024.

I look at several different measures of monthly WIC participation. I first look at the overall participation total, which includes all women, infants, and children who are participating in the program in each month for each state. I then estimate the impact on each subgroup of participants: women, infants, and children. I finally estimate the impact on the mutually exclusive segmented groups: pregnant women, postpartum (non-breastfeeding) women, breastfeeding women, partially breastfed infants, fully breastfed infant, and fully formula fed infants. Each WIC outcome variable was rescaled by natural logs to account for the wide variation in participation across states and seasonally adjusted in the same manner as the birth rates.

3.3 Controls

Based on the prior work on birth rates and abortion bans I include several controls in the models. State-level monthly non-seasonally adjusted unemployment rates were obtained from the Federal Reserve Bank of St. Louis' FRED database. I also include the shares of the state's annual 15-44 years old female population that are non-Hispanic white, non-Hispanic Black, Asian, and Hispanic. Also, I include an indicator for if the national infant formula shortage persisted during each month-year since the shortage directly affects the population participating in WIC. Based on Hodges et al. (2024), I consider the infant formula shortage to begin in February 2022, coinciding with the voluntary formula recall, and continuing through the end of 2023. Summary statistics for birth rates and WIC participation outcomes as well as the control variables are shown in **Table 1.**

Table 1: Summary Statistics

	Full Ban States		Protected Access States		T-Test
	Mean	Std. Dev.	Mean	Std. Dev.	p value
Birth Rates					
Total	5.093	0.441	4.574	0.527	<0.001
Less than high school diploma	0.648	0.131	.486	0.169	<0.001
High school diploma	1.494	0.209	1.063	0.257	<0.001
Some college	1.515	0.199	1.258	0.262	<0.001
Bachelor’s degree	0.940	0.216	1.027	0.189	<0.001
Graduate degree	0.471	0.092	.674	0.197	<0.001
WIC Participation (logged)					
Total	11.272	0.874	11.012	1.150	<0.001
Women	9.827	0.937	9.493	1.165	<0.001
Infant	9.936	0.904	9.53	1.157	<0.001
Children	10.572	0.840	10.415	1.147	<0.001
Pregnant women	8.882	0.924	8.507	1.160	<0.001
Postpartum women	8.706	0.919	8.116	1.217	<0.001
Breastfeeding women	8.44	1.048	8.472	1.171	0.461
Partially breastfed infants	7.755	1.290	7.901	1.271	0.003
Fully breastfed infants	7.627	0.793	7.676	1.115	0.201
Fully formula fed infants	9.624	0.870	9.046	1.172	<0.001
Controls					
Monthly state unemployment rate	4.165	1.381	4.573	1.947	<0.001
State NH Black female 15-44 population %	0.675	0.143	0.594	0.183	<0.001
State NH White female 15-44 population %	0.157	0.126	0.093	0.082	<0.001
State NH Asian female 15-44 population %	0.026	0.012	0.078	0.062	<0.001
State Hispanic female 15-44 population %	0.211	0.296	0.264	0.259	<0.001
Infant formula shortage	0.262	0.440	0.262	0.440	1.000
Observations	1,092		2,016		
Number of States	13		24		

Note: Outcomes are not seasonally adjusted. Birth rates were calculated by dividing the number of births in the category by the female population between 15 and 44 years old then multiplying by 1,000. < High School Diploma includes “8th grade or less” and “9th through 12th grade with no diploma”, high school diploma includes GED completion, some college includes “Some college credit, but not a degree” and “Associate degree”, and graduate degree includes mater’s, doctoral, and professional degrees. After an infant’s first birthday they are labeled as a child. Breastfeeding women includes both partially and fully breastfeeding women. Postpartum women includes all postpartum women who are not breastfeeding. State-level monthly unemployment rates are non-seasonally adjusted. Demographic shares of the population are based on annual population data. The infant formula shortage began in February 2022, coinciding with the voluntary formula recall, and continued through the end of 2023.

4 Methodology

Following Dench et al. (2024), I consider the months on or after January 2023 as treated. While some of the total abortion bans were implemented right after the *Dobbs* decision (i.e. trigger bans), the impact of those bans on birth rates would lag by a few months. Further, since only about 8.5% of the total WIC participants in my sample are pregnant women, the pregnant women who were impacted by the abortion bans in late 2022 are unlikely to impact my estimates by much. Since there are significant pre-trend issues when I estimate the event study for the total birth rate and total WIC participation using a two-way fixed effect model (**Appendix Figure A1**), I estimate the impact of the total abortion bans on birth rates and WIC participation using a synthetic difference-in-difference (SDID) model. Dench et al. (2024) also found that SDID has more power to evaluate the impact of the total abortion bans on birth rates than the two-way fixed effects difference-in-differences. The SDID estimation model from Arkhangelsky et al. (2021) is as follows:

$$(\hat{\tau}^{sdid}, \hat{\mu}, \hat{\alpha}, \hat{\beta}) = \underset{\tau, \mu, \alpha, \beta}{\operatorname{argmin}} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} (Y_{it} - \mu - \alpha_i - \beta_t - W_{it}\tau)^2 \, \hat{\omega}_i^{sdid} \hat{\lambda}_t^{sdid} \right\} \quad (1)$$

where Y_{it} is the seasonally-adjusted monthly birth rate or logged WIC participation for state i in month-year t, α_i and β_t are state and month-year fixed effects respectively, and W_{it} indicates if the state passed a total abortion ban by the start of 2023. Like traditional synthetic control methods $\hat{\omega}_i^{sdid}$ are state-specific weights. Unique to SDID though are time weights $\hat{\lambda}_t^{sdid}$ which in my specification are month-year-specific weights. These month-year-specific weights allow for the control and treatment units to have a constant level difference in the pre-treatment period. The month-year-specific weights are selected in a manner so that there is more weight on the pre-treatment periods that are more similar to the treatment periods.[7] The coefficient of interest is τ which identifies the impact of total abortion bans on the outcome of interest.[8] Since my data is

[7] Time weights in synthetic difference-in-differences are only calculated for the pre-treatment period.

[8] I estimate the variance of τ using the block bootstrap procedure as outlined in Arkhangelsky et al. (2021) and Clarke et al. (2023). In this procedure, I estimated 500 bootstrap resampled estimates of $\hat{\tau}^{sdid}$ and calculated the

at the state-level, I am unable to take women who may travel to a different state to obtain an abortion in account. As such my results should be considered to a lower bound for the true effect of a binding abortion restriction.

I include a vector of controls as detailed in section 3.3. SDID accounts for controls by first regressing the vector of controls on the outcome. The remaining portion of the outcome that is unexplained by the controls is then used as Y_{it} in Equation (1). I also estimated SDID event studies using the procedure outlined in Clarke et al. (2023).

5 Results

The impact that total abortion bans have on births is shown in **Table 2**. Because it is likely that there will be differing effects of the bans throughout the year, I estimate the impact of the bans on the birth rates starting in the first three months of each year (column 1) and subsequently add 3 months for each model (columns 2 - 4).

I find that in states that have implemented a total abortion ban there an increase in the overall monthly birth rate of 0.091 births per 1,000 women, which given the 2022 average monthly total birth rate in states that would go on to fully ban abortion of 4.738 corresponds to a 1.92% increase in births. The increase in the total birth rates grows stronger when the second quarter of each year is added, a 2.03% increase (given a mean 2022 birth rate of 4.770), but diminishes and loses significance when the 3rd and 4th quarters of each year are included in the model.

variance of τ from those estimates. Block bootstrap was chosen over the other inference methods derived in Arkhangelsky et al. (2021) because it does not require homoskedasticity of the error terms (unlike the placebo method) and allows for the time weights to differs between treated and controlled units (unlike the jackknife procedure). Further, since my panel is not too extensive the block bootstrap procedure is computationally feasible.

To identify if there were heterogenous responses to the total abortion bans like the differential effects for younger women and women of color previously documented in Dench et al. (2024), I estimate the SDID model for birth rates segmented by the mother's educational attainment.[9] The results are shown in the subsequent rows of **Table 2**. I find that there is a persistent increase in the birth rate of mothers with a high school diploma peaking at a 4.95% increase (given a 1.394 mean birth rate in 2022) when estimating the model with data from just the first 6 months of each year. There is some suggestive evidence that the birth rates for mothers with a bachelor's degree or advanced degree also may have increased, but there is not the same persistent effect over the models.

Table 2: Impact of Total Abortion Bans on Birth Rates

VARIABLES	January – March (1)	January – June (2)	January – September (3)	January - December (4)
Total Birth Rate	0.091***	0.097***	0.032	0.042
	(0.033)	(0.030)	(0.030)	(0.027)
< High School Diploma	-0.030**	-0.009	-0.011	-0.015
	(0.014)	(0.011)	(0.010)	(0.011)
High School Diploma	0.048***	0.069***	0.054**	0.032*
	(0.017)	(0.024)	(0.024)	(0.016)
Some College	0.016	0.005	0.006	-0.000
	(0.018)	(0.019)	(0.015)	(0.014)
Bachelor's Degree	0.016	0.028***	0.016	0.013
	(0.016)	(0.010)	(0.014)	(0.011)
Graduate Degree	0.017	0.013	0.019**	0.019**
	(0.012)	(0.009)	(0.009)	(0.008)

Note: Bootstrap standard errors are in parentheses. Birth rate was seasonally adjusted for each individual state prior to estimation. Additional controls include each state's annual unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. < High School Diploma includes "8th grade or less" and "9th through 12th grade with no diploma", high school diploma includes GED completion, some college includes "Some college credit, but not a degree" and "Associate degree", and graduate degree includes master's, doctoral, and professional degrees. *** p<0.01, ** p<0.05, * p<0.1

[9] The corresponding event studies for the full year models are in **Appendix Figure A2.**

Given that there is evidence that the monthly birth rate increased for women with a high school diploma as their highest level of education, who socioeconomically are more likely to participate in WIC, I then turn towards estimating the impact that the implementation of the total abortion bans had on WIC participation as shown in **Table 3**. I find a positive increase in monthly total WIC participants for states that implemented a total abortion ban, but the result is not statistically significant. When broken into the 3 sub-groups that are served by WIC, I find

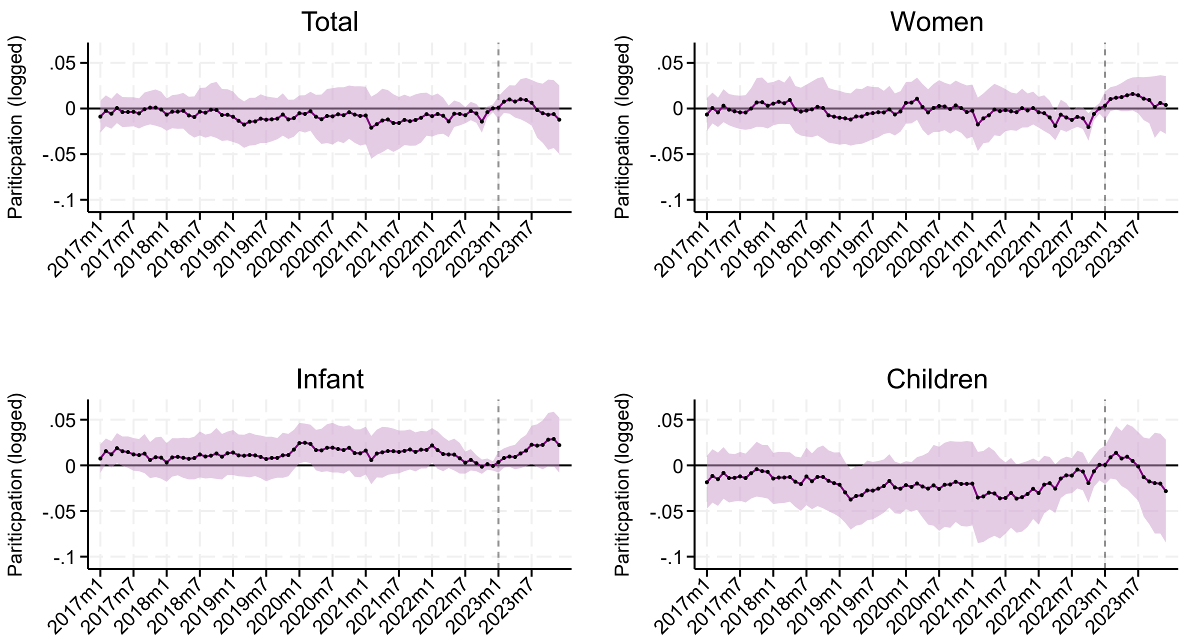
Table 4: Impact of Total Abortion Bans on Monthly WIC Participation (logged)

WIC Categories	Post Total Ban Implementation (1)	Full Ban States 2022 Average Monthly Participants (2)
Total	0.010	1,568,581
	(0.012)	
Women	0.015	391,607
	(0.011)	
Infant	0.021**	396,062
	(0.011)	
Children	0.007	780,911
	(0.019)	
Pregnant Women	-0.020	140,336
	(0.022)	
Breastfeeding Women	0.021	153,815
	(0.015)	
Postpartum Women	0.042***	97,456
	(0.013)	
Partially Breastfed Infants	0.044	118,603
	(0.037)	
Fully Breastfed Infants	0.015	40,525
	(0.016)	
Fully Formula Fed Infants	0.022**	236,934
	(0.011)	

Note: Bootstrap standard errors are in parentheses. Each outcome was seasonally adjusted for each individual state prior to the estimation. Each model includes state and month-year fixed effects and controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. After an infant’s first birthday they are labeled as a child. Breastfeeding women includes both partially and fully breastfeeding women. Postpartum women includes all postpartum women who are not breastfeeding.
*** p<0.01, ** p<0.05, * p<0.1

that states with a total abortion ban experienced a 2.1% increase in monthly infant WIC participants. The event study for monthly infant WIC participants in **Figure 2** shows a sustained increase in monthly infant participants illustrating how states with total abortion bans experienced a cumulative increasing effect on infants monthly WIC participation since infants can continue to participate in WIC each month.[10]

Figure 2: WIC Participation SDID Event Studies



Note: Each event study includes controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. After an infant's first birthday they are labeled as a child. Event studies calculated based on process outlined in Clarke et al. (2023). 95% confidence intervals shown.

It is expected that I would not find a significant change in the children category since the infants that were born during while total abortions bans were implemented are not yet 2 years old (my sample period ends in 2023). As such these infants have yet to matriculate to the children category which begins at 2 years old.

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[10] The decrease in monthly infant participation at the end of 2023 in **Figure 2** is likely due to the preliminary nature of the last few months of the 2023 data. The monthly participant totals in fiscal year 2024 will continued to be updated over time.

To understand what is driving the changes in participation in WIC, I further disaggregated monthly WIC participation into several mutually exclusive groups: pregnant women, postpartum women (non-breastfeeding), breastfeeding women (either partial or total), partially breastfed infants, fully breastfed infants, and fully formula fed infants.[11] As shown in **Table 3** even though there is no statistically significant effect on WIC participation for women as a whole, postpartum women that are not breastfeeding experience a 4.2% increase in monthly WIC participation in states with a total abortion ban. **Table 3** also shows evidence that formula-fed infants drive the increase in monthly infant WIC participation.[12]

6 Discussion

I find that states that implemented a total abortion did experience a small increase in monthly births in the first half of 2023, around 2% or 0.097 births per 1,000 women. My results are similar to those in Dench et al. (2024) which using data from the first half of 2023 finds that states that implemented a total abortion experienced a 1.2 births per 1,000 women increase. When I annualized my monthly birth rate finding, I find that states with a total abortion ban experienced an additional 1.16 births per 1,000 women. Similar to Dench et al. (2024) I also find that the impact of the total abortion bans on the overall birth rate diminishes when the full year data is included in the model. It is a possibility that the major effect of the bans is concentrated in the beginning of 2023 since other ways to access abortion such as abortion medication, abortion funds, and shield laws became more prevalent in 2023 (Guttmacher Institute 2024, Belluck

[11] Corresponding event studies are shown in **Appendix Figure A3.**

[12] Both the birth rate and WIC results are robust to the inclusion of a control indicating if (and when) states expanded Medicaid (**Appendix Table A2**) and a leave-one-out analysis where each state with a total abortion ban is dropped from the model to ensure that one state is not solely responsible for the results (**Appendix Figure A4**). The leave one out state analysis addresses some concerns that Texas, which due to its implementation of SB8 in 2021 is partially treated in the pre-treatment period, is not driving the results.

2024a). This decline in birth rates over 2023 also provides evidence of learning behavior; women were adjusting their behavior in the wake of the total abortion bans.

The 6 month birth rate findings are similar, though slightly smaller than, the effect on fertility found from other abortion restrictions including Jones & Pineda-Torres (2021) who found that targeted regulations of abortion providers (TRAP laws) increase births to Black teens by 3% and Lu & Slusky (2019) who found a 2.4% increase in the fertility rate for unmarried women after women health clinics in Texas closed due to restrictions and funding limitations. Again, the 2% increase in birth rates that I find is likely smaller since at the same time that abortion was being restricted, access to birth control and medication abortion was on the rise.

When estimating the heterogeneous impact of the total abortion bans, I find evidence that the bans increased births to mothers with a high school diploma. This result aligns with the already established idea in the literature that more disadvantaged mothers are impacted the most by abortion bans (Myers 2024, Jones & Pineda-Torres 2024, Sanger-Katz et al. 2021). However, I do not find that the birth rate of mothers with less than a high school education was impacted by the total abortion bans.

I also find that monthly WIC participation increased 2.1% for infants, driven by fully formula-fed infants, and 4.2% for postpartum (non-breastfeeding) women in states with a total abortion ban. The percentage increases for WIC participation are larger than the 6-month increase in birth rates primarily because of the data generating process differs for the two classes of outcomes. While a birth appears once in the birth data, an eligible infant or postpartum women can appear in the WIC participation data multiple times since they are eligible to receive benefits for multiple months (specifically 6 months for postpartum non-breastfeeding women and 12 months for infants). This data generating process is evident in the cumulative increase in the infant event study in **Figure 2**.

The increase in WIC participation in states with a total abortion ban could be explained in a few ways. First, due to the increase in the monthly birth rate for states with a total abortion ban there is an overall mechanical increase in the number of infants and postpartum women. Second, prior to the June 2022 *Dobbs* decision Jones and Chiu (2023) found that patients in states where abortion access would be heavily restricted or banned without *Roe* were more financially and situationally disadvantaged then those in states where abortion access would be protected. Therefore, the systemic socioeconomics differences between the group of states that totally banned abortion and those that protected abortion access could increase the number of infants and women eligible for WIC participation, especially since there is evidence of a lasting increase in the birth rate for women with a high school diploma.

Since I find that states with a total abortion ban experienced a 2.03% increase in the monthly total birth rate, I can calculate a rough estimate of the additional number of births that occurred after the abortion bans were implemented. Given that between January and June in 2021 (the last full year when there were federal protections for abortion) there were approximately 73,228 births a month in states that would implement a total abortion ban, a back-of-the-envelope calculation indicates that those states experience an extra 1,486 births each month or 8,916 additional births between January and June. The 2.1% and 4.2% increase in monthly infant and postpartum (non-breastfeeding) women participants in WIC in states with a total abortion ban translates to an additional 8,344 infants and 4,533 postpartum women participating in WIC each month given that on average in 2021 there were 397,341 infants and 107,924 postpartum women receiving WIC benefits per month in states that would pass a total abortion ban. Given that in 2023, the average food cost per person was $57.51 per month, in aggregate states with total abortion bans experienced approximately a $8.9 million ($40,556 per month) increase in WIC food costs in 2023. Since WIC is not an entitlement program, it is possible the increased demand for WIC surpasses states' WIC budgets, meaning that some WIC-eligible individuals would be placed on wait lists and experience a delay in receiving nutrition benefits.

7 Conclusion

Since the *Dobbs* decision granted states autonomy over the legality of abortion within their border, there is a wider variation in abortion access among the states than before. By the beginning of 2023, 13 states had implemented a total abortion ban. Given that previous research has concluded that abortion restrictions and bans impact economically disadvantaged and historically marginalized groups more intensively, it is possible that if the total abortion bans increase these cohorts' birth rates, then WIC participation will increase as well.

Using 2017-2023 monthly data, I find that there was a 2% increase in the monthly overall birth rate in states that implemented a total abortion ban after the *Dobbs* decisions. The increase in the monthly birth rate is driven by mothers whose highest educational attainment is a high school diploma. I then find 2.1% and 4.2% increases in monthly infant and postpartum (non-breastfeeding) women WIC participation respectively in states that passed a total abortion ban. It should be noted that these results reflect the impact of the total abortion bans and not the overall impact of the *Dobbs* ruling. The increase in monthly WIC participation translates to a total additional $8.9 million in food costs for the states that implemented a total abortion ban by the beginning of 2023. Since WIC is not an entitlement program, if the increase in food costs experienced by states with total abortion bans surpasses their budgets, it is possible that some eligible individuals who apply for WIC will be placed on a wait list and not immediately receive benefits.

Given that I only have one treatment year (2023) in my sample due to data availability, it is possible that the long-term impacts of the total abortion bans will be different from the results found here. The increasing availability of other methods of birth control as well as the changes to abortion access in states through referendums and ballot measures may mitigate these increases. Future work with more treatment years will better identify the long-term implications of the abortion bans.

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Appendix Tables

Table A1: States' Abortion Status

Total Ban	Protected Access	Excluded
Alabama	Alaska	Arizona
Arkansas	California	Florida
Idaho	Colorado	Georgia
Kentucky	Connecticut	Indiana
Louisiana	Delaware	Iowa
Mississippi	Hawaii	Nebraska
Missouri	Illinois	North Carolina
Oklahoma	Kansas	North Dakota
South Dakota	Maine	Ohio
Tennessee	Maryland	Pennsylvania
Texas	Massachusetts	South Carolina
West Virginia	Michigan	Utah
Wisconsin	Minnesota	Wyoming
	Montana	
	Nevada	
	New Hampshire	
	New Jersey	
	New Mexico	
	New York	
	Oregon	
	Rhode Island	
	Vermont	
	Virginia	
	Washington	

Note: Classification based on Dench et al. (2024).

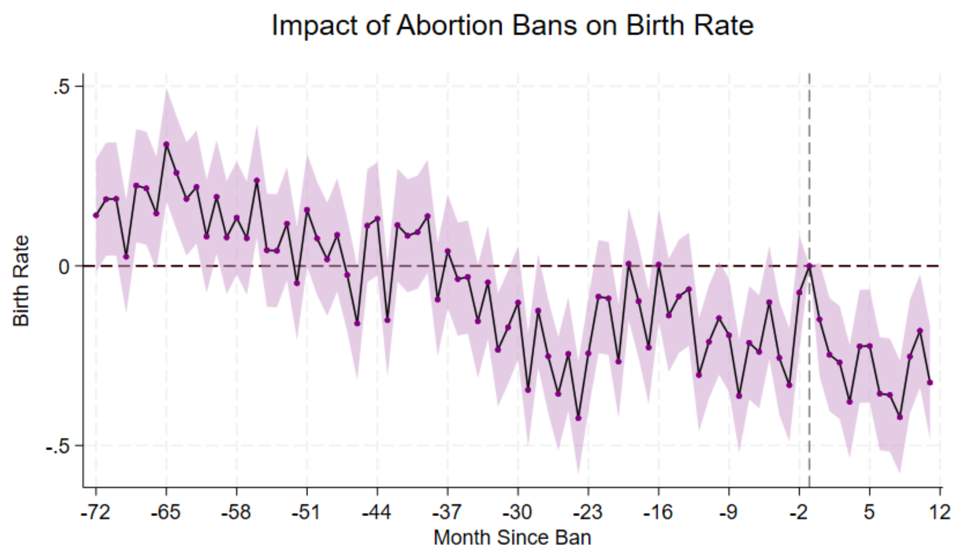
Table A2: Robustness Checks

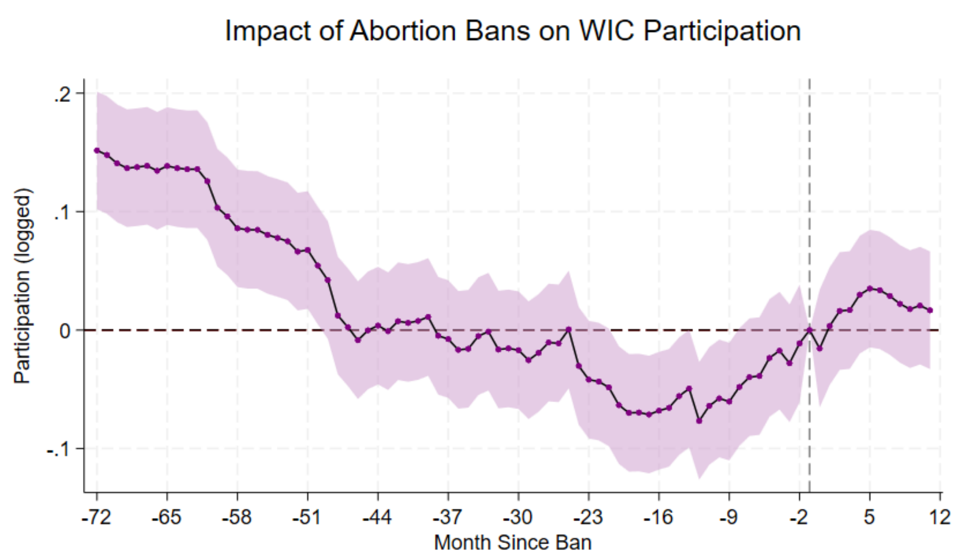
Outcomes	Medicaid Expansion (1)
Panel A: Birth Rate (January – June)	
Total	0.096***
	(0.030)
High School Diploma	0.069***
	(0.025)
Panel B: WIC (Full Year)	
Total	0.011
	(0.013)
Infants	0.021*
	(0.011)
Postpartum Women	0.042***
	(0.014)
Fully Formula-Fed Infants	0.022**
	(0.011)

Note: Each model includes state and month-year fixed effects and controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. High school diploma includes GED completion. After an infant's first birthday they are labeled as a child. Postpartum women includes all postpartum women who are not breastfeeding. Medicaid expansion data is from KFF (2025). Bootstrap standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix Figures

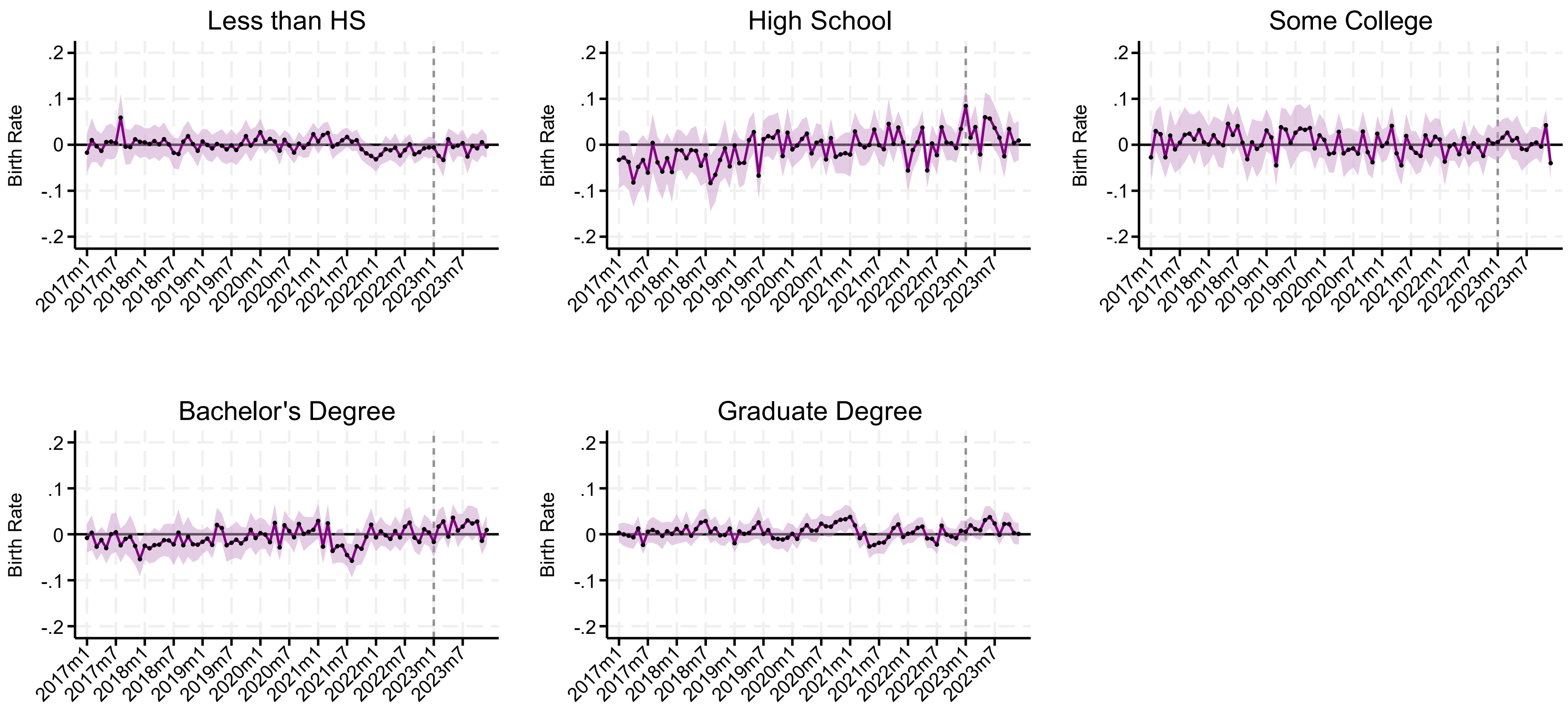
Figure A1: TWFE Event Studies





Note: Each TWFE difference-in-differences event study includes month-year and state fixed effects. 95% confidence intervals shows.

Figure A2: SDID Event Studies for Birth Rates by Mother's Educational Attainment

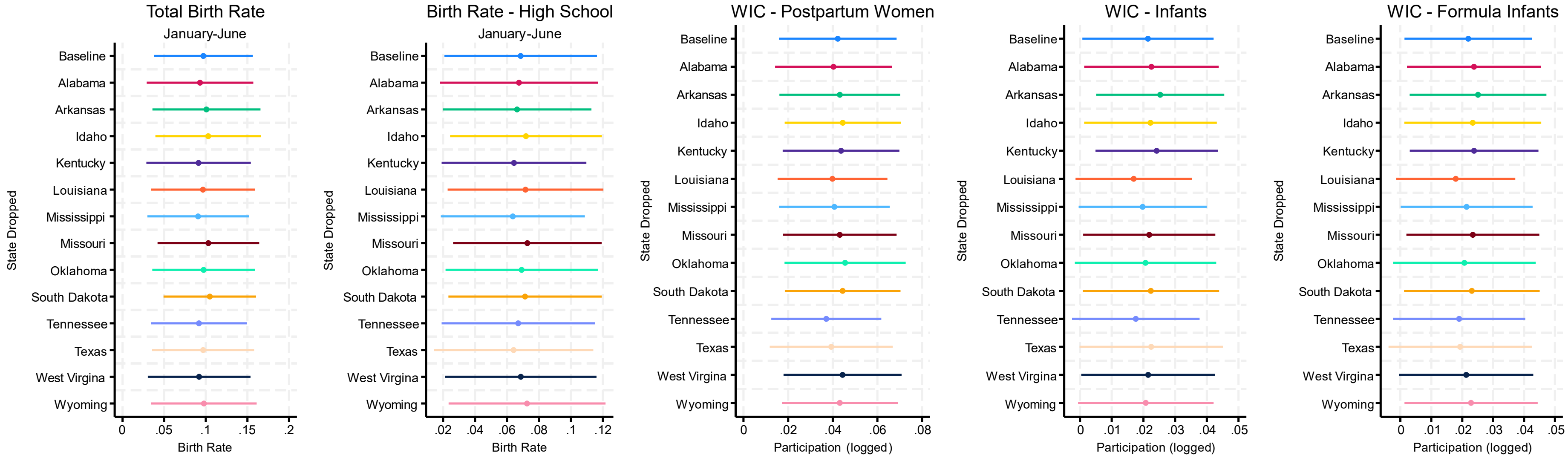


Note: Each event study includes controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. Less than High School includes "8th grade or less" and "9th through 12th grade with no diploma", high school includes GED completion, some college includes "Some college credit, but not a degree" and "Associate degree", and graduate degree includes mater's, doctoral, and professional degrees. Event studies calculated based on process outlined in Clarke et al. (2023). 95% confidence intervals shown.

Figure A3: SDID Event Studies for WIC Participation (logged) by Segments

Note: Each event study includes controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. Breastfeeding women includes both partially and fully breastfeeding women. Postpartum women includes all postpartum women who are not breastfeeding. Event studies calculated based on process outlined in Clarke et al. (2023). 95% confidence intervals shown.

Figure A4: Leave-One-Out Treated States Robustness Check



Note: Each event study includes controls for state's monthly unemployment rate, the share of the state population that is Black, White, Asian, and Hispanic, and an indicator for the infant formula shortage. High school includes GED completion. Postpartum women includes all postpartum women who are not breastfeeding. After an infant's first birthday they are labeled as a child. 95% confidence intervals shown.