The Geography of Abortion: Before and after *Dobbs*[*]

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Abstract

Despite the ruling in *Roe v. Wade* (1973), states across the U.S. have enacted restrictive abortion laws that severely stunted Americans' access to abortion services; the Supreme Court's decision in *Dobbs v. Jackson Women's Health* (2022) has only amplified the restrictions on abortion access. This paper extends the work of Myers (2023) and uses a novel county-level dataset of abortion counts, travel distances to the nearest abortion providers, and demographic characteristics covering pre- and preliminary post-*Dobbs* time periods to analyze the effect of increased travel distances to the nearest abortion providers on abortion counts using a fixed effects methodology. This paper's analysis focuses in particular on the most vulnerable women, specifically those with low incomes, who identify as Black or Hispanic, and those with limited college education. My findings reveal a differential impact of the *Dobbs* decision and the consequent increased travel distances in reducing abortion counts, particularly among these most vulnerable women. In light of these challenges, two policy approaches are proposed, aimed at mitigating disparities in abortion access, first through the implementation of transportation vouchers targeting the most vulnerable women–and second through an expansion of telemedicine services to improve access to abortion care, particularly in regions with limited healthcare infrastructure.

Keywords: Abortion bans, travel distance, *Dobbs* decision, differential impacts, policy decisions, transportation vouchers, telemedicine.

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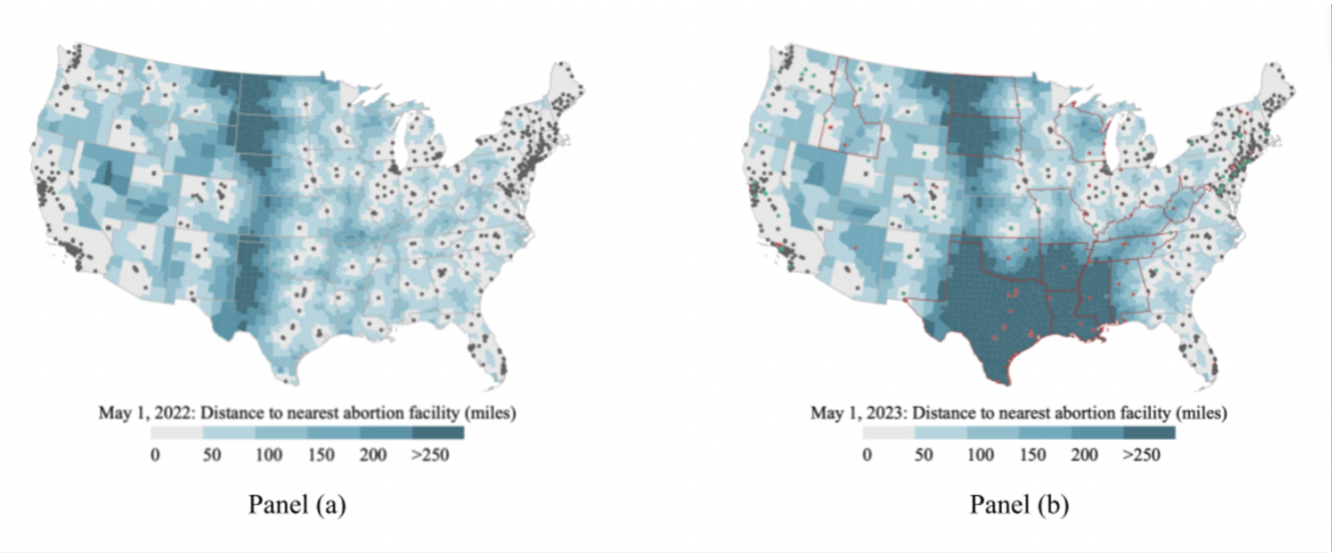
1 Introduction

On June 24, 2022 the Supreme Court overturned *Roe v. Wade* (1973) with their decision in *Dobbs v. Jackson Women's Health* (2022) and left the power to ban abortions up to state legislators and courts. In some ways, the overturning of *Roe* reflected a sharp break in reproductive health policies which only a conservative super-majority in the Supreme Court could have brought about–but in other ways, states' instatement of outright abortion bans can be viewed as a culmination of an increasingly restrictive trend in the legal landscape of abortion. Although *Roe* proved to be a landmark decision in 1973 which enshrined abortion as a woman's constitutional right, almost every state continued to pass laws on abortion restrictions.

Low-income women were dealt a severe blow concerning abortion access when the Supreme Court permitted Congress to block Medicaid funding for abortions in 1976. When abortion became legalized with the ruling of *Roe*, Medicaid covered abortion care as part of the myriad of healthcare services provided to low-income women. When Congress passed the Hyde Amendment, it banned the use of federal funding for abortion care with exceptions for limited cases. Most states followed suit, instituting bans in their state Medicaid programs: across the 34 states and the District of Columbia where it currently has an impact, the Hyde Amendment leaves approximately 7.8 million women aged 15-49 with Medicaid coverage but without abortion coverage Half of those affected are non-white women. And since *Planned Parenthood v. Casey* (1992), states have been permitted to enact abortion restrictions up to the point that they do not place "undue burden" on women seeking abortion care. However, the Court's determination of what qualifies as an "undue burden" on individuals seeking abortion care seems to apply exclusively to middle-to-high-income women and does not take into consideration low-income women. This idea applies in particular to the 34 states and the District of Columbia where the Hyde Amendment has an impact, and again a disproportionate impact on low-income women.

Figure 1: Distance to the Nearest Abortion Facility



Source: Myers (2023).
Note: Distance to the nearest abortion facility under past and recent bans. Graphs represent county-level distances to the nearest abortion facility measured on May 1, 2022 [Panel (a)] and on May 1, 2023 [Panel (b)]. Regions in Panel (b) outlined in red delineate states with near-total abortion bans. Gray dots indicate remaining open facilities; red dots indicate closed facilities; and green dots indicate newly opened facilities.

When a draft of the Supreme Court's majority opinion in the *Dobbs* decision was leaked on May 2, 2022, 13 states prepared for the overturning of *Roe* by implementing "trigger bans": laws that are designed to be "triggered" automatically in the event that *Roe* no longer stands (Nash and Guarnieri, 2023). At the present moment, 14 states have enacted outright bans on abortion, with 1 of the 14 states (South Carolina) holding a six-week ban. At least 61 clinics providing abortions halted their services in 2022, most of them found in those 14 states. However, the uncertainty around laws in other abortion-restrictive states has also caused these providers to shut down their services (Mccann and Walker, 2023); and at least a dozen of those 61 clinics picked up and moved to less restrictive states. Using novel pre- and post-*Dobbs* travel distance data from each county's population centroid to the nearest abortion facility gathered by Myers (2023), Figure 1 illustrates how the legal landscape on abortion has transformed dramatically: in the pre-*Dobbs* period, the average estimated travel time to an abortion facility was 27.8 minutes, whereas in the post-*Dobbs* period, that travel time has increased to 100.4 minutes as of November, 2022 (Rader, 2022).

Looking at how abortion restrictions impact pregnant women, Miller et al. find that women who are denied an abortion experience a large increase in financial distress that is sustained for several years (Miller et al., 2020). Gerdts et al. (2016) find that women who were denied an abortion and gave birth reported more life-threatening complications such as eclampsia and postpartum hemorrhage compared with women who had an abortion.

This paper contributes to recent literature which has applied causal methodology to examine the effects of abortion restrictions. Many researchers have discussed the consequences of increased distances to abortion providers as a result of restrictive abortion laws (Myers, 2023; Lindo et al., 2020; Venator and Fletcher, 2020; Fischer et al., 2018; Quast et al., 2017). But, this literature is generally case-study based, making it difficult to determine the broader impact of these abortion laws. Other work which has attempted to estimate the aggregate effect of abortion restrictions have used state-level abortion rate data; this fact makes measuring the effect of abortion policies difficult given the large number of state-specific, time-varying factors that need to be controlled for (Austin and Harper 2019b; Myers 2021a). State-level data also prevents the type of heterogeneity analysis by county characteristics which is crucial for understanding the differential impact of these restrictions on the welfare outcomes of women seeking abortion care, information that is of particular importance in the post-*Roe* era. Given the above limitations, I add to this literature in a few ways: first, I analyze a broad range of abortion restrictions before and after the *Dobbs* decision using a consistent empirical method. This allows for straightforward comparisons of the effect of these laws and can broadly characterize the role that abortion restrictions played in the outcomes of women seeking abortion care pre- and post-*Dobbs*. Second, my analysis uses county-level data which allows for greater granularity in geographic comparisons, controls, and fixed effects than an analysis of abortion restrictions using state-level data would allow. Using county-level data also enables a heterogeneous analysis for the *Dobbs* decision's impact on non-white and low-income women versus white and middle-to-high income women by a county's spatial and demographic characteristics, a critical feature of the discussion on the

effects of abortion restrictions which is largely missing from the causal literature.

The rest of the paper is organized as follows. Section 2 provides a literature review on work related to abortion policies pre- and post-*Dobbs* decision and their economic, social and health effects on pregnant women. Section 3 reports and discusses the datasets used in the empirical analysis. Section 4 presents the empirical analysis, employing a series of difference-in-differences designs using a fixed effects approach. Section 5 presents baseline results and their interpretation, with the main findings discussed in relation to the existing literature. Section 6 introduces two possible policy approaches motivated by the results of this paper that governments and non-governmental community organizations might consider implementing to mitigate the negative impacts of the *Dobbs* decision the most vulnerable women. The section also emphasizes the future research.

2 Literature Review

Much research has analyzed the effects of dramatic drops in abortion providers to estimate the effect of a decrease in abortion access on abortion rates, birth rates, and women's welfare outcomes. With the passing of House Bill 2 (H.B. 2) by the Texas legislature in 2013, an enormous number of abortion services became unavailable to women in the state–Grossman et al. (2014) find that H.B. 2 led to the closure of 19 abortion providers in Texas, causing the number of women in the state living more than 50, 100, and 200 miles from a provider to increase tremendously.

Authors have also exploited the passage of H.B. 2 and the abortion clinic closures and found that even modest escalations of distance to providers resulted in a large decrease in abortions, and initial increases in distance had the largest effects. For example, a change in distance from being nearby to being 50 or more miles away decreased abortion rates by approximately 16-17% (Lindo et al., 2020; Fischer et al., 2018). However, women of reproductive age may have changed their behavior in reaction to the reduction of abortion

providers: perhaps they limited unprotected sexual activity, used self-medicated abortion methods, and made the trek to operational abortion facilities. This change in behavior is reflected in the analyses by Lindo et al. (2020) and Fischer et al. (2018), who find that birth rates after H.B. 2 was passed were much smaller than expected given the Bill's effect on abortion. Venator and Fletcher (2020) adopted a similar methodological approach using policies that caused abortion providers to close in Wisconsin and found nearly identical results.

I extend the work that these case-study analyses have done by incorporating all states' abortion restriction laws in the last 14 years, allowing for a broader understanding of these laws' impacts. Austin and Harper (2019b) have gone beyond state-specific case-studies of laws that result in supply-side abortion restrictions–the authors use the panel dataset in Austin and Harper (2019a) to investigate the effect of supply-side laws on abortion rates. Using state-level data on abortion rates, they find that these restrictions do not have a statistically significant effect on abortion rates. However, the use of state-level data prevents two things: sufficient variation in abortion rates to have statistical power in an analysis; and a heterogeneous analysis that is necessary to examine the differential effects of these policies on varying race, income, and education levels. Since using state-level data does not permit a heterogeneous analysis, it becomes difficult to address issues of reproductive justice–the use of more granular, geospatial data is therefore used in this paper. I provide an analysis using county-level data measuring abortion counts alongside travel distance to the nearest abortion facility using racial, income, and education characteristics to illustrate how the effect of distance and abortion restrictions has changed over time, varies by county and state, and differentially impacts the most vulnerable women compared to their advantaged counterparts.

Another strand of literature has focused on the differential effects of abortion restrictions on women who are low-income, non-white, uneducated and/or geographically remote. Using an event-study differences-in-differences design, Caraher (2023) looks at these het-

erogeneous effects by both race and income. The author finds that regarding the effect of abortion restrictions, counties that have a relatively higher share of Black and Hispanic populations experienced a greater decrease in the abortion rate compared to majority-white counties. Caraher's estimates show that this reduction in the abortion rate can be over twice as large for counties with large minority population ratios relative to counties with large white population ratios. The author finds a thematically similar result for low- and high-income counties: abortion restrictions affect a larger decrease on abortion rates in low-income counties compared to high-income counties. One significant reason for the greater effect of abortion restrictions on abortion rates for non-white and low-income counties is presented by Loretta Ross and Rickie Solinger in their book *Reproductive Justice: A New Vision for the 21st Century* (2017). Ross and Solinger argue that restrictions which increase the costs in seeking an abortion fall disproportionately on the most vulnerable groups of women: those who are non-white, uneducated, and/or low-income. While the wealthy may have the financial freedom to access clinics that offer abortions in relatively distant states, low-income women simply do not have the means to do the same.

3 Data Overview

The present paper uses a rich set of outcome variables along with the main explanatory variables. The analyses and results are based on novel county-level data including distances to the nearest abortion facilities, abortion counts, and race, income, and educational attainment characteristics which have been collected by myself and Myers (2023) for the period 2009 to 2022. The following subsections delineate the explanatory variables utilized in this paper's analyses as well as the outcome variables measured.

3.1 Travel Distance to the Nearest Abortion Provider

The Myers (2023) dataset is the product of a multi-year effort by the author and her team to extend findings of existing studies on abortion rates and access to abortion facilities at the county-level in a particular state (see, e.g. Lindo et al. (2020) estimates for Texas and Venator and Fletcher (2020) estimates for Wisconsin) to include the majority of states and counties in which data is available.

The key contribution of Myers' dataset is the compilation of county-level travel distances to abortion facilities based on a database of abortion providers for the period 2009 to 2023. Myers uses a long list of sources including state licensing databases, current and archived facility websites, current and archived directories of Planned Parenthood health centers, current and historical directories of providers that are members of the National Abortion Federation (NAF), and accounts of provider operations published in the press. Based on this information, Myers uses the Stata Georoute (Weber and Péclat, 2016) module to calculate the travel distance from the population centroid (United States Census Bureau, 2017) of each county in the United States to the nearest operating abortion facility for every month. By averaging monthly travel distances, Myers generates a county-by-year panel of average travel distance to the nearest abortion facility. Myers and her team not only continue updating these data but have also offered an immense public good by making their data freely available at Open Science Framework (see Myers 2023a, 2023b).

3.2 Abortion Counts

Myers complements her traveling distance dataset with a matching abortion count and rate dataset, all at the county-level. The effort in compiling this second dataset on abortion rates is a noteworthy endeavor since such data were previously only partially available and generally analyzed at the state-level. There are three major data sources on abortion incidence and the characteristics of people who obtain abortions in the U.S: the Centers for Disease Control and Prevention (CDC), the Guttmacher Institute (GI), and most recently,

the Society of Family Planning's (SFP) #WeCount project. The CDC compiles abortion rate data for all 50 states and selected jurisdiction (all provided on a voluntary basis) covering the period between 1969 to 2021 along with the characteristics of women obtaining legally induced abortions. The potential shortcoming of this dataset is that it does not cover more recent years, including the post-*Dobbs* period.

Since the *Dobbs* ruling, the GI has established the Monthly Abortion Provision Study (2023) to track abortion volume within the formal United States healthcare system. The GI's ongoing study collects data and provides national and state-level estimates on procedural and medication abortions while also tracking the changes in abortion volume since 2020. This forum was designed to complement the Institute's other data collection efforts to allow for quick snapshots of the changing abortion landscape in the United States. SFP's #WeCount (2023) is another national reporting effort that measures changes in abortion access following the *Dobbs* ruling. The project reports on the number of abortions per month by state and includes data on abortions provided through clinics, private practices, hospitals, and virtual-only providers. The report does not include data on self-managed abortions that are performed without clinical supervision. The most recent report from #WeCount analyzes data from April 2022 to data from June 2023, which includes pre- and post-*Dobbs* data. The SFP's data represents 83 percent of all providers known to #WeCount who agreed to participate in their research.

Because Myers (2023) has only published abortion count data that ranges from 2009 to 2020, I collect novel county-level data that captures the most recently released abortion counts, covering the years 2021 and 2022. Sourcing county-level abortion count data through vital statistic reports and public health data requests for each state in the nation, I receive data from 18 states composed of 1,482 counties, some of which provide the most protective abortion laws and others which have enacted the most restrictive abortion bans. As with the abortion count data by Myers (2023), the county-level data I collect from 2021 to 2022

includes women aged 15 to 44.[1] By adding the most recent abortion count data up until 2022, my analyses consider both pre- and post-*Dobbs* time periods, albeit preliminary.

3.3 Demographic Characteristics

Using my main explanatory variable of distance to the nearest abortion provider and county abortion restrictiveness post-*Dobbs*, I examine the heterogeneous effects of the *Dobbs* decision on income, race, and educational groups, all at the county-level. To perform this analysis, my other explanatory variables include median household income, the proportion of Black and Hispanic residents, and the proportion of residents receiving only some college education, all collected at the county-level. Again, Myers (2023) has collected data for these variables from 2009 to 2020; for this paper's analysis on the impact of the *Dobbs* decision and consequently travel distance on abortion counts, I collect both median household income and educational attainment data at the county-level for the years 2021 and 2022, the years that immediately precede and succeed the *Dobbs* decision. The explanatory variable of racial composition, namely the proportion of Black and Hispanic residents in a given county, is rather slow-moving and is not subject to change significantly over the span of two years. Therefore, I use the racial composition of 2020 to perform my analysis covering the years of 2021 and 2022. To note, the explanatory variable of the proportion of Black and Hispanic residents measures the percentage of Black and Hispanic women aged 15 to 44 within a given county.

4 Empirical Methods

The main empirical model in this paper utilizes a difference-in-differences (DiD) estimation through a Fixed Effects (FE) approach, but it is important to begin this paper's analysis by examining the pre-Dobbs landscape on abortion rights from 2009 to 2020. This analysis

[1]The states used in my Post-*Dobbs* include Arizona, Colorado, Florida, Hawaii, Idaho, Indiana, Kansas, Michigan, Minnesota, Mississippi, Nebraska, North Carolina, Ohio, Oregon, Pennsylvania, Texas, Wisconsin, and Virginia.

builds a better understanding as to the preexisting heterogeneous impact that abortion bans during 2009 to 2020 had on the basis of race, income, and educational attainment levels. While Myers (2023) uses a Poisson model to address outcomes being discrete and at times equal to zero, I instead employ an FE approach that, at the base level, provides a causal estimation of the effect of travel distance to the nearest abortion provider (from each county's population centroid) on county-level abortion counts. To create a more uniform distribution of the abortion counts, I perform the empirical model using the log of abortion counts—I also add a unit of 1 to abortion counts, as some counties' abortion counts are equal to 0. Using the travel distance and abortion count data provided by Myers (2023) from 2009 to 2020, I use the following FE methodology:

$$\mathrm{Y}_{c,s,t} = \beta_0 + \beta_1 \mathrm{D}_{c,s,t} + v_c + v_s + v_t + \epsilon_{c,s,t}, \tag{1}$$

where $\mathrm{Y_{c,s,t}}$ is the outcome variable of abortion counts in county c of state s and in year t. The explanatory variable of interest is $\mathrm{D_{c,t}}$ which measures the travel distance to the nearest abortion provider from the population centroid of county c of state s and in year t. The variable v_c incorporates county fixed effects into the model, which control for unobserved county characteristics that remain constant over time with regards to their effect on abortion counts, the same concept following for the variable v_s at the state-level; and the variable v_t incorporates time fixed effects, which control for unobserved national shocks that affect abortion counts and hold a similar effect across all counties in the U.S. The FE estimation also clusters standard errors at the county-level that relaxes the assumption of independence of the errors and standard errors are adjusted to account for potential correlation or heteroskedasticity within counties, replacing it with the assumption of independence between clusters.[2]

I modify the previous model to exploit the differential impact that restrictive abortion

[2]I would like to thank Professor Anthony Fowler for his suggestions on this point.

laws have on the basis of income, race, and educational attainment levels:

$$\begin{aligned} \mathrm{Y}_{c,s,t} = \beta_0 + \beta_1 \mathrm{D}_{c,s,t} + \beta_2 \mathrm{R}_{c,s,t} + \beta_3 \mathrm{I}_{c,s,t} + \beta_4 \mathrm{E}_{c,s,t} + \\ + \beta_5 \mathrm{D}_{c,s,t} * \mathrm{R}_{c,s,t} + \beta_6 \mathrm{D}_{c,s,t} * \mathrm{I}_{c,s,t} + \beta_7 \mathrm{D}_{c,s,t} * \mathrm{E}_{c,s,t} + \\ + v_c + v_s + v_t + \epsilon_{c,s,t}, \end{aligned} \tag{2}$$

where travel distance to the nearest abortion facility, $D_{c,s,t}$ is interacted with three variables: $R_{c,s,t}$, $I_{c,s,\ t}$, and $E_{c,s,\ t}$. The explanatory variables of interest besides $\mathrm{D}_{c,s,t}$ are $R_{c,s,\ t}$ which indicates the majority racial population in county c of state s in year t; $I_{c,s,\ t}$ which indicates the median household income; and $E_{c,s,\ t}$ which indicates the average level of economic attainment. These three interaction terms are added to the fixed effects regression because the effect of travel distance to the nearest abortion facility on whether a county sees an increase or decrease in abortions can plausibly be dependent on the average income level, race, and or educational attainment level of a county. That is, distance to the nearest abortion facility may have an increased effect on a county's abortion counts due to the demographic characteristics of race, income, and or educational attainment level. By using a fixed effects regression with the interactions listed in Equation 2, I examine the differential impacts of increased travel distance to an abortion facility for counties that are low income, composed mostly of racial minorities, and or hold lower educational attainment levels on abortion counts for the pre-*Dobbs* years of 2009 to 2020.

After estimating the effect of various key interactions between travel distance to abortion facilities for pre-*Dobbs* years, I now turn to a DiD estimation which includes the pre- and preliminary post-*Dobbs* years of 2021 and 2022. I utilize Equations 1 and 2, again using an FE approach in order to control for county- and time-fixed effects, the benefit of which is to introduce less bias into the DiD estimation with regards to variation between counties, leaving variation within each county untouched. There are a few difference between the FE approach used here for the years 2021 and 2022 compared to that used for the pre-*Dobbs*

analysis covering the years 2009 to 2020: the first is that the pre-*Dobbs* analysis includes 33 states, the data being collected by Myers (2023) whereas the post-*Dobbs* analysis includes 18 states, the data being collected by myself. The second difference is that the current FE approach clusters standard errors at the state- rather than at the county-level to relax the assumption of independence of the errors, adjusting to account for potential correlation or heteroskedasticity within the counties of a given state and replacing it with the assumption of independence between clusters at the state-level.[1] The third difference is that as opposed to the analysis performed for pre-*Dobbs* years, the post-*Dobbs* estimations do not include state-fixed effects to alleviate the amount of controls placed on an already limited number of observations in the data.

5 Results

In this section, I present findings on the effect of travel distance on abortion access for the most vulnerable women—those who are Black and Hispanic, low-income, and/or have only received some college education. The subsections below delineate my findings first for the years of 2009 to 2020 that comprise the pre-*Dobbs* decision and second for the years of 2021 and 2022 that comprise the post-*Dobbs* decision; to note, the only controls used in the estimations below are county- and state-fixed effects.

5.1 Pre-*Dobbs* Decision

Table 1: Pre-*Dobbs* Fixed Effect Estimations

	Abortions
Distance (100s miles)	-0.183^{***}
	(0.030)
Distance * Proportion Black and Hispanic	-0.125^{*}
	(0.096)
Distance * Median Income	0.172^{***}
	(0.042)
Distance * Proportion with Some College Education	0.051^{*}
	(0.117)
No. of counties	2,179
N	24,166

Note: Table 1 provides coefficients from the Fixed Effects model of county-level abortion counts, with the population of women aged 15 to 44. The column shows the effect of each explanatory variable on abortions using the sample of reporting counties for the years 2009 to 2020. $^{*}p > 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Table 1 presents the results of the FE model corresponding to Equation 1 and 2, for the years of 2009 to 2020. The first row shows the estimate for the effect of travel distance to the nearest abortion provider on abortion counts (see Equation 1) and indicates that for every additional 100 miles a woman must travel to reach the nearest abortion provider, on average abortion counts decrease by 18.25% in the years 2009 to 2020. This result is qualitatively similar to that of Myers (2023): the linear specification of her Poisson model shows that every 100-mile increase in travel distance to the nearest abortion provider results in a 22.53% reduction in abortion rates. These results confirm evidence on the supply-side restrictions that occurred in Texas (Fischer et al., 2018; Lindo et al., 2020) and in Wisconsin (Venator and Fletcher,

2020), where abortion provider closures led to increased travel distances for women, in turn reducing the number of abortions performed.

The second row shows the estimate produced from the interaction between travel distance to the nearest abortion provider and the percentage of a given county that is Black and Hispanic. The estimate indicates that the effect of travel distance on decreasing abortion counts is weakened or decreased when factoring in counties with higher proportions of Black and Hispanic individuals between the years of 2009 and 2020. However, this estimation is not statistically significant, with its p-value equal to 0.192—that is, the estimation cannot conclusively determine what additional effect counties that are increasingly Black and Hispanic have on travel distance's effect on decreasing abortion counts.

The third row shows the estimate produced from the interaction between travel distance to the nearest abortion provider and the median household income of a given county. The estimate indicates that when moving from the 10th to the 90th percentile of median household incomes, the effect of travel distance (in 100s of miles) on abortion counts increases or is strengthened by 17.16% between the years of 2009 and 2020. This result is rather anomalous, as one would expect that moving from the poorest to the richest households would weaken the effect of travel distance on abortion counts. In the DiD estimation interacting travel distance to the nearest abortion provider and median household income in the next subsection, the results show that this expectation is in fact confirmed for the years immediately before and after the *Dobbs* decision.

The fourth row provides an estimate of the interaction between travel distance to the nearest abortion provider and the percentage of a given county's residents who have only received some college education. The estimate indicates that as the number of residents in a county with only some college education increases, the effect of travel distance (in 100s of miles) on decreasing abortion counts is strengthened or increases by 5.13% between the years 2009 and 2020. That is, the effect of travel distance to the nearest abortion provider in decreasing abortion counts for a given county is amplified in counties who have not

completed higher education successfully. However, this estimation is again not statistically significant, with its p-value equal to 0.661—the estimation cannot conclusively determine what additional effect counties whose residents increasingly did not complete college have on travel distance's effect in decreasing abortion counts. Even so, the next subsection's analysis shows that for the years immediately before and after the *Dobbs* decision, the above interaction produces statistically significant results.

5.2 Post-*Dobbs* Decision

Table 2: Post-*Dobbs* Fixed Effect Estimations

	Abortions
Dobbs decision	-0.422^{**}
	(0.158)
Distance (100s miles)	-0.373^{***}
	(0.028)
Distance * Proportion Black and Hispanic	0.180^{**}
	(0.079)
Distance * Median Income	-0.054^{**}
	(0.017)
Distance * Proportion with Some College Education	0.050^{*}
	(0.032)
No. of counties	1,482
N	2,964

Note: Table 2 provides coefficients from the Fixed Effects model of county-level abortion counts, with the population of women aged 15 to 44. The column shows the effect of each explanatory variable on abortions using the sample of reporting counties for the years 2021 and 2022. $^{*}p > 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Table 2 presents the results of the DiD model using an FE approach corresponding to Equation 1 and 2, for the years 2021 and 2022—these results explain the differential impact of the *Dobbs* decision and the resulting decrease in abortion counts on the basis of race, income, and educational attainment levels. The first row shows an estimation of the *Dobbs* decision's effect alone on abortion counts: the decision's enactment led to a preliminary 42.24% decrease in abortion counts across the nation.[3] As many more states and have implemented restrictive abortion bans starting in 2023, the above estimation is plausibly an underestimation of the true effect of the *Dobbs* decision on decreasing abortions across the nation.[4]

The second row shows an estimation of the effect of travel distance to the nearest abortion provider on abortion counts in the years immediately before and after the *Dobbs* decision. The estimation indicates that for every 100 mile increase in travel distance to the nearest abortion provider, female residents of a given county experience a 37.32% decrease in abortions. Compared to the pre-*Dobbs* estimation utilizing Equation 1, the effect of travel distance on abortion counts in the preliminary post-*Dobbs* period is more than doubles the former estimation.

The third row shows an estimate of the interaction between travel distance to the nearest abortion provider and the percentage of a given county that is Black and Hispanic in the years immediately before and after the *Dobbs* decision. The estimate indicates that given the effect of increased travel distance on decreasing abortion counts, this effect of travel distance is strengthened or increased by 18.04% when factoring in counties with higher proportions of Black and Hispanic individuals. That is, the effect of travel distance to the nearest abortion provider in decreasing abortion counts for a given county is amplified in counties with higher percentages of Black and Hispanic residents. This finding suggests that not all women face

[3]The equation estimating the effect of the *Dobbs* decision on abortion counts is similar to that of Equation 1, with a treatment variable (where the treated counties are those responding with stricter abortion bans after the *Dobbs* decision in 2022) replacing the travel distance variable.

[4]States that placed greater restrictions starting in 2023 as a result of the Dobbs decision are states Alabama, Arkansas, Indiana, Kentucky, Louisiana, Missouri, North Dakota, Oklahoma, South Dakota, Tennessee, and West Virginia.

the same obstacles to accessing abortion services after the *Dobbs* decision; rather, Black and Hispanic women generally face more impediments to receiving abortive care compared to their White counterparts in the period immediately following the *Dobbs* decision.

The fourth row provides an estimate of the interaction between travel distance to the nearest abortion provider and the median household income of a given county in the years immediately before and after the *Dobbs* decision. This estimate indicates that when moving from the 10th to the 90th percentile of median household incomes, the negative effect of travel distance on abortion counts decreases or is weakened by 5.35%. That is, when moving from the poorest to the richest counties, the effect of increased travel distances to the nearest abortion provider on decreasing abortion counts weakens. This finding suggests another differential impact on women seeking abortions: women with lower incomes face greater obstacles to receiving abortive care compared to women with higher incomes. The reasoning behind this result is perhaps intuitive: a women with a high income can afford to spend more on transportation to an operating abortion provider, where a woman with a lower income might not be able to afford those same transportation services to receive abortive care.

The fifth row provides an estimate of the interaction between travel distance to the nearest abortion provider and the proportion of residents receiving only some college education in a given county in the years immediately preceding and succeeding the *Dobbs* decision. This estimate indicates that as counties grow to have a greater proportion of residents who have dropped out or have not completed college, the negative effect of travel distance on abortion counts increases or is strengthened by 5.0%. That is, the effect of travel distance to the nearest abortion provider in decreasing abortion counts for a given county is amplified in counties with higher percentages of residents who have not successfully completed college. Again, this finding shows another differential impact of restrictive abortion laws: women who have not completed college must overcome greater obstacles to receiving abortive care when compared to their higher-educated counterparts in the period immediately following the *Dobbs* decision. However, this result is only significant at the level of $p = 0.140$.

6 Policy Implications

The results presented in the previous section suggest that the *Dobbs* decision and the consequent increase in travel distances to the nearest abortion providers do not affect all women in the nation equally–there exists a disproportional impact on a particular group of vulnerable women: those who have low incomes, those who are Black and Hispanic, and to some degree those who do not complete their college educations. These results confirm the narrative presented by Ross and Solinger (2017)–when faced with tightening abortion laws, the most socioeconomically disadvantaged women experience the largest obstacles compared to their advantaged counterparts, particularly when it comes to abortion access.

This differential impact on the most vulnerable women resulting from the increase in restrictive abortion laws after *Dobbs* presents the question of how to alleviate or ideally eradicate the particular challenges that women with lower incomes, who identify as Black or Hispanic, and/or perhaps have only completed some of their college education face after the *Dobbs* decision regarding the accessibility of abortion services. This paper provides two policy implications and the feasibility of their implementation, involving the key actors of government agencies and nongovernmental community organizations.

6.1 Subsidization of Transportation Programs

Subsidized transportation programs have the capacity to play a crucial role in ensuring equitable access to abortion services, particularly for the most vulnerable women. The implementation of such programs requires a multifaceted approach that involves collaboration between government agencies, transportation companies and services, as well as nongovernmental community organizations. The first approach is through government or nongovernmental community organization partnerships with rideshare (e.g. Uber, Lyft, etc.) or airline companies (e.g. Southwest, Delta, etc.) (Starbird et al., 2019); these partnerships might involve the negotiation of discounted rates or flat fees for rides to and from abortion clin-

ics. The second approach, which may better target women with lower incomes, involves the distribution of transportation vouchers to eligible individuals that allows these women to access transportation services without bearing the financial burden of travel. It is important, then, to determine which women are eligible for transportation vouchers. As discussed the analyses of this paper exploit data that identifies which abortion-restrictive counties include the most vulnerable women (i.e. those who are lower income, Black or Hispanic, and/or have only completed some college education). By leveraging this data to identify those most vulnerable women, a transportation voucher program can effectively target which county's female residents are eligible.

6.2 Expansion of Telemedicine Services

As the nation experiences a rise in receiving contraceptive pills by mail, the expansion of telemedicine services has the power to significantly improve access to abortion services, particularly for the most vulnerable women. Telemedicine can allow patients to consult with healthcare professionals remotely and, again, receive contraceptive pills by mail without the need to travel to a clinic in person. Despite the increased ability to increase the accessibility of abortion care using telemedicine, conservative lawmakers have enacted state-level legislation aimed at restricting such access. Many states' telemedicine laws stipulate that care is considered rendered in the state where the patient resides, necessitating healthcare professionals to hold licensure within that state to prescribe treatment (Pearlman et al., 2023). In response, government agencies or nongovernmental community organizations could potentially create increased pay incentives for healthcare professionals to obtain additional licensure in restrictive states (Jobalayeva et al., 2024).

6.3 Looking Ahead

Although this paper provides a preliminary analysis post-*Dobbs*, future research should harness the data released a few years after 2022 to capture the full effect of the *Dobbs* decision

and travel distance to the nearest abortion provider on abortion counts. Another notable consideration is the changing role that government agencies might play in executing the policies discussed previously given the potential shift to a Republican presidency in 2024. That is, this potential party shift could nullify the role that government agencies play in policies that further accessibility to abortion services for the most vulnerable women.

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