Equity and Efficiency in Post-Dobbs Reproductive Health in the US: New Evidence from Nationwide Electronic Health Records

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Abstract: We provide new evidence on equity and efficiency considerations of post-Dobbs reproductive health in the US. We use a nationwide Electronic Health Record (EHR) dataset for over 300 million patients (covering more than 40% of women of childbearing age), including detailed information on healthcare conditions and services. We calculate precise statistics for multiple layers of reproductive health choices—pregnancies, elective abortions, and contraceptive use—with linkages to self-reported demographics and residential location. With respect to equity, we find considerably higher risk of unwanted pregnancies among Black and Hispanic women as compared to White women, with lower "ex-ante" use of contraceptives. Use of contraceptives is also lower among women who live in disadvantaged communities or households, suggesting contraceptive use as a relevant lever for policies that aim to achieve equity in reproductive health outcomes. With respect to efficiency, we find no evidence for "marginal" moral hazard, in that states with higher elective abortion rates do not display higher rates of "risky" behaviors. Further, the marginal abortion appears medication-based, suggesting medication abortion as the operative margin for expansionary or contractionary state-level policies.

1. Introduction

The rights and access to reproductive health are among the most contentious topics in the US. The active debate resurfaced preceding and following the Supreme Court's ruling in *Dobbs v. Jackson* in June 2022, which overturned the 1973 decision in *Roe v. Wade*, thereby ending constitutional protection of abortion rights and allowing states to become the main regulator. This ruling led to new state-level regulations and bans that are continuously evolving (see, e.g., Brubaker et al. 2022, Rade et al. 2022, Hardin et al. 2023, Aiken et al. 2024), and to major concerns about women's access to reproductive health throughout the country.

While the broader moral debate involves thornier issues related to bodily autonomy and when life begins, economists have focused on issues that can be framed from the perspective of traditional equity-efficiency tradeoffs. From an equity perspective, restricted access tends to most affect already marginal populations, limiting choices for vulnerable subsets that wish to terminate their pregnancies. From an efficiency perspective, improved access has been found to reduce crime, increase human capital investments and labor force participation, and reduce reliance on transfer systems.

In this paper, we provide new evidence on equity and efficiency considerations of post-Dobbs reproductive health in the US. We use a nationwide Electronic Health Record (EHR) dataset that includes over 300 million patients and covers roughly 40% of women of reproductive ages. The data include detailed information on health conditions and healthcare services. They allow us to provide precise statistics, based on administrative records, for multiple layers of reproductive health choices: pregnancies, elective abortions, medication abortions, and contraceptive use. The records are also linked to self-reported demographics (such as race) and information on location (with measures of local affluence), which allows investigation of equity concerns. For efficiency, one aspect we can explore in the records is whether there is evidence of moral hazard, such as that leniency encourages abortions and results in excessive use as a contraceptive of last resort (Brubaker et al. 2022, Bell et al. 2025).

We first document the wide state-level dispersion, which has a high degree of persistence across years. In 2023, for example, Connecticut had the highest rate of elective abortions (1.69%) and Nebraska had the lowest rate of elective abortion (0.017%) among women of ages 18-50. We find a clear pattern in a state's political inclination, with Democratic-inclined states exhibiting

abortion rates that are 7.7 times higher than those in Republican-inclined states, a pattern that prevails for teenage female patients as well (of ages 14-17).

In investigating equity, we focus on studying reproductive health choices and outcomes by social groups that are traditionally underserved in the healthcare context. We accordingly focus on differences by race and ethnicity and proxies for economic affluence. Notably, we find elevated incidence of elective abortions among women from under-represented minorities (URM). Abortion rates among Black and Hispanic women are 3.6 and 2.4 times that of White women, with similar patterns for patients of ages 14-17. We further find that, relative to White women, the variability in the risk of an abortion is greater by a factor of 14 for Black women, and by 12 for Hispanic women. The results together show that women from under-represented minorities are much more likely to experience the event of an "unwanted pregnancy" and face significantly higher variability in this risk across the country.

To study if these differentials can be explained in part by substitution between ex-post and ex-ante means of avoiding an unwanted pregnancy, we study patterns of contraceptive use. We find that the use rate is meaningfully higher for White women than the national average, with the opposite true for URM patients. To explore the role of economic disadvantage, we also study contraceptive use rates by quartiles of ZIP Code socioeconomic vulnerability (based on the Social Vulnerability Index) and by patients' levels of financial hardship. We find a meaningful gradient across both measures. The location-based gradient is consistent with the common concern that women who live in less affluent communities may have more limited access to continuous reproductive health services and education. Overall, the findings point to contraceptive use as a lever for policies that target equal delivery of reproductive care.

In investigating efficiency, we focus on state-level patterns by their rates of elective abortions. This is motivated by the policy discussion centering around state-level regulations of abortion services. One moral hazard concern is that a wider availability of elective abortions could result in substituting ex-ante "preventive" behaviors, which help avoid reaching the point of facing an unwanted pregnancy, with a welfare-costly "contraception of last resort." We find no systematic relationship between elective abortion rates and pregnancies or contraceptive use, patterns that are inconsistent with this concern.

Finally, to identify the margin for efficient targeting in access-based regulations, we study whether the marginal abortion is procedural or medical. We find that the share of abortions that is

medical steadily increases as abortion rates rise—so that the marginal abortion is medication-based—implying that medication could be an active margin for access policies of contraction or expansion. That said, we show that regulations related to access via medication abortions could interact unfavorably with equality-related goals: the national expansion in the share of medication abortion is largely driven by White women, making them more likely to be affected along this margin than Black and Hispanic women of reproductive age.

2. Data and Outcomes

We utilize information from Cosmos, a nationwide Electronic Health Record (EHR) dataset that has been created in collaboration with a community of health systems using Epic. The dataset integrates inpatient and outpatient charts into one comprehensive record, including when patients move between systems. In addition to health conditions and healthcare services, the dataset includes information on demographics, such as age and race/ethnicity. As far as coverage, the records for more than 40% of women of childbearing age nationwide are included.[1]

We analyze several reproductive health choices. Pregnancies are identified using the built-in Epic grouper code "Pregnancy" that flags all clinical entries related to the condition. For elective abortions, we use ICD-10-CM Code Z33.2 for "Encounter for elective termination of pregnancy" as a billed diagnosis. For contraceptive use, we look at records of prescriptions for "Other Gynecologicals" (ATC code: G02) or "Sex Hormones and Modulators of the Genital System" (ATC Code: G03).

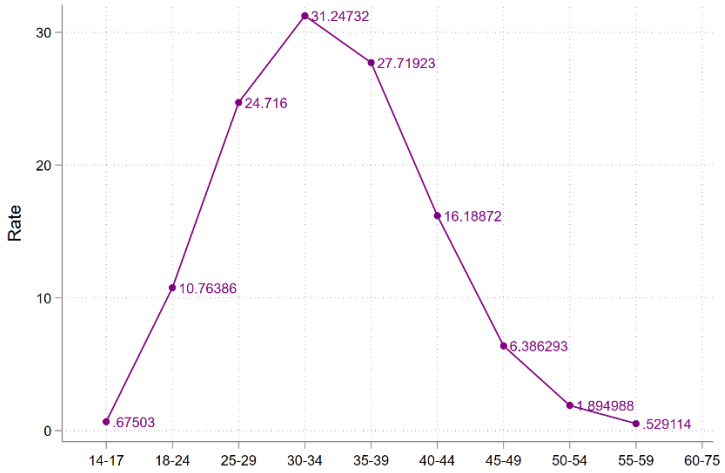
Medication abortion is a sub-category of elective abortions, documented in the dataset by prescriptions for "Mifepristone" (ATC Code: G03XB01) or "Misoprostol" (ATC Codes: G02AD06, A02BB01). The use of these two medications is an alternative to a procedural abortion to terminate a pregnancy. In some US states, physicians are the only clinicians allowed to prescribe these medicines. Some states do not permit use of telemedicine for medication abortion, and some prohibit use of medication abortion after a specific point in pregnancy (Cohen and Teal 2022). In 2020, the US Food and Drug Administration (FDA) removed in-person and clinician-only dispensing requirements as part of the Risk Evaluation and Mitigation Strategy (REMS) attached

[1] In 2024, 28.8 million female patients ages 20-49 are observed in the EHR records, whereas Census estimates indicate 66.7 million women in this age range in total (https://www.census.gov/data/tables/time-series/demo/popest/2020s-national-detail.html).

to Mifepristone, the first drug in the combined medication abortion regimen. The use of medication abortion instead of procedural abortion has seen a large rise since then (Brander et al. 2024).

Figure 1 shows pregnancy rates by age, expressed as percents (or pregnancies per 100 individuals), calculated using 2023 and 2024 Cosmos records. Rates peak as expected between the ages of 25-39. Our main analysis sample focuses on women ages 18-50, since rates drop off at younger and older ages. Though fertility rates are low, we consider teens aged 14-17 as a separate population of interest.

Figure 1: Pregnancy Rates by Age Group



In the 2023 and 2024 records, there are 36.3 million women of ages 18-50. Table 1 reports summary statistics for their reproductive health outcomes. As of 2024, nearly one in five women experiences a pregnancy, and about 0.60% of all women in the denominator undergoes an elective abortion. Around one-third use contraceptives.

Table 1: Reproductive Health Outcomes for Women of Ages 18-50

Year	Number of Women	Pregnancy Rate	Elective Abortion Rate	Medical Abortion Share (of Abortions)	Contraceptive Use Rate
2023	29,741,671	17.98	0.4487	68.55	32.79
		(0.014)	(0.002)	(0.025)	(0.017)
2024	31,091,087	18.96	0.6019	69.74	34.06
		(0.014)	(0.003)	(0.021)	(0.017)

To study patterns across relevant subgroups, we start with categorizing the women by race/ethnicity. While 16.0% do not self-report race/ethnicity (or do not fall into these categories), 15.8% identify as non-Hispanic Black (henceforth Black), 16.9% identify as Hispanic or Latino (henceforth Hispanic), and 51.3% identify as non-Hispanic White (henceforth White). We use the term under-represented minority (URM) to refer to the group of Black and Hispanic patients combined.

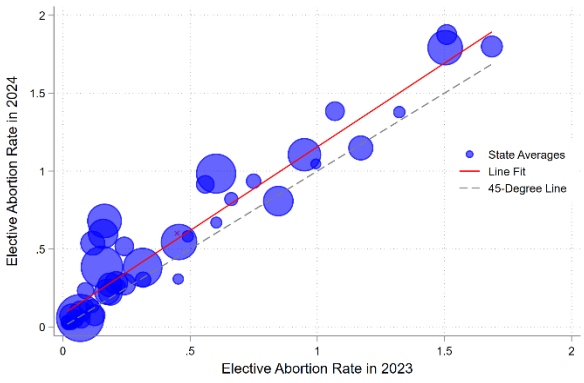
We also sometimes cut the data by two measures of economic affluence. One measure is based on a patient's residential location. The US Centers for Disease Control and Prevention (CDC) calculates a ZIP-Code-level Socioeconomic Vulnerability Index (SVI) from census tract data, which is a percentile ranking (ranging from 0-100, with 100 indicating the most disadvantage). This field is widely populated as it is based on residence. The second measure is based on the patient's own economic vulnerability. It is populated for patients who have completed the Social Drivers of Health (SDoH) survey and responded to the question: "How hard is it for you to pay for the very basics like food, housing, medical care, and heating?"

3. Empirical Evidence

3.1. Cross-State Patterns

As the policy-relevant unit of analysis, we start by studying state-level variation. In Figure 2, we compare state elective abortion rates across the years 2023 (on the *x*-axis) and 2024 (on the *y*-axis). We keep states with at least 100,000 women of ages 18-50 each year, and the size of the "bubble" represents the size of this group in 2023. We plot the linear fit (weighting by the inverse variance of states' rates), and provide the 45-degree line as a benchmark.

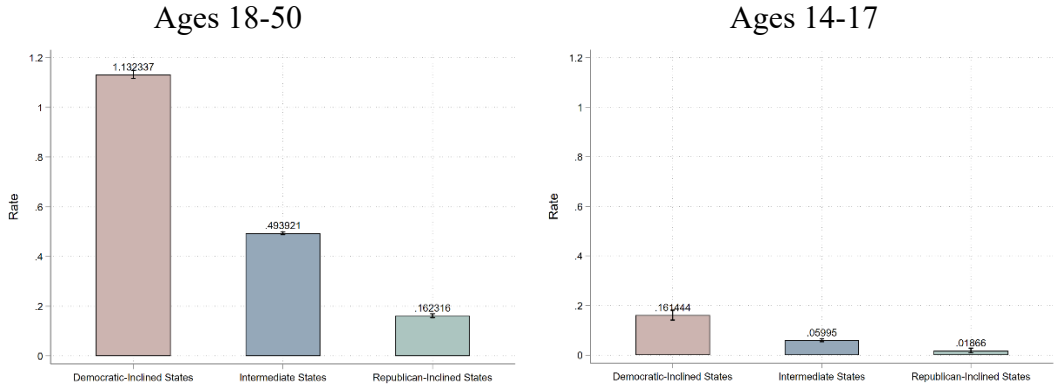
Figure 2: State-Level Persistence in Elective Abortion Rates



We first see high cross-state dispersion. In 2023, for example, the state with the highest rate is Connecticut (1.69% (0.034%)) and the state with the lowest rate is Nebraska (0.017% (0.006%)). Second, there is a high degree of persistence across years within states, indicating that there is a systematic state-level component.

In Figure 3, we group states based on political inclination. Specifically, we categorize states based on the margin of votes for the Republican candidate versus the Democratic candidate in the 2024 presidential election (i.e., the share of votes for the Republican candidate minus the share for the Democratic candidate).[2] We define "Republican-Inclined" and "Democratic-Inclined" states as those with vote margins above the 75th percentile (0.22) and below the 25th percentile (-0.11), respectively. "Intermediate" states are those with vote margins in the two middle quartiles. The panel on the left shows a clear declining gradient in the degree to which states are Republican inclined, with the abortion rate for women of ages 18-50 falling from 1.23% in Democratic-Inclined states to 0.16% in Republican-Inclined states. With naturally much lower levels, the panel on the right shows the gradient is also present among female patients of ages 14-17.

Figure 3: Abortion Rates by State Political Inclination



3.2. Analysis: Equity

Our investigation of equity considerations focuses on studying reproductive health choices and outcomes by social groups that are traditionally underserved in the healthcare context. We accordingly focus on differences by race and ethnicity and proxies for economic affluence.

[2] We use information from the American Presidency Project, a non-profit and non-partisan source of presidential documents hosted at the University of California, Santa Barbara (see: https://www.presidency.ucsb.edu/statistics).

Elective abortion and pregnancy by group

Figure 4 plots the incidence of reproductive health "events" by race/ethnicity subpopulations (along with 95% confidence intervals). In each plot, the horizontal dashed line represents the national average (including all patients in the calculation, regardless of whether information on race/ethnicity is available in their EHR records). Panel A shows that the incidence of elective abortions among URM women is elevated. For women of ages 18-50, abortion rates among Black (1.23%) and Hispanic (0.86%) women are 3.6 and 2.4 times that of White (0.36%) women. Similarly, Black and Hispanic patients of ages 14-17 undergo elective abortions at rates that are 3.6 and 2.4 times higher than White female patients of similar ages (whose average rate is 0.04%). Panel B shows that pregnancies are also more common for URM patients, though the relative rates compared to Whites are much less dramatic.

Figure 4: Reproductive Outcomes by Race/Ethnicity

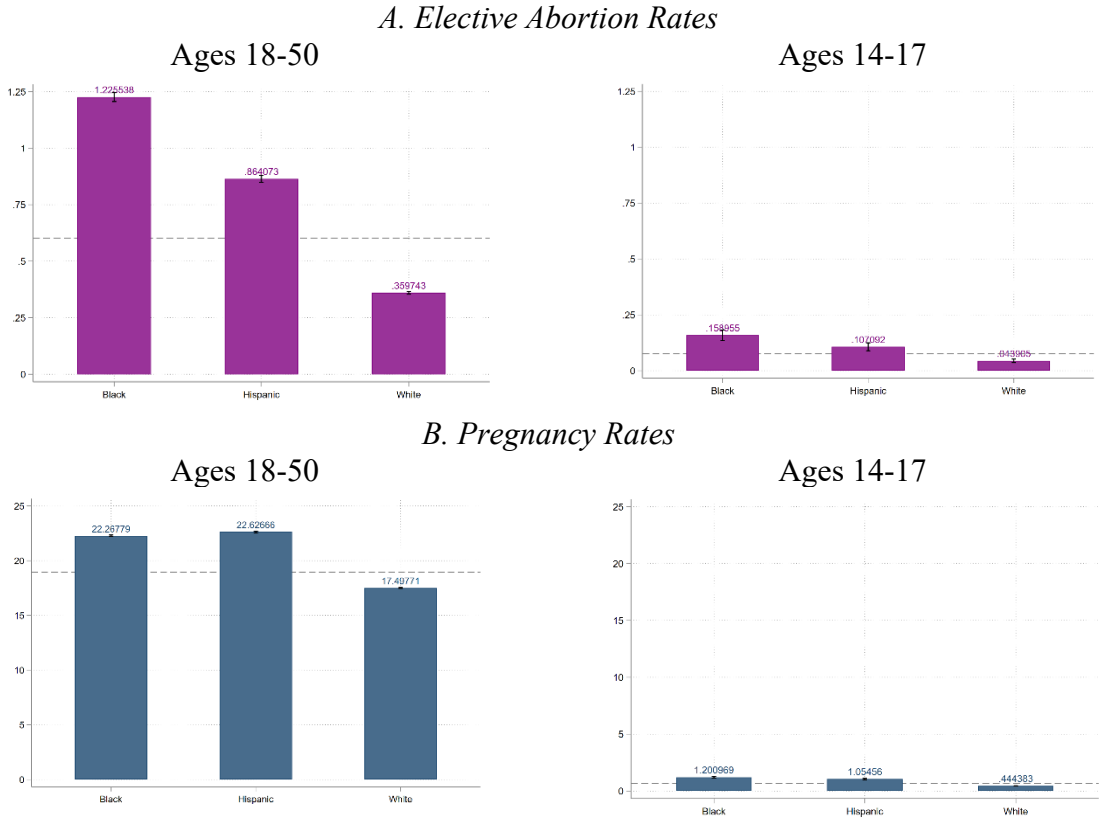


Figure 5 shows lower elective abortion rates for all groups in rural areas, relative to metropolitan area cores. But, again, within area types, URMs undergo abortions at higher rates.

Figure 5: Elective Abortion Rates by Race/Ethnicity and Rural/Urban



Next, we consider the variability in reproductive events that women from different subgroups experience across the country. In Table 2, we present estimates of the variance across states in pregnancy rates and elective abortions by subgroups. Specifically, we construct the following statistic. We use y_{im}^{g} to denote the outcome of patient i from group g in state m, with a total of M states. We then calculate state-level means for all patients from a particular group in that state (y_m^g), and the standard errors of those means (s_m^g). The grand mean of y_m^g across states is denoted by $\bar{y}_m^g$. The bias-corrected cross-state variances for each group are calculated as: $\frac{1}{M}\sum_{m=1}^{M}\left[(y_m^g - \bar{y}_m^g)^2 - (s_m^g)^2\right]$ (Walters 2024).

Table 2: Cross-State Variance in Reproductive Outcomes by Race/Ethnicity

Group	Elective Abortion Rate	Pregnancy Rate
Black	1.20	10.11
Hispanic	0.98	11.31
White	0.08	4.86
All	0.25	9.23

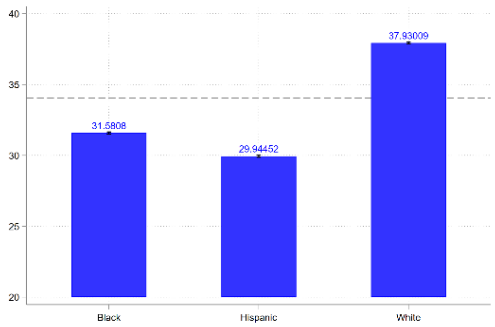
Relative to White women, the variability in the risk of an abortion is greater by a factor of 14 for Black women, and by 12 for Hispanic women. The results together show that URM women are much more likely to experience the event of an "unwanted pregnancy" and face significantly higher variability in this risk across the country.

Contraception use by group

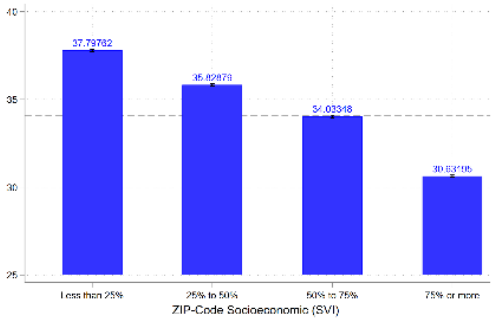
One hypothesis for the higher rates of unwanted pregnancies among URM women is that they could be driven in part by lower use of contraceptives ex-ante. In fact, panel A of Figure 6 shows that the use rate is meaningfully higher for White women than the national average, with the opposite true for URM patients. Compared to White women whose take-up of contraceptives is 37.9%, the average take-up rate is 6.3 percentage points (pp) lower among Black women and 8 pp lower among Hispanic women.

Figure 6: Heterogeneity in Rates of Contraceptive Use

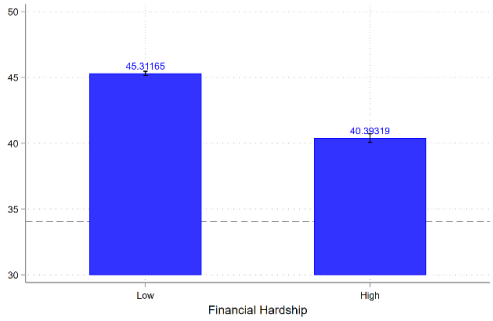
A. By Race/Ethnicity



B. By ZIP-Code's Socioeconomic Vulnerability (CDC's SVI)



C. By Patient's Financial Hardship



To explore the role of economic disadvantage, panels B and C of Figure 6 show contraceptive use rates by quartiles of ZIP Code socioeconomic vulnerability (based on the SVI) and by patients' levels of financial hardship. We find a meaningful gradient across both measures. The location-based gradient is consistent with the common concern that women who live in less affluent communities may have more limited access to continuous reproductive health services and education.

The findings overall suggest contraceptives as a relevant tool for policies targeted at equitable delivery of reproductive care. For this to be operational, evidence is needed to show that there are policy tools that can causally induce higher take-up of contraceptives among economically vulnerable individuals. In their recent work, Bailey et al. (2025) study a randomized controlled trial that varies the costs of contraceptives among low-income Americans. Indeed, they find that subsidizing contraceptives leads to large and persistent increases in use of contraceptives, resulting in significantly fewer pregnancies and abortions within two years.

3.3. Analysis: Efficiency

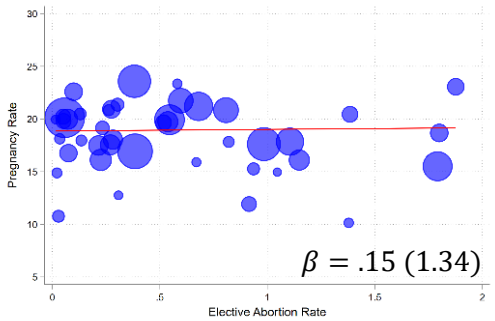
Our investigation of efficiency considerations focuses on studying state-level patterns by their rates of abortion. This is motivated by the policy discussion centering around state-level regulations of abortion services. However, it is important to note that these are equilibrium relationships, capturing both demand and supply factors.

One moral hazard concern is with respect to a wider use of elective abortions at the ex-post stage of experiencing the event of an unwanted pregnancy. The idea is that wider availability of this welfare-costly "contraception of last resort" might reduce ex-ante "preventive" behaviors to avoid reaching that point. Patterns that would be consistent with this concern include a positive correlation between elective abortion rates and pregnancies and a negative correlation between elective abortion rates and contraceptive use.

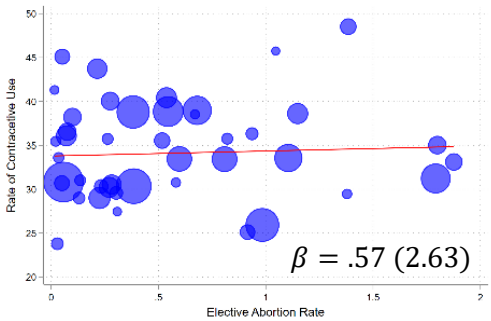
Panels A and B of Figure 7 study these relationships. Each plot displays the average outcome by state (for the outcome indicated in the panel title) as a function of states' rates of elective abortions. We also report the estimate of the slope from a linear fit that weights state observations by the inverse of the variance of the outcome. The results show no evidence of systematic moral hazard based on the correlational test that we provide.

Figure 7: State-Level Relationships between Reproductive Outcomes and Abortion Rates

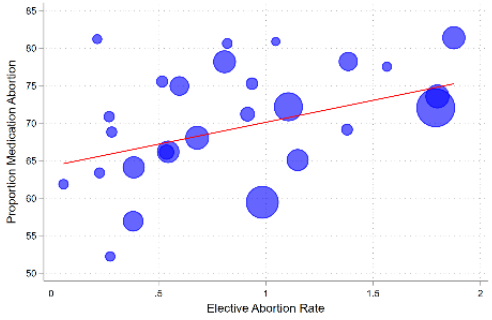
A. Pregnancy Rates



B. Rate of Contraceptive Use



C. Proportion Medication Abortion out of All Elective Abortions



To identify whether the marginal abortion is procedural or medical, we use the same approach in panel C to explore how the medical share varies with the states' elective abortion rate. Here, we only include states with more than 1,000 abortions in each year (where the median per year is 1,383). It is clear that as abortion rates rise, the share that is medical steadily increases. The positive slope (from the weighted regression) suggests that the marginal abortion is medication-based, implying that medication could be an active margin for access policies of contraction or expansion.

Finally, we assess whether regulations related to access via medication abortions could interact either favorably or unfavorably with equality-related goals. We run the same state-level regressions but for each subpopulation separately. The results are provided in columns 2-4 of Table 3. While the relationship weakly holds across subgroups, the national expansion in the share of medication abortion is largely driven by White women. This suggests that White women may be more sensitive to medication-based expansion policies than Black and Hispanic women of reproductive ages.

Table 3: Proportion Medication Abortion out of All Elective Abortions

Group:	All	Black	Hispanic	White
Slope	6.38	3.07	2.31	10.54
	(2.43)	(1.62)	(1.31)	(4.71)
Constant	63.58	59.31	66.55	68.07
	(3.00)	(3.51)	(3.66)	(3.03)
Number of observations	52	52	52	52
Number of States	27	27	27	27

3 Concluding Remarks and Policy Takeaways

This paper provides new evidence on post-Dobbs reproductive health in the US using nationwide Electronic Health Records (EHRs) that cover 40% of women of reproductive ages. We find that Black and Hispanic women face a much higher risk of experiencing the event of an unwanted pregnancy, which comes in the form of both higher incidence rates and a greater degree of uncertainty. The evidence suggests that part of these gaps can be explained by lower rates of contraceptive use ex-ante. This pattern similarly holds among women who face higher economic vulnerability, pointing to contraceptive use as a tool to enhance equality in reproductive health outcomes. We find no evidence of moral hazard in the context of a wider availability of elective abortions, in that states with higher abortion rates do not display higher pregnancy rates or reduced use of contraceptive. Lastly, we show that the marginal abortion is medical rather than procedural, highlighting medication abortion as an active margin for state-level access policies, whether contractionary or expansionary.

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