The Consequences of Being Denied an Abortion on Women's Physical and Mental Health*

Juliana Londoño-Vélez Estefanía Saravia

Preliminary. Please do not cite or circulate.

This version: March 25, 2026

Abstract

This paper estimates the causal effects of abortion denial on women's physical and mental health using comprehensive administrative data from Colombia. We exploit the country's *tutela* system—which allows women to petition judges for timely abortion care—and the random assignment of cases to judges with differing propensities to deny requests as an instrument for abortion denial. Denial reduces access to abortion by nearly 50 percentage points. We find no evidence that obtaining an abortion worsens mental health. In contrast, abortion denial leads to large and immediate increases in depression and anxiety diagnoses and in the use of mental-health medications, with effects that persist for at least three years. Denial also causes sustained deterioration in physical health, including higher rates of infections and septicemia, chronic pain, and increased emergency department visits and hospitalizations. These effects are especially pronounced among women seeking care later in pregnancy and those with pre-existing mental-health conditions, but remain large even among women with no prior history. Finally, abortion denial leads to short-run declines in contraceptive use, with no lasting effects on subsequent use of either reversible or permanent methods. Overall, restricting abortion access imposes substantial and persistent health costs, underscoring the importance of timely access to safe abortion care for women's health and well-being. **JEL:** I14, I18, J13, J16.

*Juliana Londoño-Vélez: Assistant Professor, Department of Economics, UCLA, Bunche Hall 8283, 350 Portola Plaza, Los Angeles, CA 90095, USA (j.londonovelez@econ.ucla.edu). Estefanía Saravia: Ph.D. Student, Department of Economics, UCLA, Bunche Hall 8283, 350 Portola Plaza, Los Angeles, CA 90095, USA (esaravia@g.ucla.edu). We thank Martha Bailey, Adriana Lleras-Muney, Yotam Shem-Tov, Amy Finkelstein, Alessandra Voena, Manasi Deshpande, Jonathan Kolstad, and seminar participants at UCLA for helpful feedback and discussions. We gratefully acknowledge financial support from the California Center for Population Research at UCLA (P2CHD041022). This study was approved by UCLA's IRB (IRB#23-001353).

1 Introduction

With the overturning of *Roe v. Wade* in the United States, major medical and psychological associations have warned that restricting abortion access may push women toward unsafe procedures and increase risks to their mental health (APA, 2022; WHO, 2024; Xing et al., 2023). Anti-abortion groups, by contrast, argue that abortion itself harms women physically and psychologically—claims that conflict with the prevailing medical consensus (APA, 2008; National Academies of Sciences, Engineering, and Medicine, 2018). Despite the high policy stakes, rigorous causal evidence on the health consequences of abortion—and of being denied access—remains limited due to persistent challenges in measurement and identification.

The strongest evidence to date comes from the U.S. Turnaway Study, which followed nearly 1,000 women who sought abortions and compared those denied care after exceeding gestational-age limits with those who obtained the procedure (Foster, 2020). Denial was linked to worse economic outcomes (Foster et al., 2018; Miller et al., 2023), yet researchers found no long-term differences in self-reported mental or physical health (Biggs et al., 2018, 2017; Foster et al., 2015; Ralph et al., 2019). These null results are striking given well-established links between economic conditions and health (Chetty et al., 2016; Sun et al., 2021), and may reflect limitations such as small sample sizes in later waves, reliance on self-reported measures, and potential biases from recall error, nonresponse, and selective attrition (Miller et al., 2020). As a result, important gaps remain in our understanding of the causal effects of abortion access on women's health.

This paper estimates the causal effect of being denied an abortion on women's physical and mental health. We exploit institutional features of abortion access in Colombia, where women frequently seek abortions through *tutelas*—constitutional writs that allow judges to order health insurers (EPS) and providers (IPS) to deliver timely care (Londoño-Vélez and Saravia, 2025). We link the universe of abortion-related *tutelas* filed in Colombia's four largest judicial districts—Bogotá, Medellín, Cali, and Barranquilla, where cases are randomly assigned to judges—to rich longitudinal administrative health records capturing all interactions with the health system nationwide, including prescriptions, consultations, procedures, emergency department (ED) visits, and hospitalizations.[1] We leverage this random assignment and substantial cross-judge variation in abortion-related leniency in a judge-leniency design (Chyn et al., 2024; Kling, 2006).[2]

[1] Diagnoses are recorded using the International Classification of Diseases tenth revision (ICD-10) codes, and medications are coded according to the Anatomical Therapeutic Chemical (ATC) system. Both systems are internationally recognized and widely used in clinical and administrative health data.

[2] Results are robust to using judge sex as an alternative instrument, as in Londoño-Vélez and Saravia (2025).

More than 100,000 women sought abortions through *tutelas*, and roughly half were denied by the randomly assigned judge. Leveraging this random assignment, we find that abortion denial reduces the probability of obtaining an abortion by 49.7 percentage points (p.p.), increases the likelihood of carrying the pregnancy to term by 21 p.p., and raises the probability of ending the pregnancy through other means by 28.7 p.p., indicating substantial reallocation of pregnancy outcomes.

We next examine the health consequences of this reallocation. Non-denied women show no increase in mental-health diagnoses or prescription use over the following three years. In stark contrast, abortion denial leads to large and persistent mental-health harms. Immediately after denial, the probability of any mental-health diagnosis rises by 26 p.p.—an eightfold increase relative to the pre-denial mean—driven primarily by depression and anxiety. In the same quarter, the probability of redeeming mental-health prescriptions increases by nearly 7 p.p. (230%). These effects attenuate over time but remain economically meaningful three years later; for example, prescription use is still 0.8 p.p. (27%) higher. Denial also increases treatment intensity, with antipsychotic use rising by 4.5 p.p. and remaining 0.5 p.p. higher three years later, pointing to persistent and severe mental-health deterioration.[3]

More than 90% of women seeking abortions through *tutelas* have no documented history of mental-health conditions prior to filing. Although effects are larger among women with pre-existing conditions—diagnoses rise by 41.8 p.p. and redeemed prescriptions by 17.6 p.p.—they remain large and statistically significant even among those with no prior history. This pattern indicates that abortion denial is a substantial mental-health shock, not merely an exacerbation of existing conditions. Consistent with this interpretation, effects are large across subgroups, including women at different gestational ages and parity levels.

Barriers to access often delay women into seeking abortions through *tutelas* near the end of the first trimester, pushing care beyond the window when medication abortion or vacuum aspiration—safe and effective within 13 weeks—are typically used. As a result, abortions more often require dilation and curettage (D&C) and other surgical procedures, which carry higher risks as pregnancy advances (National Academies of Sciences, Engineering, and Medicine, 2018). Consistent with this clinical pattern, we observe immedi-

[3] The mental-health effects of abortion denial are large relative to other major adverse shocks. For example, parental death increases mental-health prescription use by 0.8 p.p. (30%) in the first year and 0.5 p.p. after four years (Daly et al., 2025). Spousal death raises prescription use by 12 p.p. initially and 4 p.p. (17%) after four years (Fadlon et al., forthcoming). Rape increases antidepressant use by 9 p.p. immediately and 5 p.p. after five years (Adams et al., 2026). Infertility increases prescription use by 4 p.p. (16%) after two years (Bögl et al., 2024).

ate complications among non-denied women, including a 5.6 p.p. increase in hemorrhage and a 0.7 p.p. increase in cervical laceration, uterine perforation, and rupture—especially among those filing in later trimesters.

In contrast, abortion denial leads to large and persistent physical harms. Infections and septicemia increase and remain elevated for nearly a year, while chronic pain persists for up to two years. Health-care utilization rises sharply: ED visits and hospitalizations increase within one quarter and remain elevated for at least three years. Three years later, denied women are 6.4 p.p. more likely to visit the ED and 3.8 p.p. more likely to be hospitalized, with larger effects among those denied later in pregnancy.

Taken together, these patterns suggest that abortion denial shifts both the timing and setting of care. Denied women may turn to informal or self-managed abortions not captured in administrative data, which carry higher health risks (Haddad and Nour, 2009), while also delaying necessary care. The result is a deterioration in physical health that is immediate, severe, and long-lasting.

Finally, we examine the impact of abortion denial on subsequent contraceptive use. Denial leads to a temporary *decline* in the use of short- and long-acting reversible contraceptives (SARCs and LARCs), as well as permanent methods, in the immediate aftermath of filing. These effects dissipate over time: by three years, there are no statistically significant differences in reversible contraceptive use, and the reduction in permanent contraception is only marginally significant. Overall, the results provide little support for the view that abortion restrictions induce sustained substitution toward contraception. Instead, they suggest that abortion denial constrains access to reproductive health services and limits women's ability to exercise reproductive control.

These results contribute to the literature on the mental health consequences of abortion and abortion restriction, recently reviewed by Reardon (2018), Arboleda (2024), and Littell et al. (2024).[4] Most medical studies rely on observational designs and generally find no evidence that abortion itself worsens women's mental health; instead, outcomes appear shaped by sociodemographic factors, prior mental health history, and perceived stigma. The Turnaway Study found greater short-term distress after denial, particularly among women with prior conditions, but convergence over time (Biggs et al., 2018, 2017; Foster et al., 2015). We build on this work by combining causal identification with longitudinal administrative data that avoid reliance on self-reports, and document persistent mental-health harms from abortion denial.

Our results also contribute to the literature on the physical health effects of abor-

[4] See also Bellieni and Buonocore (2013); Charles et al. (2008); Coleman (2011); Fergusson et al. (2008); Liu et al. (2023); Major et al. (2009); Robinson et al. (2009); Steinberg et al. (2019).

tion and abortion restrictions (Bartlett et al., 2004; Clarke and Mühlrad, 2021; Farin et al., 2024; Gardner, 2024; Gerdts et al., 2016; Gipson et al., 2008; Grossman et al., 2008; Ralph et al., 2019; Stevenson, 2021; Upadhyay et al., 2015; Zane et al., 2015). Most prior studies rely on policy variation, while the main individual-level evidence—the Turnaway Study—compares women who obtained abortions to those denied and carrying to term, raising concerns about selection. In Londoño-Vélez and Saravia (2025), we use this design to show that abortion denial increases mortality and worsens self-reported physical health among survivors. Here, we extend the analysis across multiple judicial districts and leverage administrative health data to estimate a broader set of causal effects on women's physical and mental health.

2 Background

2.1 Colombia's Abortion Law and Persistent Barriers to Access

Until 2006, Colombia criminalized all abortions without exception (Law 95/1936): women faced up to 4.5 years in prison and providers up to 10. In 2006, the Constitutional Court ruled that a total ban violated women's fundamental rights—including life, health, equality, and dignity (Sentence C-355)—and decriminalized abortion under three circumstances: (1) when a physician certifies severe fetal malformations incompatible with life; (2) when the pregnancy results from rape, incest, or non-consensual insemination, reported to authorities; and (3) when a physician or psychiatrist certifies that the pregnancy endangers the woman's life or her physical, mental, emotional, or social health.[5] The Court imposed no gestational limits and required all public and private providers to deliver safe abortion care free of charge within five days of a request. In 2022, Colombia further decriminalized all abortions before 24 weeks (Sentence C-055); after 24 weeks, only the 2006 exceptions apply.

Although the 2006 ruling expanded reproductive rights, substantial barriers persisted. Because abortion remained illegal outside the specified exceptions, both women and providers continued to face stigma. Many providers refused to perform abortions, citing legally protected conscientious objection, and women meeting legal criteria were still denied care. Misinterpretation of the ruling—such as ignoring threats to mental or

[5] The Court did not require a woman to face life-threatening or severe, irreparable health risks for abortion to be legal. Psychological or emotional harm alone is sufficient. By recognizing social health, the Court also allowed physicians to consider a woman's broader social context, including how continuing an unwanted pregnancy may affect her well-being, autonomy, education, or employment opportunities (Fiscalía General de la Nación, 2016).

social health or imposing gestational age limits—further restricted access. Insurers, responsible for coordinating care, frequently failed to connect women with willing providers by lacking referral networks, rejecting out-of-network certifications, disregarding psychological assessments, questioning sexual assault claims, or demanding unnecessary documentation or judicial approval. These failures produced delays and outright denials of care (Diaz Amado et al., 2010; Baum et al., 2015; Brack et al., 2017; DePiñeres et al., 2017; Fink et al., 2016; González-Vélez and Castro, 2017; Médicos Sin Fronteras, 2019; Stifani et al., 2018).

2.2 Seeking Abortions Through *Tutelas*

When women face barriers to abortion services, they can enforce their rights through *tutelas*, a fast-track constitutional remedy designed to protect fundamental rights when delay would cause irreparable harm. Established under Article 86 of Colombia's 1991 Constitution, the *acción de tutela* allows individuals to seek immediate judicial protection when a fundamental constitutional right is violated or threatened by a public authority or by private actors providing public services, including health insurers and providers.

The *tutela* process is summary, informal, and expedited. It does not require legal representation and can be filed through a simple written petition describing the parties, the relevant facts, and the right allegedly violated. Judges decide cases based on this information alone—without hearings or direct interaction with the claimant—and must issue a ruling within ten days, either granting relief, denying the claim, or declaring the petition inadmissible. Claimants are typically given three days to correct incomplete filings, and any appeal (*impugnación*) must be resolved within twenty days of the initial filing.

Rulings are immediately enforceable, and noncompliance may trigger contempt sanctions, including fines or imprisonment. Consistent with these features, extensive evidence shows that women frequently rely on *tutelas* to obtain abortion services when insurers or providers obstruct access (Londoño-Vélez and Saravia, 2025; Stifani et al., 2018).

Tutelas may be filed in the municipality where the claimant resides, where the alleged violation occurred, or where its effects are felt. Once filed, cases are assigned to judges through an automated random-assignment system designed to promote impartiality, limit strategic filing, and reduce opportunities for manipulation, as mandated by statutory law and regulations issued by the Constitution Court and the Consejo Superior de la Judicatura. Since the early 2000s, the four largest judicial districts we study have relied on *Justicia Siglo XXI*, a case-management system that electronically registers, randomly assigns, and tracks cases. This system facilitates random assignment and enhances

transparency in high-volume courts.

3 Data and Summary Statistics

Our analysis draws on several administrative data sources:

1. **Abortion-rights *tutelas*, judges, and judicial outcomes (SAMAI, Consejo de Estado; Corte Constitucional).** We use the universe of abortion-rights *tutelas* filed between 2006 and 2022 in Colombia's four largest judicial districts administering cases through the automated *Justicia Siglo XXI* system: Bogotá (Bogotá D.C. and La Calera), Medellín (Medellín, Envigado, Bello, Itagüí), Cali, Barranquilla. This system has assigned cases to judges randomly throughout the entire study period. Together, these districts account for more than 108 thousand abortion-rights *tutelas*, representing the overwhelming majority of all such cases filed nationwide. The records include the petitioner's full name and municipality of residence, the judge assigned to the case, and their decision (accepted, denied, or deemed inadmissible).[6]

2. **Births and deaths.** We use Vital Statistics Records collected by Colombia's National Statistics Agency (DANE). These records comprehensively capture all registered live births and deaths reported by hospitals, clinics, physicians, nurses, and other health professionals nationwide from January 2007 through December 2023.

3. **Health outcomes.** We use longitudinal microdata from the Ministry of Health and Social Protection's Sistema Integral de Información de la Protección Social (SISPRO), an integrated information system that consolidates administrative records on health service utilization (RIPS), insurance enrollment (BDUA), and demand management (GD), and other health-sector databases. This national system covers all documented interactions with the health system in Colombia, including outpatient visits, emergency care, hospitalizations, diagnostic and therapeutic procedures, and other medical services. Health care providers—including primary care centers, clinics, and hospitals—report detailed information on each encounter, including diagnoses coded with four-digit ICD-10 classifications, six-digit procedural codes, and the prices charged for services and procedures. Medications dispensed through insurers are recorded and classified using the ATC coding system. Appendix B lists the exact codes for all of our outcomes. Data are available from 2009 through 2025.

[6] The data do not report the *tutela* filing date, only the date the case was received by the Constitutional Court. We therefore impute the filing date as ten days earlier, consistent with the requirement that judges rule within ten days.

Summary Statistics. Table I reports summary statistics for the study sample. Column (1) presents baseline characteristics for the 103,345 women filing 108,126 abortion *tutelas*. Before filing, 80% had at least one recorded interaction with the health-care system.

Administrative health records include age, health-insurance regime, and place of residence. Consistent with population size, most *tutelas* were filed in Bogotá (54%), followed by Medellín (26%), Cali (12%), and Barranquilla (9%). At filing, women were on average 26 years old, and 72% were enrolled in the subsidized health-insurance regime (*régimen subsidiado*), which serves poor and vulnerable populations. The vast majority lived in urban areas: 94% in municipal seats, 2% in other populated centers, and 4% in rural areas.

Using the procedure described in Appendix B, we infer gestational age at filing for nearly two-thirds of the sample. Among these women, 55%—corresponding to 35% of the full sample—filed in the first trimester, while the remaining 45%—29% of the full sample—filed later in pregnancy.

The table also reports pre-filing health characteristics measured one to two years before filing, including indicators for any ED visit, hospitalization, mental-health diagnosis, and redeemed mental-health prescriptions. During this period, 21% of women had at least one ED visit, 11% were hospitalized, 9% had a recorded mental-health diagnosis, and 6% redeemed a mental-health prescription.

Columns (2) and (3) compare women whose abortion-rights *tutela* was denied versus not denied, and Column (4) reports p-values for equality tests. Overall, 48% of cases were denied. Denied and non-denied women differ along several observable dimensions. Because judges in Bogotá are less likely to deny abortion-related *tutelas*, denied women are less likely to have filed there. They are also slightly older, less likely to be enrolled in the subsidized regime, and more likely to live outside municipal seats. In addition, they are less likely to have an inferred gestational age and slightly less likely to have experienced a prior hospitalization. At the same time, denied women exhibit worse pre-existing mental-health profiles: they are twice as likely to have a recorded mental-health diagnosis and 63% more likely to have redeemed a mental-health prescription prior to filing.

Columns (6) and (7) compare women who obtained abortions after filing a *tutela* with all women who obtained recorded abortions, regardless of whether they filed a *tutela*. Although there are more abortion-related *tutelas* than recorded abortions, only 26.4% of filings result in an abortion within nine months—reflecting both high denial rates and incomplete take-up among those granted relief. Overall, 28% of recorded abortions occur following a *tutelas*, highlighting the central role of this legal channel for a subset of women.

Column (8) shows that *tutela* filers differ sharply from the broader population of abortion recipients. Women who obtain abortions—whether or not through *tutelas*—are more

connected to the health system, nearly nine years older on average, and of higher socioeconomic status, as reflected in lower enrollment in the subsidized regime. They are also more likely to live in urban areas. To the extent that filing a *tutela* signals barriers to access, these patterns indicate that such barriers disproportionately affect younger, poorer, and less-connected women.

These disparities persist even among women who ultimately obtain abortions. Column (9) shows that *tutela* filers access abortion at more advanced gestational ages, consistent with substantial delays in care. On average, 31.8 days elapse between filing and obtaining an abortion, pushing many women from the first into the second trimester. While roughly one-third file in the first trimester, only one-fifth of them remain in the first trimester at the time of abortion, and more than two-fifths obtain care in the second or third trimester. *Tutela* filers are also slightly more likely to have prior hospitalizations and pre-existing mental-health conditions.

4 Methodology

We estimate the causal effect of being denied a wanted abortion by exploiting the random assignment of *tutelas* to judges and substantial heterogeneity in judges' attitudes toward abortion.

Our identification strategy exploits cross-judge variation in denial propensities. During our study period, 108,126 abortion-related *tutelas* were adjudicated by 1,773 judges, who differ markedly in their likelihood of denying cases. Figure I illustrates this variation: the histogram shows the distribution of judges' leave-one-out mean denial rates, residualized on judicial district-by-office-by-quarter fixed effects. While roughly half of cases are denied on average, there is substantial dispersion across judge: the gap between the 10th and 90th percentiles is 37 p.p.

We exploit this variation by constructing a judge-specific measure of leniency—the leave-one-out mean denial rate among all other abortion seekers assigned to the same judge—and use it as an instrument for abortion denial. Conditional on random assignment, this measure captures exogenous variation in the probability that a woman is denied an abortion based on the judge to whom her case is assigned. Formally, we estimate the following instrumental variables (IV) specification:

$$Denied_i = \gamma Z_{j(i)} + \delta_{o(it)} + e_{it}\,, \tag{1}$$

$$Y_{it} = \beta Denied_i + \delta_{o(it)} + \epsilon_{it}\,, \tag{2}$$

where $Denied_i$ equals one if the randomly assigned judge denied case i (the first *tutela* filed for a given pregnancy), $Z_{j(i)}$ is the leave-one-out denial rate of judge j, $\delta_{o(it)}$ denotes judicial district-by-office-by-quarter fixed effects, and Y_{it} is the outcome for case-individual i at time t.[7]

As a robustness check, we use judge sex as an alternative instrument. Londoño-Vélez and Saravia (2025) show that, in Medellín, female judges are substantially less likely than male judges to deny abortion-related *tutelas*. Motivated by this evidence, we instrument abortion denial with an indicator for whether a woman is randomly assigned to a female judge:

$$Denied_i = \gamma Female_{j(i)} + \delta_{o(it)} + e_{it}\,, \tag{3}$$

$$Y_{it} = \beta Denied_i + \delta_{o(it)} + \epsilon_{it}\,, \tag{4}$$

where $Female_{j(i)}$ equals one if the assigned judge is female.

We replicate the qualitative pattern in other judicial districts, but document substantial heterogeneity in both overall denial rates and the sex gap in judicial decisions, as discussed below. Given this variation, we use the judge-leniency measure as our primary instrument and treat judge sex as a robustness check (Section 5.6).

Under standard assumptions, IV estimation identifies a weighted average of local average treatment effects (LATEs) for compliers (Imbens and Angrist, 1994). With the judge-leniency instrument, compliers are women whose case outcomes would change if assigned to a different judge. With the judge-sex instrument, compliers are those whose outcomes would differ if assigned to a male rather than a female judge.

We next assess the validity of our instruments by discussing the four standard conditions—relevance, exogeneity, exclusion, and monotonicity—and presenting supporting institutional and empirical evidence.

1. Relevance. Figure I plots a local linear regression of residualized abortion denial on residualized judge stringency (in blue), showing a strong, approximately linear relationship between the instrument and abortion denial. A linear regression yields a coefficient of 0.966 (s.e. = 0.005), indicating that assignment to a more stringent judge translates nearly one-for-one into a higher probability of denial.

Table A.1 further reports first-stage estimates for both instruments. Column (1) shows that judge stringency strongly predicts abortion denial, with a Kleibergen–Paap Wald F-statistic of 32,430.67, relieving concerns about weak instruments. Column (2)

[7] Individuals can appeal *tutela* decisions, but the second judge upholds the initial ruling in most cases, with fewer than 3.5% overturned (Londoño-Vélez and Saravia, 2025).

shows that judge sex is also a relevant predictor: female judges are 6.3 p.p. less likely than male judges to deny abortion-related *tutelas*.[8]

2. Exogeneity. Our identification strategy relies on the assumption that cases are as-good-as-randomly assigned to judges. Figure I provides visual evidence consistent with this assumption: the predicted abortion denial rate—constructed from a regression of abortion denial on all available covariates—is flat across the full support of the instrument.

Table II presents complementary balance tests. Column (1) reports means for non-denied women. Column (2) compares baseline characteristics between women whose *tutela* was denied and those whose claim was not denied, controlling for district-by-office-by-quarter fixed effects from Specification (1). As expected, observables predict abortion denial: denied women are slightly older, less likely to have prior contact with the health system, more likely to live outside municipal seats, and less likely to have an inferred gestational age or a prior hospitalization. They also exhibit substantially worse pre-existing mental-health profiles. A joint F-statistic of 69.98 strongly rejects the null that these characteristics do not predict denial (the p-value is 0.00).

In contrast, observable characteristics do not predict assignment to judges. Column (3) shows that none of the 13 baseline characteristics vary systematically with assignment to a more stringent judge: all coefficients are small, and we fail to reject the joint null (the p-value is 0.38). Column (4) reports analogous results using judge sex; again, no coefficients are statistically significant, and the joint null cannot be rejected (the p-value is 0.43). These findings are consistent with random assignment.

We further test this assumption by estimating regressions of claimant characteristics on judge fixed effects, as in Equation (5),

$$X_i = \sigma_{j(i)} + \delta_{o(i)} + \varepsilon_i \,, \tag{5}$$

where X_i denotes baseline characteristics (e.g., age), $\sigma_{j(i)}$ are judge fixed effects, $\delta_{o(i)}$ are district-by-office-by-quarter fixed effects, and ε_i is the error term. An F-test of the equality of judge fixed effects assesses whether assignment is independent of claimant characteristics. Table III shows no systematic relationship between judge fixed effects and 13 baseline characteristics; the joint F-test fails to reject the null (the p-value is 0.62).

3. Exclusion. The exclusion restriction requires that judges affect women's outcomes

[8] Notably, while the sex gap in denial rates is large and statistically significant in Medellín, Barranquilla, and Cali, it is small and statistically indistinguishable from zero in Bogotá. Lleras-Muney et al. (2025) examine this heterogeneity in judicial attitudes toward abortion, with a particular focus on the determinants of male judges' views on women's rights.

only through abortion denial. This assumption is plausible in our setting. First, we focus exclusively on abortion-related *tutelas*. Second, judges' role is limited to ruling on the case—granting, denying, or declaring it inadmissible—and they do not influence other aspects of the process (Art. 14 of Decree 2195/1991). Third, judges do not interact directly with claimants, as cases are decided without hearings. Together, these features allow us to isolate the effect of the abortion denial. Consistent with this interpretation, we implement the tests proposed by Frandsen et al. (2023) and find no evidence of violations (Table A.2).

4. Monotonicity. Using judge stringency as an instrument requires that women denied by a given judge would also have been denied by a more stringent judge, while women granted an abortion would not have been denied by a less stringent judge. This assumption could be violated if judges are relatively strict for some types of cases or women and more lenient for others.

In our setting, however, this concern is mitigated by constructing judge leniency using only abortion-related *tutelas*, rather than all cases. We provide two empirical tests of the monotonicity assumption. First, monotonicity implies that first-stage estimates should be nonnegative across all subsamples. Table A.3 confirms this prediction. Second, we implement the tests proposed by Frandsen et al. (2023) and find no evidence of violations (Table A.2). Taken together, these tests provide no evidence against monotonicity.[9]

Complier Characteristics Column (5) of Table I reports baseline characteristics of compliers—women whose abortion-related *tutela* outcomes are affected by assignment to a less lenient judge and who are denied an abortion as a result. Relative to the full sample of women filing abortion-related *tutelas* (Column 1), compliers are more likely to have filed in Bogotá. They are slightly more likely to be in the subsidized health regime, and slightly less likely to have had a prior ED visit, a hospitalization, or a documented history of mental-health conditions before filing.

[9] Under the alternative approach, monotonicity requires that women denied by a female judge would also have been denied by a male judge. Figure A.1 shows that female judges are 6.3 p.p. less likely to deny abortion-related *tutelas* than male judges. However, the distributions of denial rates for male and female judges overlap, indicating that some female judges are stricter than some male judges. This overlap violates pairwise monotonicity. A weaker average monotonicity assumption—requiring that assignment to a female judge weakly reduces denial on average—is more plausible.

5 Results

5.1 Induced Recorded Abortion

We begin by examining the effect of abortion denial on induced abortions recorded in health records. We define induced abortion as the intentional termination of pregnancy through medication (e.g., mifepristone and misoprostol) or procedures such as vacuum aspiration and (D&C).

Figure II presents IV estimates and 95% confidence intervals for the probability of obtaining an abortion in the quarters surrounding the filing of an abortion-rights *tutela*. Prior to filing, abortion rates are close to zero and do not differ between women whose *tutela* is denied and those whose claim is not denied. After filing, denial leads to an immediate and substantial reduction in access: the probability of obtaining an induced abortion declines by 49.5 p.p. The effect is highly statistically significant (p-value $= 0.00$) and economically large, especially given that only 0.3% of denied women obtained an abortion one year before filing.

Panel (a) of Table IV decomposes filing-quarter effects by abortion method. Because many women seek abortions through *tutelas* relatively late in the first trimester—when surgical procedures are more prevalent—the reduction is concentrated in D&C and other surgical abortions (-46.6 p.p.), while medication abortion or vacuum aspiration declines by only 3.8 p.p. Consistent with this timing, most abortions obtained after filing are surgical rather than medication-based.

Panel (b) of Table IV shows that the probability of ever obtaining an induced abortion within three years falls by 49.3 p.p., nearly identical to the contemporaneous effect. This suggests that very few women obtain a subsequent abortion after filing a *tutela*.

Table A.4 examines broader pregnancy outcomes within nine months of filing. Abortion denial increases the probability of carrying the pregnancy to term by 21 p.p. It also raises terminations through other means (the residual category) by 28.7 p.p., suggesting that many women who are denied an abortion subsequently end their pregnancies outside the formal health system.

5.2 Mental Health

Figure III examines the effects of abortion denial on mental health before and after women file an abortion-rights *tutela*. Panel (a) reports effects on the probability of receiving a mental-health diagnosis. Prior to filing, there are no detectable differences. Immediately after filing, however, abortion denial leads to a sharp increase: the probability of a mental-

health diagnosis rises by 25.6 p.p. Given that only 3.2% of denied women had a diagnosis one year before filing, this represents an eightfold increase.[10]

Although the effect attenuates over time, it remains positive and statistically significant three years later, indicating persistent mental-health impacts. Consistent with this pattern, abortion denial increases the probability of ever receiving a mental-health diagnosis by 19.3 p.p., or 139% (Figure A.2).

Table V quantifies these effects and decomposes them by diagnosis category. Column (1) reports immediate (Panel a) and three-year (Panel b) impacts on any mental-health diagnosis, while columns (2)–(6) examine specific conditions. The increase is driven primarily by depression and anxiety, which rise by 14.7 p.p. and 15.8 p.p., respectively. Effects on PTSD are small (0.3 p.p.) and only marginally significant. Notably, elevated anxiety persists three years after filing, pointing to lasting mental-health consequences.

Panel (b) of Figure III examines prescription medication use for mental-health conditions. Among denied women, 3% redeemed a mental-health prescription one year before filing. Following denial, this probability increases by 6.9 p.p., a 230% rise. Although the effect diminishes over time, it remains positive and statistically significant three years later (0.8 p.p., or 27%), consistent with sustained treatment needs.

Column (8) of Table V focuses on antipsychotic medications, typically prescribed for severe psychiatric conditions such as schizophrenia, bipolar disorder, and severe depression.[11] Abortion denial increases the probability of redeeming antipsychotics by 4.5 p.p.–more than a sevenfold increase relative to baseline—and this effect remains elevated three years later (0.5 p.p., or 83%). This pattern suggests that denial affects not only the likelihood of treatment but also its intensity.

5.3 Physical Health

This section examines the impact of abortion denial on women's physical health.

We begin by focusing on medical conditions most directly linked with induced abortion. Figure IV reports effects in the quarters surrounding the filing of an abortion-related *tutela*. Panels (a) and (b) show impacts on hemorrhage (Panel a) and uterine perforation,

[10] This effect is unlikely to reflect strategic diagnoses to qualify for abortion on mental-health grounds. First, our IV strategy instruments denial with judge-specific leniency. Second, event time is defined relative to the *tutela* filing date, by which point required medical documentation has already been submitted. Third, although some denied women subsequently appeal, such cases are a minority (Londoño-Vélez and Saravia, 2025). Finally, the persistence of medication use below suggests persistent deterioration rather than transitory or strategic diagnoses.

[11] These medications are associated with clinically meaningful adverse effects, including movement disorders, metabolic complications, cardiac effects, sedation, hyperprolactinemia-related infertility, and, in rare cases, liver toxicity (Chokhawala and Stevens, 2025).

rupture, or related injuries (Panel b). Consistent with the procedural risks of abortion, denial *reduces* these complications: hemorrhage falls by 5.6 p.p. (467%) and uterine injuries by 0.7 p.p (Table VI). These declines occur in the filing quarter—when denied women are less likely to undergo a recorded procedure—and dissipate quickly thereafter. Figure A.3 confirms that the reduction in hemorrhage is driven by abortion-related diagnoses, consistent with reduced exposure to procedure-related risks.

Panel (c) examines septicemia and infections. In the filing quarter, abortion denial reduces recorded diagnoses by 8.2 p.p., again reflecting fewer recorded procedures after denial. Beginning one quarter later, denial *increases* infections and septicemia by 4 p.p., with effects that persist for nearly a year. Additional evidence points to a shift in the type and timing of morbidity: non-abortion-related infections rise immediately, while abortion-related infections increase with a lag (Figure A.3). Consistent with emerging symptoms, prescriptions for septicemia and bacterial infection-related treatments rise by 7.9 p.p. in the filing quarter.

Taken together, these patterns suggest that abortion denial shifts both the timing and setting of care. While denial reduces immediate procedure-related complications, it is followed by increases in infections and treatment consistent with delayed or medically unmanaged care. One plausible interpretation is that some women obtain abortions outside the formal health system, where risks are higher and complications may arise with delay.

Panel (d) examines broader conditions affecting the abdomen, reproductive organs, and menstrual cycle. Abortion denial increases these diagnoses by 1.1 p.p. in the filing quarter and 3.9 p.p. in the following quarter, with effects that remain positive and statistically significant two years later, indicating persistent deterioration in physical health.

Figure V shows similar dynamics for health-care utilization. We observe a temporary decline in the filing quarter—consistent with fewer recorded abortion procedures—followed by sharp and persistent increases. ED visits rise by 6.4 p.p. (60%) three years after filing, and the probability of ever visiting the ED (excluding the filing quarter) increases by 24.8 p.p. (89%; Table VII). Hospitalizations follow a similar dynamic pattern: after an initial decline, they rise persistently, increasing 3.8 p.p. at three years and by 48.1 p.p (235%) in cumulative terms (excluding the filing quarter).

Finally, Table A.5 examines mortality. Consistent with Londoño-Vélez and Saravia (2025), abortion denial increases mortality in this larger sample of judicial districts, driven primarily by deaths related to septicemia and infections.

Overall, the evidence points to a clear pattern: abortion denial reduces immediate procedure-related risks but leads to substantial and persistent increases in morbidity,

health-care utilization, and mortality. These dynamics suggest that denial delays pregnancy resolution and may push some women toward unsafe or medically unmanaged methods, resulting in sustained deterioration in physical health.

5.4 Subsequent Contraceptive Behavior

This section examines how contraceptive use evolves after women seek an abortion through *tutelas*.

Figure VI and Table VIII report IV estimates of the effect of abortion denial on subsequent use of SARCs, LARCs, and permanent methods. Panel (a) presents effects on the probability of redeeming prescriptions for SARCs, including systemic hormonal contraceptives, vaginal rings, and spermicides. Abortion denial leads to a sharp but temporary decline in SARC use. In the filing quarter, denied women are 3.8 p.p. (146%) *less* likely to use SARCs, consistent with women who obtain abortions accessing contraception immediately after the procedure. This gap reverses in subsequent quarters: SARC use rises modestly among denied women as pregnancies are resolved—but the effect is short-lived. By three years, differences are close to nil and statistically insignificant.

Panel (b) reports effects on the probability of having an active LARC, including subdermal contraceptive implants and intrauterine devices. Abortion denial reduces active LARC use by 1.7 p.p. (425%) in the filing quarter, suggesting that women granted abortion access are more likely to initiate LARCs immediately. This effect fades quickly, with no detectable differences after six months.

Panel (c) reports effects on permanent sterilization procedures, including tubal ligation, salpingectomy, salpingo-oophorectomy, or hysterectomy. Denial reduces sterilization by 1.5 p.p. (1500%) in the filing quarter, again indicating that women granted abortions are more likely to undergo sterilization at that time. As with reversible methods, this effect fades over time and is only marginally significant three years later.

Taken together, these results provide little evidence that abortion denial induces sustained substitution toward contraception. Instead, the patterns point to short-run disruptions in access to reproductive health services. Abortion access and contraceptive use appear jointly determined, implying that denial not only restricts abortion but also temporarily limits women's ability to control their fertility.

5.5 Heterogeneity

Gestational age. Using procedural codes, we infer gestational age at filing for nearly two-thirds of women (Appendix B). While many seek abortions early, 45% of those with

inferred gestational age—28.5% of the full sample—file at later stages of pregnancy.

Table IV shows that abortion denial sharply reduces access across all gestational ages, with similar effects for women filing in the first trimester (-51.5 p.p.) and those filing later (-49.8 p.p.). However, downstream consequences differ markedly. The effects of abortion denial are more severe for women filing later in pregnancy. Tables V through VII show that, following denial, these women are nearly twice as likely to receive any mental-health diagnosis and more than three times as likely to be diagnosed with anxiety. They also face higher risks of uterine injury and experience larger increases in infections, chronic pain, and health-care utilization. Three years after filing, they are significantly more likely to visit the ED and to be hospitalized, indicating persistent deterioration in health.[12] Taken together, these findings underscore the importance of timely access in mitigating preventable health risks.

Prior mental-health diagnosis. Table A.6 examines heterogeneity by pre-existing mental-health status, defined as a diagnosis one to two years before filing. Although only 9.2% of women have a prior diagnosis, the effects of abortion denial are substantially larger for this group: the increase in subsequent diagnoses is nearly twice as large, and the increase in prescription use nearly three times as large. Importantly, denial also has large effects among women with no prior mental-health history. For this group, it raises the probability of any mental-health diagnosis by 24.9 p.p., driven primarily by depression (14.3 p.p.) and anxiety (15.1 p.p.), and increases prescription use by 6.1 p.p., including a 4.4 p.p. rise in antipsychotic use.

These patterns highlight two key points. First, abortion denial amplifies pre-existing vulnerabilities. Second, it also induces large and clinically meaningful mental-health deterioration among otherwise healthy women, indicating that denial acts as a substantial mental-health shock rather than merely exacerbating prior conditions.

Prior Parity. We next examine heterogeneity by prior parity using birth records from Vital Statistics. About 17% of women had at least one prior birth.

Table A.6 shows that abortion denial has markedly larger effects for these women. Immediately after filing, denial increases the probability of a mental-health diagnosis by 39.3 p.p. among women with prior births, compared to 23.5 p.p. among those without. These effects are driven by depression (24.2 vs. 13.1 p.p.) and anxiety (23.8 vs. 14.6 p.p.). Similarly, denial increases the probability of redeeming any mental-health prescription by 15.6 p.p. (vs. 5.6 p.p.) and antipsychotic use by 4.6 p.p. (vs. 4.4 p.p.). Overall,

[12] By contrast, effects on contraceptive use do not vary meaningfully by gestational age.

these results suggest that abortion denial is particularly harmful for women with greater caregiving responsibilities, amplifying psychological strain.

5.6 Robustness

Alternative Instruments. As explained in Section 4, we consider two alternative instruments for abortion denial: judge leniency (measured as the leave-out mean abortion denial rate) and judge sex. Because these instruments generate variation through different channels, they may identify effects for partially distinct complier populations. Figure A.4 compares our main estimates—covering recorded abortion access, mental-health diagnoses, hemorrhage, septicemia and infections, ED visits and hospitalizations, and contraceptive behavior—using judge leniency (blue) and judge sex (pink) as instruments. Despite the potential differences in complier groups, the estimated magnitudes are quantitatively similar across the two identification strategies. For relatively rare outcomes, such as hemorrhage and sterilization, estimates based on judge leniency are more precise, reflecting the greater variation provided by this instrument relative to the judge-sex indicator.

6 Discussion

This paper provides new causal evidence on the health consequences of abortion denial using comprehensive administrative data and quasi-random judicial assignment. We find no evidence that obtaining an abortion worsens mental health. In contrast, abortion denial leads to large immediate increases in depression and anxiety diagnoses, followed by smaller but persistent effects that remain detectable years later, along with sustained increases in mental-health medication use. These effects are especially pronounced among women with pre-existing conditions, consistent with denial exacerbating existing vulnerabilities. At the same time, large effects among women with no prior history indicate that abortion denial constitutes a substantial negative health shock, not merely the amplification of pre-existing risk.

The physical-health effects underscore the importance of timely access to care. While average risks of severe complications are low, they rise sharply with gestational age, when procedures become more complex. We find that abortion denial leads to persistent morbidity—including higher rates of infections and septicemia, chronic pain, and increased emergency department visits and hospitalizations—indicating that its consequences extend well beyond the immediate pregnancy period. The sustained increase in health-care utilization years after denial further suggests lasting costs for both individuals and health

systems.

These findings contribute to ongoing policy debates by documenting substantial and persistent health harms among women denied abortions. They also help reconcile the apparent tension with prior evidence. While the U.S. Turnaway Study finds no long-run differences in self-reported health, our estimates—based on administrative records—reveal large short- and medium-run effects. A likely explanation is measurement: diagnoses, procedures, and prescription claims capture clinically verified outcomes that may not be fully reflected in self-reports. In addition, our large-scale administrative data mitigate concerns about attrition, recall bias, and limited statistical power. Together, these differences suggest that earlier null results may partly reflect data limitations rather than the absence of health effects.

Several limitations warrant discussion. First, although random assignment of *tutelas* to judges provides strong internal validity, external validity may depend on features of Colombia's health and legal systems. Our setting captures women who pursue abortion access through *tutelas*, whereas others may turn directly to informal or clandestine procedures. Second, although our data cover nationwide interactions with the formal health system, we observe outcomes only for individuals who seek care, and may miss untreated conditions or services obtained outside the formal system. Finally, our measures rely on physicians' diagnostic and reporting practices, which may introduce measurement error.

These findings have clear policy implications. Restricting abortion access does not improve women's health and instead imposes substantial and lasting mental and physical health costs. Policies that delay or deny access—particularly those that push women to seek care later in pregnancy—may increase preventable health risks and raise demand for costly emergency and inpatient services. Expanding timely access to safe abortion care, alongside integrated reproductive and mental-health services, may therefore improve health and reduce downstream strain on health systems.

References

Adams, Abi, Kristiina Huttunen, Emily Nix, and Ning Zhang, "The Economic Impacts of Rape," 2026. IFS Working Paper, February.

Amado, Eduardo Diaz, Maria Cristina Calderon García, Katherine Romero Cristancho, Elena Prada Salas, and Eliane Barreto Hauzeur, "Obstacles and challenges following the partial decriminalisation of abortion in Colombia," *Reproductive Health Matters*, 2010, *18*, 118–126.

APA, "Report of the APA Task Force on Mental Health and Abortion," Technical Report, American Psychological Association, Washington, DC 2008. Accessed: 2025-10-01.

_ , "Resolution Affirming and Building on APA's History of Support for Reproductive Rights," https://www.apa.org/about/policy/resolution-reproductive-rights.pdf February 2022. Accessed: 2025-11-21.

Arboleda, N. N., "Mental Health Implications of Abortion and Abortion Restriction: A Brief Narrative Review of U.S. Longitudinal Studies," *American Journal of Psychiatry Residents' Journal*, 2024, *20* (1), 11–15. Published online 2024-09-06.

Bartlett, Linda A., Cynthia J. Berg, Holly B. Shulman, Suzanne B. Zane, Clarice A. Green, Sara Whitehead, and Hani K. Atrash, "Risk factors for legal induced abortion-related mortality in the United States," *Obstetrics and Gynecology*, 2004, *103* (4), 729–737.

Baum, Sarah, Teresa DePiñeres, and Daniel Grossman, "Delays and barriers to care in Colombia among women obtaining legal first- and second-trimester abortion," *International Journal of Gynecology and Obstetrics*, 2015, *131* (3), 285–288.

Bellieni, Carlo V. and Giuseppe Buonocore, "Abortion and subsequent mental health: Review of the literature," *Psychiatry and Clinical Neurosciences*, 2013, *67* (5), 301–310.

Biggs, M. Antonia, Heather Gould, Rana E. Barar, and Diana G. Foster, "Five-Year Suicidal Ideation Trajectories Among Women Receiving or Being Denied an Abortion," *American Journal of Psychiatry*, 2018, *175* (9), 845–852. PMID: 29792049.

_ **, Ushma D. Upadhyay, Charles E. McCulloch, and Diana G. Foster**, "Women's Mental Health and Well-being 5 Years After Receiving or Being Denied an Abortion: A Prospective, Longitudinal Cohort Study," *JAMA Psychiatry*, 2017, *74* (2), 169–178.

Bögl, Sarah, Jasmin Moshfegh, Petra Persson, and Maria Polyakova, "The Economics of Infertility: Evidence from Reproductive Medicine," 2024. Working paper, June 17.

Brack, Chelsey E., Roger W. Rochat, and Oscar A. Bernal, "'It's a Race Against the Clock': A Qualitative Analysis of Barriers to Legal Abortion in Bogotá, Colombia," *International Perspectives on Sexual and Reproductive Health*, 2017, *43* (4), 173–182.

Charles, Vignetta E., Chelsea B. Polis, Srinivas K. Sridhara, and Robert W. Blum, "Abortion and long-term mental health outcomes: a systematic review of the evidence," *Contraception*, December 2008, *78* (6), 436–450. Epub 2008 Sep 23.

Chetty, Raj, Michael Stepner, Sarah Abraham, Shelby Lin, Benjamin Scuderi, Nicholas Turner, Augustin Bergeron, and David Cutler, "The Association Between Income and Life Expectancy in the United States, 2001–2014," *JAMA*, 2016, *315* (16), 1750–1766.

Chokhawala, K. P. and L. Stevens, "Antipsychotic Medications," in "StatPearls [Internet]," Treasure Island (FL): StatPearls Publishing, 2025. Updated 2023 Feb 26.

Chyn, Eric, Brigham Frandsen, and Emily C Leslie, "Examiner and Judge Designs in Economics: A Practitioner's Guide," Working Paper 32348, National Bureau of Economic Research April 2024.

Clarke, Damian and Hanna Mühlrad, "Abortion laws and women's health," *Journal of Health Economics*, 2021, *76*, 102413.

Coleman, Priscilla K., "Abortion and mental health: quantitative synthesis and analysis of research published 1995–2009," *The British Journal of Psychiatry*, 2011, *199* (3), 180–186.

Daly, Moira, Mathias Fjællegaard Jensen, Ning Zhang, and Yunbin Zhang, "Effects of Parental Death on Youth," 2025. Working paper, August.

DePiñeres, Teresa, Sarah Raifman, Marcela Mora, Cristina Villareal, Diana Green FFoster, and Caitlin Gerdts, "'I felt the world crash down on me': Women's experiences being denied legal abortion in Colombia," *Reproductive Health*, 2017, *14* (1), 133.

Fadlon, Itzik, Astrid Sophie Fugleholm, and Torben Heien Nielsen, "Survivors' Mental Health and the Protective Role of Income Stability," *American Economic Review: Insights*, forthcoming.

Farin, Sherajum Monira, Lauren Hoehn-Velasco, and Michael F. Pesko, "The Impact of Legal Abortion on Maternal Mortality," *American Economic Journal: Economic Policy*, August 2024, *16* (3), 174–216.

Fergusson, David M., L. John Horwood, and Joseph M. Boden, "Abortion and mental health disorders: evidence from a 30-year longitudinal study," *British Journal of Psychiatry*, 2008, *193* (6), 444–451.

Fink, Lauren R., Kaitlyn K. Stanhope, Roger W. Rochat, and Oscar A. Bernal, ""The Fetus Is My Patient, Too": Attitudes Toward Abortion and Referral Among Physician Conscientious Objectors in Bogotá, Colombia," *International Perspectives on Sexual and Reproductive Health*, 2016, *42* (2), 71–80.

Fiscalía General de la Nación, "Directiva 0006 (27, marzo, 2016). Por la cual se adoptan directrices para la investigación y juzgamiento del delito de aborto," 2016.

Foster, Diana G., Julia R. Steinberg, Sarah C. M. Roberts, John Neuhaus, and M. Antonia Biggs, "A Comparison of Depression and Anxiety Symptom Trajectories Between Women Who Had an Abortion and Women Denied One," *Psychological Medicine*, 2015, *45* (10), 2073–2082.

Foster, Diana G, Lauren J Ralph, M Antonia Biggs, Caitlin Gerdts, Sarah C M Roberts, and M Maria Glymour, "Socioeconomic outcomes of women who receive and women who are denied wanted abortions," *American Journal of Public Health*, 2018, *108* (3), 407–413.

Foster, Diana Greene, *The Turnaway Study*, Scribner, 2020.

Frandsen, Brigham, Lars Lefgren, and Emily Leslie, "Judging Judge Fixed Effects," *American Economic Review*, January 2023, *113* (1), 253–77.

Gardner, Graham, "The maternal and infant health consequences of restricted access to abortion in the United States," *Journal of Health Economics*, 2024, *98*, 102938.

Gerdts, Caitlin, Loren Dobkin, Diana Greene Foster, and Eleanor Bimla Schwarz, "Side Effects, Physical Health Consequences, and Mortality Associated with Abortion and Birth after an Unwanted Pregnancy," *Women's Health Issues*, 2016, *26* (1), 55–59.

Gipson, Jessica D., Michael A. Koenig, and Michelle J. Hindin, "The effects of unintended pregnancy on infant, child, and parental health: a review of the literature," *Studies in Family Planning*, 2008, *39* (1), 18–38.

González-Vélez, Ana Cristina and Laura Castro, "Barreras de acceso a la Interrupción Voluntaria del Embarazo en Colombia," *La Mesa por la Vida y la Salud de las Mujeres*, 2017.

Grossman, Daniel, Kelly Blanchard, and Paul Blumenthal, "Complications after second trimester surgical and medical abortion," *Reproductive Health Matters*, 2008, *16* (31 Suppl), 173–182.

Haddad, Lisa B and Nawal M Nour, "Unsafe abortion: unnecessary maternal mortality," *Reviews in obstetrics & gynecology*, 2009, *2* (2), 122–126.

Imbens, Guido W. and Joshua D. Angrist, "Identification and Estimation of Local Average Treatment Effects," *Econometrica*, 1994, *62* (2), 467–475.

Kling, Jeffrey R., "Incarceration Length, Employment, and Earnings," *American Economic Review*, 2006, *96* (3), 863–876.

Littell, Julia H., Sarah Young, Therese D. Pigott, M. Antonia Biggs, Trine Munk-Olsen, and Julia R. Steinberg, "PROTOCOL: Abortion and mental health outcomes: A systematic review and meta-analysis," *Campbell Systematic Reviews*, 2024, *20* (2), e1410.

Liu, Sze Yan, Claire Benny, Erin Grinshteyn, Amy Ehntholt, Daniel Cook, and Roman Pabayo, "The association between reproductive rights and access to abortion services and mental health among US women," *SSM - Population Health*, 2023, *23*, 101428.

Lleras-Muney, Adriana, Juliana Londoño-Vélez, and Estefanía Saravia, "What Shapes (Men's) Attitudes Towards Women's Abortion Rights?," 2025. UCLA Working Paper.

Londoño-Vélez, Juliana and Estefanía Saravia, "The Impact of Being Denied a Wanted Abortion on Women and Their Children," *The Quarterly Journal of Economics*, 2025, *140* (2), 1061–1110.

Major, Brenda, Mark Appelbaum, Linda Beckman, Mary Ann Dutton, Nancy Felipe Russo, and Carolyn West, "Abortion and mental health: Evaluating the evidence," *American Psychologist*, December 2009, *64* (9), 863–890.

Miller, Sarah, Laura R. Wherry, and Diana Greene Foster, "What Happens After an Abortion Denial? A Review of Results from the Turnaway Study," *AEA Papers and Proceedings*, 2020, *110*, 226–230.

_ , _ , and _ , "The Economic Consequences of Being Denied an Abortion," *American Economic Journal: Economic Policy*, 2023, *15* (1), 394–437.

Médicos Sin Fronteras, "Aborto no seguro, mujeres en riesgo: Limitaciones en el acceso a la interrupción voluntaria del embarazo en Colombia," https://www.msf.es/sites/default/files/documents/msf-informe-ive-colombia.pdf 2019.

National Academies of Sciences, Engineering, and Medicine, *The Safety and Quality of Abortion Care in the United States*, Washington, DC: The National Academies Press, 2018.

Ralph, Lauren J., Eleanor Bimla Schwarz, Daniel Grossman, and Diana Greene Foster, "Self-Reported Physical Health of Women Who Did and Did Not Terminate Pregnancy after Seeking Abortion Services: A Cohort Study," *Annals of Internal Medicine*, 2019, *171* (4), 238–247.

Reardon, David C, "The abortion and mental health controversy: A comprehensive literature review of common ground agreements, disagreements, actionable recommendations, and research opportunities," *SAGE Open Medicine*, 2018, *6*, 2050312118807624. PMID: 30397472.

Robinson, Gail Erlick, Nada L. Stotland, Nancy Felipe Russo, Joan A Lang, and Mallay Occhiogrosso, "Is there an "abortion trauma syndrome"? Critiquing the evidence," *Harvard Review of Psychiatry*, 2009, *17* (4), 268–290.

Steinberg, Julia R, Thomas M Laursen, Nancy E Adler, Christiane Gasse, Esben Agerbo, and Trine Munk-Olsen, "The association between first abortion and first-time non-fatal suicide attempt: a longitudinal cohort study of Danish population registries," *The Lancet Psychiatry*, 2019, *6* (12), 1031–1038.

Stevenson, Amanda Jean, "The Pregnancy-Related Mortality Impact of a Total Abortion Ban in the United States: A Research Note on Increased Deaths Due to Remaining Pregnant," *Demography*, 2021, *58* (6), 2019–2028.

Stifani, Bianca M., Laura Gil Urbano, Ana Cristina Gonzalez-Velez, and Cristina Villarreal Velásquez, "Abortion as a human right: The struggle to implement the abortion law in Colombia," *International Journal of Gynecology & Obstetrics*, 2018, *143* (S4), 12–18.

Suh, Siri, "Rewriting Abortion: Deploying Medical Records in Jurisdictional Negotiation over a Forbidden Practice in Senegal," *Social Science & Medicine*, 2014, *108*, 20–33.

Sun, Sicong, Jin Huang, Darrell L. Hudson, and Michael Sherraden, "Cash Transfers and Health," *Annual Review of Public Health*, 2021, *42*, 363–380.

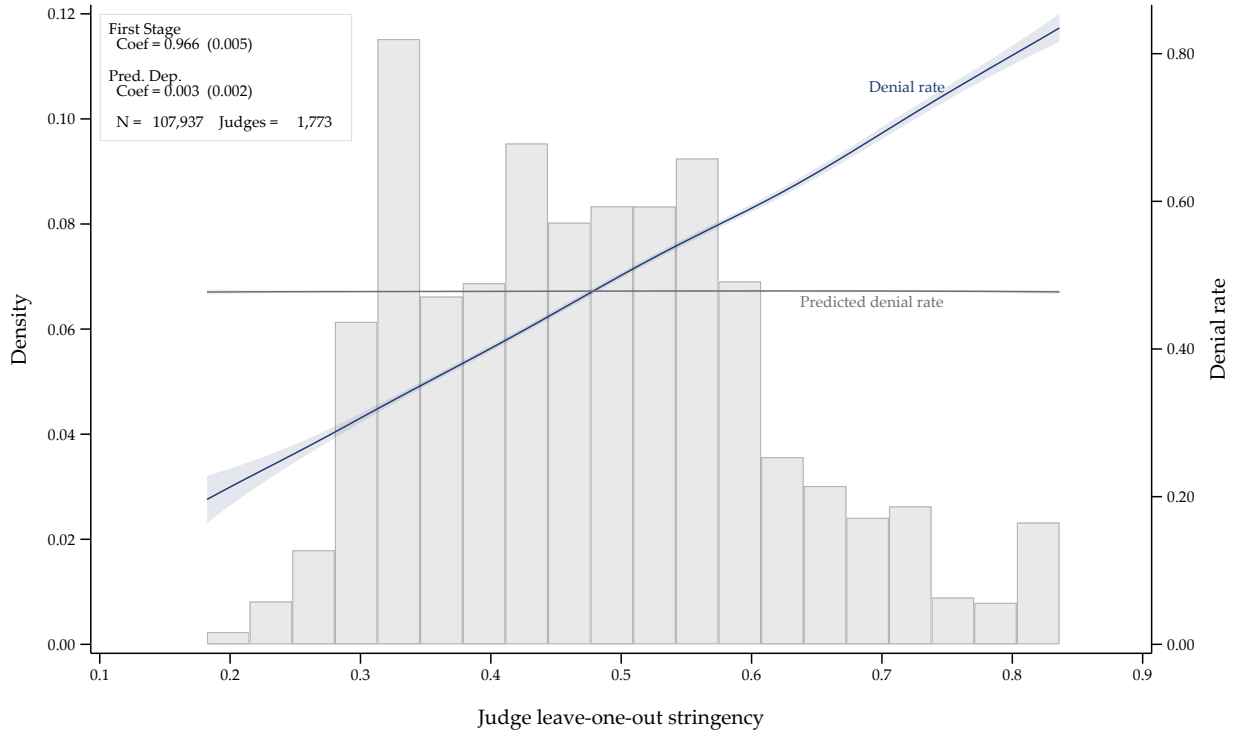
Upadhyay, Ushma D, Sheila Desai, Vera Zlidar, Tracy A Weitz, Daniel Grossman, Patricia Anderson, and Diana Taylor, "Incidence of emergency department visits and complications after abortion," *Obstetrics & Gynecology*, Jan 2015, *125* (1), 175–183.

WHO, *Abortion Care Guideline, 2nd ed.*, World Health Organization, 2024. License: CC BY-NC-SA 3.0 IGO.

Xing, Enze, Rieham Owda, Charisse Loder, and Kathleen Collins, "Abortion rights are health care rights," *JCI Insight*, 2023, *8* (11), e171798.

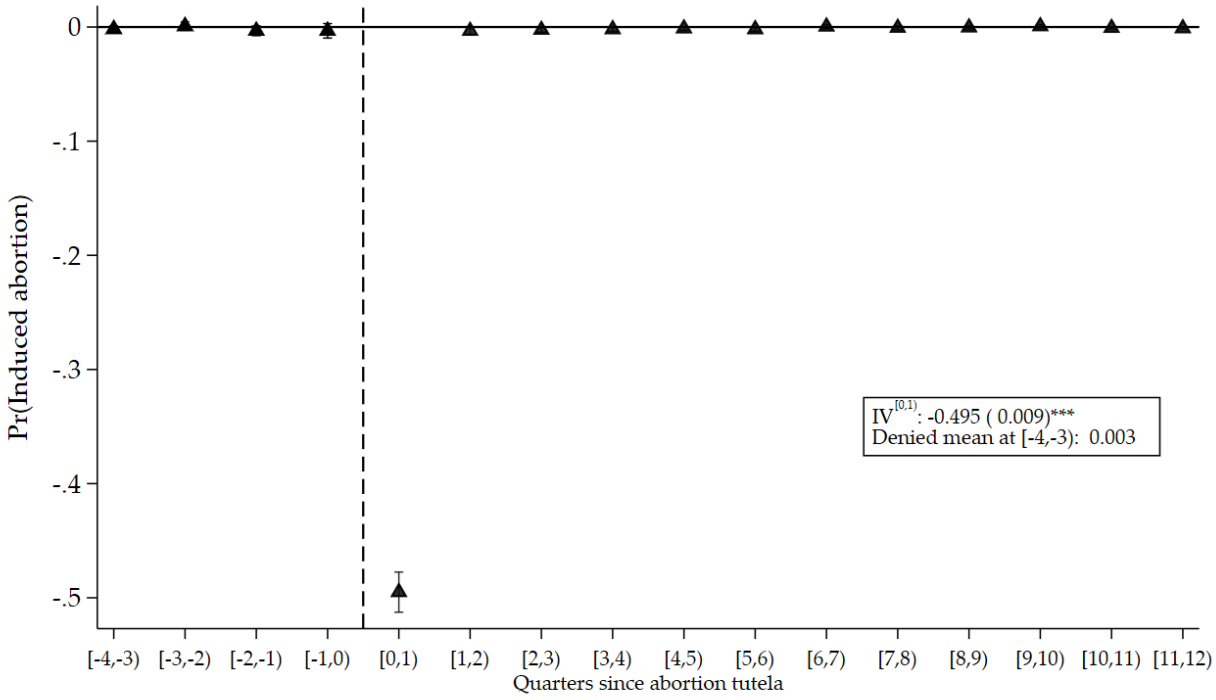
Zane, Suzanne, Andreea A. Creanga, Cynthia J. Berg, Karen Pazol, Danielle B. Suchdev, Denise J. Jamieson, and William M. Callaghan, "Abortion-Related Mortality in the United States: 1998–2010," *Obstetrics and Gynecology*, 2015, *126* (2), 258–265.

Figure I: Judge Stringency



Notes: This figure illustrates the variation in our instrument (judge stringency), the first stage, and covariate balance. Both the outcome (abortion denial) and the instrument are residualized with respect to district-by-office-by-quarter fixed effects. The background histogram displays the distribution of the residualized instrument (recentered at the sample mean), trimming the bottom and top 0.5 percentiles for visualization (all observations are used in estimation). The upward-sloping curve plots a local linear regression of residualized abortion denial on residualized judge stringency, with 95% confidence intervals; the corresponding OLS first-stage coefficient (with judge-clustered standard errors) is reported in the top-left corner. The horizontal line plots a local linear regression of predicted abortion denial on the residualized instrument. Predicted denial is constructed using baseline fixed effects and individual covariates, including prior contact with the health system, age, subsidized regime, area of residence, inferred gestational age, prior ED visits, prior hospitalizations, and prior mental-health diagnoses and prescriptions. The corresponding OLS coefficient and standard error are also reported in the top-left corner. *Sources:* Authors' calculations using data from the Constitutional Court and SISPRO.

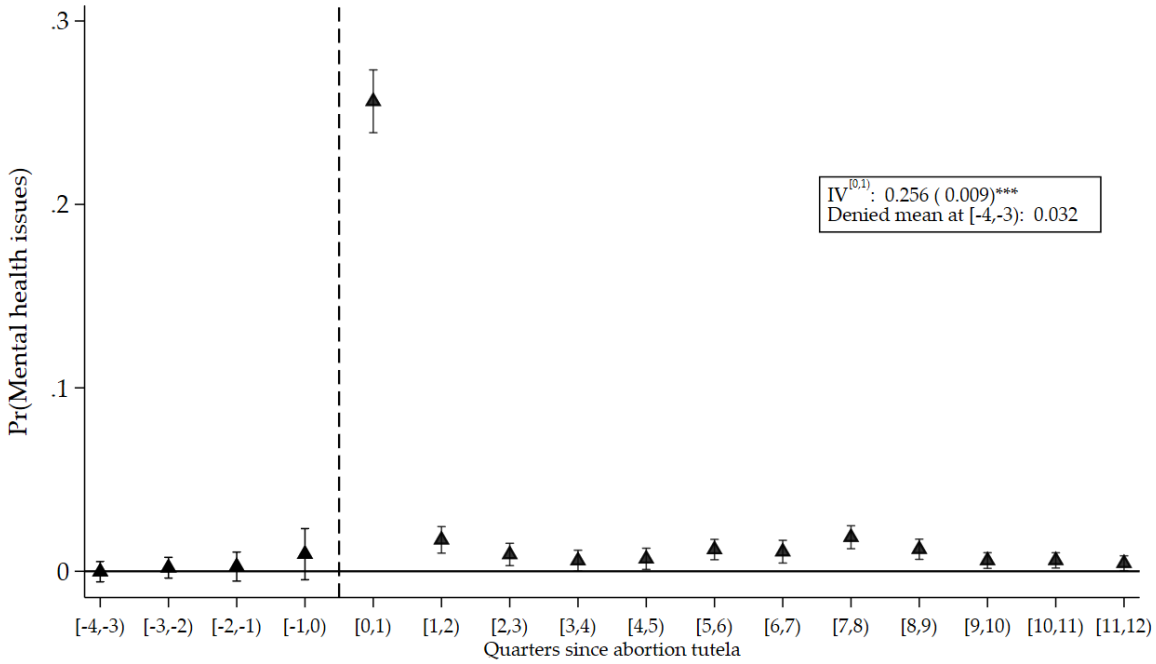
Figure II: The Impact of Being Denied Abortion on Obtaining an Induced Abortion



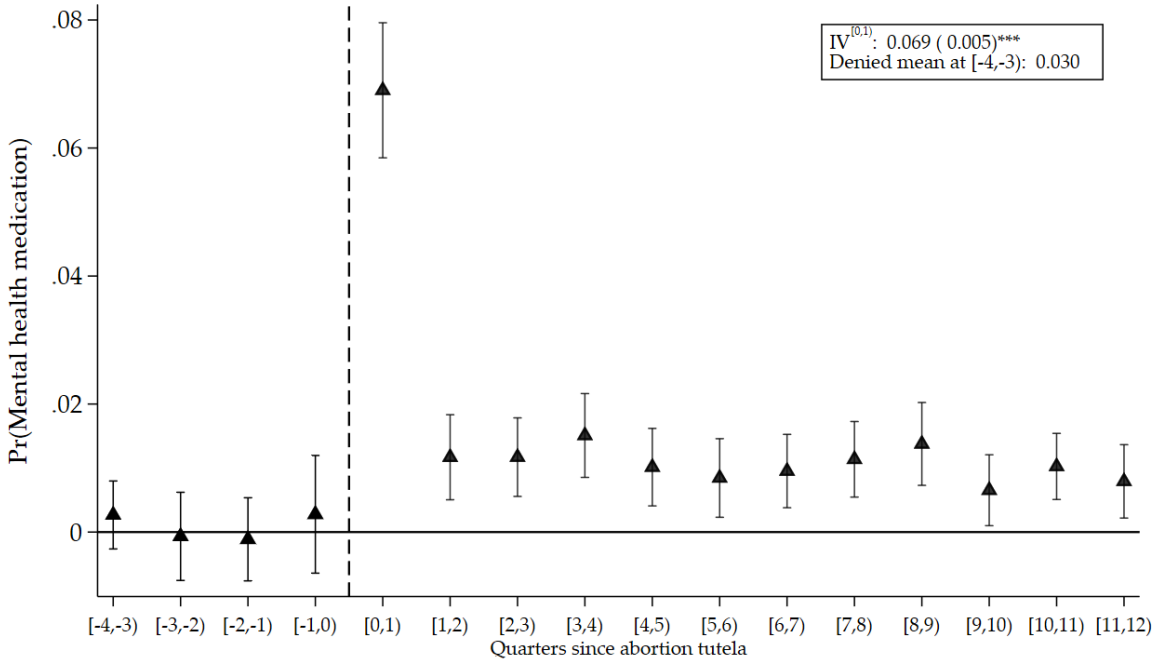
Notes. This figure plots IV coefficients and 95% confidence intervals from specification (1), where the outcome is the probability of obtaining an induced abortion in the quarters before and after filing the abortion-related *tutela*. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Figure III: The Impact of Being Denied Abortion on Mental Health

(a) Received a Mental-Health Diagnosis



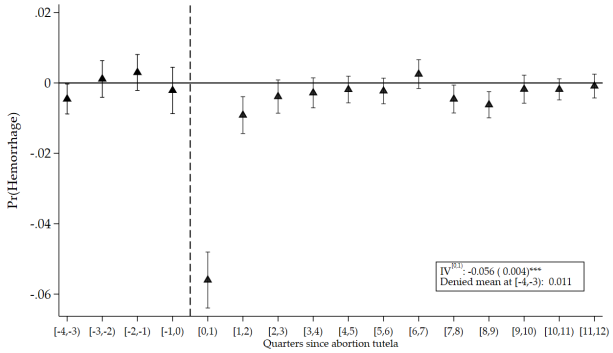
(b) Redeemed a Mental-Health Rx



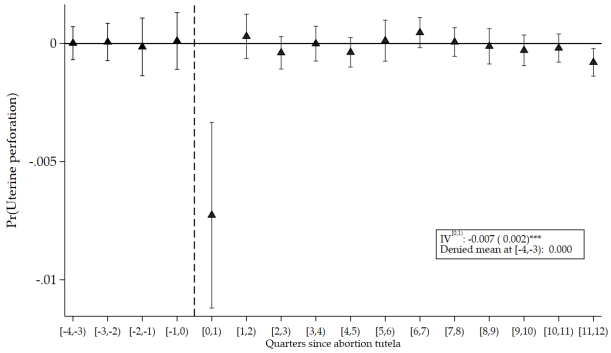
Notes. This figure plots IV coefficients and 95% confidence intervals from specification (1). Panel (a) shows effects on the probability of receiving a mental-health diagnosis, and panel (b) shows effects on the probability of redeeming a mental-health prescription, in the quarters before and after filing the abortion-related *tutela*. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Figure IV: The Impact of Being Denied Abortion on Physical Morbidity

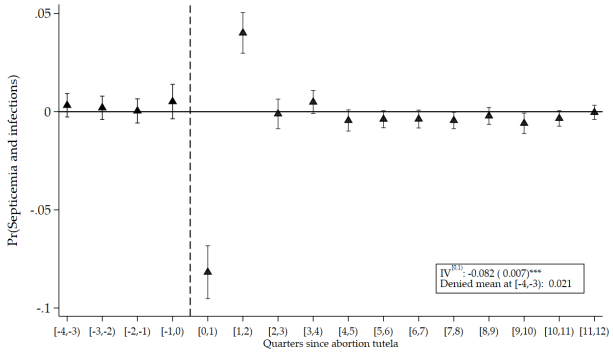
(a) Hemorrhage



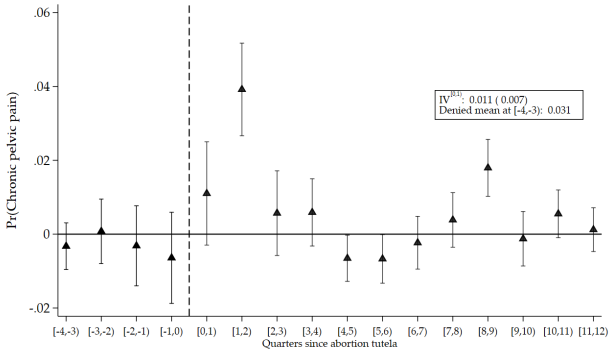
(b) Uterine Perforation or Damage



(c) Septicemia and Infections



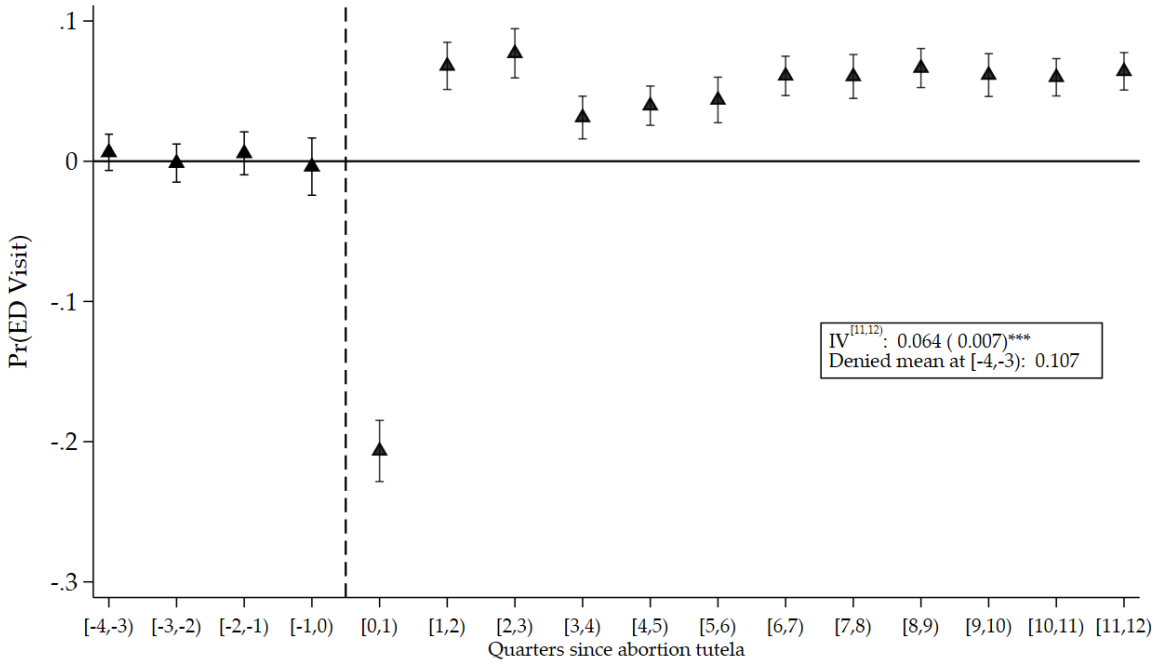
(d) Pain and Other Conditions



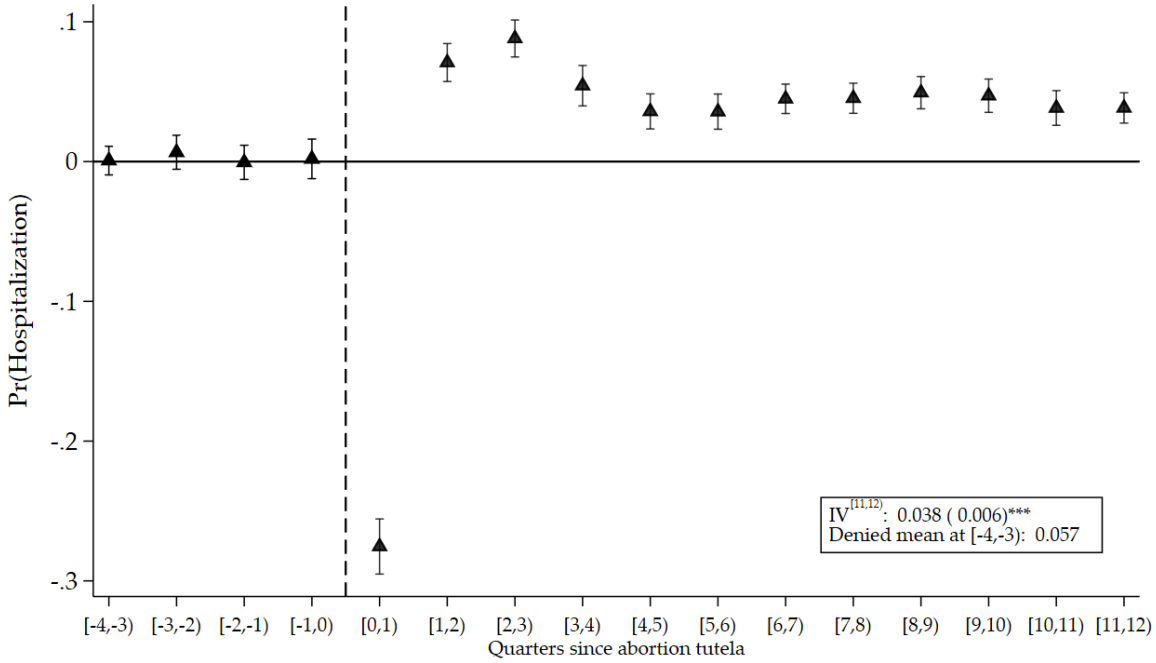
Notes. This figure plots IV estimates and 95% confidence intervals from specification (1) by quarter relative to the filing of an abortion-related *tutela*, for diagnoses of hemorrhage (Panel a); uterine perforation, rupture, or damage to genitals or pelvic organs (Panel b); septicemia and infection (Panel c); and pain and other conditions involving the abdomen, female genital organs, or the menstrual cycle (Panel d). *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Figure V: The Impact of Being Denied Abortion on ED Visits and Hospitalizations

(a) ED Visits



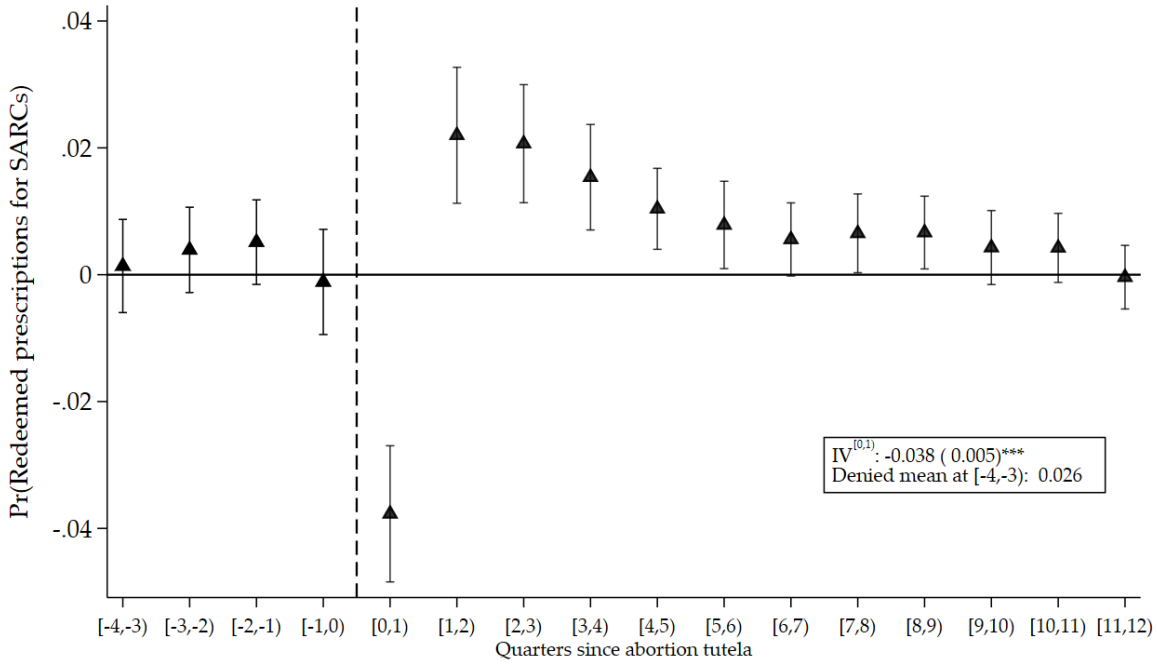
(b) Hospitalizations



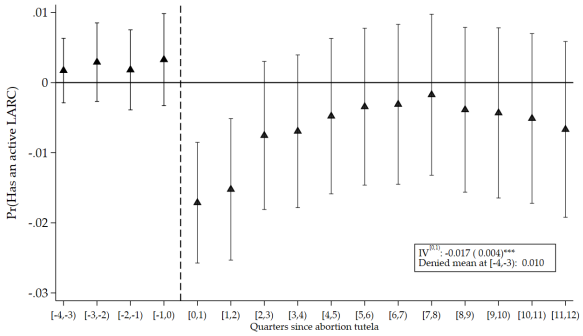
Notes. This figure plots IV coefficients and 95% confidence intervals from specification (1). Panel (a) shows effects on the probability of an emergency-department visit, and panel (b) shows effects on the probability of hospitalization, in the quarters before and after filing the abortion-related *tutela*. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Figure VI: The Impact of Being Denied Abortion on Subsequent Contraceptive Behavior

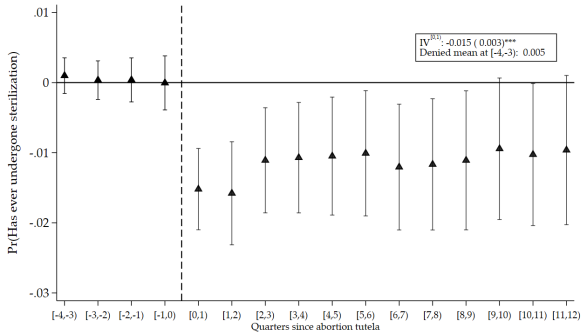
(a) Redeemed prescriptions for SARCs



(b) Active LARC use



(c) Has ever undergone sterilization



Notes. This figure plots IV coefficients and 95% confidence intervals from specification (1). Panel (a) presents effects on the probability of redeeming prescriptions for SARCs. Panel (b) shows effects on the probability of using an active LARC, while Panel (c) reports effects on the probability of ever undergoing sterilization, in each quarter before and after filing the abortion-related *tutela*. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Table I: Summary Statistics of Women Seeking Abortions

	Abortion-Related *Tutelas*					Induced Abortions			
	All	Denied	Not denied	(2)–(3) *p*-value	Compliers	All	After *Tutela*	(6)–(1) *p*-value	(6)–(7) *p*-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Judicial district									
Medellín	0.259	0.307	0.215	0.000	0.123	0.261	0.171	0.361	0.000
Cali	0.115	0.134	0.097	0.000	0.020	0.152	0.095	0.000	0.000
Barranquilla	0.086	0.098	0.076	0.000	0.033	0.138	0.078	0.000	0.000
Bogotá	0.540	0.461	0.612	0.000	0.824	0.449	0.656	0.000	0.000
Prior contact with health system	0.801	0.796	0.806	0.000	0.809	0.893	0.838	0.000	0.000
Age	26.102	26.859	25.534	0.000	25.397	36.156	27.241	0.000	0.000
Subsidized regime	0.720	0.701	0.734	0.000	0.744	0.538	0.729	0.000	0.000
Area of residence									
Urban center	0.935	0.927	0.941	0.000	0.947	0.981	0.947	0.000	0.000
Other populated centers	0.023	0.027	0.019	0.000	0.021	0.007	0.018	0.000	0.000
Rural area	0.042	0.045	0.040	0.000	0.032	0.012	0.035	0.000	0.000
Inferred gestational age									
Trimester 1	0.347	0.338	0.356	0.000	0.330	0.457	0.217	0.000	0.000
Trimester 2 or 3	0.285	0.275	0.295	0.000	0.307	0.196	0.426	0.000	0.000
Trimester N.A.	0.368	0.388	0.350	0.000	0.363	0.347	0.357	0.000	0.000
ED visit	0.210	0.211	0.209	0.242	0.184	0.255	0.237	0.000	0.000
Hospitalization	0.112	0.108	0.115	0.001	0.098	0.097	0.133	0.000	0.000
Mental health									
Diagnosis	0.092	0.127	0.060	0.000	0.078	0.024	0.055	0.000	0.000
Redeemed Rx	0.064	0.080	0.049	0.000	0.057	0.032	0.048	0.000	0.000
Observations	108,126	51,707	56,419			102,778	28,513		
Individuals	103,345	49,135	54,210			96,348	27,346		

Notes. This table reports baseline characteristics, health-care use, and morbidity. Age, insurance regime, area of residence, and gestational age are measured at filing an abortion *tutela* (Columns 1–5) or at abortion (Columns 6 and 7); all other variables are measured 1–2 years prior. Column (1) reports summary statistics for all abortion *tutelas*; Columns (2)–(3) split by denial, with Column (4) reporting p-values for equality of means. Column (5) reports complier characteristic from 2SLS interactions $Denied_i \times X_i$ using judge stringency $Z_{j(i)}$ as an instrument. Columns (6)–(7) compare all women obtaining recorded abortions with those who did so after filing a *tutela*; Columns (8)–(9) report p-values for equality tests.
Source. Authors' calculations using data from the Constitutional Court and SISPRO.

Table II: Testing Balance

	Non-Denied Mean	Denied	Judge Stringency	Female
	(1)	(2)	(3)	(4)
Prior health contact	0.806	-0.007**	0.003	0.004
		(0.003)	(0.008)	(0.003)
Age	25.531	0.600***	-0.106	0.013
		(0.067)	(0.173)	(0.059)
Subsidized regime	0.733	0.001	0.001	0.000
		(0.003)	(0.010)	(0.003)
Area of residence				
Urban center	0.941	-0.005***	-0.001	0.002
		(0.002)	(0.006)	(0.002)
Other populated centers	0.019	0.007***	0.001	-0.000
		(0.001)	(0.004)	(0.001)
Rural area	0.040	-0.002	0.000	-0.002
		(0.002)	(0.006)	(0.002)
Inferred gestational age				
Trimester 1	0.356	-0.019***	-0.014	-0.000
		(0.003)	(0.010)	(0.003)
Trimester 2 or 3	0.295	-0.011***	0.005	-0.001
		(0.003)	(0.011)	(0.003)
Trimester N.A.	0.350	0.030***	0.009	0.002
		(0.003)	(0.010)	(0.003)
ED visit	0.209	-0.001	-0.015	-0.002
		(0.003)	(0.012)	(0.003)
Hospitalization	0.115	-0.007***	-0.011	0.001
		(0.003)	(0.009)	(0.002)
Mental health				
Diagnosis	0.060	0.057***	0.009	-0.002
		(0.004)	(0.007)	(0.002)
Redeemed Rx	0.049	0.023***	0.007	-0.000
		(0.002)	(0.005)	(0.001)
Joint F-test		69.983	1.078	1.020
p-value		0.000	0.376	0.426

Notes: Column (1) reports the non-denial mean. Column (2) presents results from a regression of abortion denial on claimant characteristics. Column (3) presents results from a regression of judge stringency on claimant characteristics, while Column (4) shows results from a regression of assignment to a female judge on claimant characteristics. All regressions include district-by-office-by-time fixed effects. Standard errors are shown in parentheses and are clustered at the judge level. Some judges only handled one abortion case and are included in Columns (2) and (4) but not in Column (3). *Sources:* Authors' calculations using data from the Constitutional Court and SISPRO.

Table III: Test of Random Case Assignment to Judges

	F-Statistic (1)	p-value (2)
Prior health contact	1.034	0.160
Age	0.961	0.865
Subsidized regime	1.038	0.144
Area of residence		
Urban center	0.859	1.000
Other populated centers		1.000
Rural area	0.935	0.968
Inferred gestational age		
Trimester 1	0.954	0.908
Trimester 2 or 3	1.041	0.122
Trimester N.A.	0.989	0.622
ED visit	1.030	0.190
Hospitalization	1.007	0.418
Mental health		
Diagnosis	0.990	0.604
Redeemed Rx	0.952	0.918
Joint F-test	0.816	
p-value	0.624	

Notes: This table reports tests of random case assignment to judges. Each row displays the coefficient from running an OLS regression of each baseline control variable on the judge fixed effect and the district-by-office-by-time fixed effect. The p-value reported at the bottom is for an F-test of the joint significance of the variables listed in the rows. *Sources:* Authors' calculations using data from the Constitutional Court and SISPRO.

Table IV: The Impact of Being Denied Abortion on Obtaining an Induced Abortion

	Any	Medication or vacuum aspiration	D&C or other
	(1)	(2)	(3)
Panel A. *In the filing quarter*			
	-0.495	-0.038	-0.466
	(0.009)***	(0.004)***	(0.008)***
Heterogeneity by gestational age			
Trimester 1	-0.515	-0.040	-0.483
	(0.017)***	(0.007)***	(0.016)***
Trimester 2 or 3	-0.498	-0.041	-0.468
	(0.014)***	(0.007)***	(0.014)***
Trimester NA	-0.479	-0.033	-0.454
	(0.013)***	(0.006)***	(0.013)***
Panel B. *Within three years from filing*			
	-0.493	-0.039	-0.464
	(0.009)***	(0.004)***	(0.008)***
$\mu^{P}_{[-4,-3)}$	0.003	0.001	0.003

Notes. This table reports the effects of abortion denial on the probability of obtaining an induced abortion, estimated using specification (1). Column (1) reports the overall effect, while Columns (2) and (3) decompose this effect by abortion method—medication or vacuum aspiration versus D&C or other methods. Panel (a) presents effects in the quarter of *tutela* filing for the full sample and heterogeneity by gestational age at the time of filing, while Panel (b) reports effects on the probability of ever obtaining an induced abortion within three years of the initial *tutela* filing.
Source. Authors' calculations using data from the Constitutional Court and SISPRO.

Table V: The Impact of Being Denied Abortion on Mental Health

	Mental-Health Diagnosis						Mental-Health Rx	
	Any	Depression	Anxiety	Postpartum	PTSD	Other	Any	Antipsychotics
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. *In the filing quarter*								
	0.256	0.147	0.158	-0.000	0.003	-0.002	0.069	0.045
	(0.009)***	(0.007)***	(0.007)***	(0.000)	(0.001)*	(0.002)	(0.005)***	(0.003)***
Heterogeneity by gestational age								
Trimester 1	0.183	0.138	0.081	-0.001	0.004	-0.004	0.066	0.050
	(0.013)***	(0.011)***	(0.009)***	(0.000)*	(0.003)	(0.003)	(0.010)***	(0.007)***
Trimester 2 or 3	0.365	0.150	0.293	-0.000	-0.001	-0.001	0.073	0.043
	(0.020)***	(0.015)***	(0.015)***	(0.000)	(0.003)	(0.003)	(0.011)***	(0.006)***
Trimester NA	0.223	0.153	0.104	0.000	0.003	-0.004	0.065	0.041
	(0.013)***	(0.011)***	(0.010)***	(0.000)	(0.003)	(0.002)*	(0.010)***	(0.006)***
Panel B. *Three years after filing*								
	0.004	0.002	0.004	0.000	0.000	0.000	0.008	0.005
	(0.002)**	(0.001)	(0.001)***	(0.000)	(0.000)	(0.000)	(0.003)***	(0.002)***
$\mu^{D}_{[-4,-3)}$	0.032	0.014	0.015	0.000	0.001	0.001	0.030	0.006

Notes. This table reports estimated effects of abortion denial on mental-health outcomes, measured using ICD-10 diagnoses (Columns 1–6) and ATC-coded mental-health prescriptions (Column 7: codes beginning with N05 or N06; Column 8: antipsychotics, N05A, excluding lithium [N05AN]), based on specification (1). Panel (a) presents effects in the *tutela* filing quarter for the full sample, by prior mental-health diagnosis, and by inferred gestational age, while Panel (b) reports effects three years after filing. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Table VI: The Impact of Being Denied Abortion on Physical Morbidity

	Hemorrhage		Uterine perforation or Damage		Septicemia and Infections		Pain and Other Conditions	
	$[0,1)$ (1)	$[1,2)$ (2)	$[0,1)$ (3)	$[1,2)$ (4)	$[0,1)$ (5)	$[1,2)$ (6)	$[0,1)$ (7)	$[1,2)$ (8)
Panel A. *Full sample*								
	-0.0560	-0.0091	-0.0073	0.0003	-0.0817	0.0401	0.0110	0.0392
	(0.0041)***	(0.0027)***	(0.0020)***	(0.0005)	(0.0069)***	(0.0053)***	(0.0071)	(0.0064)***
$\mu^D_{[-4,-3)}$	0.011	0.011	0.000	0.000	0.021	0.021	0.031	0.031
Panel B. *Heterogeneity by gestational age*								
Trimester 1	-0.0578	-0.0091	0.0054	0.0000	-0.2201	0.0284	0.0065	0.0293
	(0.0075)***	(0.0046)**	(0.0026)**	(0.0008)	(0.0153)***	(0.0083)***	(0.0127)	(0.0087)***
Trimester 2 or 3	-0.0535	-0.0090	-0.0318	0.0013	-0.0016	0.0643	0.0212	0.0483
	(0.0074)***	(0.0051)*	(0.0064)***	(0.0009)	(0.0128)	(0.0098)***	(0.0119)*	(0.0113)***
Trimester N.A.	-0.0556	-0.0076	0.0000	-0.0002	-0.0225	0.0295	0.0113	0.0354
	(0.0069)***	(0.0043)*	(0.0010)	(0.0007)	(0.0099)**	(0.0070)***	(0.0111)	(0.0097)***
$\mu^D_{[-4,-3)}$	0.011	0.011	0.000	0.000	0.021	0.021	0.031	0.031

Notes. This table reports the effects of abortion denial on several measures of physical morbidity in the quarter immediately after filing and one quarter later using specification (1). Panel (a) presents results for the full sample, while Panel (b) reports heterogeneity by inferred gestational age.
Source. Authors' calculations using data from the Constitutional Court and SISPRO.

Table VII: The Effects of Being Denied Abortion on ED Visits and Hospitalizations

	ED Visits				Hospitalization			
	Any at $[0,1)$ (1)	Any at $[11,12)$ (2)	Ever (3)	Ever w/o $[0,1)$ (4)	Any at $[0,1)$ (5)	Any at $[11,12)$ (6)	Ever (7)	Ever w/o $[0,1)$ (8)
Panel A. *Full sample*								
	-0.207	0.064	-0.316	0.248	-0.275	0.038	-1.073	0.481
	(0.011)***	(0.007)***	(0.161)**	(0.130)*	(0.010)***	(0.006)***	(0.241)***	(0.211)**
Panel B. *Heterogeneity by gestational age*								
Trimester 1	-0.246	-0.021	-1.356	-0.707	-0.278	-0.000	-1.136	0.400
	(0.020)***	(0.010)**	(0.287)***	(0.222)***	(0.014)***	(0.007)	(0.474)**	(0.418)
Trimester 2 or 3	-0.198	0.232	1.631	2.106	-0.270	0.147	0.360	1.584
	(0.020)***	(0.017)***	(0.356)***	(0.286)***	(0.017)***	(0.013)***	(0.661)	(0.586)***
Trimester NA	-0.176	-0.002	-0.920	-0.390	-0.276	-0.018	-2.227	-0.344
	(0.016)***	(0.008)	(0.263)***	(0.203)*	(0.016)***	(0.007)***	(0.426)***	(0.408)
$\mu^D_{[-4,-3)}$	0.107	0.107	0.279	0.279	0.057	0.057	0.205	0.205

Notes. This table reports long-run effects of abortion denial on ED visits and hospitalizations, estimated using specification (1). Columns (1) and (4) show effects on the probability of at least one ED visit or hospitalization, respectively, 11 to 12 quarters after filing the abortion-related *tutela*. Columns (2) and (5) report effects on the probability of ever having an ED visit or hospitalization within three years, while Columns (3) and (6) present analogous estimates excluding the filing quarter. Panel (a) reports results for the full sample, and Panel (b) examines heterogeneity by inferred gestational age. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Table VIII: The Impact of Being Denied Abortion on Subsequent Contraceptive Behavior

	Redeemed Rx for SARCs	Active LARC	Has ever undergone sterilization
	(1)	(2)	(3)
Panel A. *In the filing quarter*			
	-0.038	-0.017	-0.015
	(0.005)***	(0.004)***	(0.003)***
Heterogeneity by gestational age			
Trimester 1	-0.033	-0.019	-0.018
	(0.010)***	(0.007)***	(0.005)***
Trimester 2 or 3	-0.043	-0.023	-0.015
	(0.012)***	(0.008)***	(0.006)**
Trimester N.A.	-0.041	-0.011	-0.014
	(0.010)***	(0.007)	(0.005)***
Panel B. *Three years after filing*			
	-0.000	-0.007	-0.010
	(0.003)	(0.006)	(0.005)*
$\mu^{D}_{[-4,-3)}$	0.026	0.010	0.005

Notes. This table reports the effects of abortion denial on subsequent contraceptive behavior, estimated using specification (1). Column (1) reports effects on the probability of using SARCs and LARCs, while Column (2) reports effects on the likelihood of ever undergoing permanent sterilization procedures, including tubal ligation, total salpingectomy, or hysterectomy. Panel (a) presents effects in the quarter of *tutela* filing for the full sample and by gestational age at filing, while Panel (b) reports effects three years later. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

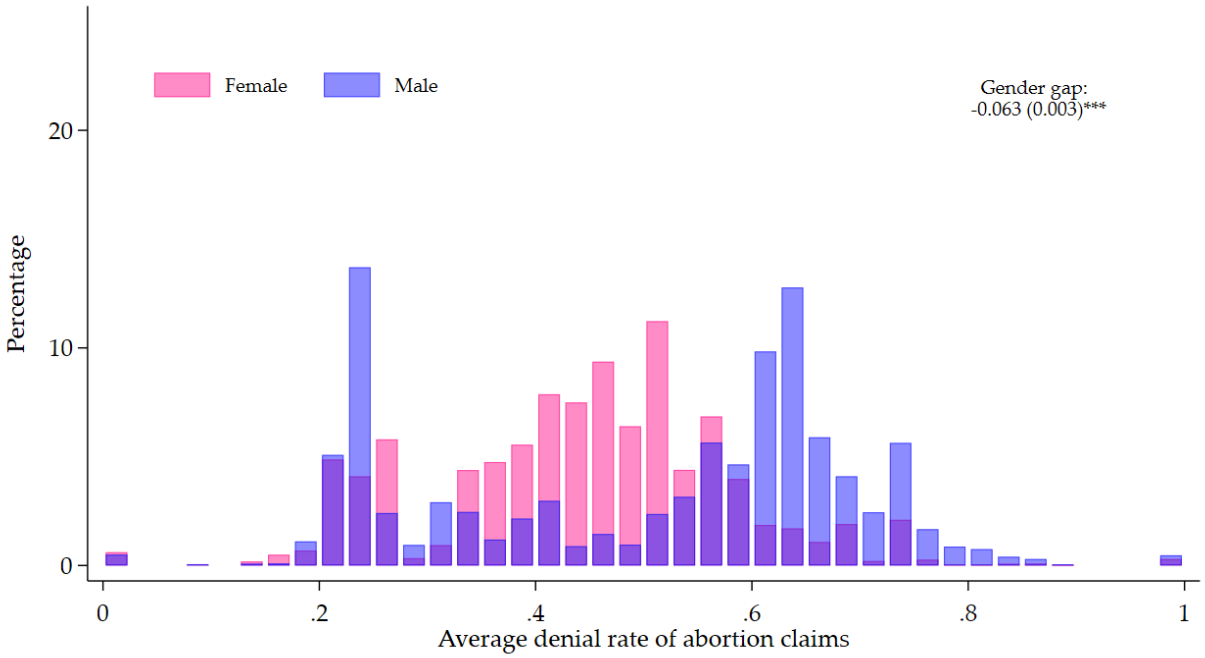
Online Appendix

The Consequences of Being Denied an Abortion on Women's Physical and Mental Health

Juliana Londoño-Vélez and Estefanía Saravia

A Appendix Figures and Tables

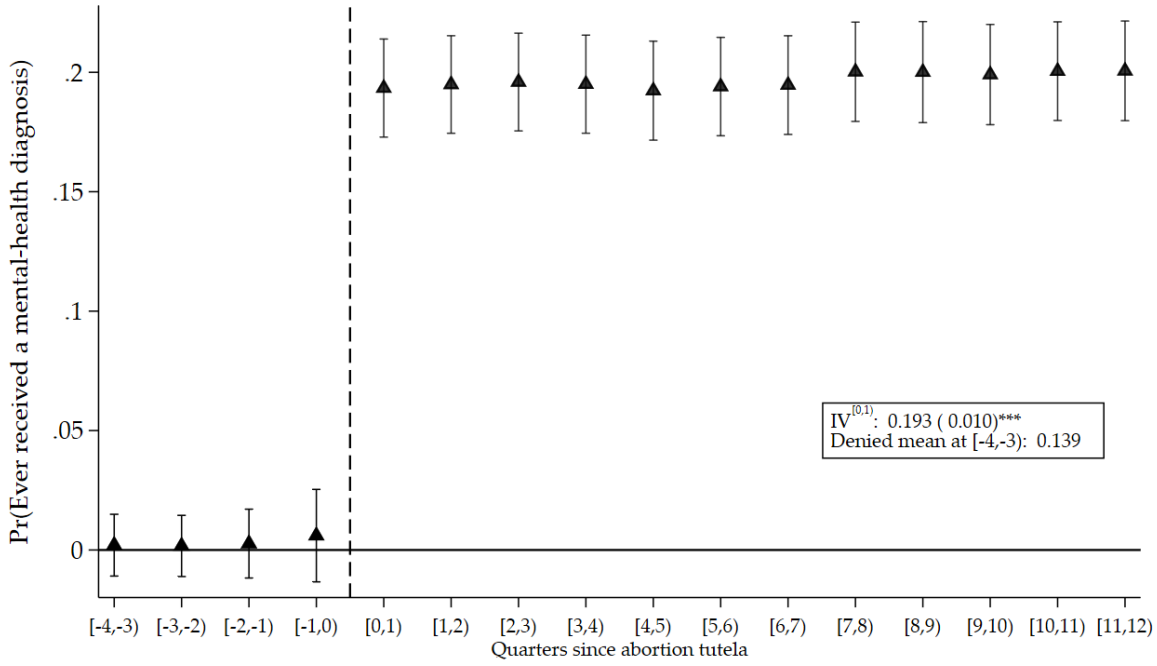
Figure A.1: Female Judges are 6.3 p.p. Less Likely than Male Judges to Deny Women a Wanted Abortion



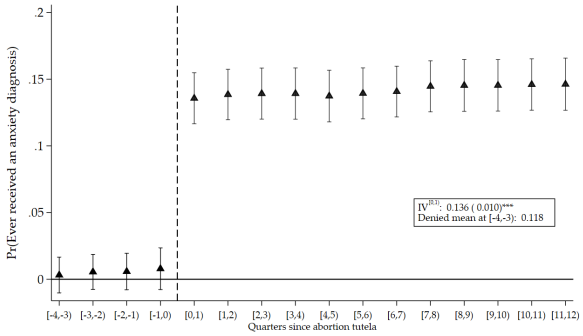
Notes: This figure plots the distribution of the judge-specific likelihood of denying an abortion rights *tutela* separately for male and female judges, where each judge is weighted by the number of abortion rights *tutelas* handled. 108,126 abortion rights *tutelas* are handled by a total of 1,773 judges, 48.2% of whom are female. Female judges are 6.3 p.p. less likely to deny women a wanted abortion than male judges. The odd columns in Table A.1 report the coefficient and associated standard errors of the difference in abortion denial rates between male and female judges. *Sources:* Authors' calculations using data frmo the Constitutional Court.

Figure A.2: Impacts on Ever Receiving a Mental-Health Diagnosis

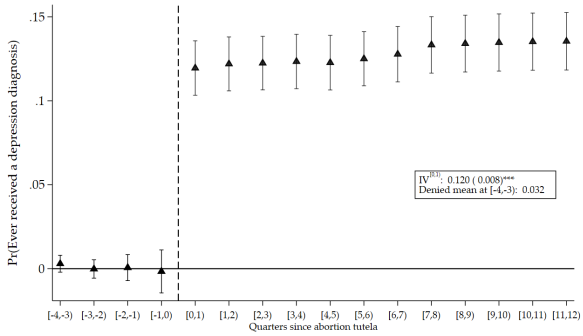
(a) Ever Received Any Mental-Health Diagnosis



(b) Ever Received an Anxiety Diagnosis

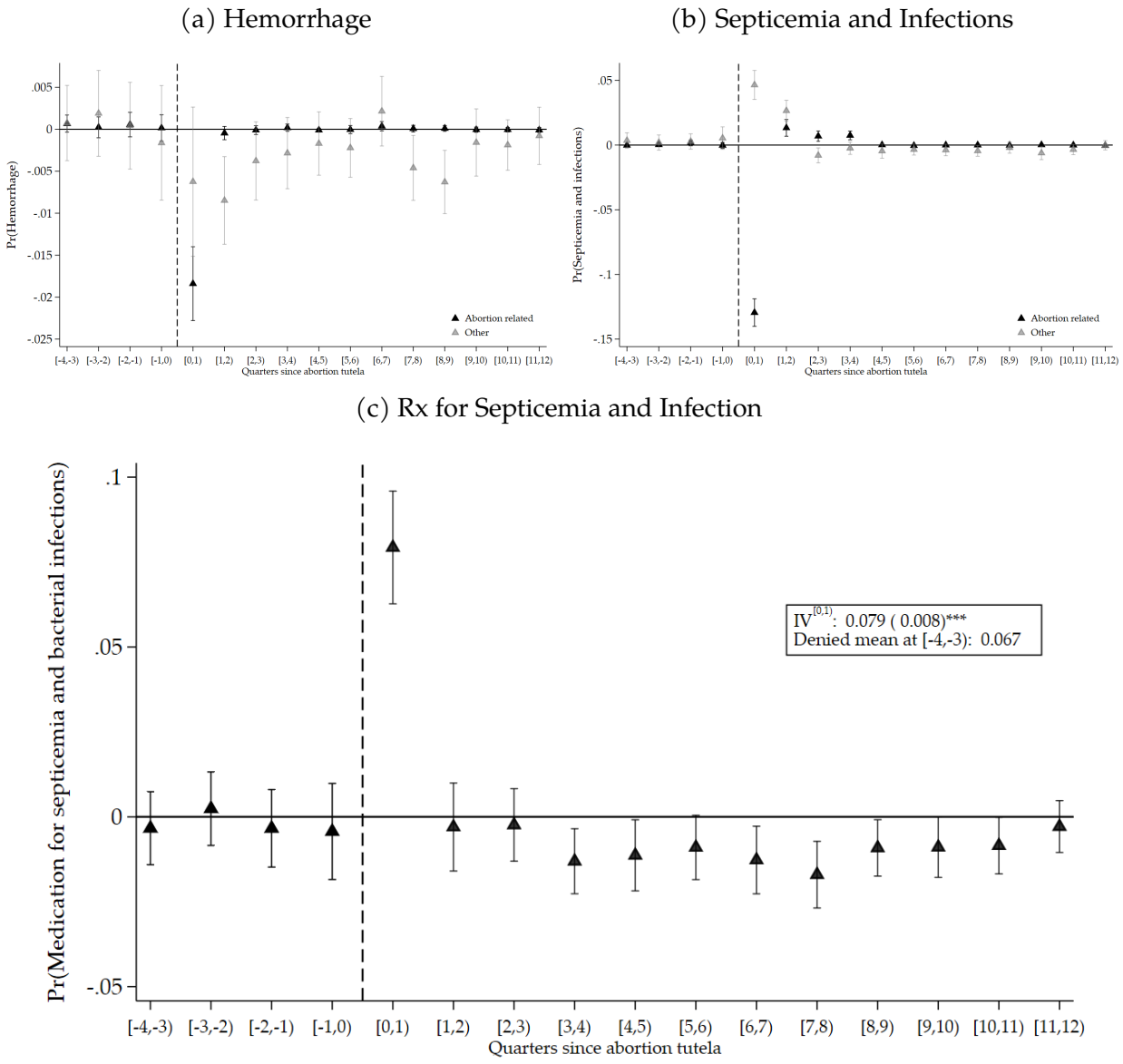


(c) Ever Received a Depression Diagnosis



Notes. This figure plots IV estimates and 95% confidence intervals from specification (1) for each quarter before and after the filing of an abortion-related *tutela*. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

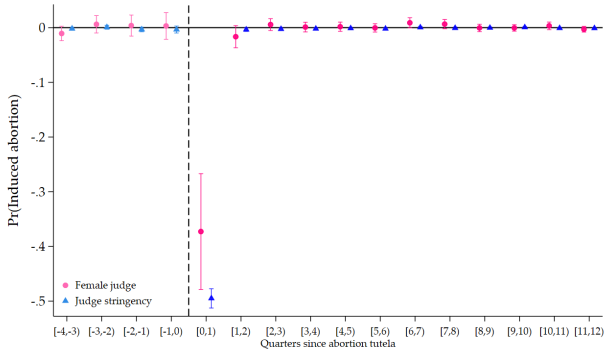
Figure A.3: The Impact of Being Denied Abortion on Abortion-Related Physical Morbidity and Redeemed Prescriptions



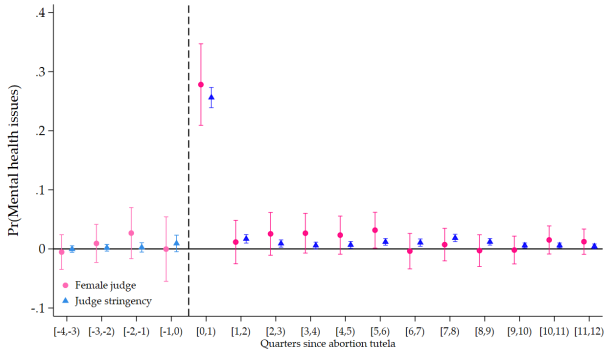
Notes. This figure plots IV estimates and 95% confidence intervals from specification (1) for each quarter before and after the filing of an abortion-related *tutela*. Panels (a) and (b) distinguish between diagnoses that are directly related to abortion—hemorrhage (panel a) and septicemia or other infections (panel b)—as defined in Appendix B. Panel (c) reports effects on the probability of redeeming prescriptions for septicemia and bacterial infections. *Source.* Authors' calculations using data from the Constitutional Court and SISPRO.

Figure A.4: Robustness Using Judge Sex Indicator

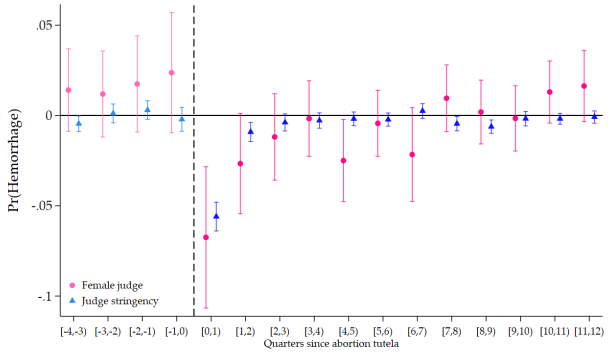
(a) Obtaining an Induced Abortion



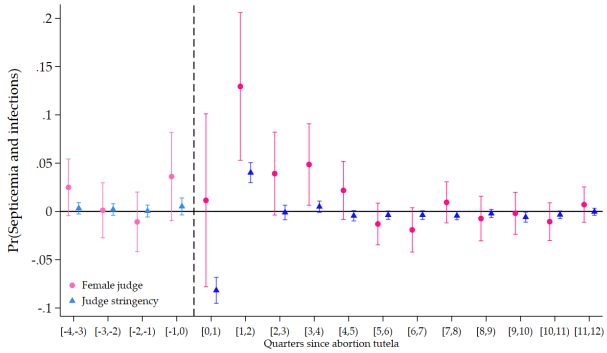
(b) Mental-Health Diagnosis



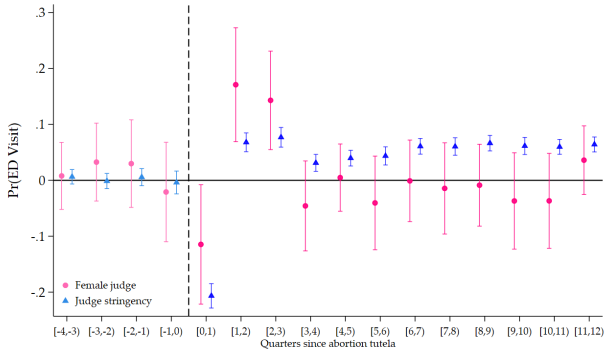
(c) Hemorrhage



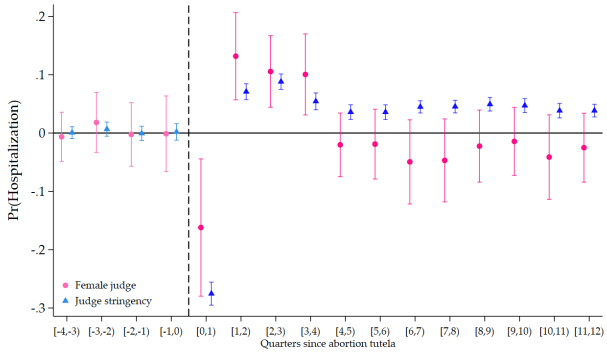
(d) Septicemia and Infections



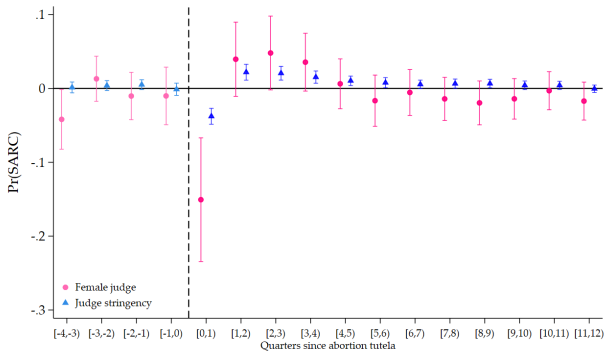
(e) ED Visits



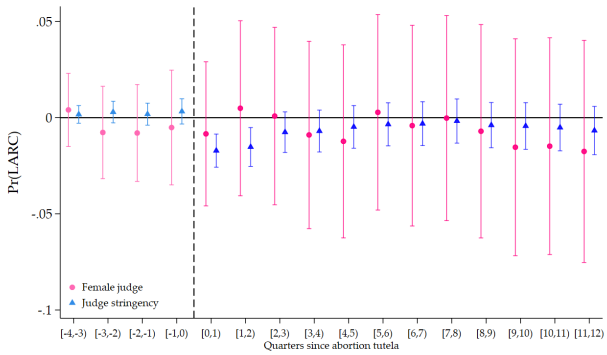
(f) Hospitalizations



(g) SARCs



(h) LARC



Notes. This figure compares the main estimated effects of abortion denial using judge sex and judge leniency as alternative instruments. *Sources.* Authors' calculations using data from the Constitutional Court and SISPRO.

Table A.1: First Stage

	All		Bogotá		Medellín		Cali		Barranquilla		All except Bogotá	
	Judge Stringency (1)	Female Judge (2)	Judge Stringency (3)	Female Judge (4)	Judge Stringency (5)	Female Judge (6)	Judge Stringency (7)	Female Judge (8)	Judge Stringency (9)	Female Judge (10)	Judge Stringency (11)	Female Judge (12)
γ	0.966***	-0.063***	0.999***	0.026	0.855***	-0.199***	0.988***	-0.085***	0.747***	-0.172***	0.839***	-0.165***
	(0.005)	(0.020)	(0.002)	(0.034)	(0.030)	(0.013)	(0.021)	(0.009)	(0.043)	(0.010)	(0.024)	(0.007)
N	107,937	107,997	58,323	58,353	19,676	19,699	12,388	12,395	9,307	9,307	49,614	49,644
Kleibergen–Paap Wald F	32430.67	10.37	166770.77	0.58	807.46	238.18	2185.11	93.21	297.24	274.47	1236.71	564.85

Notes: This table reports results from the first stage regression of abortion denial on judge stringency in odd column and judge sex in even columns using Specifications (1) and (3), respectively. *Sources:* Authors' calculations using data from the Constitutional Court.

Table A.2: Frandsen et al. (2023) Tests of Monotonicity and Exclusion

Outcome	Without variance correction		With variance correction		
	F-stat	p-value	Wald stat	df	p-value
	(1)	(2)	(3)	(4)	(5)
Abortion	1,479.74	1.000	1,805.06	1,736	0.121
Mental health	1,728.82	0.678	1,743.61	1,736	0.444
ED visit	1,459.79	1.000	1,591.13	1,736	0.994
Hospitalization	1,459.52	1.000	1,682.37	1,736	0.818

Notes: This table reports the fit component of the test proposed by Frandsen et al. (2023) for the validity of judge fixed effects designs. Columns (1)–(2) report the F-statistic and p-value from jointly testing whether spline residuals differ across judges, without adjusting for the estimation of judge propensities. Columns (3)–(5) report the Wald statistic, degrees of freedom, and p-value using the sandwich variance estimator from Theorem 3 of Frandsen et al. (2023), which accounts for the two-step estimation of both the judge propensity and the spline coefficients. Under the null, the test statistic follows a χ^2 distribution with degrees of freedom equal to the number of judges minus the number of spline basis functions. All specifications are residualized by judicial district $\times$ office $\times$ quarter fixed effects. The Bonferroni weight is set to $\omega = 1$, as recommended for settings with many judges.

Table A.3: First Stage by Baseline Characteristics

	Judge Stringency (1)	Female Judge (2)
Above median age		
1	0.940	-0.083
	(0.013)	(0.016)
0	0.827	-0.047
	(0.015)	(0.019)
Subsidized regime		
1	0.876	-0.055
	(0.010)	(0.018)
0	0.899	-0.086
	(0.024)	(0.016)
First trimester		
1	0.966	-0.044
	(0.014)	(0.020)
0	0.968	-0.070
	(0.009)	(0.020)
Prior ED visit		
1	0.906	-0.056
	(0.023)	(0.019)
0	0.980	-0.064
	(0.007)	(0.020)
Prior hospitalization		
1	0.889	-0.052
	(0.033)	(0.021)
0	0.971	-0.064
	(0.006)	(0.020)
Prior mental-health diagnosis		
1	0.900	-0.046
	(0.033)	(0.019)
0	0.970	-0.063
	(0.006)	(0.020)

Notes: This table presents the first stage across various groups of female claimants. Column (1) uses judge stringency as the instrument, while Column (2) uses judge sex as the instrument. All regressions include district-by-office-by-quarter fixed effects. Standard errors are shown in parentheses and are clustered at the judge level. *Sources:* Authors' calculations using data from the Constitutional Court and SISPRO.

Table A.4: Impacts on Recorded Abortion, Childbearing, and Pregnancy Termination through Other Means by Inferred Gestational Age

	(1) Induced abortion	(2) Childbearing	(3) Residual
Panel A. *Full sample*			
	-0.497***	0.210***	0.287***
	(0.009)	(0.009)	(0.011)
Panel B. *Heterogeneity by gestational age*			
Trimester 1	-0.519***	0.234***	0.285***
	(0.017)	(0.015)	(0.018)
Trimester 2 or 3	-0.499***	0.212***	0.287***
	(0.014)	(0.016)	(0.019)
Trimester NA	-0.481***	0.186***	0.294***
	(0.013)	(0.017)	(0.019)

Notes. This table reports the effects of being denied abortion on the probability of obtaining an induced abortion recorded in health records (Column 1), giving birth (Column 2), or terminating the pregnancy through other means (the residual category, Column 3) within nine months of filing the abortion-related *tutela*. Panel (a) reports impacts on the full sample, while Panel (b) examines heterogeneity by inferred gestational age at filing: first trimester, second or third trimester, and cases with unassigned gestational age. *Source.* Authors' calculations using data from the Constitutional Court, SISPRO, and Vital Statistics.

Table A.5: The Impact of Being Denied Abortion on Mortality

	All	*By cause of death*	
		Septicemia or Infection	Other
	(1)	(2)	(3)
Panel A. *Full sample*			
Denied	0.005**	0.006**	-0.001
	(0.002)	(0.003)	(0.002)
Panel B. *Heterogeneity by gestational age*			
Trimester 1	0.010**	0.006	0.003
	(0.005)	(0.005)	(0.005)
Trimester 2 or 3	0.002	0.007	-0.005
	(0.005)	(0.006)	(0.005)
Trimester N.A.	0.003	0.004	-0.001
	(0.004)	(0.004)	(0.004)

Notes. This table reports the effects of abortion denial on mortality within the nine months following filing using specification (1). Columns (1), (2), and (3) report impacts on all-cause mortality, deaths from septicemia or other infections, and deaths from all other causes, respectively. Panel (a) reports impacts on the full sample, while Panel (b) examines heterogeneity by inferred gestational age. *Source.* Authors' calculations using data from the Constitutional Court and Vital Statistics.

Table A.6: The Impact of Being Denied Abortion on Mental Health: Heterogeneity

	Mental-Health Diagnosis						Mental-Health Rx	
	Any	Depression	Anxiety	Postpartum	PTSD	Other	Any	Antipsychotics
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. *Heterogeneity by prior mental-health diagnosis*								
Had prior diagnosis	0.418	0.216	0.311	-0.003	0.009	-0.000	0.176	0.046
	(0.075)***	(0.068)***	(0.058)***	(0.003)	(0.014)	(0.012)	(0.063)***	(0.040)
No prior diagnosis	0.249	0.143	0.151	-0.000	0.002	-0.003	0.061	0.044
	(0.008)***	(0.007)***	(0.007)***	(0.000)	(0.002)	(0.002)	(0.005)***	(0.003)***
Panel B. *Heterogeneity by prior parity*								
Had previous births	0.393	0.242	0.238	0.000	0.011	0.002	0.156	0.046
	(0.029)***	(0.023)***	(0.019)***	(0.001)	(0.006)*	(0.007)	(0.015)***	(0.009)***
No previous births	0.235	0.131	0.146	-0.000	0.001	-0.003	0.056	0.044
	(0.009)***	(0.007)***	(0.008)***	(0.000)	(0.001)	(0.002)*	(0.006)***	(0.004)***

Notes. This table reports estimated effects of abortion denial on mental health diagnoses (based on ICD-10 codes) and mental health-related prescriptions (based on ATC codes), using specification (3). Panel A presents heterogeneity by prior mental-health diagnosis. Panel B presents heterogeneity by prior birth.

B Definitions of Outcomes and Gestational Age

- *Induced abortion.* We identify induced abortions using information on abortion-related medications (ATC codes) and procedures (CUPS codes). For each calendar quarter, we construct an indicator equal to one if an individual receives any abortion medication or undergoes any abortion-related procedure.
  - Medications include the following ATC codes: A02BB01 and G02AD06 (Misoprostol), G03AD01 and G03XB01 (Mifepristone), and G02AD02 (Dinoprostone).
  - Procedures include the following CUPS codes:
    * 695101 (vacuum aspiration of the uterus for termination of pregnancy)
    * 750101 (obstetric uterine curettage postpartum or post-abortion by dilation and curettage)
    * 750105 (obstetric uterine curettage postpartum or post-abortion by vacuum aspiration)
    * 750201 (dilation and curettage for termination of pregnancy)
    * 750301 (uterine evacuation for termination of pregnancy by dilation and curettage)
    * 750302 (uterine evacuation for termination of pregnancy by vacuum aspiration)
    * 750303 (uterine evacuation for termination of pregnancy by other methods)

  Because some of these procedures are also used in postpartum care, we do not classify an observation as an induced abortion if vital statistics records indicate a live birth within nine months of the *tutela* filing date.

  In our main analysis, we do not rely on diagnoses to identify abortions. Although relevant ICD-10 codes exist (e.g., O04 for medical induction), evidence from other settings suggests that providers frequently record abortion-related care under alternative codes—for example, classifying medical abortions as spontaneous—rather than documenting them explicitly (Suh, 2014).

- *Mental-health diagnoses.* To diagnose mental health conditions, physicians evaluate whether a patient has experienced specific symptoms within the previous two weeks. If the diagnostic criteria for depression are met, the physician then determines whether the condition constitutes a depressive episode—defined as a first occurrence—or a depressive disorder, which involves multiple episodes separated by

remission periods.[1] The diagnosis is subsequently classified as primary if depression is the main reason for the visit, or secondary if it is not. We identify individuals with mental health conditions if either the primary or secondary diagnosis corresponds to any of the following ICD-10 codes:

  - Schizophrenia and related disorders: F20–F29, F06.0, F06.2
  - Bipolar disorder: F30, F31, F34.0, F38.0
  - Depression: F32, F33, F34.1, F38.1
  - Anxiety, neurotic, and stress-related disorders: F064, F40, F41, F42, F43.0, F48.8, F48.9,
  - PTSD: F43.1, F43.2, F43.8, F43.9
  - Postpartum: F53
  - Other mood disorders: F34.8, F34.9, F39, F54, R45
  - Eating disorders: F50
  - Personality disorders: F60–F69
  - Disorders due to psychoactive substance abuse: F10–F19
  - Suicide attempt: X60–X84

- *Mental-health medication.* Prescription drugs are classified using the ATC system. To identify medications related to mental health, we use ATC groups N05 (psycholeptics) and N06 (psychoanaleptics). Antipsychotics are defined as medications with ATC codes beginning with N05A, excluding lithium (N05AN), which is a mood stabilizer. Because these categories encompass broad classes of mental-health–related medications, our analysis focuses on the extensive margin of medication use—whether an individual obtains any mental-health medication—rather than on treatments targeting specific symptoms or diagnoses.

- *Medication for infections:* Prescription drugs are classified according to the ATC system. To associate certain prescription drugs for systemic and parasitic infections, we use the classification system below: antibacterials for systemic use (J01), antimycotics for systemic use (J02), antimycobacterials (J04), antiprotozoals (P01), anthelmintics (P02), and ectoparasiticides (P03).

[1] An episode refers to the first onset of depression; a disorder requires recurrent episodes with intervening remission.

- *Physical health diagnoses.* We identify physical health issues using the incidence of ED visits and hospitalizations. We identify morbidities using the following ICD-10 codes:
  - Septicemia and infections: abortion-related (O03.0, O03.5, O04.0, O04.5, O05.0, O05.5, O06.0, O06.5, O07.0, O07.5, O08.0), other (N39.0, O85, O86, A48.0, A49.8, A49.9)
  - Hemorrhage: abortion-related (O03.1, O03.6, O04.1, O04.6, O05.1, O05.6, O06.1, O06.6, O07.1, O07.6, O08.1), other (D69.9, O67, O72, N92, N93)
  - Uterine perforation or rupture, damage to genitals or pelvic organs: S31, S37, O71,
  - Pain and other conditions associated with abdomen, female genital organs, or menstrual cycle: R10.2, R10.3, R10.4, N73, N82, N94
- *Subsequent contraceptive behavior.*
  - *SARCs.* Prescription drugs: Hormonal contraceptives for systemic use (ATC codes G03A, excluding G03AC subdermal contraceptive implants and G03AD emergency contraceptive combinations), vaginal ring (G02BB01), spermicides (G02BB02).
  - *LARCs.*
    - Prescription drugs: subdermal contraceptive implants (ATC code G03AC).
    - Procedures: subdermal contraceptive implant (CUPS code 861801) and intrauterine contraceptive device (CUPS codes 697100 and 697101), minus extraction of subdermal contraceptive implant (CUPS code 861203) and minus extraction of IUD (CUPS code 977100)
  - *Sterilization.* Procedures: hysterectomy (CUPS codes 683100–687000), sterilization (CUPS codes 663910), and tubal ligation (CUPS codes 662101–662204, 662200, 663100), salpingectomy (664001, 664002, 665001, 665002), salpingo-oophorectomy (669210, 669220).
- *Gestational age.* SISPRO uses the World Health Organization's standard ICD-10 classification—not the U.S. ICD-10-CM adaptation that includes codes Z3A.xx for "weeks of gestation", which exists only in ICD-10-CM. Therefore, we infer gestational age based on the following procedure codes:

- First trimester (up to 13 weeks and 6 days, inclusive) if administration of hCG (CUPS code 904508), hCG test (CUPS code 906625 and 906626), transvaginal obstetric ultrasound (CUPS code 881432), obstetric ultrasound with nuchal translucency (CUPS code 881436), PAPP-A (CUPS code 903048), PAPP-A and free β-hCG (CUPS code 903049)
    - For two procedures—transvaginal pelvic ultrasound (CUPS code 881401) and transabdominal obstetric ultrasound (CUPS code 881431)—we assume first trimester *if and only if there is no procedural code from more advanced gestational ages*.
- Second and third trimester (14 weeks and above) if second-level obstetric ultrasound (CUPS code 881434), obstetric ultrasound in the third trimester / fetal growth (CUPS code 881435), obstetric ultrasound with detailed fetal anatomical assessment (CUPS code 881437), obstetric diagnostic amniocentesis (CUPS codes 751100 and 751101), therapeutic amniocentesis (CUPS code 751200), antepartum fetal monitoring (CUPS code 897011), triple-marker test (CUPS code 903050), obstetric Doppler ultrasound with evaluation of placental circulation (CUPS code 882298), and glucose tolerance test (CUPS codes 903885 and 903886).