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Shaping Teen Abortion Choices: Access Frictions and Consent Laws

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Abstract

This paper examines how parental consent requirements and access frictions jointly shape teenage reproductive decisions. Exploiting the Spanish 2015 reform that mandated parental consent for 16–17-year-olds, together with Spanish administrative microdata on all registered abortions and births, I find that the reform led to declines in both abortions and pregnancies among affected teenagers. Consistent with a two-stage decision framework, most of the reduction in abortions operates through a decrease in pregnancies, indicating behavioral responses before pregnancy. A simple model of teenage abortion decisions is used to interpret these findings and to clarify how legal and access barriers interact. Using data on proximity to abortion centers and local religiosity, I show how these access frictions operate in the context of parental consent requirements. Where travel costs are high, parental involvement is effectively required even in the absence of formal consent laws, limiting the impact of the reform. When parental consent does bind, local norms shape the margin of adjustment: in more traditional municipalities, the reform primarily affects abortion decisions conditional on pregnancy.

JEL Codes: J13, I12, I18.

Keywords: Parental consent, abortion decision, access frictions, distance, religiosity.

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1 Introduction

Access to abortion plays a central role in women’s reproductive decisions.¹ Legal regulations, such as parental consent requirements, set the formal conditions under which an abortion can be obtained. At the same time, these legal rules interact with structural access frictions, including distance to providers, social norms or stigma, and financial constraints, which condition the extent to which legal rights can be effectively exercised. Such barriers are particularly consequential for teenagers and women from disadvantaged backgrounds, for whom legal autonomy and mobility are often limited.

This paper studies how parental consent requirements and baseline access frictions jointly influence teenage abortion decisions. In 2015, the Spanish government introduced a reform requiring parental consent for abortions involving teenagers under 18. Using a difference-in-differences design, I compare reproductive outcomes of teenagers aged 16–17 to those aged 18–19. The analysis employs all registered abortions and births in Spain, combined with population data and information on abortion center locations and local religiosity.

I find that the parental consent reform reduced the abortion rate by 11.07% among teenagers under 18. Consistent with the two-stage nature of reproductive decision-making, this effect can be decomposed into changes in pregnancies and abortion choices conditional on pregnancy. Most of the reduction in abortions is driven by a decline in pregnancies, which fell by 5.32%, indicating that behavioral responses occurred before pregnancy.

To interpret these findings, I adapt the stylized model of [Ananat et al. \(2009\)](#) to clarify the stage of the decision-making process at which the reform operates and the role of access costs in shaping teenagers’ responses. The model incorporates two key access frictions that shape teenage abortion decisions under parental consent requirements: proximity to the nearest abortion center and local religiosity. This approach is consistent with the existing literature, which emphasizes the central role of geographic access in the abortion context ([Lindo et al., 2020](#); [Joyce et al., 2013](#)), its particular relevance under parental consent requirements ([Myers and Ladd, 2020](#)), and the importance of social norms and beliefs in shaping abortion decisions ([Zohar et al., 2025](#); [Bhalotra et al., 2021](#)).

The model delivers two key predictions. First, when travel costs are sufficiently high, parental involvement may be effectively required even in the absence of formal consent

¹See, among others, [Bitler and Zavodny \(2001\)](#), [Ananat et al. \(2007\)](#), [Joyce et al. \(2020\)](#), [Myers \(2017\)](#), [Clarke and Mühlrad \(2021\)](#), and [Londoño-Vélez and Saravia \(2025\)](#).

laws, as geographic constraints limit teenagers' ability to obtain an abortion without parental knowledge. Second, conditional on parental consent binding, religiosity influences abortion outcomes through two distinct channels: higher religiosity lowers the probability of parental approval and may also increase the perceived value of giving birth.

I use municipality-level data on proximity to abortion centers and religiosity to proxy for access frictions and local norms. In line with the model's predictions, I find that the effects of the parental consent requirement are concentrated among teenagers living closer to an abortion center. Teenagers in more distant municipalities show no significant response to the reform, suggesting that parental involvement was already effectively required before the policy change due to high travel costs. In these settings, geographic constraints limit teenagers' ability to obtain an abortion without parental involvement, leaving little scope for the formal consent requirement to alter behavior.

Religiosity, by contrast, moderates how adjustment occurs once parental consent becomes binding. The results show that municipalities with different levels of religiosity respond along different margins of the reproductive decision. In more secular municipalities, the reform primarily operates through reductions in pregnancies, consistent with the baseline two-stage response documented earlier. In more traditional municipalities, however, the reform leads to a decline in abortions conditional on pregnancy, reflecting stronger constraints on the abortion margin. In these environments, lower parental approval probabilities and a higher perceived value of childbirth—particularly from the parents' perspective—raise the expected cost of abortion once pregnancy has occurred.

This study contributes to three strands of the literature. First, it relates to work on legal access to abortion and its effects on women's fertility and socioeconomic outcomes (Bitler and Zavodny, 2001; Altındağ and Joyce, 2022; González et al., 2025). Within this literature, parental consent requirements have received particular attention, as parental involvement directly shapes teenagers' reproductive decisions. These regulations introduce an additional layer of bargaining and often delay abortions, with documented adverse consequences for women's health (Joyce and Kaestner, 2001; Joyce et al., 2020; Myers and Ladd, 2020). This paper contributes to this strand by showing that the effects of parental consent laws depend crucially on pre-existing access frictions, which shape both the magnitude of the response and the stage of the decision-making process at which the law operates.

Second, the paper contributes to a complementary literature emphasizing the role of

access frictions in shaping abortion decisions. Beyond legal status, geographic barriers have been shown to matter substantially: greater distance to abortion providers reduces abortion use and alters reproductive behavior (Joyce et al., 2013; Lindo et al., 2020). In particular, Myers et al. (2025) show that the effects of abortion bans intensify with travel burdens, highlighting the importance of geographic frictions. I focus on parental consent requirements, a policy context in which access frictions are likely to be especially salient, as travel costs and financial constraints can increase parental involvement and reduce minors' autonomy. Related work by Zohar et al. (2025) shows that financial subsidies and social norms shape women's autonomy and parental involvement in abortion decisions. This study adds to this literature by explicitly distinguishing between pregnancy and abortion decisions, allowing legal and access frictions to affect these margins differently.

Third, the paper contributes to the literature that models abortion decisions as a multi-stage process. Existing work emphasizes the importance of distinguishing between contraceptive choices, pregnancy realizations, and abortion decisions, highlighting the two-stage nature of reproductive behavior (Ananat et al., 2009; Levine and Staiger, 2002). This study builds on that framework by incorporating multiple sources of heterogeneity in access and by allowing for the presence of informal or illegal abortion, which is known to be important for women's health (Clarke and Mühlrad, 2021). Evidence from Eastern Europe (Levine and Staiger, 2004) shows that legal restrictions of varying strength generate distinct behavioral responses depending on how binding they are; this paper complements that evidence by identifying how specific access frictions shape adjustments across decision margins.

The rest of the paper is organized as follows. Section 2 describes the data sources and institutional context. Section 3 outlines the empirical strategy and presents the main difference-in-differences results. Section 4 introduces a simple model of teenage abortion decisions to interpret the empirical findings and to highlight relevant access frictions. Section 5 presents empirical evidence on the mechanisms underlying teenagers' behavioral responses. Finally, Section 6 concludes and discusses the broader policy implications of the results.

2 Data and Context

2.1 Data

Fertility Records. To measure abortion decisions, I use administrative data on all abortions registered in Spain starting from 2011, provided by the Spanish Ministry of Health. For live births, I rely on the dataset from the Spanish National Statistics Institute (INE). Both datasets include detailed information such as the date of the event, the woman’s age, municipality of residence, gestational week, and other basic demographic characteristics.

Combining these datasets with municipal population data from the INE, I construct abortion and pregnancy outcomes for teenagers. Using gestational week information, I assign abortions and births to their semester of conception, ensuring comparability in the timing of reproductive decisions. The abortion rate is defined as the number of abortions per 1,000 women in each municipality-age-time cell. The pregnancy rate is calculated using the same method. I also report results on the abortion ratio, measured as the share of pregnancies ending in abortion.

Geographic Access to Abortion. To construct a measure of proximity and access to abortion centers, I use the Annual Reports on Pregnancy Interruptions available on the Spanish Ministry of Health’s website. These reports provide a list of centers that perform abortions, allowing me to build a panel of abortion centers operating each year.

Using the names of the centers, I collect their addresses to obtain their geographic coordinates. With this information, I can calculate the distance from each municipality’s centroid to the nearest abortion center. This panel includes both private and public facilities, including clinics, hospitals, and even primary health centers. I also classify centers by whether they offer abortions before week 14, the period in which abortions can be obtained on request (further details on the legal context are provided in [Section 2.2](#)).

Religiosity. To assess the potential role of social norms and religion around fertility and abortion, I construct a baseline measure of religiosity at the municipal level using administrative data on marriages from INE. For each municipality, I calculate the average share of Catholic marriages among all marriages from 2011 to 2015.

Illegal Abortions. I use hospital discharge records from the Spanish Ministry of Health to explore possible illegal or informal abortions. I can identify discharges associated with ICD-10 codes corresponding to complications following induced termination and failed attempted termination. Following a similar approach as with fertility outcomes, I construct the annual rate of abortion-related complications per 1,000 women in each region-age-year cell.

Sample. The sample includes teenagers aged 16–19 experiencing their first pregnancy,² observed from 2012 to 2019 and assigned to semesters based on the estimated date of conception. I focus on teenagers residing in municipalities with more than 10,000 inhabitants. For the geographic-access analysis, I further restrict the sample to mainland Spain, excluding the islands, and to facilities providing abortions before week 14.

2.2 Spanish Abortion Law

Abortion was legalized in Spain in 1985. Still, it was quite restrictive, allowed under specific circumstances, such as cases of rape, risks to the mother’s mental or physical health, or fetal anomalies.³ It was not until the 2010 law that abortion was freely permitted up to the 14th week of gestation,⁴ also becoming publicly funded. This was contingent upon the woman receiving mandatory information about her rights and support options, as well as adhering to a three-day reflection period.

Following the 2010 reform, most abortions, particularly among teenagers, occurred within the 14-week window and were performed at the woman’s request, without citing any health or fetal justification. Between 2012 and 2019, approximately 93% of abortions among teenagers fell into this category.

Despite the 2010 law, abortion remained a contested issue, leading to subsequent reforms. In 2015, a reform introduced a parental consent requirement for teenagers aged 16 and 17 seeking an abortion. Under the 2010 framework, all teenagers aged 16 and older could access an abortion without parental consent. However, starting on September 21, 2015, teenagers aged 16 and 17 were required to obtain parental consent, while those 18 and older could still undergo the procedure without parental involvement.

²This restriction ensures that decisions are less influenced by prior reproductive histories and more directly shaped by the policy environment.

³Some women avoided these restrictions by presenting mental health risks, verified by a psychologist, to obtain an abortion and prevent unwanted pregnancies.

⁴Beyond 14 weeks and up to 22 weeks, abortion is allowed if the continuation of the pregnancy poses a serious risk to the woman’s life or health, or if prenatal tests reveal severe fetal abnormalities.

3 Effects of Parental Consent Requirements

3.1 Empirical Strategy

To estimate the effect of the parental consent law in abortion decision-making, I will use a Difference-in-Differences (DiD) approach relying on the framework of the policy as the source of variation. The policy is affecting 16 and 17 year olds, while teenagers aged 18 and 19 years old are not affected by this policy. The basic setup is:

$$Y_{mat} = \lambda_t + \gamma_{ma} + \beta \cdot Post_t \cdot T_a + \varepsilon_{mat} \quad (1)$$

where Y_{mat} represents the abortion or pregnancy rate at the municipality, age, and semester level, my main outcomes. The term λ_t captures semester fixed effects to account for time-specific factors affecting all municipalities and age groups. Age-municipality fixed effects, γ_{ma} , control for differences across municipality-age groups. $Post_t$ indicates whether the policy is in effect, and T_a identifies the treated group (1 for 16- and 17-year-olds). Finally, ε_{mat} represents the error term, capturing unobserved factors.

The coefficient β captures the policy's impact on the abortion rate for eligible teens. The identification assumption in this model is that, without the introduction of the parental consent law, outcomes would have followed a similar trend for both groups: teenagers under 18 and those aged 18-19.⁵ Figure A.1 shows that before the reform, abortion and pregnancy rates followed similar trends for both groups. After the policy change in 2015, their trends started to diverge.

I also estimate this equation dynamically to capture semester-specific coefficients relative to a baseline period, which in this analysis is the first semester of 2015. This allows me to test for the standard parallel-trends assumption that Equation 1 relies on. More generally, I can compare changes in rates between the treated group (teenagers aged 16 and 17) and the control group (those aged 18 and 19) for each year relative to the first semester of 2015. I estimate the following regression:

$$Y_{mat} = \lambda_t + \gamma_{ma} + \sum_{k \neq S1\ 2015} \beta_k \cdot T_a \cdot \mathbf{1}\{t = k\} + \varepsilon_{mat} \quad (2)$$

where the coefficients β_k measure the dynamic treatment effect, capturing how the policy's impact evolves. The baseline year is normalized such that $\beta_{S1\ 2015} = 0$

⁵In Spain, child support benefits are not contingent on the mother being over 18 years old.

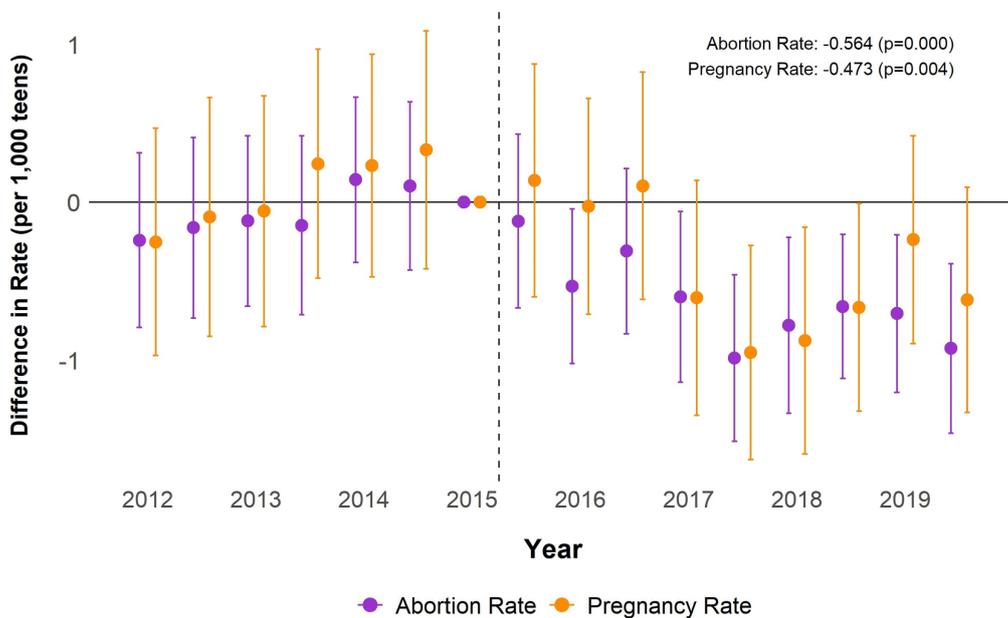
3.2 Effects on Pregnancies and Abortions

I estimate the overall effect of the parental consent law using Equation 1. The results, presented in Table A.1, show that the abortion rate among teenagers aged 16-17 decreased by 0.56 abortions per 1,000 women per semester, relative to those aged 18-19, who were not subject to the parental consent law. This corresponds to an 11.07% decline from the baseline abortion rate of 5.10 abortions per 1,000 women per semester.

Similarly, the pregnancy rate for teenagers aged 16-17 fell by 0.47 pregnancies per 1,000 women per semester, also relative to the 18-19 age group. This represents a 5.32% decrease from the baseline pregnancy rate of 8.88 pregnancies per 1,000 women per semester.

Estimates from the main dynamic specification are presented in Figure 1. The x-axis represents the semester, and the y-axis shows the effect of the parental consent law on the abortion and pregnancy rates for teenagers aged 16 and 17. As the figure shows, the difference in abortion rates between teenagers aged 16-17 and those aged 18-19, relative to the first semester of 2015 (baseline period), becomes significant following the introduction of the parental consent law. The abortion rate for teenagers under 18 is significantly lower after the policy is implemented.

Figure 1: Effects of the Parental Consent Law on Abortion and Pregnancy Rates



Note: This figure shows estimated semester-specific effects of the 2015 parental consent law on abortion rates and pregnancy rates among teenagers aged 16-17 (treated group), relative to those aged 18-19 (control group). Coefficients are plotted relative to the baseline period (first semester of 2015). Each dot represents the point estimate of the treatment effect in a given semester, with 95% confidence intervals shown as vertical bars. The dashed line indicates the timing of the policy introduction, while the solid horizontal line marks zero effect. Standard errors are clustered at the municipality-age level.

In the case of pregnancies, there appears to be a delayed response. The pregnancy rate among 16–17-year-olds begins to decline only after the law takes effect, relative to older teens. This pattern suggests that part of the reduction in abortions may result from an earlier behavioral response that is reducing pregnancies.⁶ This finding highlights the importance of understanding the timing of teenagers’ reproductive decision-making and the behavioral mechanisms through which policy changes affect outcomes.

3.3 Decomposition of the Abortion Response

Given these results, the next step is to separate the overall decline in abortions into its two behavioral components: changes in pregnancies and changes in abortions conditional on pregnancy. Empirically, I estimate difference-in-differences effects on three outcomes: abortions per population (the *abortion rate*), abortions per pregnancies (the *abortion ratio*), and pregnancies per population (the *pregnancy rate*). By definition, these outcomes satisfy:

$$\frac{\text{Abortions}}{\text{Population}} = \frac{\text{Abortions}}{\text{Pregnancies}} \times \frac{\text{Pregnancies}}{\text{Population}} \quad (3)$$

Taking logs yields an exact additive decomposition. I therefore estimate separate difference-in-differences regressions for each logged outcome using the same specification as in Equation (1). Because the logged version of Equation (3) holds by identity and all three regressions include identical fixed effects, the estimated coefficients satisfy:

$$\beta^{rate} \approx \beta^{ratio} + \beta^{preg} \quad (4)$$

In practice, the parental-consent reform is associated with a 15.4% decline in abortions per population, driven by both margins: a 4.0% reduction in abortions per pregnancy and a 12.2% reduction in pregnancies per population. These effects correspond to log-point estimates of -0.167 , -0.041 , and -0.130 , respectively, which satisfy the decomposition in Equation (4).

The contribution of each behavioral margin can be expressed as the share of the total log effect:

$$\text{Pregnancy margin} = \frac{|\hat{\beta}^{preg}|}{|\hat{\beta}^{rate}|} = 0.78, \quad \text{Abortion margin} = \frac{|\hat{\beta}^{ratio}|}{|\hat{\beta}^{rate}|} = 0.24$$

⁶Figure A.2 in Appendix A reports the dynamic DiD estimates for the abortion ratio (abortions per pregnancy) and the birth rate. Both series move mechanically with the declines in pregnancy and abortion rates documented earlier.

Thus, approximately three-quarters of the overall decline in abortions per population is explained by a reduction in pregnancies, while the remaining one-quarter reflects fewer pregnancies ending in abortion.

This exercise maps directly into the decision-making process of teenagers, changes in abortion conditional on pregnancy, and changes in pregnancies. Because of the parental consent law, some pregnancies end in birth instead of abortion. But also, pregnancies are reduced to start with. This mapping motivates the need for a conceptual model, where the law increases the cost of abortion and affects both the decision to abort and the decision to avoid pregnancy.

4 A Model of Teen Abortion Choices

4.1 Benchmark Model

The empirical evidence shows that the parental-consent reform affects both the likelihood of becoming pregnant and the likelihood of aborting, conditional on pregnancy. This pattern naturally connects to the two-stage frameworks commonly used in the abortion literature (Ananat et al., 2009), in which individuals first choose contraceptive effort and then make an abortion decision if pregnancy occurs. I therefore begin by outlining a simple version of this canonical model. However, as I discuss below, this benchmark framework does not fully capture other important forms of abortion costs that arise specifically in the context of parental consent. I subsequently extend the model to incorporate these frictions.⁷

A representative teenager makes two sequential decisions. In *Stage 1*, she chooses contraceptive effort $e_i \in [0, 1]$, which is costly but reduces the probability of pregnancy. In *Stage 2*, conditional on pregnancy, she decides whether to abort or give birth.

More formally, abortion yields utility $-c_i^A$, where $c_i^A > 0$ captures monetary, psychological, and institutional costs. Carrying the pregnancy to term yields v_i^B , which may be positive or negative. She chooses abortion if and only if $-c_i^A > v_i^B$. Let the resulting payoff from pregnancy be $v_i^P \equiv \max\{v_i^B, -c_i^A\}$.

Anticipating this *Stage 2* decision, her *Stage 1* problem is

$$\max_{e_i \in [0,1]} U_i(e_i) = -C(e_i) + \pi(e_i) v_i^P,$$

⁷Figure A.5 in Appendix A summarizes the full structure of the model.

yielding an optimal contraceptive effort e_i^* . A higher abortion cost c_i^A makes pregnancy less attractive ex ante. This increases the marginal benefit of avoiding pregnancy, raising optimal contraceptive effort e_i^* in *Stage 1* and lowering the probability of pregnancy, producing fewer “marginal pregnancies”. In *Stage 2*, the same increase in c_i^A lowers the incentive to abort, so some pregnancies that would have been terminated are instead carried to term, creating “marginal births”.

This simple model provides the foundation for understanding how parental consent requirements alter teenagers’ choices. When the law is introduced for minors, pregnant teenagers can no longer make abortion decisions independently and must obtain parental approval. Let $\theta_i \in [0, 1]$ denote the probability that consent is granted. If consent is denied, the cost of obtaining an abortion becomes prohibitive, with an additional cost $c_{\text{ill}} > 0$ (e.g., due to accessing informal or illegal channels).

Under this setting, whenever the abortion branch is relevant ex post, the teenager faces an expected abortion cost of

$$\mathbb{E}[c_i^{\text{abort}}] = \theta_i c_i^A + (1 - \theta_i)(c_i^A + c_{\text{ill}}) = c_i^A + (1 - \theta_i)c_{\text{ill}}.$$

This framework allows for the possibility of illegal abortions, but mainly highlights that denied consent substantially raises the cost of abortion. By contrast, older teenagers (18–19) are not subject to the law and always have $\theta_i = 1$, so their expected abortion cost remains c_i^A . As a result, the introduction of parental consent requirements increases expected abortion costs only for minors, which reduces the abortion rate through both a pregnancy margin and an abortion margin channel. This is consistent with the empirical patterns documented in [Section 3](#).

4.2 Frictions to Abortion Access

The benchmark model above is useful for illustrating the basic behavioural responses to changes in abortion costs, but it abstracts from contextual factors that shape real-world access to abortion services. In practice, teenagers face additional frictions that influence both the feasibility and the cost of terminating a pregnancy. Geographic barriers, financial considerations, and local social norms can all play an important role in shaping access and realized abortion decisions.

In the Spanish setting, financial costs are not a salient constraint because abortion is legally included in the National Health System and publicly financed, even when per-

formed in private centers. I therefore focus on two frictions that remain highly relevant: distance to the nearest abortion provider, which affects the practical ability to obtain care, and local religiosity, which shapes the social and psychological environment surrounding reproductive decisions. These dimensions introduce heterogeneity in abortion access that interacts directly with the parental consent requirement.

Proximity to Abortion Centers

In the presence of parental consent requirements, geographic proximity to abortion services becomes a key determinant of access. Distance can naturally be interpreted as an additional cost of abortion. Let d_{m_i} denote the distance from municipality m , where teenager i lives, to the nearest abortion center. A simple way to incorporate this friction is to replace c_i^A by $c^A + \tau d_{m_i}$, where $\tau > 0$ reflects the marginal cost of an extra kilometer. In this formulation, teenagers living farther from clinics face higher effective abortion costs, reducing access.

However, distance does more than raise costs, it also shapes decision-making autonomy. Even in the absence of a parental consent law, travelling long distances may require logistical, financial, or emotional support from an adult, effectively making parental involvement unavoidable. Distance therefore, determines the extent to which minors can realistically act independently.

To formalise this idea, I decompose “consent” into two components. Let $a_i \in [0, 1]$ be the probability that teenager i must involve her parents to access abortion. I assume that this probability increases with distance: $a_i = a(d_{m_i})$ with $\partial a / \partial d > 0$. Let $\varphi_i \in [0, 1]$ denote the probability that parental consent is granted, conditional on being asked.

Then, the effective probability of obtaining a legal access to abortion is:

$$\theta_i = 1 - a(d_{m_i})(1 - \varphi_i)$$

In the extreme cases, if no parental involvement is needed ($a_i = 0$), then $\theta_i = 1$; if it is always required ($a_i = 1$), then $\theta_i = \varphi_i$. When the abortion branch is relevant in the decision tree, the expected cost entering *Stage 1* can be written as:

$$\mathbb{E}[c_i^{\text{abort}}] = c^A + \tau d_{m_i} + a(d_{m_i})(1 - \varphi_i) c_{\text{ill}} \quad (5)$$

With the presence of parental consent laws, parental involvement is always required

($a_i = 1$) regardless of distance. However, the need to ask and involve parents is present for teenagers living further away from abortion centers without the law.

Proposition 1. Distance attenuates the impact of the consent requirement

The increase in the expected cost of abortion due to the introduction of a parental consent law is:

$$\Delta C(d_{m_i}, \varphi_i) = [1 - a(d_{m_i})](1 - \varphi_i)c_{\text{ill}}$$

Since $a(d_{m_i})$ increases with distance, this cost increase is largest for teens living closer to abortion centers and attenuates with distance. Therefore, the effects of the law are expected to be concentrated among teenagers residing near abortion centers.

Religiosity

Social norms and religiosity may play an important role in abortion decision-making, particularly when parental involvement is required. Let R_{m_i} denote the level of religiosity in the municipality m where teenager i lives. Religiosity can influence abortion choices through several channels.

First, it may lower the probability that parents approve an abortion once they are involved, affecting φ_i . In particular, let $\varphi_i = \varphi(R_{m_i})$, with $\partial\varphi/\partial R < 0$. Holding distance d_{m_i} fixed, this channel implies that teenagers in more religious municipalities face lower approval probabilities.

Proposition 2. Religiosity amplifies the impact of the consent requirement

The increase in the expected cost of abortion due to the introduction of a parental consent law is:

$$\Delta C(d_{m_i}, R_{m_i}) = [1 - a(d_{m_i})](1 - \varphi(R_{m_i}))c_{\text{ill}}$$

Since $\varphi(R_{m_i})$ decreases with religiosity, this cost increase is larger for teenagers living in more religious areas. Therefore, the effects of the law are expected to be concentrated among minors in highly religious municipalities.

A second channel is the birth-value channel: religiosity may also affect the perceived value of giving birth. More religious municipalities may hold more traditional or pro-life views. Then, higher religiosity raises the value of giving birth, and the incentive to abort decreases in R_{m_i} . This channel reduces the abortion ratio in levels even before the reform and dampens the marginal impact of the law, since abortion is already less attractive in

these areas.

Together, Proposition 2 and the birth-value channel highlight two distinct mechanisms through which religiosity shapes abortion outcomes. The approval-probability channel amplifies the effect of the parental consent requirement, while the birth-value channel dampens it. Since both channels may operate simultaneously and their relative magnitude is ultimately empirical, I remain agnostic about which effect dominates *ex ante*.

5 Evidence on Mechanisms Behind the Law’s Impact

The model in Section 4 highlights two key frictions that are particularly relevant in the parental consent context: distance to abortion services and religiosity or social norms. These dimensions introduce meaningful heterogeneity in teenagers’ access to abortion. Both serve as mechanisms through which the parental consent requirement can shape their responses. This section examines each mechanism in detail and presents empirical evidence on how these frictions mediate the law’s impact on teen abortion decisions. I then discuss another implication of the model: the reform may increase informal abortions when formal access is more constrained.

5.1 Proximity to Abortion Centers

Abortion in Spain can be performed only in registered and authorized centers, which may be either public or private. Even when the procedure is carried out in a private center, it is publicly funded. Additionally, some centers only perform abortions when there are health risks to the woman, but not on request before the 14th week of gestation. Figure 2a illustrates this classification and highlights the variation across Spanish regions in how abortion services are organized.

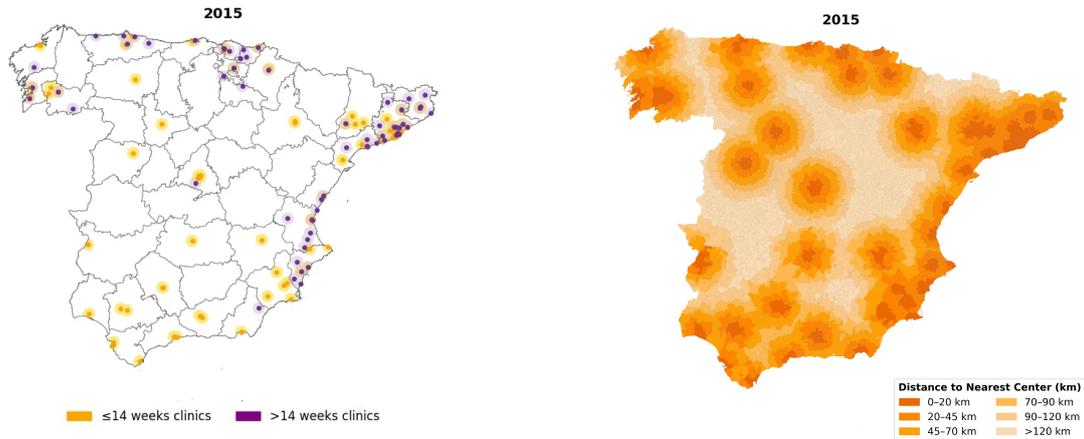
These regional differences in service provision are also reflected in geographic accessibility. Figure 2b displays the distance from each municipality to the nearest abortion center. As shown, access to abortion services varies across the country. Some regions offer relatively good access from all municipalities, while others have only one center, often located in the capital of the province.⁸ This limited access can make it difficult for women in more remote areas to obtain services.

⁸A few provinces have experienced an increase in the number of centers performing abortions over the past decade. However, for most provinces, the number of centers has remained stable throughout the period. This stability can be attributed to the fact that centers have an established and registered relationship with regional health authorities, meaning that any expansion is likely to result from public health initiatives.

Figure 2: Geographic Accessibility to Abortion Services in 2015

(a) Abortion Centers by Type of Service

(b) Distance to the Nearest Center



Note: Panel (a) maps abortion centers in 2015, classified by whether they provide services on request up to 14 weeks of gestation (orange) or only perform abortions beyond 14 weeks under legal exceptions such as maternal or fetal health risk (purple). The classification draws on regional health protocols, communication with regional authorities, and abortion microdata. Panel (b) displays the distance from each Spanish municipality to the nearest abortion center providing services before 14 weeks. Distances are calculated using municipality centroids and the geographic coordinates of centers, and are restricted to mainland Spain. Darker shades indicate closer proximity to a center; lighter shades indicate greater distance.

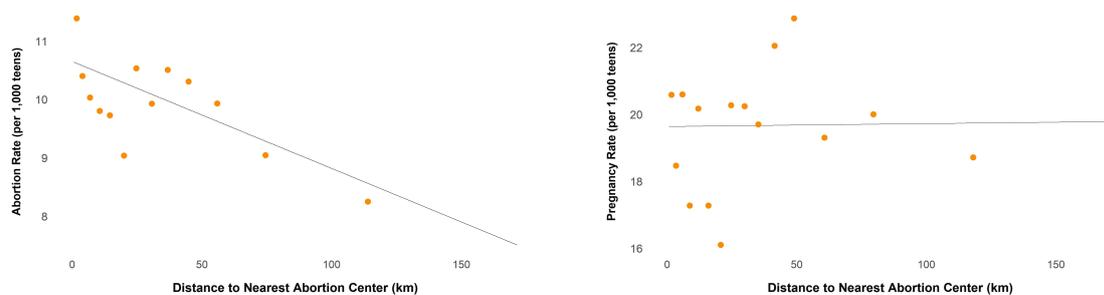
Given these disparities, it is important to assess whether geographic access translates into effective constraints for teenagers. According to the model, distance raises the effective abortion cost and determines the need to ask for consent (generally, even without consent requirements). It therefore predicts fewer abortions in municipalities farther from clinics, and a stronger reaction to the policy from teenagers living closer to the abortion centers.

Figure 3 shows simple binned scatterplots of municipality-level abortion and pregnancy rates against distance to the nearest abortion center. Each dot represents the average rate within a distance bin, weighted by the population size.

Figure 3: Binned Scatterplots of Rates and Distance to Nearest Center

(a) Abortion Rate

(b) Pregnancy Rate



Note: This figure presents the binned scatterplots of the abortion and pregnancy rates (per 1,000 women) against the distance to the nearest abortion center, using municipality–age–year level data. Each dot represents the average rate and average distance within a bin. The plot is weighted by the population in each municipality–age–year cell. A linear fit line is included to illustrate the overall relationship.

For the abortion rate, in [Figure 3a](#), there is a negative relationship: municipalities farther from an abortion center exhibit substantially lower abortion rates. This pattern suggests that distance may serve as a barrier to access, particularly for younger individuals who face greater mobility constraints.

However, [Figure 3b](#) shows that the pattern is very different for pregnancy rates, where there is no clear relationship. There is no evidence that distance shapes fertility behavior *ex ante*, but it may be more of a logistical barrier at the abortion stage rather than a forward-looking consideration.

With the introduction of parental consent requirements, [Proposition 1](#) predicts a stronger response for teenagers living near the abortion centers, given a larger increase in abortion cost. As a consequence, the effects should be concentrated among those teenagers in both the abortion and pregnancy margins.

To test this, I extend the difference-in-difference specification by interacting it with a categorical variable that captures each municipality’s distance to the nearest abortion center. Formally, I modify [Equation 1](#) include distance-bin-specific coefficients by interacting the treatment with d_m , a set of mutually exclusive dummy variables indicating which distance bin municipality m belongs to.

$$Y_{mat} = \lambda_t + \gamma_{ma} + \beta \cdot (d_m \cdot Post_t \cdot T_a) + \varepsilon_{mat} \quad (6)$$

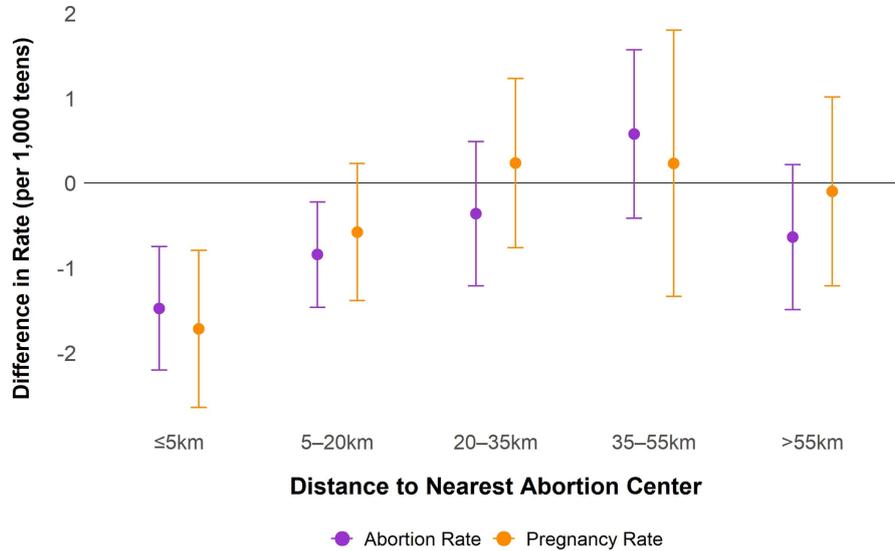
This approach allows for heterogeneous treatment effects across areas with different levels of geographic access to abortion services. To construct the distance bins, I use the distribution of distances to the nearest abortion center among mainland municipalities (excluding the islands, Ceuta, and Melilla).⁹ I calculate the 20th, 40th, 60th, and 80th percentiles of the distance distribution and round the resulting cutoff points to the nearest multiple of 5 kilometers. This yields the following five distance bins: 0 – 5 km, 5 – 20 km, 20 – 35 km, 35 – 55 km, and < 55 km. I use the distance to the nearest abortion center in 2015 as a measure of baseline access to abortion.

The heterogeneous effect of the parental consent law based on distance to the nearest abortion center is illustrated in [Figure 4](#), which shows the impact of the policy on abortion and pregnancy rates for teenagers aged 16–17 compared to those aged 18–19, across municipalities grouped by distance. Teenagers living in municipalities farther from an abortion center appear largely unaffected by the reform. In contrast, coefficients for

⁹[Figure A.3](#) in [Appendix A](#) shows the distribution of municipal distances to the nearest center in Spain.

municipalities closer to an abortion center are negative, indicating a stronger behavioral response to the policy among teens with better access. The pattern is very similar for both the abortion and the pregnancy rates.

Figure 4: Heterogeneous Effects of the Parental Consent Law by Distance



Note: This figure presents difference-in-differences estimates of the effect of the 2015 parental consent law on abortion and pregnancy rates (abortions/pregnancies per 1,000 women) among teenagers aged 16–17 relative to those aged 18–19, separately by distance to the nearest abortion center. Each dot corresponds to a distance bin and shows the estimated treatment effect for municipalities in that bin. Vertical bars denote 95% confidence intervals. Standard errors are clustered at the municipality-age level. The dashed horizontal line marks the zero effect.

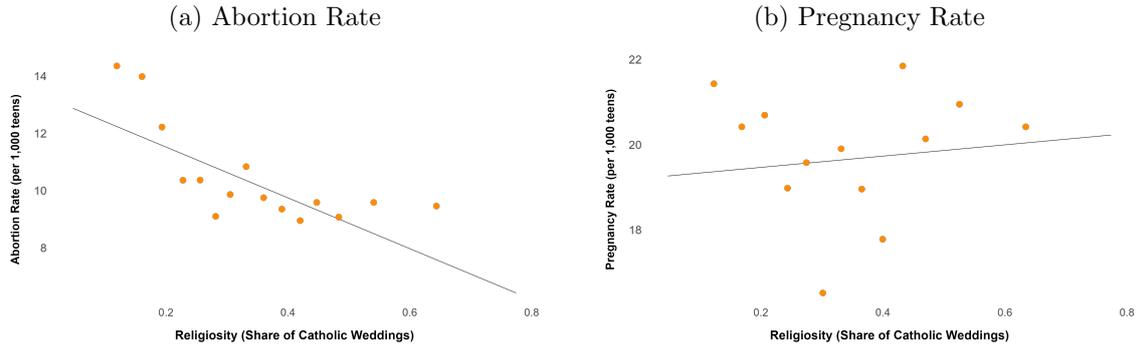
These findings suggest that geographic proximity to abortion services plays a critical role in shaping teenagers’ reproductive decisions. The effect of the policy varied depending on prior accessibility, implying that teenagers in areas with limited access were already facing substantial barriers before the reform. For them, the introduction of the parental consent requirement did not impose a significant additional constraint, likely because accessing services already required some form of parental involvement (e.g., for travel). In contrast, among teenagers with easier access to abortion services, the policy introduced a new binding constraint that reduced abortion rates.

5.2 Religiosity and the Impact of Parental Consent

Religiosity, proxied by the share of Catholic marriages in a municipality, also plays an important role in teenage abortion decisions. Descriptive evidence in Figure 5 shows patterns that are similar to those observed for geographic access. In particular, more religious municipalities exhibit lower abortion rates, while pregnancy rates display little systematic variation with religiosity. This suggests that religiosity is associated with differences in

abortion behavior rather than in pregnancy incidence.

Figure 5: Binned Scatterplots of Rates and Religiosity



Note: This figure presents the binned scatterplots of the abortion and pregnancy rates (per 1,000 women) against the religiosity in a given municipality, using municipality–age–year level data. Each dot represents the average rate and average religion within a bin. The plot is weighted by the population in each municipality–age–year cell. A linear fit line is included to illustrate the overall relationship.

The model highlights two channels through which religiosity shapes the impact of the parental-consent requirement. Proposition 2 predicts that higher religiosity lowers the parental approval probabilities, increasing the effective abortion cost after the reform. Thus, the policy’s effect should be stronger in more religious municipalities. However, it may be that higher religiosity increases the value of giving birth, leading to lower abortion ratios even before the reform and dampening the responsiveness of sexual behavior or contraceptive investments.

To test these predictions, I proxy municipal religiosity using the share of Catholic marriages over 2011-2015.¹⁰ I extend the baseline specification analogously to the distance exercise, interacting treatment with religiosity in municipality m , R_m .

$$Y_{mat} = \lambda_t + \gamma_{ma} + \beta \cdot (R_m \cdot Post_t \cdot T_a) + \varepsilon_{mat} \quad (7)$$

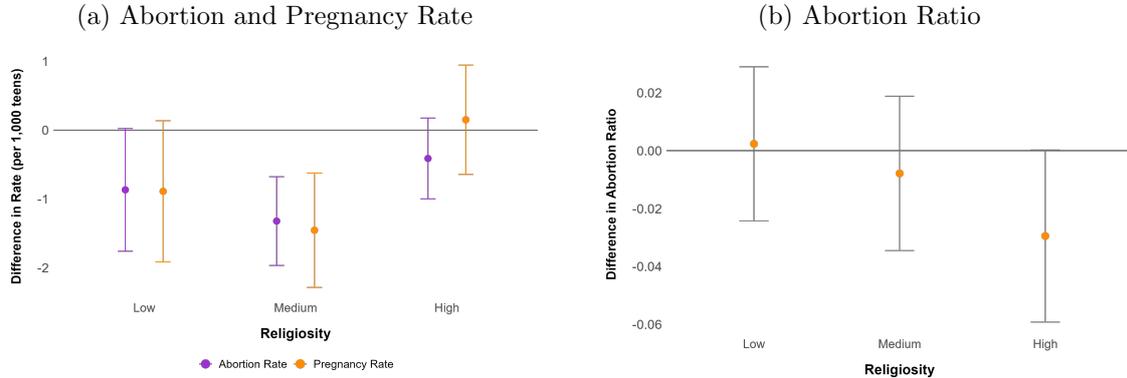
I classify municipalities into terciles of religiosity (low, medium, and high) and estimate heterogeneous effects for abortion rates, pregnancy rates, and, given the theoretical relevance, the abortion ratio.

Figure 6 summarize the findings. There is evidence that low-religiosity municipalities adjust more on the pregnancy margin: they display reductions in pregnancies after the reform, consistent with teenagers updating ex ante behavior when abortion costs increase. The pattern is different for highly religious municipalities. As seen clearly in Figure 6b, given that pregnancy rates do not decline in high-religiosity areas, abortion ratios fall.

¹⁰Figure A.4 in Appendix A shows the distribution of municipal share of catholic weddings.

This indicates that nearly all of the response occurs on the abortion margin rather than through changes in contraceptive behaviour.

Figure 6: Heterogeneous Effects of the Parental Consent Law by Religiosity



Note: This figure presents difference-in-differences estimates of the effect of the 2015 parental consent law on abortion and pregnancy rates (abortions or pregnancies per 1,000 women) and abortion ratio (abortions/pregnancies) among teenagers aged 16–17 relative to those aged 18–19, separately by religiosity. Each dot corresponds to a religiosity bin and shows the estimated treatment effect for municipalities in that bin. Vertical bars denote 95% confidence intervals. Standard errors are clustered at the municipality-age level. The dashed horizontal line marks the zero effect.

The approval probability channel would predict that highly religious municipalities should have the strongest effect, given the increase in the abortion cost. Although this is shown in the abortion margin, it is not true in the pregnancy margin. The birth-value channel could explain some changes. Given the higher value of birth in religious contexts,¹¹ an increase in the cost of abortion is more likely to shift some abortions into marginal births.

Taken together, the patterns indicate that religiosity affects how teenagers adjust to the parental consent reform, with more secular municipalities responding on the pregnancy margin and highly religious municipalities responding almost exclusively through reduced abortions among the pregnancies that occur.

5.3 Joint heterogeneity by distance and religiosity

A natural concern is that geographic access to abortion services and local religiosity may be correlated across municipalities, as illustrated in Figure A.6. Although both variables enter the expected abortion cost in the model, they do so through distinct channels: distance directly affects access, while religiosity shapes outcomes by influencing the likelihood of

¹¹As supporting evidence, data from the 2018 Spanish Fertility Survey shows that more religious women have stronger pro-natal preferences. Using both religiousness and intensity-to-practice, moving from non-religious to the highest level of religious practice is associated with desiring over 1 extra child on average and starting sexual activity approximately 3 years later. These patterns are consistent with the idea that a more religious environment attaches a higher value to childbearing, and has less room to increase contraceptive intensity.

parental approval and the perceived value of giving birth. To disentangle their relative importance, I examine heterogeneity along both dimensions simultaneously.

Specifically, I classify municipalities into two groups based on whether their distance to the nearest abortion center is above or below the median, and into religiosity terciles. I then estimate a fully interacted difference-in-differences specification that allows the effect of the parental consent reform to vary across the resulting six distance–religiosity cells. [Figure A.7](#) presents the estimated effects separately for low and high distance municipalities.

In municipalities located near an abortion center, the reform generates sizable declines in abortion rates across all religiosity levels, accompanied by reductions in pregnancy rates and modest changes in abortion ratios. In contrast, in municipalities farther from abortion centers, the estimated effects are smaller and often statistically indistinguishable from zero, regardless of religiosity. Where effects do arise, religiosity moderates them as observed in [Section 5.2](#). These findings are consistent with the model: distance determines how binding the parental-consent requirement becomes, while religiosity shapes behavioral responses across margins.

5.4 Riskier Alternatives: Evidence from Complications

The main results show declines in both abortions and pregnancies per population, consistent with an increase in the expected cost of abortion. However, registered data may miss behavioral responses outside the formal system, such as substitution toward illegal or informal abortions,¹² captured in the model by c_{ill} .

To explore this potential effect of the reform, I use the hospital discharge records from the Ministry of Health and construct an outcome measuring the annual rate of abortion-related complications per 1,000 females aged 16–19, disaggregated by age, year and region. I estimate a difference-in-differences model based on the main specification in [Equation 1](#), but aggregated at the regional level (CCAA), comparing minors (16–17) to legal adults (18–19) before and after the 2015 reform.

The results, presented in [Table A.1](#), show that the estimated coefficient indicates an increase of 0.022 per 1,000,¹³ corresponding to a 43.6% increase relative to the baseline. This rise in post-reform complications among minors, relative to 18–19-year-olds, is con-

¹²Contemporary press reports documented cases of minors seeking abortion pills online or resorting to unsafe alternatives; see [El Mundo, 2017](#), [El Periódico, 2020](#), and [El Mundo, 2023](#).

¹³Standard error = 0.0095; p-value = 0.0249.

sistent with some substitution toward informal abortion methods. Note that these are not illegal abortions per se, but rather potential consequences if such abortions were occurring. That said, these events are rare and difficult to measure, and the evidence should be interpreted as suggestive.

6 Conclusion

This study shows how parental consent requirements shapes teenagers' reproductive decisions and how its impact depends on access to abortion services and local religiosity. The reform substantially reduced abortions among minors and also lowered pregnancies. Decomposing the response across the two stages of the decision shows that roughly three quarters of the decline in the abortion rate operates through fewer pregnancies, with the remaining quarter reflecting fewer abortions among existing pregnancies.

Mechanism evidence and the use of the conceptual model help interpret these patterns. Hospitalizations for abortion-related complications suggest some substitution toward informal or illegal abortions. The reform's effects are also strongly heterogeneous by geographic access: teenagers in municipalities close to an abortion center exhibit large declines in abortions and pregnancies, whereas those in more remote areas are almost unaffected, consistent with distance already acting as a *de facto* constraint before the reform.

Religiosity and social norms further shape responses. In more secular municipalities, the main adjustment occurs on the pregnancy margin, consistent with minors updating *ex ante* behavior when abortion becomes more costly. In highly religious areas, pregnancy rates change little but abortion ratios fall, indicating that the response is concentrated in the decision to carry pregnancies to term.

Taken together, the results highlight how legal and baseline barriers jointly influence reproductive choices. The parental consent requirement introduced in 2015 was repealed in 2023, but regional differences in how the public health system organizes abortion services continue to limit effective choice. Policies targeting minors' autonomy interact with pre-existing barriers and norms, and their evaluation should also consider the distribution of those constraints faced by teenagers.

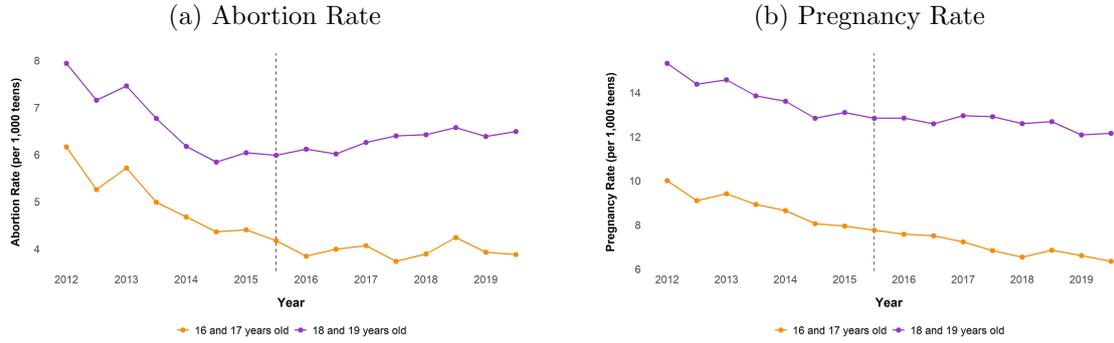
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A Additional Figures and Tables

Figure A.1: Mean Rate by Age Group (2012-2019)



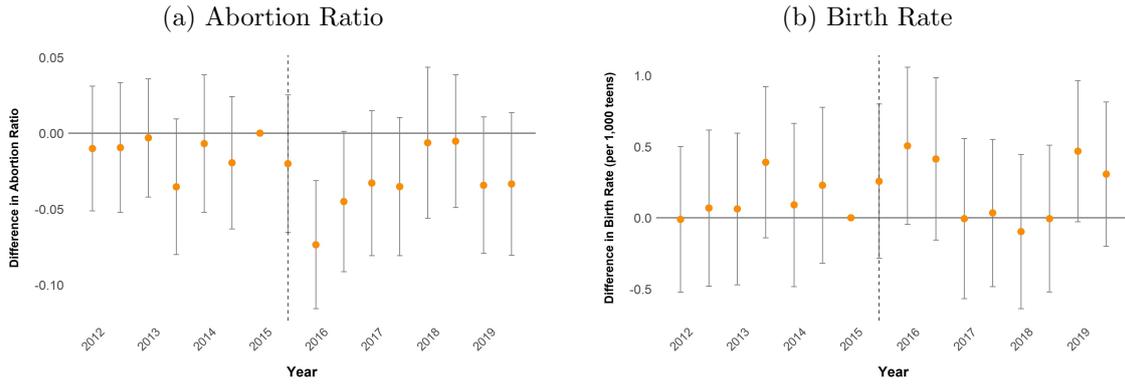
Note: This figure shows the abortion and pregnancy rates (number of abortions/pregnancies per 1,000 women) for two age groups: 16–17 (treated, in orange) and 18–19 (control, in purple), from 2012 to 2019. The vertical dashed line marks the implementation of the 2015 parental consent requirement for minors. Each dot represents the average rate in a given semester and age group. The figure illustrates how both groups showed similar trends pre-policy.

Table A.1: Effects of Parental Consent Law on Key Outcomes

Outcome	Baseline mean	DiD estimate	N
Abortion rate (per 1,000 teens)	5.10	-0.564^{***} (0.140)	25,222
Pregnancy rate (per 1,000 teens)	8.88	-0.473^{**} (0.166)	25,222
Abortion ratio (abortions/pregnancies)	0.58	-0.020^{**} (0.009)	25,222
Birth rate (per 1,000 teens)	3.79	0.091 (0.098)	25,222
Complication rate (per 1,000 teens)	0.05	0.022^{**} (0.010)	684

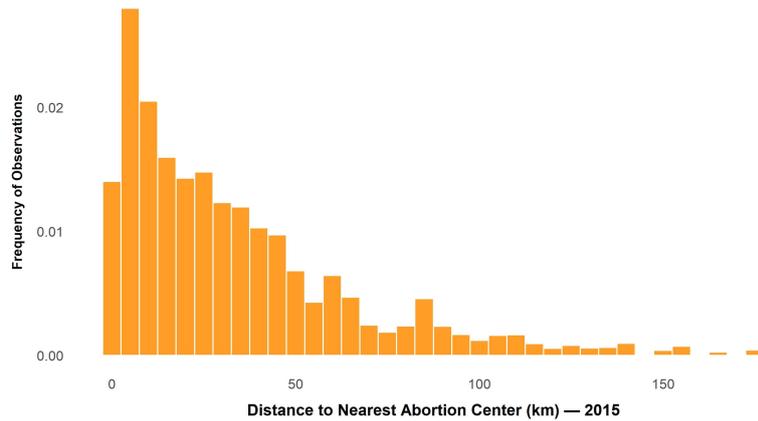
Note: This table reports the difference-in-differences estimates of Equation (1) following the 2015 parental consent reform. Standard errors (in parentheses) are clustered at the municipality–age level for fertility outcomes and at the regional–age (*comunidad autónoma*) level for complication rates. The number of observations corresponds to area×age×time cells: municipality and semester for fertility outcomes, and region and year for complications. Stars denote significance at: * 10%, ** 5%, *** 1%.

Figure A.2: Effects of the Parental Consent Law



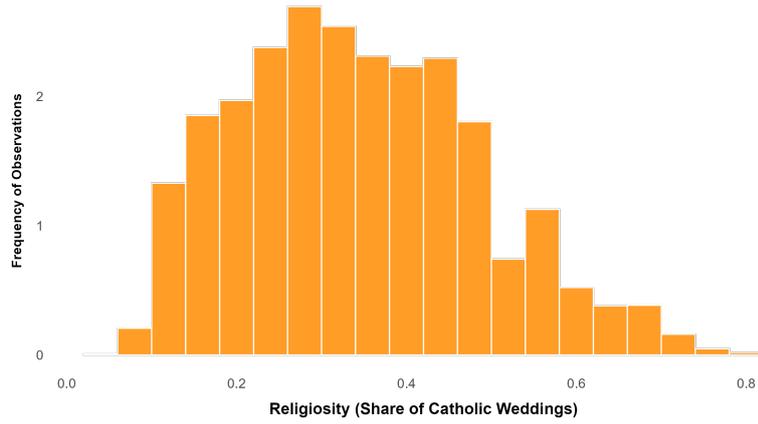
Note: This figure shows estimated semester-specific effects of the 2015 parental consent law on abortion ratio and birth rate among teenagers aged 16–17 (treated group), relative to those aged 18–19 (control group). Coefficients are plotted relative to the baseline period (first semester of 2015). Each dot represents the point estimate of the treatment effect in a given semester, with 95% confidence intervals shown as vertical bars. The dashed line indicates the timing of the policy introduction, while the solid horizontal line marks zero effect. Standard errors are clustered at the municipality-age level.

Figure A.3: Distribution of Municipal Distances to Nearest Abortion Center



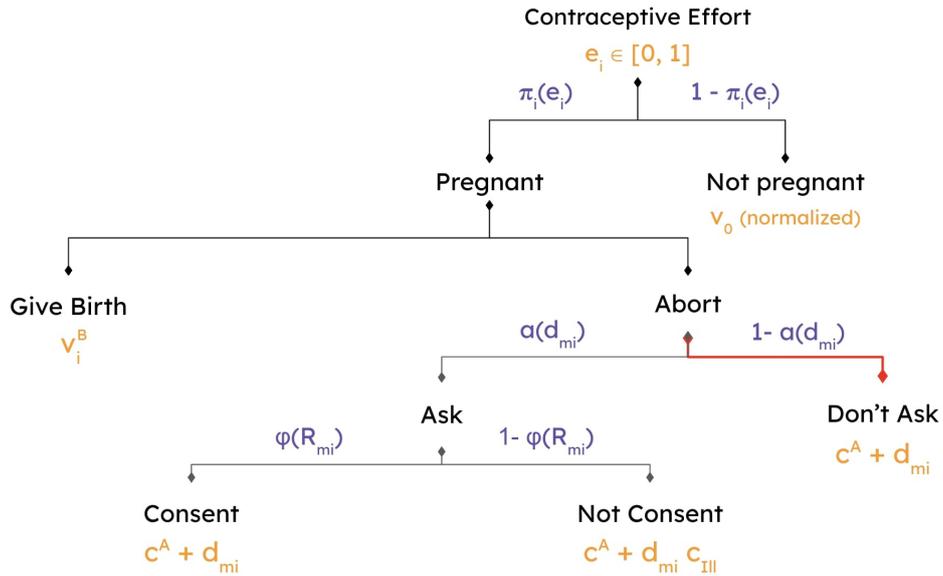
Note: This histogram shows the distribution of straight-line distances (in kilometers) from each mainland Spanish municipality (population > 10,000) to its nearest abortion center, based on 2015 data.

Figure A.4: Distribution of Municipal Share of Catholic Weddings (2011-2015)



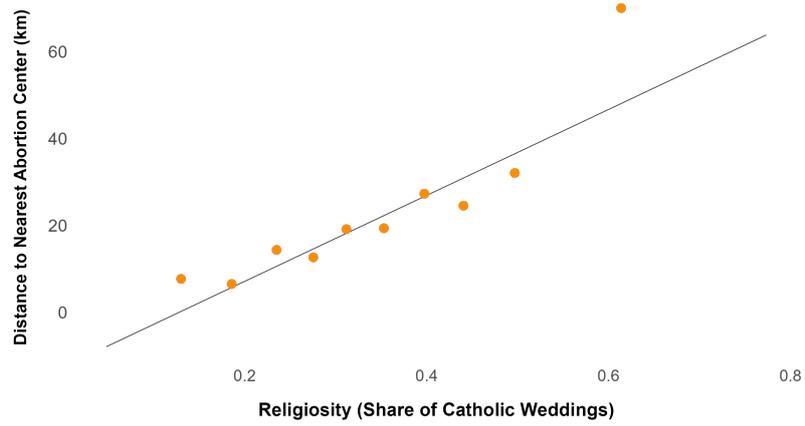
Note: This histogram shows the distribution across municipalities of the share of Catholic weddings over 2011–2015, defined as the total number of Catholic weddings divided by the total number of weddings in the municipality during that period.

Figure A.5: Decision-Tree: Abortion Model with Access Frictions



Note: This figure illustrates the two-stage decision process of a representative teenage girl. In the first stage, she chooses contraceptive effort, which determines her probability of pregnancy. If pregnancy occurs, she then decides whether to abort or give birth. Conditional on abortion, she may need to involve her parents, depending on her distance to the nearest abortion center. Following the parental consent reform, parental involvement becomes mandatory, so the red arrow is no longer available. If parental involvement is required, approval is uncertain and depends on local religiosity. If consent is granted, or if no parental involvement is needed, she incurs a cost of $c^A + d_{m_i}$. If consent is denied, she must seek an illegal abortion, incurring an additional cost c_{III} , for a total cost of $c^A + d_{m_i} + c_{III}$.

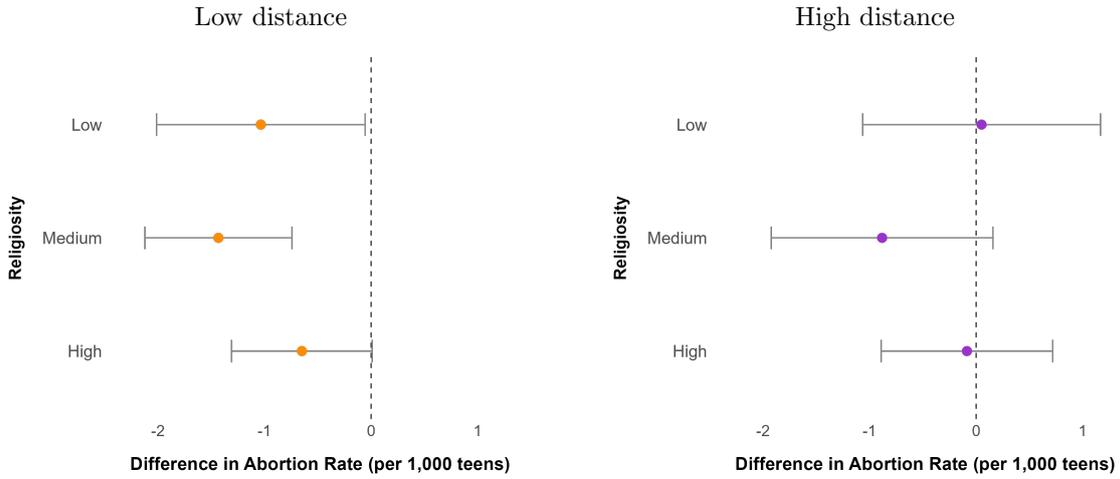
Figure A.6: Binned Scatterplot of Distance and Religion



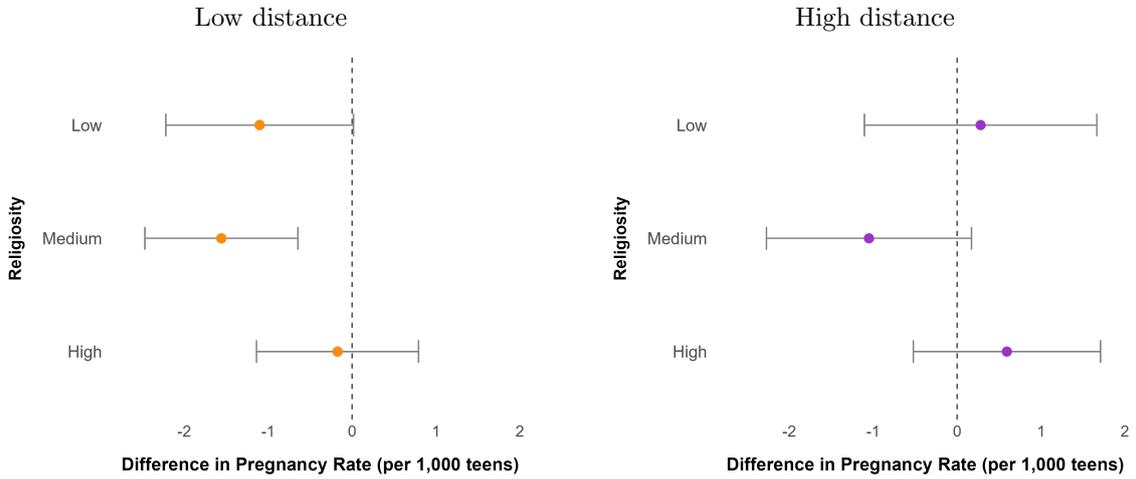
Note: This figure presents the binned scatterplots of distance to the nearest abortion center against the religiosity measure, using municipality–age–year level data. Each dot represents the average religiosity and average distance within a bin. The plot is weighted by the population in each municipality–age–year cell. A linear fit line is included to illustrate the overall relationship.

Figure A.7: Effects of the Parental Consent Law by Distance and Religiosity

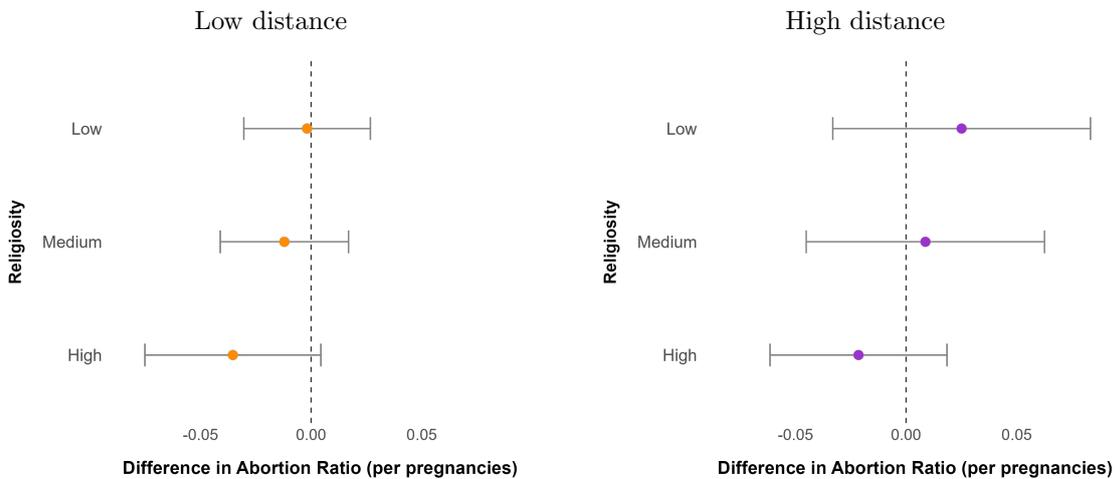
Panel A: Abortion rate



Panel B: Pregnancy rate



Panel C: Abortion ratio



Note: This figure presents difference-in-differences estimates of the effect of the 2015 parental consent law on abortion and pregnancy rates (abortions or pregnancies per 1,000 women) and abortion ratio (abortions/pregnancies) among teenagers aged 16–17 relative to those aged 18–19, separately by distance and religiosity. Each dot corresponds to a distance-religiosity bin and shows the estimated treatment effect for municipalities in that bin. Vertical bars denote 95% confidence intervals. Standard errors are clustered at the municipality-age level. The dashed vertical line marks the zero effect.

B Details of the Conceptual Model

This appendix presents the full model underlying the interpretation of the parental consent reform and derives the comparative statics.

B.1 Benchmark Model

A teenager chooses contraceptive effort $e_i \in [0, 1]$, facing a cost $C(e_i)$ with $C'(e_i) > 0$ and $C''(e_i) > 0$. Pregnancy occurs with probability $\pi(e_i)$, where $\pi'(e_i) < 0$ and $\pi''(e_i) > 0$.

If pregnant, she chooses abortion or birth. Abortion yields utility $-c_i^A$, where $c_i^A > 0$; birth yields v_i^B , which can be positive or negative. The *Stage 2* payoff is

$$v_i^P \equiv \max\{-c_i^A, v_i^B\}.$$

Anticipating this, her *Stage 1* problem is

$$\max_{e_i \in [0,1]} U_i(e_i) = -C(e_i) + (1 - \pi(e_i)) v_0 + \pi(e_i) v_i^P = -C(e_i) + \pi(e_i) v_i^P,$$

where v_0 is the value of not being pregnant, which is normalized to 0.

When pregnancy is undesirable, $v_i^P < 0$, the interior optimum satisfies the first-order condition

$$C'(e_i^*) = \pi'(e_i^*) v_i^P. \quad (8)$$

The first-order condition equates the marginal cost and the marginal benefit of contraceptive effort. The marginal cost, $C'(e_i^*)$, reflects the additional burden of raising effort. The marginal benefit, $\pi'(e_i^*) v_i^P$, combines the reduction in pregnancy risk from an incremental increase in effort, $\pi'(e_i^*) < 0$, with the payoff from being pregnant, v_i^P . Their product represents the expected return to a marginal increase in contraception.

At the interior optimum, the teenager chooses effort such that the cost of the last unit exactly equals the expected gain from further lowering the probability of pregnancy. When pregnancy is rewarding/desirable ($v_i^P > 0$), the marginal benefit is negative and there is a corner solution with $e_i^* = 0$; when pregnancy is costly ($v_i^P < 0$), the marginal benefit is positive and an interior solution with $e_i^* > 0$ exists, and increases in $|v_i^P|$.

An increase in the abortion cost c_i^A lowers v_i^P , raises optimal effort e_i^* , and reduces the probability of pregnancy. It also reduces the propensity to abort conditional on pregnancy.

This simple model can be extended to include the need for parental consent. Let

$\theta_i \in [0, 1]$ denote the probability that parental consent is granted. If consent is denied, abortion requires an additional cost $c_{\text{ill}} > 0$ (illegal market). Whenever the abortion branch is relevant, the expected abortion cost is

$$\begin{aligned}\mathbb{E}[c_i^{\text{abort}}] &= \theta_i c_i^A + (1 - \theta_i)(c_i^A + c_{\text{ill}}) \\ &= c_i^A + (1 - \theta_i)c_{\text{ill}}.\end{aligned}\tag{9}$$

For teenagers aged 18 and older, $\theta_i = 1$, so their expected cost remains c_i^A .

B.2 Proximity to Abortion Centers

Let d_{m_i} be distance from municipality m to the nearest abortion provider. Distance raises the direct cost of abortion:

$$c_i^A = c^A + \tau d_{m_i}, \quad \tau > 0.$$

Distance also affects the probability that parental involvement is needed before the law. Let

$$a_i = a(d_{m_i}), \quad a'(d) > 0,$$

denote the probability that the teenager must ask and involve her parents in order to obtain an abortion. Let $\varphi_i \in [0, 1]$ be the probability that parents approve conditional on being asked. Before the law, legal access to abortion occurs with probability

$$\theta_i^{\text{pre}} = 1 - a(d_{m_i})(1 - \varphi_i).$$

Using (9) with θ_i^{pre} ,

$$\mathbb{E}[c_i^{\text{abort,pre}}] = c^A + \tau d_{m_i} + a(d_{m_i})(1 - \varphi_i)c_{\text{ill}}.\tag{10}$$

The law makes parental involvement certain, so $\theta_i^{\text{post}} = 1$ and as a consequence, $\theta_i^{\text{post}} = \varphi_i$. Hence

$$\mathbb{E}[c_i^{\text{abort,post}}] = c^A + \tau d_{m_i} + (1 - \varphi_i)c_{\text{ill}}.\tag{11}$$

Subtracting (10) from (11) yields

$$\Delta C(d_{m_i}, \varphi_i) \equiv \mathbb{E}[c_i^{\text{abort,post}}] - \mathbb{E}[c_i^{\text{abort,pre}}] = [1 - a(d_{m_i})](1 - \varphi_i)c_{\text{ill}}.\tag{12}$$

For any $\varphi \in [0, 1]$,

$$\frac{\partial}{\partial d} \Delta C(d, \varphi) < 0.$$

Proof. Differentiating (12) with respect to d gives

$$\frac{\partial \Delta C}{\partial d} = -a'(d)(1 - \varphi)c_{\text{ill}}.$$

By assumption $a'(d) > 0$, and we have $1 - \varphi \geq 0$ and $c_{\text{ill}} > 0$. Therefore

$$\frac{\partial \Delta C}{\partial d} < 0,$$

so the increase in expected abortion cost induced by the law is largest for teenagers living closest to a clinic and declines with distance. \square

B.3 Religiosity

Let R_{m_i} be the level of religiosity in municipality m . Religiosity affects the probability that parents approve abortion once they are involved. Suppose

$$\varphi_i = \varphi(R_{m_i}), \quad \varphi'(R) < 0.$$

Substituting into (12) yields

$$\Delta C(d_{m_i}, R_{m_i}) = [1 - a(d_{m_i})][1 - \varphi(R_{m_i})]c_{\text{ill}}.$$

For any fixed distance d ,

$$\frac{\partial}{\partial R} \Delta C(d, R) > 0.$$

Proof. Differentiating $\Delta C(d, R)$ with respect to R gives

$$\frac{\partial \Delta C}{\partial R} = [1 - a(d)][-\varphi'(R)]c_{\text{ill}}.$$

We have $1 - a(d) \geq 0$, $c_{\text{ill}} > 0$, and $\varphi'(R) < 0$. Hence

$$\frac{\partial \Delta C}{\partial R} > 0,$$

i.e. the increase in expected abortion cost induced by the law is larger in more religious municipalities. \square

Religiosity may also affect the value of giving birth directly, reflecting systematic differences in fertility preferences between more and less religious municipalities. Let

$$v_i^B = \mu_B + \lambda_B R_{m_i} + u_i, \quad \lambda_B > 0.$$

Higher religiosity raises the payoff from birth and thus reduces the incentive to abort even in the absence of the reform. This lowers the abortion ratio in levels and can dampen the marginal impact of the consent requirement. Without additional restrictions on the relative magnitudes of the approval and birth-value channels, no unambiguous prediction on the net effect of religiosity follows.