Do all roads lead to the same destination? Proximity to abortion providers, abortion decisions and conditions in Portugal*

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Abstract

Portugal legalized abortion in 2007, making it available through the National Health Service (NHS) free-of-charge. This paper analyzes how variations in proximity to an abortion provider affect the probability of aborting and the conditions under which abortions occur, namely when, where, and how. We find suggestive evidence that there are fewer abortions among women living further away from a provider relative to women living closer. We also find evidence that *(i)* these women abort later, *(ii)* are more likely to be referred by public hospitals to private clinics and, consequently, *(iii)* have an increased risk of aborting surgically, an invasive procedure which is more costly than the medical method.

JEL Codes: I11, I12, J13

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1. INTRODUCTION

Women undergoing unsafe abortion are at a higher risk of having health problems or even dying (Grimes et al. 2006). The World Health Organization (WHO) has defined the elimination of unsafe abortion as one of its top five priorities of its global reproductive health strategy (WHO 2004). Legalizing abortion was shown to be an effective way to decrease maternal mortality and morbidity (Clarke and Mühlrad 2021), and, indeed, since 2007, when Portugal made abortion legal and fully subsidized, there has been a decrease in the number of abortion-related deaths, from fourteen between 2001 and 2007, to two between 2008 and 2014 (Vicente 2020). However, the legal status of abortion is not the only dimension of access at stake, as Grimes et al. (2006) point out: "enabling abortion legislation is necessary but not sufficient: a new law might not translate into widespread access to safe services" (p. 6).

One important dimension is proximity to a provider, which can be seen as the physical, logistical, and emotional cost faced by women when traveling to an abortion facility (Kimport 2022). Increases in this cost render abortion more difficult to obtain, and thus, likely influence not only whether women abort (Kane and Staiger 1996), but also the conditions under which they abort, namely when (Bitler and Zavodny 2001; Lindo et al. 2020), where, and how. This is, of course, relevant for the well-being of women. In fact, not being able to abort can lead to worse present and future financial and economic conditions (Miller et al. 2020). Furthermore, when a woman is able to abort, "any delay increases the risk of complications" (Cates et al. 1977:268). Given that later abortions are more demanding in terms of logistics and training of healthcare professionals (Harris 2008), delays may also reduce the number of available abortion providers. In addition, as medically induced abortions lose efficiency after the ninth week of pregnancy (Winikoff et al. 2008), delays may lead to the use of surgical abortion, a less time-consuming method but an invasive and more costly procedure.[1]

The role of proximity to abortion services in affecting whether women abort is a growing topic in applied economics. Quast et al. (2017), Fischer et al. (2018), Lindo et al. (2020), and Venator and Fletcher (2021) document that the number of abortions in U.S. counties fell in response to increases in the travel distance to the nearest provider. However, there is not much research on how proximity affects when, where, or how women abort. To the best of our knowledge, only Lindo et al. (2020) address how being close to a provider affects when abortions occur.

In this paper, not only do we analyze the association between proximity to a provider and whether and when women abort, but we also consider how proximity affects other characteristics of abortions such as where they take place – with a public hospital or a private clinic – and how they are performed – use of a medical or surgical method.

To measure proximity, we use the travel time from the women's municipality of residence to the nearest abortion provider. In Portugal, travel times to the nearest abortion provider have varied across time due to the shutdowns and openings of abortion services. To examine how changes in travel time affect abortion decisions and conditions, we use individual-level data from birth records and abortion registries to compile a dataset of all pregnancies occurring in Portugal between 2008 and 2016. It contains information on the number of weeks of gestation of each pregnancy and women's socioeconomic characteristics, including their municipality of residence. Together with the information on the location of abortion providers throughout time, this allows us to compute the travel time from the center of each municipality to the nearest abortion provider. We find that living far away from a provider is associated with fewer abortions in the area of residence and also with aborting later. Moreover, these late abortions

[1] The Portuguese General-Directorate of Health recommends the use of the surgical method to terminate pregnancies above nine weeks of gestation (DGS 2007a).

appear to be caused by late arrivals to abortion care. For abortion services, it may prove challenging to accommodate women at later gestational ages, within the legal time limits, and to use the medical method since it is more time consuming than the surgical procedure but non-invasive and less costly.[2] The challenge is particularly difficult for public hospitals, which are chronically short of healthcare professionals who are not conscientious objectors (Oliveira da Silva 2009). As a consequence, they have an incentive to refer women to private clinics that predominantly use the surgical method. We provide evidence of this mechanism by showing that longer trips to a provider are associated both with a higher likelihood of being referred from a public hospital to a private clinic and with a greater risk of having a surgical abortion. Although we cannot completely rule out that abortion supply might be partially determined by demand, we argue, in the Discussion section, that it is unlikely that our results be driven by the endogeneity of the travel time to the nearest abortion provider. Finally, even though women living far away are at a higher risk of having the more costly surgical abortion, a back-of-the-envelope calculation suggests that providing proximity abortion services through the NHS would only save a limited amount of public money. However, this would reduce the individual burden of having to undergo a late and invasive abortion.

This paper contributes to the economic literature studying how abortion access, in particular proximity, affects abortion rates. Theoretically, decreased access to abortion should reduce the number of abortions through two different channels (Kane and Staiger 1996; Levine and Staiger 2002). On the one hand, pregnant women may decide to carry their pregnancy to term, as abortion becomes too costly. On the other hand, women may exert more effort to avoid pregnancy, leading to fewer pregnancies and, consequently, fewer abortions (Kane and Staiger

[2] For medical abortions, women need to make two to three visits to the doctor: one to take the mifepristone, and another, 48 hours later, to take Misoprostol. If abortion did not take place during the second visit, a third visit is required to check if abortion was successful (DGS 2007b). As for surgical abortions, women only need to make one trip to the doctor. However, as it is a surgical procedure, it demands more hospital resources, namely an operating room and an anesthesiologist (DGS 2007c).

1996; Levine and Staiger 2002). Both theoretical predictions find support in empirical studies, most of which rely on natural experiments conducted in the USA as a source of exogenous variations in abortion access. Cook et al. (1999) take advantage of North Carolina's intermittent reimbursement of abortion procedures throughout the year – that randomly left some women uncovered – to show that unexpected funding restrictions reduce the number of abortions. Quast et al. (2017), Fischer et al. (2018), Lindo et al. (2020), and Venator and Fletcher (2021) exploit restrictive abortion laws that led to drastic reductions in the number of abortion clinics in Texas and Wisconsin and show that increasing the distance to an abortion provider reduces abortion rates. In our paper, we explore a setting where, unlike Texas or Wisconsin, abortions are provided free-of-charge and traveling is the only tangible cost faced by women. In Portugal, the time constraint is particularly relevant since the legal gestational age limit for abortion is only ten weeks, the lowest among high-income countries (Popinchalk and Sedgh 2019). To our knowledge, this is also the only paper using European data to examine how abortion access affects the number of abortions.[3]

Our paper also contributes to the literature on how barriers to abortion affect its timing. The intuition is that women with deprived access may need more time to reach abortion services, hence delaying abortions (Lindo et al. 2020). For the United States, a number of state-specific studies find that women abort later when facing mandatory reflection periods (Joyce and Kaestner 2001; Lindo and Pineda-Torres 2019), or the need to obtain parental consent (Joyce and Kaestner 2001), or congested abortion services (Lindo et al. 2020; Kelly 2020). However, it is unclear how proximity affects abortion timing (Lindo et al. 2020). In the present paper, we find suggestive evidence that living far away from a provider leads women to abort later. As far as we know, we are the first to examine how access affects abortion timing in a European

[3] Other studies focus on the relationship with fertility (Levine and Staiger 2004; Pop-Eleches 2010; González et al. 2018) and with children's and women's outcomes (Pop-Eleches 2006; Mitrut and Wolff 2011; González et al. 2018).

country. We also look at the consequences that these delays cause in other aspects of the abortion process, namely where – being referred to a private clinic by a public hospital – and how women abort – medical or surgical method –, which has not been tackled so far in the literature.

The structure of the paper is the following: Section 2 provides institutional background on the legal framework and distribution of abortion services in Portugal; Section 3 presents the empirical strategy; Section 4 introduces and describes the data; Section 5 provides the results, and Section 6 presents the discussion and some conclusions.

2. INSTITUTIONAL BACKGROUND

Before dwelling on how proximity to a provider affects the decision of aborting and the conditions under which abortions occur, we must point out that in Portugal, abortion on request only became legal in 2007 (Law 16/07). The Portuguese law is quite restrictive compared to its European counterparts: it has the lowest gestational age limit among high-income countries (Popinchalk and Sedgh 2019) – ten weeks of pregnancy – and it requires a mandatory reflection period of three days, as well as parental consent for minors below the age of 16.

Upon legalization, there was a swift effort to generalize access to abortion services, either public or private. A key factor for that rapid expansion was the provision of abortions free-of-charge within the the pre-existing public maternity network of the NHS, which is of universal access (Simões et al. 2017). To that end, the law determined that all public hospitals with a gynecology or obstetrics department should provide abortion services (Portaria741-A/2007). According to the standard procedure, to access public abortion, women should first contact primary care services which should refer them to the regional specialized public hospital, although it is admissible that women bypass this system and access hospital services directly (Simões et al. 2017).

However, as 85% of gynecologists in Portugal are conscientious objectors (Oliveira da Silva 2009), some hospitals could not provide abortion services, undermining the local supply of abortion and leading to discrepancies in the geographical distribution of providers, which, as we show in Figure 1, varied across time.

If proximity to public providers is compromised because public hospitals do not have abortion services or cannot promptly provide them within the legal limit of ten weeks of gestational age, by law, hospitals must redirect women living in the area they cover towards another provider – either a public hospital or a certified private clinic. In that case, the cost of the abortion is directly paid by the hospital first contacted by the woman to that which performed the abortion – at a set price, defined by law, depending on the abortion method. Overall, in the NHS, the financing of abortions procedures, outsourced or not, is provided through each hospital's fixed budget. Hospital's budgets are set according to the hospital's cost history, use, and complexity indicators (Simões et al. 2017). Women may also directly access private providers, but, in this case, they must pay for the abortion procedure themselves.

3. EMPIRICAL STRATEGY

The first goal of this paper is to understand how proximity affects the probability that women abort. As previously mentioned, travel time to the nearest abortion provider impacts the likelihood that a woman aborts on two margins: the probability of becoming pregnant and the probability of aborting, once pregnant. Given that we do not have individual-level data for all fertile females in Portugal, but only for pregnant women, to estimate how variations in travel time affect the probability that any woman aborts, we conduct an analysis on the number of abortions occurring each year in municipalities – the lowest geographical aggregation level at our disposal. Then, using individual data on all pregnancies, we examine how travel time affects the probability that a pregnant woman aborts. Finally, we focus exclusively on women who abort to assess how proximity affects the conditions under which abortion occurs, namely when, where, and how.

3.1. Number of abortions in municipalities

We start by examining how travel time affects the number of abortions among all women at the municipality-level. As some municipalities had no abortions in a number of years – this is mainly the case for abortions among teens, as can be seen in Figure A1 (online appendix) – we use a Poisson pseudo-maximum likelihood estimator.[4,5] We estimate the model below:

$$N^{o}Abortions_{mt} = \beta_1 Time_{mt} + X_{mt}\beta_2 + \varphi_m + \zeta_t + u_{mt} \qquad (1)$$

where $N^{o}Abortions_{mt}$ is the number of abortions among women living in municipality m, in year t. $Time_{mt}$ is the travel time between the centroid of the nearest municipality with an abortion provider and the centroid of municipality m in year t. X_{mt} is a vector of time-varying municipal controls. φ_m and ζ_t are municipal and year fixed-effects, respectively. u_{mt} is the error term. We use the number of fertile women or alternatively the number of teens – for the teens' analysis – as the exposure variable of the Fixed Effects Poisson model, which has its coefficient restricted to one.[6] The coefficient of interest is β_1, which we expect to carry a negative sign, as increases in travel time should make abortion more costly, leading women to either carry their pregnancies to term or to avoid becoming pregnant at all.

[4] The recent literature on abortion access and rates at the local level uses the Poisson pseudo-maximum likelihood estimator (Lindo et al. 2020; Fischer et al. 2018; Venator and Fletcher 2021) as, unlike other count models with fixed effects, it does not suffer from the incidental parameters problem (Cameron and Trivedi 2005).

[5] One problem of the Poisson model is that if the variance is larger than the expected value, there is a risk of underestimating the standard errors. Nevertheless, as Lindo et al. (2020) note, "while the possibility of overdispersion is the main theoretical argument that might favor alternative models, overdispersion is corrected by calculating sandwiched standard errors (Cameron and Trivedi 2005)" (p. 1148).

[6] As Lindo et al. (2020), we also estimated the model above by OLS, using an Inverse Hyperbolic Sine Transformation of the dependent variable. As evidenced in Table C1 (online appendix) the results are robust to this change, both in magnitude and in statistical significance.

3.2. Probability to abort, once pregnant

Separately, employing individual-level data on births and abortions, we analyze how travel time affects the decision to abort using the following linear probability model, clustering the standard errors at the municipality level:

$$Abortion_{imt} = \alpha_0 + \alpha_1 Time_{mt} + X_{imt}\, \alpha_2 + \varphi_m + \zeta_t + \varepsilon_{imt} \tag{2}$$

where $Abortion_{imt}$ is a dummy variable equal to one if the pregnant woman i living in municipality m and conceiving her pregnancy at year t aborts and 0 otherwise. $Time_{mt}$ is the travel time between the centroid of the nearest municipality with an abortion provider and the centroid of the municipality m where woman i lives, at the year of the conception of her pregnancy t. X_{imt} is a vector of individual controls, and ε_{imt} is the error term. The parameter we are interested in is α_1. We expect α_1 to carry a negative sign for the reasons mentioned above, as long distances could dissuade women from aborting.

3.3. Conditions under which abortion takes place

Finally, we analyze how travel time affects the conditions under which abortion takes place. Using data restricted to women who aborted, we estimate the model below by OLS, again clustering the standard errors at the municipality level:

$$Y_{imt} = \lambda_0 + \lambda_1 Time_{mt} + X_{imt}\, \lambda_2 + \varphi_m + \zeta_t + v_{imt} \tag{3}$$

where Y_{imt} stands for the six different outcomes we study.

First, we examine four outcomes related to the timing of abortion, namely: i) the gestational age at the moment when women make the first contact with abortion care, ii) the number of waiting days between that moment and the abortion intervention, iii) the gestational age at the time of abortion, and iv) the probability of having an abortion after nine weeks of pregnancy, a turning point in the quality of care, as it increases the risk of complications and the use of the surgical method. In fact, over nine weeks of pregnancy the General Directorate of Health

(DGS) recommends the use of the surgical method to abort (DGS, 2007a), as the efficiency of medical abortion decreases overtime (Winikoff et al. 2008). Second, we analyze where abortions occur, namely, v) the probability of being referred by a public hospital to a private clinic. Third and last, we examine how travel time affects the abortion method, namely, vi) having a surgical abortion, which is invasive, unlike the medical method. We expect the main coefficient of interest, λ_1, to be positive for these different outcomes.

4. DATA

4.1. Data sources

To carry out our investigation on the relationship between proximity and abortion decisions and conditions, ideally, we would have individual-level data for all women of fertile age, containing questions on their family planning decisions, socioeconomic profile, and place of residence. Although individual-level data for all women does not exist, we have access to administrative data on all women giving birth or aborting,[7] which allows us to build a dataset of all pregnancies in Portugal between 2008 and 2016. Data on abortions were provided by the DGS (2020) and data on births originates from birth records at Civil Registers, subsequently compiled by Statistics Portugal (2020a). Both the abortion and birth datasets contain detailed information on pregnant women, particularly their socioeconomic characteristics and municipality of residence, which is crucial to measure proximity to an abortion provider.

To obtain the location of abortion providers, for each year of the analysis, we construct a list of the abortion services operating in Portugal and the bordering regions of Spain – that women living in Portugal may potentially use. This information is provided by the DGS and the Spanish Ministry of Health, respectively, in annual reports on abortion registers (DGS 2010-2017; Sanidad 2009-2018). For Portugal, these reports disclose the number of abortions that

[7] Miscarriages or involuntary abortions are not included in the abortion data.

each provider performed. We only consider a provider to have been in operation if it performed at least ten abortions in a given year. Our results are robust to considering other thresholds, namely, to having had at least one or five abortions in a given year – see Tables C2 to C7 (online appendix). Using the name of the hospital or clinic provided in the reports, we identify the municipality where that abortion facility is based. Because of the 2018 General Data Protection Regulation, the DGS stopped publishing the number of abortions per provider in their annual reports. For this reason we do not have information on the providers operating from 2017 onwards and we can only conduct our analysis on the 2008-2016 period.

We also gather data to characterize the socioeconomic and demographic characteristics of municipalities. The data on regional-level per capita Gross Domestic Product (GDP), municipality population by age and gender, and the percentage of catholic marriages per municipality come from Statistics Portugal (2020b, 2020c, 2020d). In addition, the Ministry of Internal Administration provides the data on the national and European parliamentary elections at the municipal-level (MAI 2020), while data on the number of people receiving unemployment benefits originate from the Portuguese Employment Office (IEFP 2008-2017).

4.2. Variables

Proximity to the nearest provider is at the core of this paper and is measured by the travel time to the nearest abortion provider. Not knowing the exact coordinates where women live, we assume that they all live in the populational centroid of their municipality of residence. We then compute travel times to the centroid of the nearest Portuguese municipality with an abortion provider for each of the 278 municipalities in mainland Portugal between 2008 and 2016. We also computed the travel time between each municipality and the closest Spanish municipality with a private abortion clinic – see section A.1 in the online appendix for more information on the travel time to Spanish providers data. To compute these travel times, we use the Stata user-written command GEOROUTE (Weber and Péclat 2017). According to the specifications, travel time is introduced in the regressions either as a linear variable or as a categorical variable – to account for possible non-linear effects. In the latter case, we consider three travel time bins, namely, living in a municipality *i*) within 30 minutes of an abortion provider; *ii*) between 30 minutes and one hour, and *iii*) more than one hour away from the nearest municipality with an abortion provider – see Figure B2 in the online appendix for the distribution of municipalities across time bins.

When examining how travel time to the nearest provider affects the number of abortions at the municipality level, we control for the age structure of the population, using the share of all age groups in the population of fertile-age women.[8] We also control for the economic conditions in the municipality of residence. These are proxied by the number of persons receiving unemployment benefits as a percentage of the active population in the municipality (aged 15 to 65) and by the growth rate of the GDP per capita in Purchasing Power Standards of the NUTS III region. Additionally, as our analysis covers a nine-year period, we consider potential changes in social norms within municipalities. As a proxy of the level of conservatism, we control for the percentage of catholic marriages in the municipality as well as for the local results at the latest European and National parliamentary elections – see section A.2 in the online appendix for more details on the construction of the latter variables.

To explore how proximity affects the probability of aborting, conditional on being pregnant, we build a dataset of all pregnancies in Portugal. To do so, we need to make the socioeconomic controls compatible in the abortion and birth data. We aggregate the more refined information regarding marital status (married, single, widowed, divorced, and separated) and cohabitation status (living with or without a partner) contained in the abortion dataset to match the cruder information provided in the birth dataset (birth within-wedlock, out-of-wedlock with

[8] Each age group defined on the basis of a five-year interval.

cohabitation of parents, out-of-wedlock without cohabitation of parents). Moreover, we harmonize the classification of occupations and activity status across both datasets by creating a new occupation variable with nine classes – see section A.3 in the online appendix for details on the harmonization of occupations. The additional controls we include in our analysis are directly comparable across datasets and hence require no harmonization. Specifically, we also control for women's municipality of residence, age, educational level (illiterate, knows how to read/write, primary school, lower middle school, higher middle school, high-school, and college), number of previous children, and nationality (Portuguese or Foreign). Finally, we use the number of weeks of pregnancy to estimate the date of the start of the pregnancy for both births and abortions. This aspect is critical to computing the time each woman had to travel to the nearest abortion provider at a stage of her pregnancy in which she could legally abort.[9]

Finally, in the analysis of how proximity affects the conditions under which abortion occurs, we control for the aforementioned socioeconomic variables. The fact that we only consider women who aborted enables us to use the original occupation variable of the abortion data as well as the more refined marital status and cohabitation variables. Nevertheless, in Table C8 (online appendix), we also provide the results we obtain using the coarser controls used to estimate the probability of aborting, once pregnant. In addition, we also control for the previous number of abortions, as women who already underwent an abortion may be more experienced with the procedure.

It should be noted that in our individual-level analysis – on the probability to abort, once pregnant and on the conditions under which abortion takes place – we exclude outliers, namely women who are pregnant after age 60 (190 observations) – who should not be fertile anymore.

[9] Data on the number of weeks of pregnancy is directly comparable across data-sets, from 2010 onwards. In the birth dataset, for years 2008 and 2009, the number of weeks of gestation is a categorical variable, with each category defined on the basis of a five-week interval. We assume births were delivered at the mid-point of those intervals.

We note that the 60-year-old cutoff is a conservative threshold since between 55 and 60 years old we only have one pregnant woman in our data. Regarding the number of children, we discard women with more than 15 children (three observations) and women who aborted more than 15 times (five observations). In addition, we drop women with a negative estimated number of completed weeks of pregnancy at the time of access to abortion services. We also exclude observations of births and abortions with missing information on any control variable. Our final samples contain 737,838 observations in the birth dataset and 152,124 observations in the abortion dataset for the time period ranging from 2008 to 2016.

4.3. Descriptive statistics

In our set-up, it is essential that travel time varies within municipalities across time for its effect to be identified, as our preferred specifications have municipality fixed-effects that capture all time-invariant features of municipalities. In Portugal, between 2008 and 2016, travel times from municipalities to their nearest abortion provider varied, as illustrated by Figure 1. These variations in travel time are primarily due to the shutdowns and openings of public abortion providers – that represent the vast majority of abortion providers (online appendix Figure B3). The most staggering variation occurred in the south of Portugal, where the shutdown of a provider in 2011 – later reversed in 2015 –led to increases by more than one hour in travel time for several municipalities (Figure 1).

Tables D1 and D2 (online appendix) present summary statistics of the variables we use in the municipal-level analysis;[10] while Tables D3, D4, and D5 (online appendix) provide the descriptive statistics of the pregnant women considered in the individual-level analysis. As we can see in Table D3 (online appendix), between 2008 and 2016, 17% of pregnant women

[10] The size of Portuguese municipalities varies widely. They can range between 1721 square kilometers (Odemira) to eight (São Joao da Pesqueira). The average size is 315 square kilometers. For population statistics see Table D1 (online appendix).

aborted. Out of these abortions, 84% occurred among women living within 30 minutes of an abortion provider, 13% among those residing between 30 and 60 minutes, and 3% among women living over one hour away from an abortion provider. Upon arrival at an abortion provider, the average gestational age was 6.58 weeks, while it was 7.32 weeks at the time of the abortion. On average, women waited for 8.25 days between their first contact with abortion care and abortion, with 5% of them aborting above nine weeks of gestation. Most abortions occurred in an NHS hospital (69%) and are medically induced (68%). The proportion of abortions referred to private clinics increases from 22% – among women living within 30 minutes of a provider – to 36% – among women living over one hour away. Similarly, the proportion of surgical abortions increases from 31% among women living within 30 minutes from an abortion provider to 42% for those facing travel time over one hour. Finally, 97% of all abortions in the NHS were medically induced, whereas, in the private sector, surgical abortions represented 97%.

5. RESULTS

5.1. Proximity and the probability to abort

We first consider how proximity affects the probability that any woman aborts. We start by examining how travel times to the nearest provider affect the number of abortions at the municipality level. In the regressions displayed in panel a of Table 1, the dependent variable is the number of abortions by all women in fertile age – 15 to 49 years old.

All regressions include municipality fixed effects. Odd columns of Table 1 regress the number of abortions on a linear measure of travel time, while even columns use travel time as a categorical variable. In this case, the reference category is municipalities within 30 minutes of an abortion provider. The regressions in columns 3 and 4 introduce municipal time-varying controls, and columns 5 and 6 add Administrative-Health-Region-by-year fixed-effects – see

Figure B4 (online appendix) for a map of the divisions of administrative health regions. Across all linear specifications, we observe a negative – although insignificant – relationship between travel time to the nearest provider and the number of abortions in a municipality.

In the regressions of panel a using travel time categories, we find that municipalities that are over one hour away from an abortion provider experience fewer abortions, with the gap ranging from 11.9 (column 4) to 9.4% (column 6) according to the specification, always significant at least at the 5% level.[11] This suggests that long travel times to the nearest provider are associated with a reduced probability of abortion. A threat to this interpretation would be that women living far away from a Portuguese provider would abort in Spain since we have no data on abortions in this country. However, this appears not to be the case, as our results are robust to excluding municipalities closer to a Spanish abortion clinic than to a Portuguese one – see online appendix Table C9.

As mentioned above, women may not abort either because they avoid pregnancy or because they carry their pregnancy to term. To test the latter possibility, we examine the decision to abort, once pregnant, using individual-level data. As Table 2 shows, we find no evidence of an association between travel time and the probability to abort, conditionally on being pregnant.

Overall, these results suggest that municipalities located further away from an abortion provider experience fewer abortions because women adapt their contraceptive effort or sexual activity to their level of access to abortion to avoid becoming pregnant. To test for this, we estimate equation (1) using the number of pregnancies as an outcome. Table C10 (online appendix) confirms that municipalities over one hour away from the nearest abortion provider have fewer pregnancies relative to municipalities within 30 minutes of a provider, suggesting that our intuition is correct.

[11] Percent effects are computed in the following way: $(e^{\beta} - 1) \times 100$.

5.2. Proximity and the conditions under which abortion takes place

In the section above, we provide evidence that pregnant women living far away from a provider are not less likely to abort. Nevertheless, proximity may still affect the conditions under which abortion takes place.

We first analyze the timing of abortion. It arguably depends both on when women request an abortion and on the waiting time to get it. In columns 1 and 2 of Table 3, we estimate equation (3) for the number of weeks pregnant at the time of the first contact with abortion care. We find that an increase by 15 minutes in the travel time to the nearest provider is associated with an increase in the gestational age by 0.06 weeks at the time of the first contact with abortion care. This corresponds to approximately half a day (statistically significant at the 0.1% level). We also find evidence that this association may be non-linear. Women who live between 30 minutes and one hour away from the nearest abortion service arrive one full day later in the course of their pregnancy than women living within 30 minutes of a provider; women living over one hour away arrive two days later in the course of their pregnancy than the reference group (column 2). However, we do not observe any association between travel time and the number of waiting days between the first contact with abortion care and abortion (columns 5 and 6). This suggests that the delays in aborting that we observe (columns 3 and 4) are due to a longer time-period before accessing abortion care rather than afterwards.

In columns 7 and 8, we analyze how travel time affects the probability of having an abortion beyond nine weeks of pregnancy – which we refer to as late abortions. We find that a 15-minute increase in travel time is associated with an increase by 1 percentage point in the probability of having a late abortion, significant at the 5% level. This represents an increase in the risk of having a late abortion by 21%.[12] Turning to column 8, where we split travel time in bins, we

[12] (point estimate × 15min × 100)/(%Women having late abortions) = (0.0007 × 15min × 100)/5 = 21%

find that, relative to living within 30 minutes away from a provider, women living between 30 minutes and one hour away have a 64% higher probability to abort after nine weeks of gestation, significant at the 5% level, while women living over one hour away have a 73% higher probability of late abortion, significant at the 1% level.

These delays can have repercussions at other stages of the abortion process, namely, on where and how abortions occur. Public hospitals attending women near the legal gestational age limit may encounter difficulties providing abortion in due time. We find evidence of this in columns (9) and (10), where we consider the probability of being referred to a private clinic by the NHS when one wants to abort. This probability increases indeed with the travel time to an abortion provider, whatever the specification we use.

As mentioned before, private clinics almost exclusively perform surgical abortions. The increased likelihood of referral by the NHS to private clinics, together with the higher probability of aborting after nine weeks of pregnancy, can arguably lead women who live further away from a provider to be more prone to surgical abortion. Our findings are consistent with this mechanism. In column 11, we find that an increase by 15 minutes in travel time is associated with an increase by 6.6 percentage points – i.e. a 25% increase – in the probability of having a surgical abortion, significant at the 0.1% level. When exploring possible non-linear effects, we find that living between 30 and 60 minutes away from a provider is associated with a 72% increase in the probability of having a surgical abortion, while living over one hour away is associated with a 105% increase.

These findings suggest that living far away from a provider does not prevent pregnant women from aborting but makes it more difficult. It takes more time for them to reach an abortion provider, making them more likely to have a late abortion. This leads them, in turn, to be referred by the NHS to private clinics and eventually have a surgical abortion.

6. DISCUSSION AND CONCLUSION

In this paper, we provide evidence that proximity to abortion services is an important dimension of abortion access that affects the decision of aborting and the conditions under which abortions occur. However, one could be concerned by the fact that changes in proximity are not random. In what follows, we discuss whether such changes are likely to be endogenous. We also provide a back-of-the-envelope estimate of the potential savings that the NHS could make by providing proximity abortion care to all women in Portugal. We conclude with a brief overview of our findings and potential avenues for future research.

6.1. Causal interpretation of the estimates

Our estimates of the likelihood with which any woman aborts (section 5.1) and of the probability to abort conditionally on being pregnant (section 5.2) could suffer from endogeneity biases. The first worry is that variations in abortion demand may determine variations in abortion supply. This would generate an upward bias in our estimates of the effect of travel time to the nearest abortion provider on the number of abortions in municipalities and the probability to abort, once pregnant.

However, it is quite unlikely that providers react to demand, to the extent that the real limitation in providing abortion services is the availability of doctors and nurses since about 85% of gynecologists in Portugal are conscientious objectors (Oliveira da Silva 2009).[13] Furthermore, if this concern is valid, past variations in the abortion rate should predict the opening or closure of a provider. To test for this, we construct a provider region-by-year panel by aggregating the number of abortions occurring within each provider's region of influence, which we define as

[13] Even in areas with high abortion demand, such as Lisbon, it is difficult to open abortion services due to the lack of non-conscientious objecting medical staff. For example, Lisbon's Hospital university, one of the largest hospitals in Portugal, had to stop providing abortions for one month due to lack of specialized nurses willing to perform abortions. https://www.publico.pt/2018/01/12/sociedade/noticia/hospital-santa-maria-encaminha-abortos-para-clinica-privada-por-falta-de-enfermeiros-1799111

all municipalities that, at some point in time, were closer to that provider than to any other. We then regress a dummy variable equal to 1 if the provider changed its opening or closure status on the absolute value of the variation of the abortion rate – the number of abortions per 10000 fertile women – in the provider's region. We find no evidence of variations in the abortion rate predicting changes in abortion provision status, even when introducing two lags of our variable of interest – see Table C11 (online appendix). The event studies presented in section E (online appendix) further support this. Therefore, it is unlikely that the provision of abortion services is reacting to demand.

The other potential source of bias is residential sorting. If women who believe they will never abort choose to live further away from an abortion center, we will not be able to tell apart the effects of travel time to the nearest abortion provider from those of preferences. However, since most abortion centers are located within hospitals, this is highly unlikely. As a matter of fact, women may still have to go to a hospital because of other health conditions even if they exclude that they will ever need an abortion.

Another way to infer to which extent residential sorting is affecting our estimates is to focus our analysis on teen women – aged 15 to 19 –since most of them still live with their parents and hence do not choose where to live. The similarities both in sign and statistical significance of our preferred specification – see column 6 of panel b of Table 1 – between the estimates obtained using the overall and teen samples suggest that residential sorting is unlikely to affect our estimates.

Last, the 2011 Census shows that from 2005 to 2011, only 8.5% of Portuguese families had migrated between Portuguese municipalities (Gomes et al. 2019). Hence, in 2016 most Portuguese women resided in the same municipality where they lived in 2008. As abortion was only legalized in Portugal in 2007, by referendum, it is doubtful that women chose their location based on the expectation of how far their house would become from a legal abortion provider, in case the "Yes" vote would win in the referendum.

Regarding the remaining of the paper, these endogeneity concerns are less present since it is unlikely that abortion supply is determined by when, where, or how women abort. Besides, it is unlikely that women consider the conditions under which they may abort in their choice of residence.

Nevertheless, there is a potential selection issue if the preferred abortion timings or methods of women who do not abort, because they became too far from a provider, differ from those who abort. Suppose selection is the mechanism driving our results because longer travel times reduce the number of women who abort. Then we should observe a change in the share of late or surgical abortions but no positive effect on the overall number of late and surgical abortions. To check for this, in line with Kelly (2020), we regress the number of abortions in each municipality according to referral type, gestational age, and method on our measures of travel time to an abortion provider. We find that longer travel times increase the number of late and surgical abortions in municipalities – see Table C12 (online appendix). It is, therefore, not plausible that selection is the driver of the effects of travel time on abortion conditions.

6.2. Medical vs. Surgical abortion costs: back of the envelope calculation

We now discuss how our results may contribute to assess the current organization and financing of abortion care in Portugal.

Our findings suggest that women who live further away from a provider are more likely to abort late, be referred by the NHS to a private clinic, and have a surgical abortion. As mentioned in section 2, the NHS can outsource abortions to private clinics. Surgical abortions are more costly to provide and are reimbursed at a higher rate than medical abortions. As living further away from a provider increases the risk of having a surgical abortion, it is interesting to estimate how much the NHS would spend on abortion procedures in a hypothetical scenario where no women would be further than 30 minutes away from an abortion service, in comparison to what it actually spends.

Bringing women closer to an abortion provider would have increased the number of abortions in Portugal. According to our estimates, in that scenario, municipalities over one hour away from a provider would have had 9.4% more abortions between 2008 and 2016, i.e. 410 additional abortions. Thus, the total number of abortions would have been 141,278 instead of 140,868.

In parallel, bringing women closer to abortion providers would reduce the risk of aborting surgically. As shown in Table D1 (online appendix), 25.8% of women living within 30 minutes of a provider had a surgical abortion. Transporting this proportion to our hypothetical scenario, there would have been a total of 36,449 surgical abortions instead of 38,603 (respectively, 104,828 medical abortions instead of 102,265). Therefore, in our scenario, the NHS would have paid for 2,154 fewer surgical abortions and 2,563 more medical abortions. Assuming an average cost of 400 euros per surgical procedure and 300 euros per medical abortion,[14] this would have translated into a reduction in abortion spendings by 92,700 euros over nine years.

If expanding abortion services required building new facilities or recruiting professionals in the NHS, the costs of making all women within 30 minutes of a provider likely exceeded the potential savings. The 92,700 euros saved on abortion costs indeed do not even allow hiring one entry-level general practitioner (GP) over three years.[15] Nevertheless, to promote equitable access to abortion, the NHS could take advantage of its already existing primary care network,

[14] Between 2008 and 2016 the reimbursement rates of surgical abortions ranged between 368and 444 euros, while medical abortions were reimbursed at a rate between 283 and 368 euros (Portaria n.8781-A/200; Portaria n.163/2013; Portaria n.20/2014; Portaria n.234/2015).

[15]As of 2012, entry-level specialized doctors in the public sector earn a gross annual income of 38,447.36 euros (Acordo Coletivo de Trabalho n.5/2012).

since, according to the WHO, medical abortions are not demanding in terms of expertise or equipment and can be provided by nurses and GPs (WHO 2012). In fact, this solution has already been implemented in three health care centers in Portugal.[16]

6.3. Conclusion

This paper shows that proximity to an abortion provider is likely to affect women's family planning decisions. We show that Portuguese municipalities that are more than one hour away from the nearest provider have 9.4% fewer abortions than municipalities within 30 minutes of one. Since we do not find any effect of travel times to abortion providers on the probability of aborting once pregnant, we argue that this reduction in the number of abortions is due to a reduction in pregnancies, suggesting that women either increase their contraceptive effort or decrease their sexual activity when abortion access decreases. This is coherent with the findings by Miller and Valente (2016) who document that increases in the local supply of abortion services in Nepal led to decreases in the use of modern contraceptives. Nevertheless, for Texas, Fischer et al. (2018) do not find an impact of distance to an abortion provider on the sales of emergency contraceptives and condoms. However, as condoms and emergency contraceptives only represent 23% of the contraceptive methods used worldwide (UNDESA 2019), it would be interesting to further explore how proximity to an abortion provider in a high-income country affects the use of alternative contraceptive methods.

We also document that proximity affects the conditions under which abortions occur. We show that women living further away from a provider abort later in their pregnancies and that this delay is caused by their later arrivals at abortion services, possibly due to ignorance on how to access them. Late abortions make it difficult for public hospitals to provide abortions within the legal gestational age limit of 10 weeks, forcing them to outsource abortions to private

[16] In the health care centers of Amarante, Penafiel, and Viana do Castelo.

clinics, where 97% of abortions are surgical. This likely explains why we find that women living further away from providers are more likely to be referred to private clinics and to have a surgical abortion.

Finally, back-of-the-envelope calculations indicate that the NHS can only expect limited savings on abortion spendings from providing proximity abortion care to all women in Portugal. However, this would allow women to escape invasive surgical abortions, thereby improving their health-related welfare.

Recently, the COVID-19 pandemic has disrupted healthcare provision globally, and abortion care was no exception. This led some countries to relax abortion legislation – such as gestational age limits, mandatory reflection periods, or even enabling women to abort from home – while others did not or even made abortion more difficult to access (Moreau et al. 2020). This natural experiment will provide a valuable opportunity to investigate how varying access to abortion impacts abortion decisions and conditions in a context of deprived access to healthcare facilities.

REFERENCES

Bitler, M., & Zavodny, M. (2001). The effect of abortion restrictions on the timing of abortions. *Journal of Health Economics*, *20*, 1011-1032.

Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. New York, NY: Cambridge University Press

Cates, W., Schulz, K. F., Grimes, D. A., & Tyler, C. W. (1977). 1. The effect of delay and method choice on the risk of abortion morbidity. *Family Planning Perspectives*, *9*(6), 266-273.

Clarke, D., & Mühlrad, H. (2021). Abortion laws and women's health. *Journal of Health Economics*, *76*, 102413. https://doi.org/10.1016/j.jhealeco.2020.102413

Cook, P. J., Parnell, A. M., Moore, M. J., & Pagnini, D. (1999). The effects of short-term variation in abortion funding on pregnancy outcomes. *Journal of Health Economics*, *18*, 241-257.

Direção-Geral da Saúde (DGS). (2007a). *Interrupução da gravidez por opção da mulher: guia informativo* (Clinical practice guideline). Lisbon, Portugal: Ministério da Saude, Direção-Geral da Saúde. Retrieved from https://www.dgs.pt/areas-em-destaque/interrupcao-da-gravidez/formularios-e-documentos-normalizados/interrupcao-da-gravidez-por-opcao-da-mulher-guia-informativo-pdf.aspx

DGS. (2007b). *Circular normativa: Interrupção medicamentosa da gravidez* (Clinical practice guideline). Lisbon, Portugal: Ministério da Saude, Direção-Geral da Saúde. Retrieved from https://www.spdc.pt/files/legix/11268_3.pdf

DGS. (2007c). *Circular normativa: Interrupção cirúrgica da gravidez até às 10 semanas de gestação* (Clinical practice guideline). Lisbon, Portugal: Ministério da Saude, Direção-Geral da Saúde. Retrieved from https://www.spdc.pt/files/legix/11269_3.pdf

DGS. (2010-2017). *Relatório dos registos das interrupções da gravidez* (2008 to 2016 Annual Reports). Lisbon, Portugal: Ministério da Saude, Direção-Geral da Saúde. Retrieved from https://www.spdc.pt/documentacao/publicacoes

DGS. (2020). *Registos das interrupções da gravidez, 2008-2016* [Data set]. Lisbon, Portugal: Ministério da Saude, Direção-Geral da Saúde.

Fischer, S., Royer, H., & White, C. (2018). The impacts of reduced access to abortion and family planning services on abortions, births, and contraceptive purchases. *Journal of Public Economics*, *167*, 43-68.

Gomes, M. C. S., Freitas, A., & Pinto, M. L. R. (2019). Famílias e mobilidade interna. *Análise social*, *54*(230 (1)), 82-105.

González, L., Jiménez-Martín, S., Nollenberger, N., & Castello, J. V. (2018). *The effect of abortion legalization on fertility, marriage and long-term outcomes for women* (Working Paper No. 1607). Barcelona, Spain: Universitat Pompeu Fabra, Department of Economics and Business.

Grimes, D. A., Benson, J., Singh, S., Romero, M., Ganatra, B., Okonofua, F. E., & Shah, I. H. (2006). Unsafe abortion: the preventable pandemic. *The lancet*, *368*, 1908-1919.

Harris, L. H. (2008). Second trimester abortion provision: breaking the silence and changing the discourse. *Reproductive health matters*, *16*(31), 74-81.

Instituto do Emprego e Formação Profissional, IP (IEFP). (2008-2017). *Estatísticas Mensais por Concelhos* (2008 to 2016 Monthly Reports). Lisbon, Portugal: IEFP. Retrieved from https://www.iefp.pt/estatisticas

Instituto Nacional de Estatística, IP (Statistics Portugal). (2020a). *Nados-vivos, 2008-2016* (Série de Microdados 5.4) [Data set]. Lisbon, Portugal: Instituto Nacional de Estatística, IP.

Joyce, T., & Kaestner, R. (2001). The impact of mandatory waiting periods and parental consent laws on the timing of abortion and state of occurrence among adolescents in Mississippi and South Carolina. *Journal of Policy Analysis and Management*, *20*, 263-282.

Kane, T. J., & Staiger, D. (1996). Teen motherhood and abortion access. *The Quarterly Journal of Economics, 111*, 467-506.

Kelly, A. M. (2020). *When Capacity Constraints Bind: Evidence from Reproductive Health Clinic Closures.*

Kimport, K. (2022). Reducing the burdens of forced abortion travel: Referrals, financial and emotional support, and opportunities for positive experiences in traveling for third-trimester abortion care. *Social Science & Medicine*, 293, 114667.

Levine, P. B., & Staiger, D. O. (2002). *Abortion as insurance*. (NBER Working Paper No. 8813). Cambridge, MA: National Bureau of Economic Research.

Levine, P. B., & Staiger, D. (2004). Abortion policy and fertility outcomes: the Eastern European experience. *The Journal of Law and Economics*, *47,* 223-243.

Lindo, J. M., & Pineda-Torres, M. (2019). *New evidence on the effects of mandatory waiting periods for abortion* (NBER Working Paper No. 26228). Cambridge, MA: National Bureau of Economic Research.

Lindo, J. M., Myers, C. K., Schlosser, A., & Cunningham, S. (2020). How far is too far? New evidence on abortion clinic closures, access, and abortions. *Journal of Human resources*, *55*, 1137-1160.

Miller, G., & Valente, C. (2016). Population policy: Abortion and modern contraception are substitutes. *Demography*, *53*, 979-1009.

Miller, S., Wherry, L. R., & Foster, D. G. (2020). *The economic consequences of being denied an abortion* (NBER Working Paper No. 26662). Cambridge, MA: National Bureau of Economic Research.

Ministerio da Administração Interna (MAI). (2020) *Eleições e Referendos* [Data sets]. Available from https://www.sg.mai.gov.pt/AdministracaoEleitoral/EleicoesReferendos

Mitrut, A., & Wolff, F. C. (2011). The impact of legalized abortion on child health outcomes and abandonment. Evidence from Romania. *Journal of Health Economics*, *30*, 1219-1231.

Moreau, C., Shankar, M., Glasier, A., Cameron, S., & Gemzell-Danielsson, K. (2020). Abortion regulation in Europe in the era of COVID-19: a spectrum of policy responses. *BMJ sexual & reproductive health*. https://doi.org/10.1136/bmjsrh-2020-200724

Oliveira da Silva, M. (2009) Reflections on the legalisation of abortion in Portugal. *The European Journal of Contraception & Reproductive Health Care*, *14*, 245-248.

Pop-Eleches, C. (2006). The impact of an abortion ban on socioeconomic outcomes of children: Evidence from Romania. *Journal of Political Economy*, *114*, 744-773.

Pop-Eleches, C. (2010). The supply of birth control methods, education, and fertility evidence from Romania. *Journal of Human Resources*, *45*, 971-997.

Popinchalk, A., & Sedgh, G. (2019). Trends in the method and gestational age of abortion in high-income countries. *BMJ sexual & reproductive health*, *45*, 95-103.

Quast, T., Gonzalez, F., & Ziemba, R. (2017). Abortion Facility Closings and Abortion Rates in Texas. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *54*. https://doi.org/10.1177/0046958017700944

Simões J., Augusto G.F., Fronteira I., Hernández-Quevedo C. (2017). Portugal: Health system review. *Health Systems in Transition* 19(2):1–184.

Ministerio de Sanidad (Sanidad). (2009-2018). *Interrupción Voluntaria del Embarazo* (2008 to 2016 Annual Reports). Madrid, Spain: Sanidad. Retrieved from https://www.mscbs.gob.es/profesionales/saludPublica/prevPromocion/embarazo/home.htm

Statistics Portugal. (2020b). *Estimativas anuais da população residente, 2008-2016* [Data set]. Lisbon, Portugal: Statistics Portugal. Available from https://smi.ine.pt/DocumentacaoMetodologica/Detalhes/1074

Statistics Portugal. (2020c). *Contas económicas regionais, 2008-2016* [Data set]. Lisbon, Portugal: Statistics Portugal. Available from https://smi.ine.pt/Indicador/Detalhes/13115

Statistics Portugal. (2020d). *Casamentos, 2008-2016* [Data set]. Lisbon, Portugal: Statistics Portugal. Available from https://smi.ine.pt/DocumentacaoMetodologica/Detalhes/1090

United Nations Department of Economic and Social Affairs (UNDESA). (2019). *Contraceptive Use by Method 2019: Data Booklet*. New York, NY: United Nations, Department of Economic and Social Affairs. Retrieved from https://digitallibrary.un.org/record/3849735

Venator, J. and Fletcher, J. (2021), Undue Burden Beyond Texas: An Analysis of Abortion Clinic Closures, Births, and Abortions in Wisconsin. *Journal of Policy Analysis and Management*, *40*, 774-813.

Vicente, L. F. (2020). Aborto por opcção da mulher: a experiência portuguesa da implementação da Rede Nacional. *Cadernos de Saúde Pública*, *36*, e00036219. https://doi.org/10.1590/0102-311X00036219.

Weber, S., & Péclat, M. (2017). A Simple Command to Calculate Travel Distance and Travel Time. *The Stata Journal*, *17*, 962–971. https://doi.org/10.1177/1536867X1801700411

Winikoff, B., Dzuba, I. G., Creinin, M. D., Crowden, W. A., Goldberg, A. B., Gonzales, J., ... & Shannon, C. S. (2008). Two distinct oral routes of misoprostol in mifepristone medical abortion: a randomized controlled trial. *Obstetrics & Gynecology*, *112*, 1303-1310.

World Health Organization (WHO). (2004). *Reproductive health strategy to accelerate progress towards the attainment of international development goals and targets*. Geneva, Switzerland: World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/68754

WHO. (2012). *Safe abortion: technical and policy guidance for health systems* (2nd ed.). Geneva, Switzerland: World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/70914

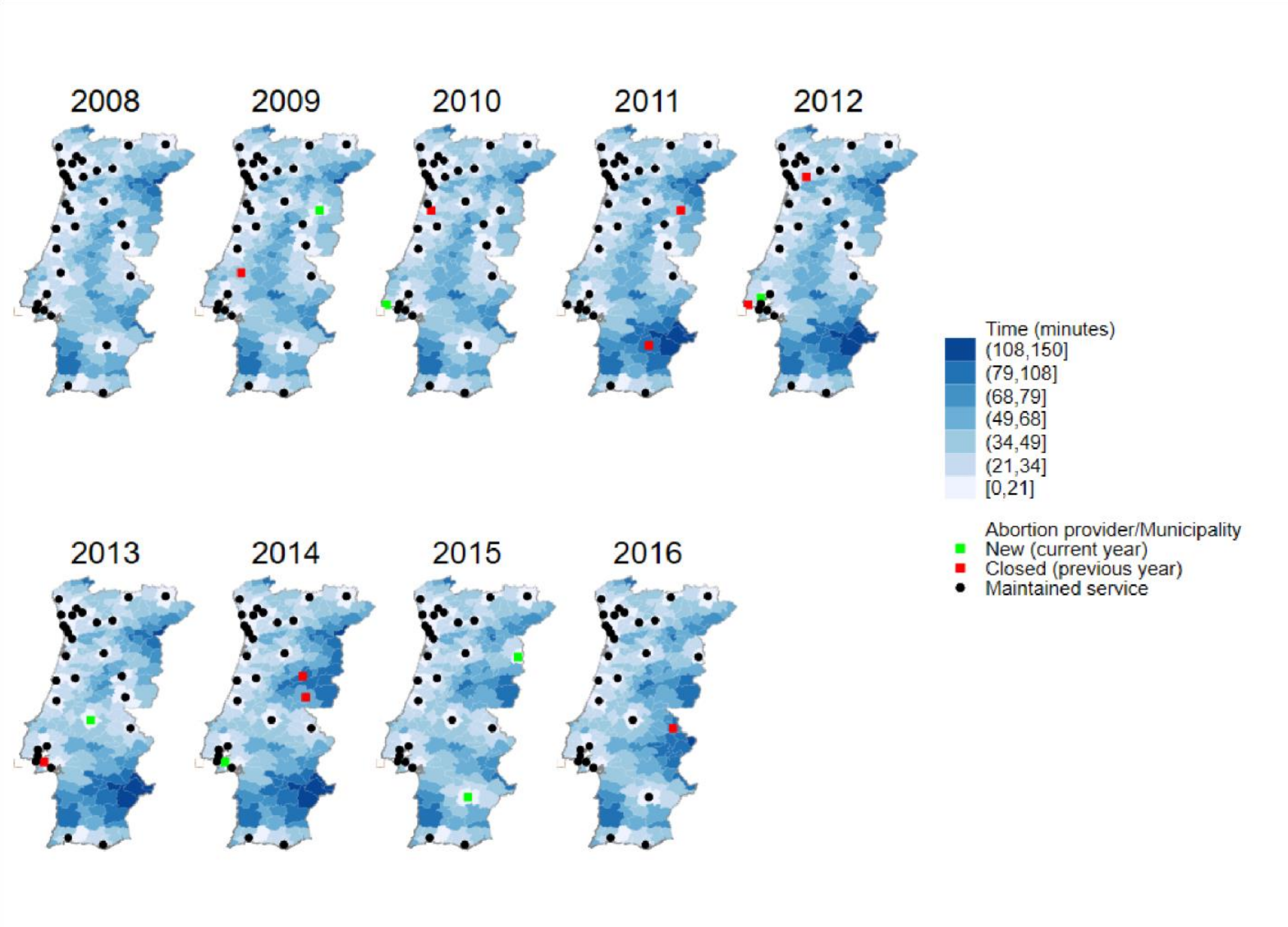

Figure 1 Provision of abortion across municipalities and travel time to the nearest abortion provider

Table 1 Abortion rate and access to abortion

	Number of abortions in municipality					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel a: Full sample						
Linear travel time						
Travel time (min.)	-0.0011		-0.0010		-0.0006	
	(0.0007)		(0.0007)		(0.0008)	
Bins of travel time						
(Ref: within 30min.)						
30 to 60min.		0.0260		0.0121		0.0272
		(0.0326)		(0.0362)		(0.0357)
Over 60min.		-0.1268***		-0.1370***		-0.0996*
		(0.0319)		(0.0363)		(0.0400)
Observations	2,502	2,502	2,502	2,502	2,502	2,502
Municipalities	278	278	278	278	278	278
Wald χ^2	2.643	19.396	61.381	77.453	61.745	69.603
Prob > χ^2	0.104	0.000	0.000	0.000	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes
Panel b: Teens (Between 15 and 19)						
Linear travel time						
Travel time (min.)	-0.0015		-0.0012		-0.0020	
	(0.0012)		(0.0012)		(0.0014)	
Bins of travel time						
(Ref: within 30min.)						
30 to 60min.		0.0252		0.0254		0.0185
		(0.0753)		(0.0773)		(0.0782)
Over 60min.		-0.0714		-0.1028		-0.1901†
		(0.0897)		(0.0970)		(0.1120)
Observations	2,439	2,439	2,439	2,439	2,439	2,439
Municipalities	271	271	271	271	271	271
Wald χ^2	1.555	0.910	37.872	38.008	52.620	52.253
Prob > χ^2	0.212	0.634	0.013	0.018	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3-4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5-6 have Administrative-Health-Region-by-year fixed effects. Robust standard errors in parenthesis. †<.1; * p <.05; *** p <.001

Table 2 Probability of abortion and access

	Probability of aborting	
	(1)	(2)
Linear travel time		
Travel time (min.)	-0.0000	
	(0.0001)	
Bins of travel time *(Ref: within 30min.)*		
30 to 60min.		0.0021
		(0.0049)
Over 60min.		-0.0062
		(0.0053)
R^2	0.3964	0.3964
Observations	889,962	889,962

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they conceived. Column 1 presents access linearly, while even column 2 presents access categorically. Robust standard errors in parenthesis.

Table 3 Conditions under which abortion occurs and abortion access

	Number of weeks pregnant				No. of waiting days		Having abortion over 9 weeks		NHS referral to private clinic		Having surgical abortion	
	First contact with services		Abortion intervention				Yes		Yes		Yes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Linear travel time												
Travel time in min.	0.0038***		0.0043**		0.0061		0.0007*		0.0057***		0.0054***	
	(0.0011)		(0.0014)		(0.0055)		(0.0003)		(0.0009)		(0.0008)	
Bins of travel time												
(Ref: within 30min.)												
30 to 60min.		0.1253†		0.1519**		0.2411		0.0319*		0.2240***		0.2219***
		(0.0713)		(0.0545)		(0.2083)		(0.0160)		(0.0634)		(0.0605)
Over 60min.		0.2678***		0.2541***		0.1407		0.0363**		0.3439***		0.3251***
		(0.0649)		(0.0498)		(0.3104)		(0.0117)		(0.0853)		(0.0859)
R^2	0.0152	0.0151	0.0201	0.0199	0.0091	0.0090	0.0126	0.0126	0.0638	0.0576	0.0603	0.0564
Observations	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, number of previous abortions, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they aborted. Odd columns present access linearly, while even columns present access categorically. Robust standard errors in parenthesis. †*p* <.1; * *p* <.05 ; ** *p* <.01; *** *p* <.001

ONLINE APPENDIX

A Data Appendix

A.1 Details on how we compute travel time to nearest Spanish abortion provider.

To compute travel time to the nearest Spanish provider we only consider Spanish private clinics as most abortions in Spain occur in the private sector – 91.9% in 2014 (Sanidad 2009-2018). Also, women living in Portugal are unlikely to follow the Spanish National Health System referral path since abortions abroad are not covered by the national health insurance neither in Portugal nor in Spain. For the period under study, the closest Spanish municipalities with a private abortion clinic were always Badajoz, Vigo, Huelva, Leon, Valladolid, or Salamanca, so that there is no variation in the travel time to the nearest Spanish municipality with an abortion provider.

A.2 Results of National and European elections at the municipality-level

In this section, we precise how we construct the set of control variables using the local results in the last national and European elections to account for potential changing norms in municipalities. For our analysis, we use the results in National and European elections occurring between 2004 and 2016. There were three European parliamentary elections – 2004, 2009, 2014 – and four national parliamentary elections – 2005, 2009, 2011, 2015. While our analysis focuses on the 2008 to 2016 period, we collect results from the national and European parliamentary elections of 2005 and 2004 in order to be able to control for the results of the last elections in each municipality. For the year 2008, the elected officials in office were selected in the 2004 and 2005 elections.

We include the municipality-level voter turnout and the results of each of the four parties/coalitions that always had parliamentary representation – between 2004 and 2015 – in the previous National and European parliamentary elections. The parties included are the

Socialist Party (PS), the Social Democratic Party (PSD), the Christian Democratic Party (CDS), the Left Block (BE), the Communist Party (PCP), and the Green Party (PEV). PCP and PEV always go to elections in a coalition – called CDU – so that we use the percentage of votes that CDU obtains. PSD and CDS have gone to elections in coalition in four out of the six elections we consider, hence their results in the two remaining elections are merged. PS and BE never formed any coalition.

A.3 Birth and abortion data harmonization

In this section, we explain how we modified the occupation variables to harmonize the abortion and births datasets. To do so, we created a variable with nine classes, namely: 1- Armed Forces Occupations (ISCO-08 major group 0); 2- Managers (ISCO-08 major group 1); 3- Professionals (ISCO-08 major group 2); 4- Technicians and associate professionals (ISCO-08 major group 3); 5- Clerical support workers, service and sales workers, and other services (ISCO-08 major groups 4 and 5); 6- Skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators and assemblers (ISCO-08 major groups 6, 7, and 8); 7- Elementary occupations (ISCO-08 major group 9); 8- Unemployed; 9- Non Active. While the birth data had information on activity status (employed, unemployed and searching for a new job, unemployed and searching for a first job, not active) and occupation – each major group of the International Standard Classification of Occupations (ISCO-08) –, in the abortion data this information is coded in a single variable in which some of the ISCO-08 major groups are merged (group 4 merged with group 5 and groups 6, 7, and 8 merged) while being unemployed, being a student, and being a non-remunerated domestic worker are separate categories.

B Descriptive statistics: figures

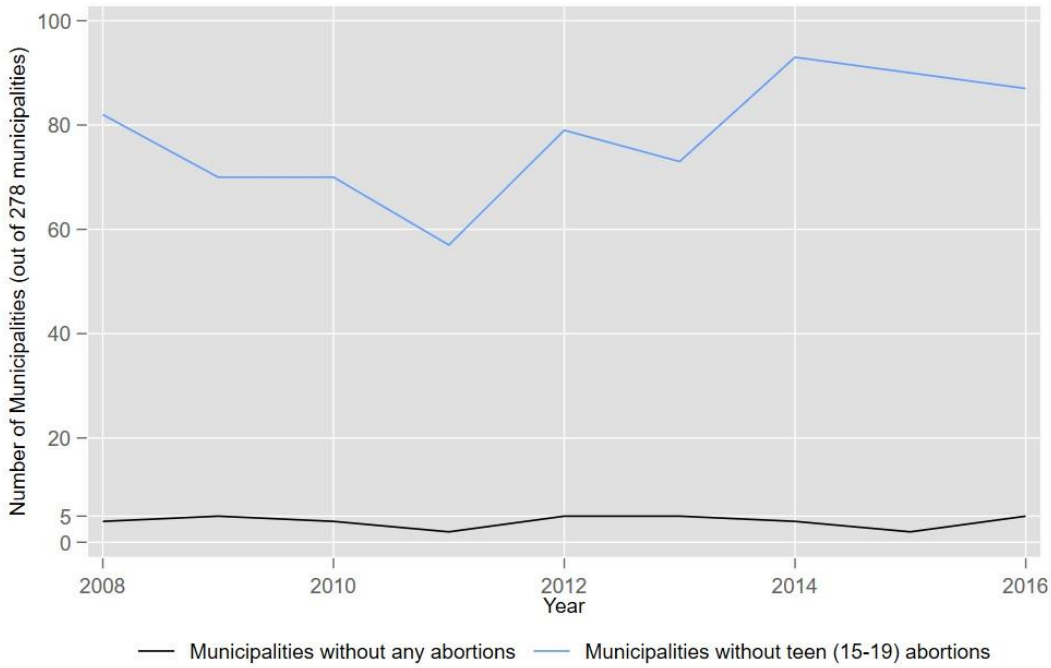

Figure B1 Number of municipalities with zero abortions

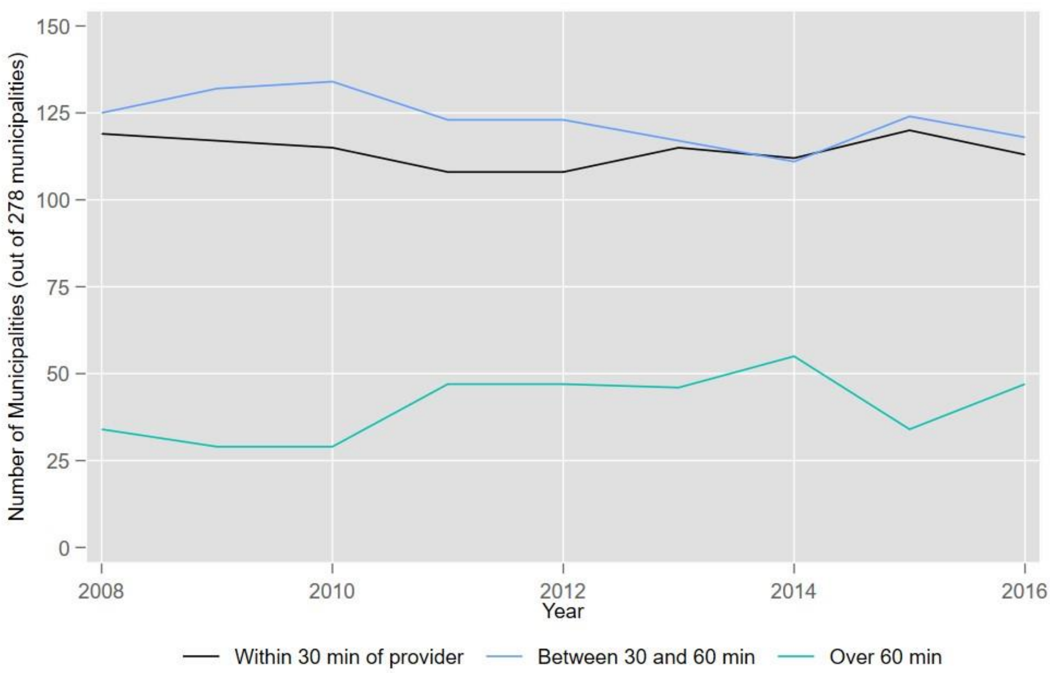

Figure B2 Number of municipalities by travel time bin

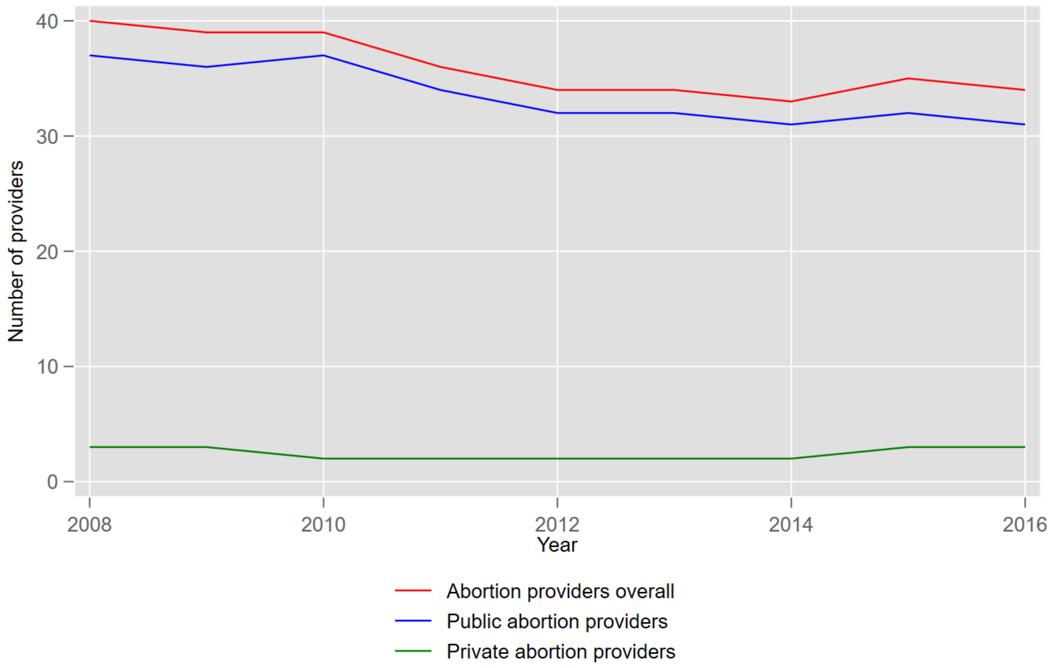

Figure B3 Number of providers by type and average travel time to abortion provider

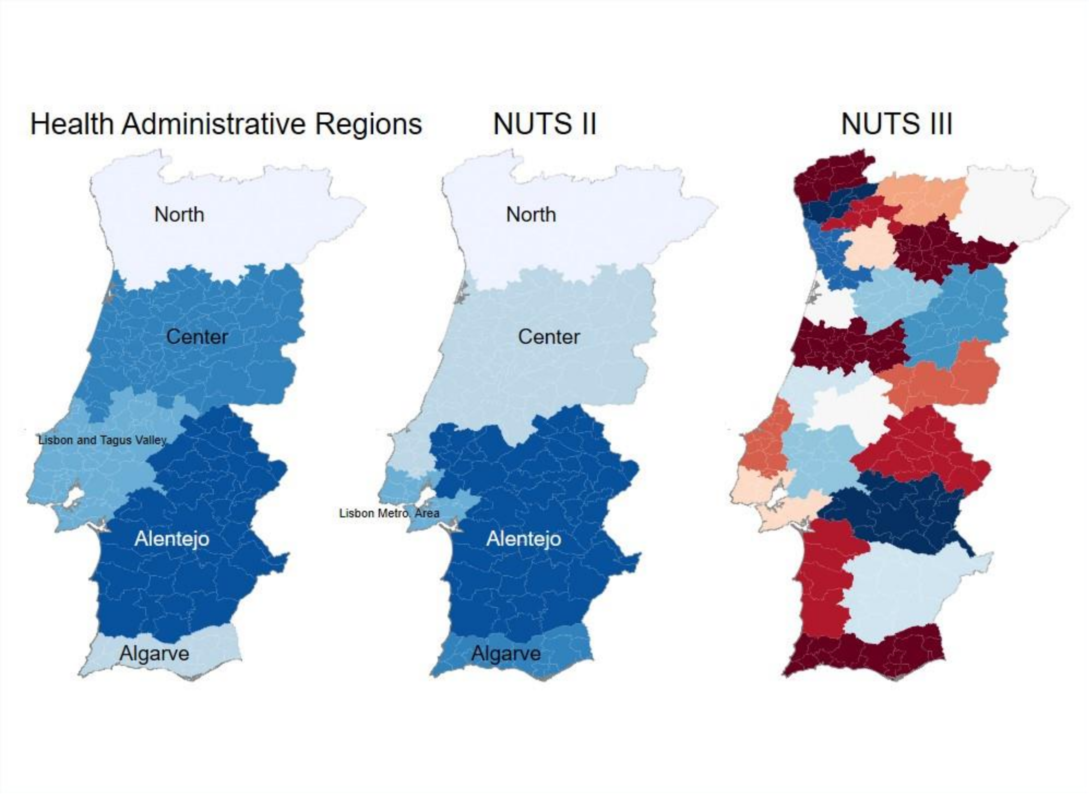

Figure B4 Division of the administrative health regions

C Robustness checks

Table C1 Abortion rate and access to abortion: Inverse Hyperbolic Sine Transformation as in Lindo et al. (2020)

	$\log\left(\frac{No.Abortions[Age\_group] \times \sqrt{No.Abortions[Age\_group]^2+1}}{No.Women[Age\_group]}\right)$					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel a: Full sample						
Linear travel time						
Travel time (min.)	-0.0013		-0.0014		-0.0009	
	(0.0012)		(0.0012)		(0.0012)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		-0.0041		-0.0191		0.0071
		(0.0448)		(0.0480)		(0.0507)
Over 60 min.		-0.1164**		-0.1417**		-0.1058*
		(0.0387)		(0.0439)		(0.0447)
Observations	2,502	2,502	2,502	2,502	2,502	2,502
Municipalities	278	278	278	278	278	278
R^2	0.083	0.084	0.106	0.107	0.126	0.127
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes
Panel b: Teens (Between 15 and 19)						
Linear travel time						
Travel time (min.)	-0.0015		-0.0015		-0.0024	
	(0.0017)		(0.0017)		(0.0018)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		-0.0121		-0.0094		-0.0176
		(0.0596)		(0.0681)		(0.0702)
Over 60 min.		-0.0444		-0.0853		-0.1717
		(0.0872)		(0.1039)		(0.1092)
Observations	2,439	2,439	2,439	2,439	2,439	2,439
Municipalities	271	271	271	271	271	271
R^2	0.072	0.072	0.090	0.089	0.107	0.106
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by OLS. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3 and 4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5 and 6 have Administrative-Health-Region-by-year fixed effects. In panel b, municipal fixed effects reduce the sample of municipalities to 271 as 9 municipalities never had abortions among teens. Robust standard errors in parenthesis. * p <.05; ** p <.01

Table C2 Abortion rate and access to abortion: Criteria of open provider = at least 1 abortion

	Number of abortions in municipality					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel a: Full sample						
Linear travel time						
Travel time (min.)	-0.0009		-0.0008		-0.0003	
	(0.0007)		(0.0007)		(0.0008)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0175		0.0002		0.0123
		(0.0293)		(0.0327)		(0.0323)
Over 60 min.		-0.1461***		-0.1568***		-0.1120**
		(0.0332)		(0.0376)		(0.0433)
Observations	2,502	2,502	2,502	2,502	2,502	2,502
Municipalities	278	278	278	278	278	278
Wald χ^2	1.606	21.137	60.607	80.071	61.788	69.199
Prob > χ^2	0.205	0.000	0.000	0.000	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes
Panel b: Teens (Between 15 and 19)						
Linear travel time						
Travel time (min.)	-0.0010		-0.0007		-0.0015	
	(0.0012)		(0.0012)		(0.0014)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0742		0.0660		0.0632
		(0.0663)		(0.0681)		(0.0683)
Over 60 min.		-0.0926		-0.1264		-0.2439*
		(0.0934)		(0.1014)		(0.1174)
Observations	2,439	2,439	2,439	2,439	2,439	2,439
Municipalities	271	271	271	271	271	271
Wald χ^2	0.758	2.656	37.012	39.433	51.094	54.809
Prob > χ^2	0.384	0.265	0.017	0.013	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3 and 4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5 and 6 have Administrative-Health-Region-by-year fixed effects. In panel b, municipal fixed effects reduce the sample of municipalities to 271 as 9 municipalities never had abortions among teens. Robust standard errors in parenthesis. * p <.05; ** p<.01; *** p <.001

Table C3 Abortion rate and access to abortion: Criteria of open provider = at least 5 abortions

	Number of abortions in municipality					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel a: Full sample						
Linear travel time						
Travel time (min.)	-0.0012†		-0.0011		-0.0006	
	(0.0007)		(0.0008)		(0.0008)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0256		0.0096		0.0239
		(0.0330)		(0.0368)		(0.0363)
Over 60 min.		-0.1357***		-0.1442***		-0.1022*
		(0.0331)		(0.0373)		(0.0429)
Observations	2,502	2,502	2,502	2,502	2,502	2,502
Municipalities	278	278	278	278	278	278
Wald χ^2	2.794	19.950	61.486	78.754	61.780	68.822
Prob > χ^2	0.095	0.000	0.000	0.000	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes
Panel b: Teens (Between 15 and 19)						
Linear travel time						
Travel time (min.)	-0.0017		-0.0014		-0.0023	
	(0.0012)		(0.0013)		(0.0015)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0134		0.0117		0.0068
		(0.0769)		(0.0791)		(0.0796)
Over 60 min.		-0.0909		-0.1200		-0.2355*
		(0.0940)		(0.1020)		(0.1175)
Observations	2,439	2,439	2,439	2,439	2,439	2,439
Municipalities	271	271	271	271	271	271
Wald χ^2	1.912	1.061	38.099	38.064	53.591	53.356
Prob > χ^2	0.167	0.588	0.013	0.018	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3 and 4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5 and 6 have Administrative-Health-Region-by-year fixed effects. In panel b, municipal fixed effects reduce the sample of municipalities to 271 as 9 municipalities never had abortions among teens. Robust standard errors in parenthesis. †p<0.1; * p <.05; *** p <.001

Table C4 Probability of abortion and access: Criteria of open provider = at least 1 abortion

	Probability of aborting	
	(1)	(2)
Linear travel time		
Travel time (min.)	-0.0000	
	(0.0001)	
Bins of travel time		
(Ref: within 30 min.)		
30 to 60 min.		0.0021
		(0.0045)
Over 60 min.		-0.0078
		(0.0061)
R^2	0.3964	0.3964
Observations	889,962	889,962

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they conceived. Column 1 presents access linearly, while even column 2 presents access categorically. Robust standard errors in parenthesis.

Table C5 Probability of abortion and access: Criteria of open provider = at least 5 abortions

	Probability of aborting	
	(1)	(2)
Linear travel time		
Travel time (min.)	-0.0000	
	(0.0001)	
Bins of travel time		
(Ref: within 30 min.)		
30 to 60 min.		0.0018
		(0.0050)
Over 60 min.		-0.0070
		(0.0060)
R^2	0.3964	0.3964
Observations	889,962	889,962

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they onceived. Column 1 presents access linearly, while even column 2 presents access categorically. Robust standard errors in parenthesis.

Table C6 Conditions under which abortion occurs and abortion access: Criteria of open provider = at least 1 abortion

	Number of weeks pregnant				No. of waiting days		Having abortion over 9 weeks		NHS referral to private clinic		Having surgical abortion	
	First contact with services		Abortion intervention				Yes		Yes		Yes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Linear travel time												
Travel time in min.	0.0050***		0.0043**		-0.0009		0.0007**		0.0056***		0.0054***	
	(0.0012)		(0.0014)		(0.0063)		(0.0003)		(0.0009)		(0.0008)	
Bins of travel time												
(Ref: within 30 min.)												
30 to 60 min.		0.0962		0.1161*		0.1868		0.0252†		0.1930***		0.1958***
		(0.0631)		(0.0503)		(0.1938)		(0.0137)		(0.0558)		(0.0535)
Over 60 min.		0.3294***		0.2820***		-0.0906		0.0451***		0.3573***		0.3375***
		(0.0613)		(0.0530)		(0.3591)		(0.0121)		(0.1003)		(0.1011)
R^2	0.0154	0.0152	0.0201	0.0199	0.0090	0.0090	0.0126	0.0126	0.0633	0.0570	0.0602	0.0562
Observations	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, number of previous abortions, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they aborted. Odd columns present access linearly, while even columns present access categorically. NHS stands for National Health Service. Robust standard errors in parenthesis. † p <.1; * p <.05 ; ** p <.01; *** p <.001

Table C7 Conditions under which abortion occurs and abortion access: Criteria of open provider = at least 5 abortions

	Number of weeks pregnant				No. of waiting days		Having abortion over 9 weeks		NHS referral to private clinic		Having surgical abortion	
	First contact with services		Abortion intervention				Yes		Yes		Yes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Linear travel time												
Travel time in min.	0.0042***		0.0045**		0.0052		0.0007*		0.0060***		0.0057***	
	(0.0011)		(0.0015)		(0.0058)		(0.0003)		(0.0010)		(0.0009)	
Bins of travel time												
(Ref: within 30 min.)												
30 to 60 min.		0.1261†		0.1544**		0.2558		0.0319†		0.2266***		0.2249***
		(0.0727)		(0.0557)		(0.2115)		(0.0163)		(0.0646)		(0.0616)
Over 60 min.		0.3036***		0.2604***		-0.0185		0.0369**		0.3619***		0.3387***
		(0.0627)		(0.0545)		(0.3360)		(0.0120)		(0.0952)		(0.0958)
R^2	0.0152	0.0151	0.0201	0.0199	0.0091	0.0090	0.0126	0.0126	0.0643	0.0578	0.0605	0.0565
Observations	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, number of previous abortions, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they aborted. Odd columns present access linearly, while even columns present access categorically. NHS stands for National Health Service. Robust standard errors in parenthesis. †*p* <.1; * *p* <.05 ; ** *p* <.01; *** *p* <.001

Table C8 Conditions under which abortion occurs and abortion access: Same controls as probability of abortion analysis

	Number of weeks pregnant				No. of waiting days		Having abortion over 9 weeks		NHS referral to private clinic		Having surgical abortion	
	First contact with services		Abortion intervention				Yes		Yes		Yes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Linear travel time												
Travel time in min.	0.0038***		0.0043**		0.0061		0.0007*		0.0057***		0.0054***	
	(0.0011)		(0.0014)		(0.0055)		(0.0003)		(0.0009)		(0.0008)	
Bins of travel time												
(Ref: within 30 min.)												
30 to 60 min.		0.1238†		0.1504**		0.2420		0.0315*		0.2238***		0.2223***
		(0.0709)		(0.0542)		(0.2083)		(0.0159)		(0.0634)		(0.0608)
Over 60 min.		0.2682***		0.2540***		0.1387		0.0359**		0.3440***		0.3247***
		(0.0649)		(0.0501)		(0.3102)		(0.0118)		(0.0855)		(0.0861)
R^2	0.0147	0.0146	0.0196	0.0194	0.0089	0.0089	0.0122	0.0122	0.0634	0.0572	0.0587	0.0548
Observations	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124	152,124

Notes: All regressions were estimated by OLS. All regressions have Administrative-Health-Region-by-year and municipal fixed effects and have year of age, occupation, education, number of children, nationality, and cohabitation dummies. All regressions also the results of voter turnout and of the main 4 parties/coalitions in the previous national and European parliamentary elections, as well as the percentage of catholic marriages in their municipality of residence on the year they aborted. Odd columns present access linearly, while even columns present access categorically. NHS stands for National Health Service. Robust standard errors in parenthesis. †*p* <.1; * *p* <.05 ; ** *p* <.01; *** *p* <.001

Table C9 Abortion rate and access to abortion: Excluding municipalities closer to a Spanish than to a Portuguese abortion provider

	Number of abortions in municipality					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel a: Full sample						
Linear travel time						
Travel time (min.)	-0.0010		-0.0010		-0.0005	
	(0.0008)		(0.0008)		(0.0009)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0206		0.0018		0.0157
		(0.0336)		(0.0377)		(0.0370)
Over 60 min.		-0.1237***		-0.1370***		-0.0944*
		(0.0330)		(0.0371)		(0.0433)
Observations	2,359	2,359	2,359	2,359	2,359	2,359
Municipalities	265	265	265	265	265	265
Wald χ^2	1.799	16.007	59.679	75.031	61.692	66.790
Prob > χ^2	0.180	0.000	0.000	0.000	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes
Panel b: Teens (Between 15 and 19)						
Linear travel time						
Travel time (min.)	-0.0014		-0.0011		-0.0019	
	(0.0013)		(0.0014)		(0.0015)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0112		0.0052		-0.0034
		(0.0785)		(0.0809)		(0.0811)
Over 60 min.		-0.0698		-0.1053		-0.2054†
		(0.0999)		(0.1071)		(0.1233)
Observations	2,318	2,318	2,318	2,318	2,318	2,318
Municipalities	260	260	260	260	260	260
Wald χ^2	1.186	0.545	37.132	37.050	51.851	51.553
Prob > χ^2	0.276	0.762	0.016	0.023	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3 and 4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5 and 6 have Administrative-Health-Region-by-year fixed effects. In panel b, municipal fixed effects reduce the sample of municipalities to 260 as 5 municipalities among the ones that are closer form a Portuguese provider than a Spanish, never had abortions among teens. Robust standard errors in parenthesis. †<.1; * p <.05; *** p <.001

Table C10 Pregnancy rate and access to abortion

	Number of abortions in the municipality					
	(1)	(2)	(3)	(4)	(5)	(6)
Linear travel time						
Travel time	-0.0011		-0.0010		-0.0006	
	(0.0007)		(0. 0007)		(0.0008)	
Bins of travel time						
(Ref: within 30 min.)						
30 to 60 min.		0.0228		0.0095		-0.0243
		(0.0007)		(0.0350)		(0.0345)
over 60 min.		-0.1173***		-0.1276***		-0.0922*
		(0.0314)		(0.0314)		(0.0314)
Observations	2,502	2,502	2,502	2,502	2,502	2,502
Municipalities	278	278	278	278	278	278
Wald χ^2	2.657	18.965	62.317	78.467	62.959	70.798
Prob > χ^2	0.103	0.000	0.000	0.000	0.000	0.000
Municipal FE	Yes	Yes	Yes	Yes	Yes	Yes
Includes controls	No	No	Yes	Yes	Yes	Yes
Administrative-Health-Region-by-year FE	No	No	No	No	Yes	Yes

Notes: All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have year and municipal fixed effects. Odd columns present access linearly, while even columns present access categorically. Columns 3 and 4 introduce time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament. Columns 5 and 6 have Administrative-Health-Region-by-year fixed effects. Robust standard errors in parenthesis. * p <.05; *** p <.001

Table C11 Variations in abortion rate and abortion supply

	Probability of change in abortion provision status (equal to 1 if opened or closed and 0 otherwise)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel a: No year or Provider's Region Fixed Effects							
Absolute value of the variation in the abortion rate							
Between year T-1 and T	0.3625			0.2817	0.1698		0.1914
	(0.2615)			(0.2466)	(0.3187)		(0.3265)
Between year T-2 and T-1		0.0266		-0.0224		-0.0480	-0.0758
		(0.0978)		(0.0914)		(0.0785)	(0.0851)
Between year T-3 and T-2			-0.1435		-0.1467	-0.1346	-0.1331
			(0.0999)		(0.1026)	(0.1050)	(0.1064)
R^2	0.0282	0.0002	0.0055	0.0167	0.0092	0.0061	0.0106
Observations	296	259	222	259	222	222	222
Panel b: With Provider's Region Fixed Effects							
Absolute value of the variation in the abortion rate							
Between year T-1 and T	0.3793			0.3520	0.2174		0.2186
	(0.2829)			(0.2852)	(0.3720)		(0.3673)
Between year T-2 and T-1		-0.0039		0.0024		-0.0946	-0.0957
		(0.2829)		(0.1019)		(0.0776)	(0.0803)
Between year T-3 and T-2			-0.1979		-0.1699	-0.2015	-0.1734
			(0.1335)		(0.1371)	(0.1345)	(0.1370)
R^2	0.0286	0.0000	0.0097	0.0259	0.0149	0.0118	0.0171
Observations	296	259	222	259	222	222	222
Panel c: With Year and Provider's Region Fixed Effects							
Absolute value of the variation in the abortion rate							
Between year T-1 and T	0.3958			0.3613	0.2380		0.2336
	(0.2809)			(0.2914)	(0.3602)		(0.3555)
Between year T-2 and T-1		-0.449		-0.0223		-0.1464	-0.1428
		(0.1063)		(0.1140)		(0.1005)	(0.1023)
Between year T-3 and T-2			-0.2181		-0.1791	-0.2301†	-0.1915
			(0.1352)		(0.1326)	(0.1360)	(0.1326)
R^2	0.0450	0.0198	0.0316	0.0446	0.0377	0.0362	0.0420
Observations	296	259	222	259	222	222	222

Notes: All regressions were estimated by OLS. Robust standard errors in parenthesis. The panel on which this regressions are estimated in composed of 37 municipalities that ever had an abortion provider between 2008 and 2016. The variable of interest is the absolute value of the variation of the abortion rate in the region of influence of each municipality that ever had an abortion provider. We define the region covered by each provider as the set of municipalities that, at some point between 2008 and 2016, were closer to that provider than to any other abortion service in Portugal. Hence, it is possible that one municipality is considered to be in the region of influence of more than one provider. $^{\dagger}p<0.1$;

Table C12 Conditions under which abortion occurs and abortion access – municipal-level analysis

	Abortions below 7 weeks		Abortions between 7 and 9 weeks		Abortions over 9 weeks		NHS referral to private clinic		Surgical abortions		Medical abortions	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Linear travel time												
Travel time in min.	-0.0024*		0.0019*		0.0067*		0.0198***		0.0153***		-0.0133***	
	(0.0010)		(0.0009)		(0.0033)		(0.0027)		(0.0018)		(0.0020)	
Bins of travel time												
(Ref: within 30min.)												
30 to 60min.		0.0173		0.0598		0.0540		0.7820***		0.4711***		-0.3531**
		(0.0436)		(0.0457)		(0.2459)		(0.1182)		(0.0868)		(0.1127)
Over 60min.		-0.2036***		0.0839		0.5286*		1.6626***		1.1615***		-0.6787***
		(0.0532)		(0.0656)		(0.2553)		(0.2782)		(0.1632)		(0.1224)
Observations	2502	2502	2502	2502	2046	2046	1458	1458	2232	2232	2502	2502
Municipalities	278	278	278	278	231	231	162	162	248	248	278	278
Wald χ^2	63.103	82.709	59.784	56.265	122.681	122.873	211.057	200.844	246.370	191.555	191.038	160.704
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: : All regressions were estimated by Poisson quasi-maximum likelihood. All regressions have: *i)* municipal fixed effects; *ii)* time-varying control variables namely the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP, the percentage of Catholic marriages, and the results in the national and European elections of voter turnout and of the four parties/coalition with a seat in parliament; and ; *iii)* Administrative-Health-Region-by-year fixed effects. Robust standard errors in parenthesis. * p <.05 ; ** p <.01; *** p <.001

D Descriptive statistics: Tables

Table D1 Descriptive statistics of municipalities

Variable	Panel	Mean	SD	Min	Max	Observations
Abortion access						
Travel time (minutes)	Overall	37.22	23.93	0	149.67	N = 2502
	Between Municipalities		21.43			Municipalities = 278
	Within Municipalities		10.70			Years = 9
Abortions						
Overall number in municipality	Overall	63.30	183.68	0	2,700	N = 2502
	Between Municipalities		182.45			Municipalities = 278
	Within Municipalities		23.62			Years = 9
Number in municipality (15 to 19 teens)	Overall	6.92	20.20	0	298	N = 2502
	Between Municipalities		19.80			Municipalities = 278
	Within Municipalities		4.17			Years = 9
Demographics						
Fertile women to population ratio	Overall	21.72	2.61	12.44	27.84	N = 2502
	Between Municipalities		2.57			Municipalities = 278
	Within Municipalities		0.51			Years = 9
Teens to population ratio	Overall	2.52	0.39	1.14	3.82	N = 2502
	Between Municipalities		0.36			Municipalities = 278
	Within Municipalities		0.15			Years = 9
Population (thousands)	Overall	35.82	57.45	1.69	550.93	N = 2502
	Between Municipalities		57.52			Municipalities = 278
	Within Municipalities		1.50			Years = 9
% Catholic marriages (NUTSIII)	Overall	43.86	11.45	16.60	71.89	N = 2502
	Between Municipalities		10.86			Municipalities = 278
	Within Municipalities		3.69			Years = 9
Economy						
Municipal unemployment rate	Overall	7.93	2.57	2.01	18.81	N = 2502
	Between Municipalities		2.09			Municipalities = 278
	Within Municipalities		1.49			Years = 9
NUTSIII GDP per capita (thousand euros)	Overall	18.24	3.97	11.75	32.89	N = 2502
	Between Municipalities		3.83			Municipalities = 278
	Within Municipalities		1.06			Years = 9

Table D1 (continued)

National Parliamentary elections (2005-2015)						
Voter Turnout (%)	Overall	57.83	6.06	32.88	74.33	N = 2502
	Between Municipalities		5.38			Municipalities = 278
	Within Municipalities		2.80			Years = 9
Votes in major left-wing party (%)	Overall	33.16	8.59	9.37	64.77	N = 2502
	Between Municipalities		6.23			Municipalities = 278
	Within Municipalities		5.92			Years = 9
Votes in major right-wing party/coalition (%)	Overall	44.59	13.96	8.24	81.76	N = 2502
	Between Municipalities		12.54			Municipalities = 278
	Within Municipalities		6.16			Years = 9
European Parliamentary elections (2004-2014)						
Voter Turnout (%)	Overall	35.37	5.28	20.32	56.64	N = 2502
	Between Municipalities		4.99			Municipalities = 278
	Within Municipalities		1.74			Years = 9
Votes in major left-wing party (%)	Overall	31.23	8.87	8.75	62.40	N = 2502
	Between Municipalities		6.57			Municipalities = 278
	Within Municipalities		5.98			Years = 9
Votes in major right-wing party/coalition (%)	Overall	36.57	14.67	4.75	72.58	N = 2502
	Between Municipalities		13.48			Municipalities = 278
	Within Municipalities		5.85			Years = 9

Table D2 Abortion rates per travel time bin

Abortion rates (per 10000 fertile women)	Travel time to nearest provider							
	Within 30 minutes		*30 to 60 minutes*		*Over 60 minutes*		*Total*	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Overall	6.043	3.937	4.773	2.670	4.700	2.669	5.2833	3.310
For teens aged 15 to 19	6.032	5.255	4.568	5.101	4.432	5.573	5.149	5.286
Below 7 weeks of gestation	3.650	2.424	2.971	1.877	2.904	1.850	3.240	2.142
Between 7 and 9 weeks	2.167	1.873	1.641	1.352	1.637	1.409	1.856	1.614
Between 9 and 10 weeks	0.226	0.381	0.161	.326	0.160	0.382	0.1874	0.359
Referred from NHS to Private	0.611	2.500	0.937	1.947	1.331	2.606	0.861	2.152
Surgical abortions	0.960	2.465	1.200	2.128	1.560	2.707	1.154	2.368
Medical abortions	5.062	3.332	3.544	2.758	3.120	2.508	4.105	3.082

Table D3 Descriptive statistics of pregnant women – outcome variables

	Travel time to nearest provider											
	Within 30 minutes			*30 to 60 minutes*			*Over 60 minutes*			*Total*		
	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)
Pregnancy outcomes												
Births	589,010	82	80	121,757	86	17	27,071	85	4	737,838	83	100
Abortions	128,023	18	84	19,449	14	13	4,652	15	3	152,124	17	100
Total	717,033	100	81	141,206	100	16	31,723	100	4	889,962	100	100
Weeks pregnant												
Less than seven	71,269	56	84	11,000	57	13	2,738	59	3	85,007	56	100
From seven to nine	50,302	39	84	7,569	39	13	1,695	36	3	59,566	39	100
From nine to ten	6,452	5	85	880	5	12	219	5	3	7,551	5	100
Total	128,023	100	84	19,449	100	13	4,652	100	3	152,124	100	100
Type of provider												
Private clinic - own initiative	10,275	8	86	1,344	7	11	298	6	3	11,917	8	100
Private clinic - NHS referral	27,537	22	78	6,207	32	18	1,696	36	5	35,440	23	100
NHS Hospital	90,211	70	86	11,898	61	11	2,658	57	3	104,767	69	100
Total	128,023	100	84	19,449	100	13	4,652	100	3	152,124	100	100
Method												
Medical abortion	88,421	69	86	11,846	61	12	2,656	57	3	102,923	68	100
Surgical abortion	39,602	31	80	7,603	39	15	1,996	43	4	49,201	32	100
Total	128,023	100	84	19,449	100	13	4,652	100	3	152,124	100	100
Method (Among women accessing to services through the NHS)												
Medical abortion	87,831	74	86	11,787	65	12	2,647	61	3	102,265	73	100
Surgical abortion	30,512	26	79	6,375	35	17	1,716	39	4	38,603	27	100
Total	118,343	100	84	18,162	100	13	4,363	100	3	140,868	100	100
		Mean	SD		Mean	SD		Mean	SD		Mean	SD
Weeks pregnant at:												
Time of access		6.57	1.53		6.59	1.49		6.66	1.47		6.58	1.52
Time of abortion		7.32	1.37		7.32	1.32		7.28	1.30		7.32	1.36
Waiting days		8.29	4.68		8.17	4.69		7.58	4.41		8.25	4.67
Travel time (minutes)		10.40	11.03		40.39	7.90		77.44	16.18		17.51	19.20

Table D4 Descriptive statistics of women giving birth – control variables

	Mean	SD	No.	Travel time to nearest provider: *Within 30 minutes* No.	Col (%)	Row (%)	*30 to 60 minutes* No.	Col (%)	Row (%)	*Over 60 minutes* No.	Col (%)	Row (%)
Age	30.7	5.6										
Less than 15			389	296	0	76	63	0	16	30	0	8
15 to 19			23,821	18,738	3	79	3,978	3	17	1,105	4	4
20 to 24			84,607	66,416	11	79	14,742	12	17	3,449	13	4
25 to 29			180,857	141,896	24	78	31,912	26	18	7,049	26	4
30 to 34			257,129	206,210	35	80	41,873	34	16	9,046	33	4
35 to 39			156,499	127,254	22	81	24,024	20	16	5,221	19	3
Over 40			34,536	28,200	5	82	5,165	4	15	1,171	4	3
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4
Education												
Illiterate			2,279	1,590	0	70	422	0	18	267	1	12
Reads/writes			1,213	841	0	69	266	0	22	106	0	9
Primary school			25,667	19,924	3	78	4,509	4	17	1,234	5	5
Lower middle school			69,482	56,101	10	81	11,083	9	16	2,298	8	3
Higher middle school			150,023	117,775	20	78	26,841	22	18	5,407	20	4
High school			225,444	173,888	30	77	42,206	35	19	9,350	35	4
College			263,730	218,891	37	83	36,430	30	14	8,409	31	3
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4
Occupation												
Agriculture (ISCO08:6-8)			50,689	40,586	7	80	8,825	7	17	1,278	5	3
Armed Forces (ISCO08:0)			2,414	1,866	0	77	481	0	20	67	0	3
Services (ISCO-08:4-5)			196,498	155,195	26	79	33,803	28	17	7,500	28	4
Unskilled (ISCO-08:9)			43,572	34,041	6	78	8,009	7	18	1,522	6	4
Managers (ISCO-08:1)			22,121	18,449	3	84	3,145	3	14	527	2	2
Professionals (ISCO-08:2)			137,461	114,696	19	83	18,442	15	15	4,323	16	3
Technicians (ISCO-08:3)			69,247	57,103	10	82	10,122	8	15	2,022	7	3
Not active			115,657	87,431	15	76	22,284	18	19	5,942	22	5
Unemployed			100,179	79,643	14	80	16,646	14	16	3,890	14	4
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4

Table D4 (continued)

	Mean	SD	No.	Travel time to nearest provider								
				Within 30 minutes			*30 to 60 minutes*			*Over 60 minutes*		
				No.	Col (%)	Row (%)	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)
Nationality												
Portuguese			696,362	552,561	89	79	117,205	93	17	26,596	94	4
Other			76,830	66,213	11	86	8,873	7	12	1,744	6	2
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4
Cohabitation /Civil Status												
Married			396,432	316,268	54	80	67,064	55	17	13,100	48	3
Not married, with partner			96,288	79,819	13	83	13,545	11	14	2,924	11	3
Not married, no partner			245,118	192,923	33	79	41,148	34	17	11,047	41	4
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4
Previous children	0.1	0.5										
0			666,839	532,464	90	80	110,102	90	17	24,273	90	4
1			48,665	38,949	7	80	7,872	7	16	1,844	7	4
2			16,439	12,944	2	79	2,763	2	17	732	3	4
3			4,261	3,330	1	78	771	1	18	160	0	4
4			1,131	913	0	81	177	0	16	41	0	3
More than 4			503	410	0	82	72	0	14	21	0	4
Total			737,838	589,010	100	80	121,757	100	16	27,071	100	4

Table D5 Descriptive statistics of women who aborted – control variables

	Mean	SD	No.	Travel time to nearest provider								
				Within 30 minutes			*30 to 60 minutes*			*Over 60 minutes*		
				No.	Col (%)	Row (%)	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)
Age	28.5	7.3										
Less than 15			640	535	0	84	79	0	12	26	1	4
15 to 19			16,499	13,969	11	85	2,048	11	12	482	10	3
20 to 24			34,559	29,527	23	85	4,057	21	12	975	21	3
25 to 29			32,908	27,998	22	85	3,940	20	12	970	21	3
30 to 34			30,956	25,905	20	84	4,126	21	13	925	20	3
35 to 39			25,134	20,815	16	83	3,459	18	14	860	18	3
Over 40			11,422	9,268	7	81	1,740	15	15	414	9	4
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Education												
Illiterate			418	347	0	83	55	0	13	16	0	4
Reads/writes			307	249	0	81	43	0	14	15	0	5
Primary school			6,147	5,129	4	84	816	4	13	202	4	3
Lower middle school			18,751	15,471	12	83	2,663	14	14	617	13	3
Higher middle school			41,032	34,305	27	84	5,457	28	13	1,270	27	3
High school			54,342	45,740	36	84	6,924	36	13	1,678	36	3
College			31,127	26,782	86	86	3,491	18	11	854	18	3
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Occupation												
Agriculture (ISCO08:6-8)			23,926	19,679	15	82	3,454	18	14	793	17	3
Armed Forces (ISCO08:0)			827	705	1	85	110	1	13	12	0	2
Services (ISCO-08:4-5)			16,621	14,154	11	85	2,013	10	12	454	10	3
Unskilled (ISCO-08:9)			27,892	23,558	18	84	3,605	19	13	729	16	3
Managers (ISCO-08:1)			1,520	1,357	1	89	134	1	9	29	1	2
Professionals (ISCO-08:2)			10,628	9,183	7	86	1,152	6	11	293	6	3
Technicians (ISCO-08:3)			11,664	10,036	8	86	1,312	7	11	316	7	3
Domestic worker			3,445	2,662	2	77	634	3	18	149	3	4
Student			25,554	21,768	17	85	2,996	15	12	790	17	3
Unemployed			30,047	24,921	20	83	4,039	21	13	1,087	23	4
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3

Table D5 (continued)

	Mean	SD	No.	Travel time to nearest provider								
				Within 30 minutes			*30 to 60 minutes*			*Over 60 minutes*		
				No.	Col (%)	Row (%)	No.	Col (%)	Row (%)	No.	Col (%)	Row (%)
Nationality												
Portuguese			125,483	104,288	81	83	17,076	88	14	4,119	11	3
Other			26,641	23,735	19	89	2,373	12	9	533	89	2
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Civil Status												
Married			37,375	30,235	24	81	5,782	30	15	1,358	29	4
Divorced			11,317	9,212	7	82	1,736	8	15	369	8	3
Separated			2,263	1,901	1	84	293	1	13	69	1	3
Single			100,518	86,158	67	86	11,527	60	11	2,833	61	3
Widow			651	517	1	79	111	1	17	23	1	4
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Cohabitation												
Lives with partner			74,954	61,711	48	82	10,645	55	14	2,598	56	4
Lives without partner			77,170	66,312	52	86	8,804	45	11	2,054	44	3
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Previous children	1.0	1.0										
0			61,676	52,782	41	86	7,171	37	11	1,723	37	3
1			44,694	37,826	29	85	5,500	28	12	1,368	29	3
2			33,630	27,476	21	82	5,007	25	15	1,147	24	3
3			8,959	7,291	6	81	1,356	7	15	312	7	4
4			2,247	1,884	1	84	294	2	13	69	1	3
More than 4			1,962	1,562	1	80	321	2	16	79	2	4
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3
Previous abortions	0.4	0.7										
0			112,079	93,412	73	83	15,097	77	13	3,570	76	3
1			30,607	26,308	20	86	3,456	18	11	843	18	3
2			6,887	6,061	5	88	650	3	9	176	4	3
3			1,676	1,475	1	88	163	1	10	38	1	2
4			503	453	0	90	39	0	8	11	0	2
More than 4			1,416	1,112	1	79	244	1	17	60	1	4
Total			152,124	128,023	100	84	19,449	100	13	4,652	100	3

E Event Studies

To better understand if openings and closures of abortion providers are driven by abortion demand we conduct event studies which are displayed in Figures E1 to E4 below.

In this analysis, we use the abortion rate of the region of influence of a provider – which is defined as the set of municipalities to which that provider was, at some point in time, the closest abortion provider – as an outcome and estimate the model described below by OLS:

$$Y_{rt} = \sum_{i=-Pre}^{-2} \alpha_i T_{rti} + \sum_{i=0}^{Post} \alpha_i T_{rti} + X_{rt}\beta + \varphi_r + \zeta_t + u_{rt}$$

Where $\boldsymbol{Y_{rti}}$ is either the abortion rate or the percentage of catholic marriages and $\boldsymbol{T_{rti}}$ is a dummy equal to one for the region of provider $\boldsymbol{r}$, in year $\boldsymbol{t}$, which is $\boldsymbol{i}$ years away from the event (opening or closure of provider). $\boldsymbol{X_{rt}}$ is a vector of time-varying controls of the provider's region of influence, namely: the percentage of women in fertile age in the population, the insured unemployment rate, the growth rate of the NUTS III region's GDP. If the outcome variable is the abortion rate, we also include as controls the percentage of Catholic marriages and the results in the national and European elections, namely voter turnout and the percentage of votes in the four parties/coalition with a seat in parliament. $\boldsymbol{\varphi_r}$ and $\boldsymbol{\zeta_t}$ are provider's region of influence and year fixed-effects, respectively. $\boldsymbol{u_{rt}}$ is the error term.

As we show in Figures E1 to E4, we find no evidence that there were systematic differences in abortion rates prior to the closures or openings of abortion providers.

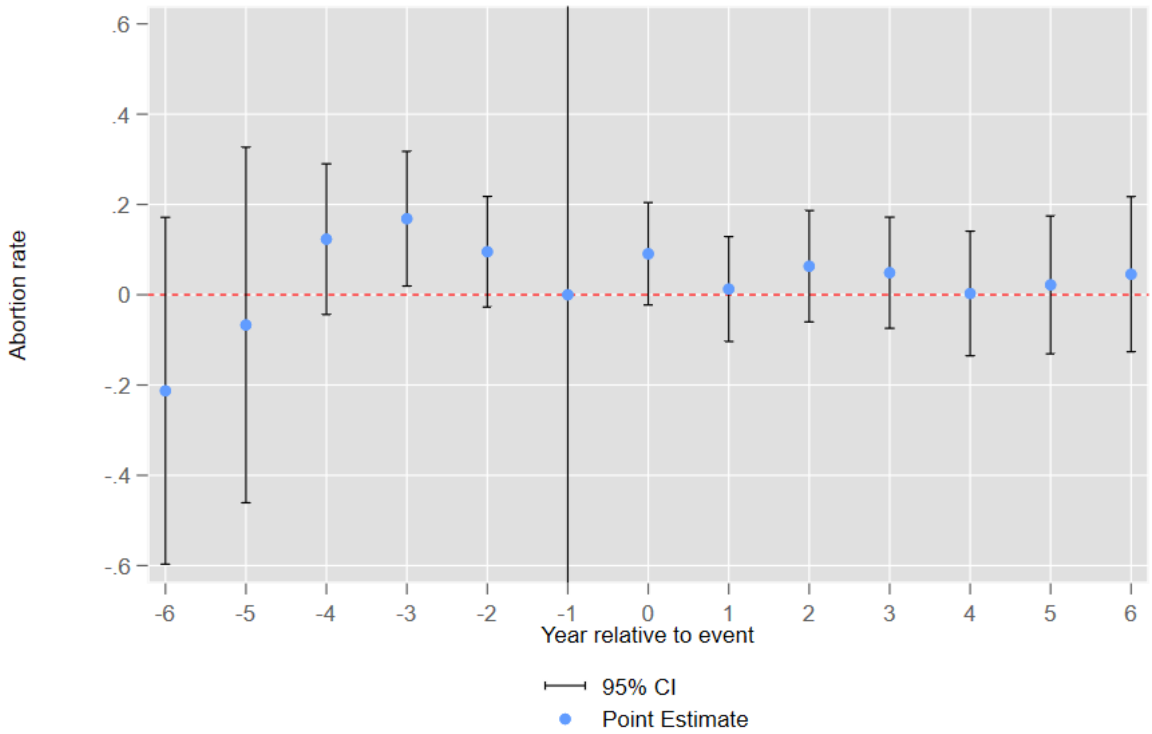

Figure E1 Abortion rate before and after clinic closure

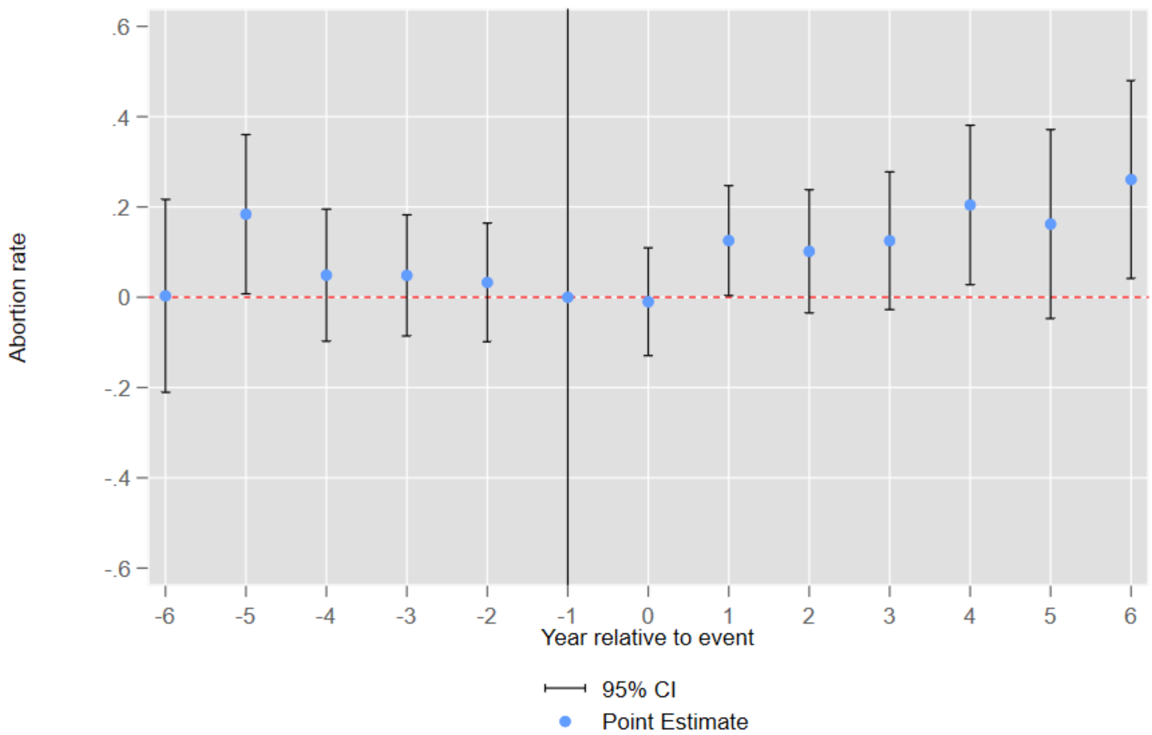

Figure E2 Abortion rate before and after clinic opening

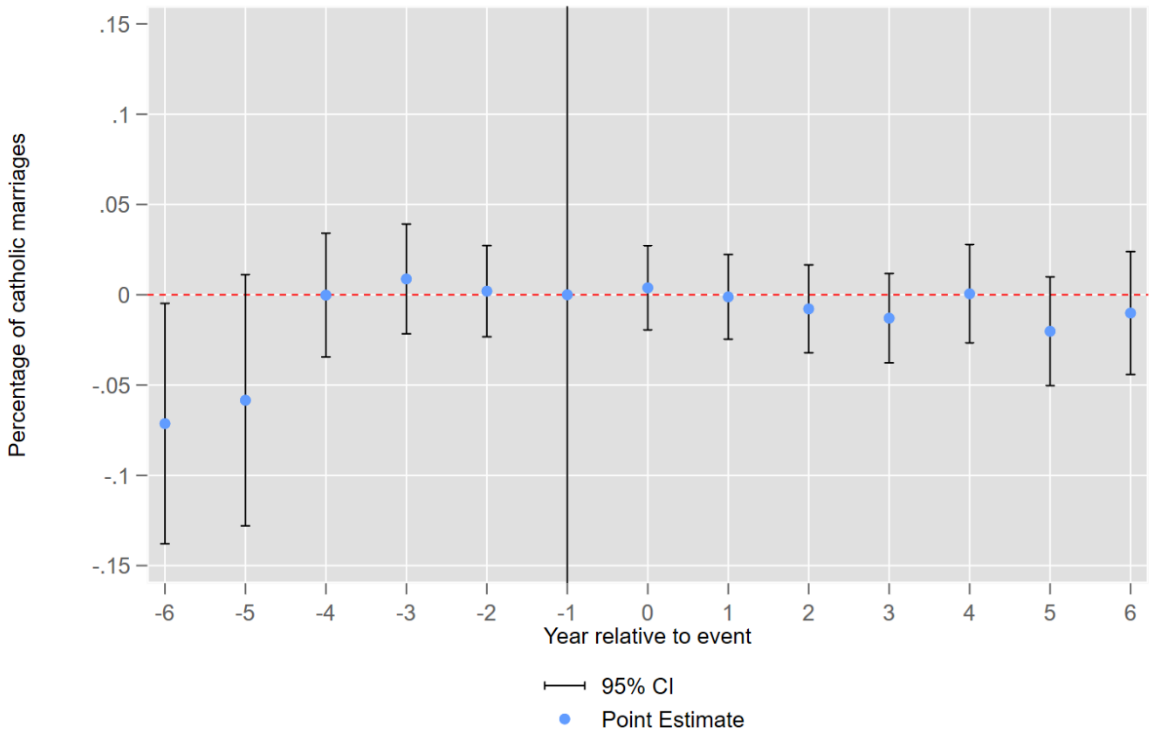

Figure E3 Percentage of catholic marriages before and after clinic closure

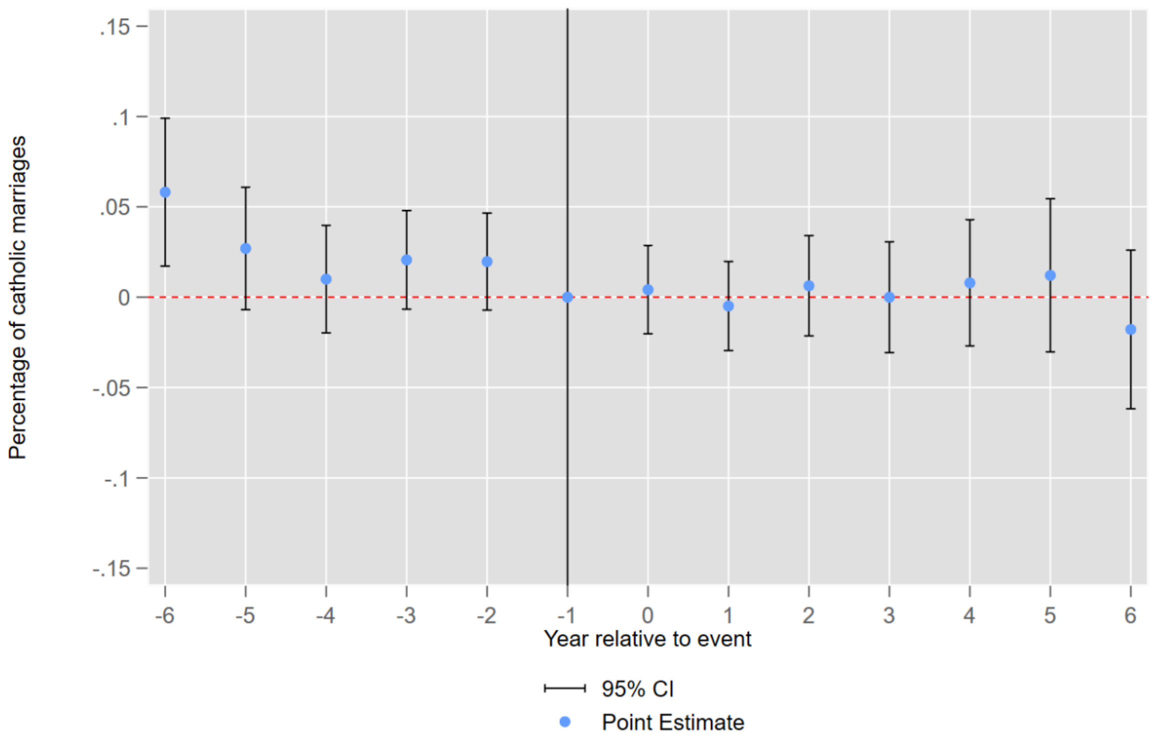

Figure E4 Percentage of catholic marriages before and after clinic opening