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Abortion and Mental Health: Short-Term Distress, Long-Term Recovery

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Abstract

Abortion remains a highly contested issue in women's health. Using Norwegian administrative data from a setting with legal and accessible abortion, we estimate the causal effect of abortion on mental health. Exploiting variation in age-at-abortion within a stacked difference-in-differences design, we find a temporary increase in mental health–related GP visits that dissipates within one to two years. Among women without children, mental health improves in the medium term, along with changes in family dynamics and subsequent childbirth. An alternative matching approach comparing women with and without abortions confirms these findings. We find no evidence of persistent mental health deterioration.

JEL classification

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Keywords

abortion, mental health, women's health, age at abortion

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1 Introduction

The ability to plan fertility, through access to modern contraception and safe abortion, has been central to women's empowerment, improving their health, educational attainment, and labor market outcomes (e.g., Ananat and Hungerman, 2012; Angrist and Evans, 1996; Bailey, 2006, 2013; Clarke and Mühlrad, 2021; Goldin and Katz, 2002; Goldin, 2006; Guldi, 2008; Londoño-Vélez and Saravia, 2025; Myers, 2012; Mølland, 2016). Yet abortion remains a highly contested issue. While about 60% of women of reproductive age live in countries where abortion is legal (Center for Reproductive Rights, 2025), abortion rates vary widely across (industrialized) countries, from 5.8 per 1,000 women in Germany (Prütz et al., 2022) to 11.2 in the United States (CDC, 2024) and 10.4 in Norway (NIPH, 2024).

Despite abortion being legal in many industrialized countries, it continues to be politically and morally charged, with pro-life movements frequently asserting that, beyond moral objections, abortions cause substantial harm to women's mental health (e.g., Charlotte Lozier Institute, 2023). Understanding whether abortions adversely affect women's mental health is therefore of central societal importance, not only because these claims influence policy debates on the access to abortion, but also because mental health conditions are among the most common and costly health problems for young adults, with far-reaching consequences for long-term health and economic outcomes (e.g., Bütikofer et al., 2024b; Rehm and Shield, 2019). Yet evidence on the causal effects of abortion on mental health remains limited.

In this paper, we address this gap and provide novel evidence on how undergoing an abortion affects women's mental health. Norway offers an ideal setting for this analysis: abortion is legal and easily accessible, allowing us to study the consequences of abortions as they are actually experienced rather than as a result of policy-driven access constraints or liberalization. We estimate the mental health effects within the population of women who eventually undergo an abortion. This contrasts with most existing causal work, which has focused on other outcomes, such as education, labor market outcomes, fertility, or child health, and has relied on variation in abortion access generated by legal restrictions or reforms (e.g., Abboud, 2024; Clarke and Mühlrad, 2021; Farin et al., 2024; Jones and Pineda-Torres, 2024; Londoño-Vélez and Saravia, 2025; Noghanibehambari et al., 2025). By examining the realized experience of abortion in a context with broad access, we provide evidence on a different and policy-relevant margin: the effect of abortion *per se*, rather than the effect of being granted or denied access. In industrialized countries where abortion is largely legal, understanding its mental health consequences within a legal-access framework is particularly relevant for designing policies that effectively support women during this period.

Our analysis draws on rich Norwegian register data containing precise information on

abortions and their timing, mental health diagnoses, socio-economic characteristics, partner dynamics, and fertility histories. We estimate the effects of abortion using a stacked difference-in-differences (DiD) design. Specifically, we estimate the effects of abortion separately by age at abortion, using age-specific control groups comprising not-yet-treated women who undergo the abortion at slightly older, comparable ages (Cengiz et al., 2019; Melentyeva and Riedel, 2023). This approach accounts for heterogeneity in mental health trajectories across women who have abortions at different ages. In addition, the motivations for abortion are likely to differ across the life cycle, reflecting age-specific differences in partnership stability, career stage, parity, health risks, and fertility expectations. Importantly, by estimating effects within the population of women who eventually undergo an abortion, this design avoids relying on women without abortions as a control group – a comparison that is problematic given the strong and endogenous selection into abortion (see Section 3). Moreover, this design circumvents the methodological challenges of Kleven et al. (2019)'s standard approach to estimate child penalties associated with two-way fixed effects (TWFE) models with roll-out and heterogeneous treatment effects (De Chaisemartin and d'Haultfoeuille, 2023). We estimate the effects separately for women who undergo an abortion before gestation week 12, procedures that are easily accessible and free for all residents in Norway, and for women who undergo an abortion after week 12, which require approval by a medical committee. Abortions performed before week 12 are the main focus of our study as they are more likely to reflect unwanted pregnancies, whereas abortions after week 12 predominantly involve wanted pregnancies and are performed primarily for fetal or maternal medical reasons.

Our results show that abortions performed before gestation week 12 lead to a short-lived increase in mental health problems, followed by a return to baseline within one year. To account for important differences in life circumstances and socio-economic characteristics, we then distinguish between women who had at least one child before the abortion and those who had not. Among women without children, we find sustained improvements in mental health beginning two years after the procedure, while women with children revert to pre-abortion levels. We identify two mechanisms that help explain these patterns. First, separations rise around the time of the abortion, especially among childless women who subsequently give birth, suggesting that some women may exit dysfunctional relationships, potentially due to disagreements about fertility. Second, childbirth after an abortion is common among women without prior children, and a mediation analysis indicates that subsequent childbirth accounts for a substantial share of their mental health improvements (Ahammer et al., 2023; Barschkett and Bosque-Mercader, 2024). Consistent with the interpretation that women's mental health responses reflect not only the abortion itself but likely also the broader experi-

ence of an unwanted pregnancy and the role of partner dynamics in shaping these responses, we find qualitatively similar effects on partners' mental health.

Taken together, we find no evidence of persistent mental health deterioration in the four years following the abortion, but the short-term spike highlights the importance of providing timely support to women during this period. Beyond the differences between women with and without children, we find no evidence of heterogeneous mental health responses to abortion across socio-economic groups, suggesting that interventions to support women's mental health around abortions should be broadly targeted rather than tailored to specific subgroups. Finally, extending the analysis using a matching strategy that compares women who undergo an abortion to observationally similar women without an abortion allows us to assess the effects relative to the broader population. These results reinforce our main conclusion: abortion does not lead to persistently adverse mental health outcomes.

Our study makes two main contributions. First, we add to the literature on how fertility-related events affect women's (mental) health outcomes. Prior work has primarily examined the consequences of childbirth for women's mental health and labor market outcomes (e.g., Ahammer et al., 2023; Andresen and Nix, 2022; Barschkett and Bosque-Mercader, 2024; Kleven et al., 2019), or the effects of involuntary pregnancy loss or childlessness (e.g., Bíró et al., 2019; Bütikofer et al., 2024a; Martinenghi and Naghsh-Nejad, 2025). We contribute by providing evidence on a distinct and understudied margin: the mental health effects of voluntary pregnancy termination. Related work on access to contraception has largely focused on labor market outcomes rather than mental health (e.g., Ananat and Hungerman, 2012; Bailey, 2006, 2013; Goldin and Katz, 2002; Gallen et al., 2023), with the notable exception of Costa-Ramón et al. (2025), who study the impact of oral contraceptive use on adolescents' mental health.

Second, we are the first to provide causal evidence on the relationship between undergoing an abortion and women's mental health. Prior research has primarily examined the effects of abortion reforms, that is, how gaining or being denied access to abortion affects fertility, labor market and educational outcomes, women's health, and child outcomes (e.g., Abboud, 2024; Farin et al., 2024; González et al., 2025; Jones and Pineda-Torres, 2024; Londoño-Vélez and Saravia, 2025; Clarke and Mühlrad, 2021; Noghanibehambari et al., 2025). To our knowledge, only one study has touched on mental health, showing that the legalization of abortion in Spain improved women's later-life life satisfaction (González et al., 2025).[1] We advance this literature by estimating the mental health effects of the *abortion itself*, rather

[1]There is also correlational evidence in the medical literature, which generally finds null or modestly positive associations between abortion and mental health (e.g., Steinberg et al., 2014; Thornburg et al., 2024; Zandberg et al., 2023).

than the effects of policy-induced access, and by identifying the mechanisms underlying these effects through the study of partner dynamics and subsequent childbirth.

2 Institutional Background

2.1 Abortion in Norway

All women residing in Norway have the right to obtain an abortion, either through self-determination or following approval by an abortion committee. Abortions are free of charge for Norwegian residents. Non-resident women who are members of the National Insurance Scheme or covered by a reciprocity agreement with another country may also have the costs covered.

Women have the right to decide for themselves whether to terminate a pregnancy within the first 12 weeks (11 weeks and 6 days) of a pregnancy. An abortion after 12 weeks requires the woman to submit an application to an abortion committee requesting approval for the procedure. The duration of the pregnancy is calculated from the first day of the last menstrual period, but is determined more precisely using ultrasound measurement. After the end of the 18th week of pregnancy (17 weeks and 6 days), a pregnancy cannot be terminated unless there are particularly compelling reasons.[2] Applications for abortion after week 12 are reviewed by an abortion committee. The committee is required to give substantial weight to women's own assessment of her situation. Healthy fetuses are assumed to be viable after the end of the 22nd week of pregnancy (21 weeks and 6 days), and abortion is therefore not permitted. However, if there is a serious fetal condition that renders the fetus non-viable, an abortion may still be granted at any point during the pregnancy (Helsedirektoratet, 2019, 2023).

Although, most hospital-based procedures in Norway require a referral from a woman's assigned general practitioner (GP), abortions, both before and after week 12, can be accessed directly by contacting a hospital or through a GP, a gynecologist, or other physician.

Abortions in Norway are either medical or surgical, with more than 90% performed medically before week 12 (Helsedirektoratet, 2019). After an initial hospital examination and administration of the first medication, most procedures are completed at home, though women may opt to remain in hospital if needed. Abortions after week 12 are performed in hospitals using medication, while surgical procedures are reserved for medical necessity (Helsedirektoratet, 2023).

[2]Effective 1 July 2025, Norway increased the gestational limit for self-determined abortion from 12 to 18 weeks; this legislative change does not affect our analysis, which uses data up to 2019 (Helsedirektoratet, 2025).

2.2 The Norwegian Health Care System

All Norwegian citizens and permanent residents have universal access to publicly financed health services in Norway. The first level of care, primary care, is organized at the municipal level and includes GPs, emergency rooms (ERs), infant and child health care centers, school health services, and elderly care. Specialist care is organized across four health regions and includes somatic specialist care, psychiatric health services, and private referral specialists.

All Norwegian citizens are entitled to a specific GP who is responsible for providing primary health care. The GP's tasks include diagnosing, certifying sick leave, prescribing treatment, and referring patients to specialist care when needed. Specialist care is mainly provided through public hospitals, although some private specialists operate under contract (Helfo, 2023).

3 Data

3.1 Administrative Data

We use multiple Norwegian administrative registers, including health registers, the Central Population Register, the tax and earnings register, and the education register. These registers cover the universe of Norwegian citizens from 1967 to 2020 and contain information on residence, immigration status, earnings, and education. A unique personal identifier allows us to track individuals over time and merge them with their partners if they are married or living together. The health registers include data on visits and diagnoses from both GPs and specialist services provided in hospitals. We do not have access to prescription registries and therefore lack information on women's contraceptive use.

We specifically use two administrative health registers. Our primary data source, from which we identify abortions, is the Norwegian Patient Registry (NPR). The NPR contains information on all individuals who receive specialized healthcare in hospitals, outpatient clinics, or from contracted specialists and covers the period from 2009 to 2019. Specialists report all consultations using the International Classification of Diseases (ICD-10). Abortions are recorded under ICD-10 code "O04 – Legal Abortion". From the NPR, we observe the month and year in which the abortion is performed.

The NPR does not provide information on the gestational week in which the abortion was performed. We therefore use the Medical Birth Registry (MBR) as a complementary data source, which records all births, including terminated pregnancies after week 12. Abortions observed in both the MBR and the NPR are classified as occurring after week 12, whereas abortions recorded only in the NPR are classified as occurring before week 12.

All visits to GPs and ERs are recorded in the Control and Payment of Health Refunds database (KUHR), which is available from 2006 to 2021. To receive payments, GPs and ERs report all consultations using the International Classification of Primary Care (ICPC-2) codes. These codes capture the GP's assessment of the patient's health problems and the type of care provided. Using KUHR, we construct measures of both the probability of a visit and the number of visits to GPs and ERs. We focus on consultations coded with ICPC-2 codes starting with "P", which denote psychological symptoms and disorders. Reimbursement for both specialist and GP services follows a fee-for-service model.

The tax registry includes labor earnings, taxable sickness benefits, and parental leave payments from 1967 to 2017. Earnings are not top-coded. Educational attainment is obtained from the educational registry database, which provides information on individuals' years of education from 1967 to 2018.

We restrict our samples to individuals who undergo an abortion between 2009 and 2019 and who are between 20 and 40 years old at the time of the procedure. This implies that women in our sample are born between 1969 and 1999.

3.2 Descriptive Statistics

Table 1 presents individual-level summary statistics for our outcomes and a set of socio-economic characteristics for three groups: (i) women who do not undergo an abortion during the observation period but belong to the same birth cohorts and age groups as the abortion samples (column 1), (ii) women who undergo an abortion before week 12 (column 2), (iii) women who undergo an abortion after week 12 (column 3). Our sample includes 101,114 women who undergo an abortion before week 12, 2,897 women who undergo an abortion after week 12, and 1,129,732 women without an abortion. This implies that approximately one in twelve women in our sample has an abortion before week 12 during the observation period. For the abortion samples, means are computed based on observations two years prior to the abortion; for the non-abortion sample, means are calculated as averages across all observations. Women who undergo an abortion, especially those with a procedure before week 12, differ markedly from women who never have an abortion. Women with an abortion before week 12 are younger, less likely to be immigrants, have lower educational attainment, are less likely to be childless, have lower earnings, and are less likely to cohabit with a partner compared to women without an abortion. Abortions after week 12 are less common and generally related to medical complications of the mother or fetus. Women who obtain an abortion after week 12 more closely resemble the general population, but still differ on several dimensions. In general, women with and without an abortion differ substantially in their socio-economic characteristics, making them not directly comparable.

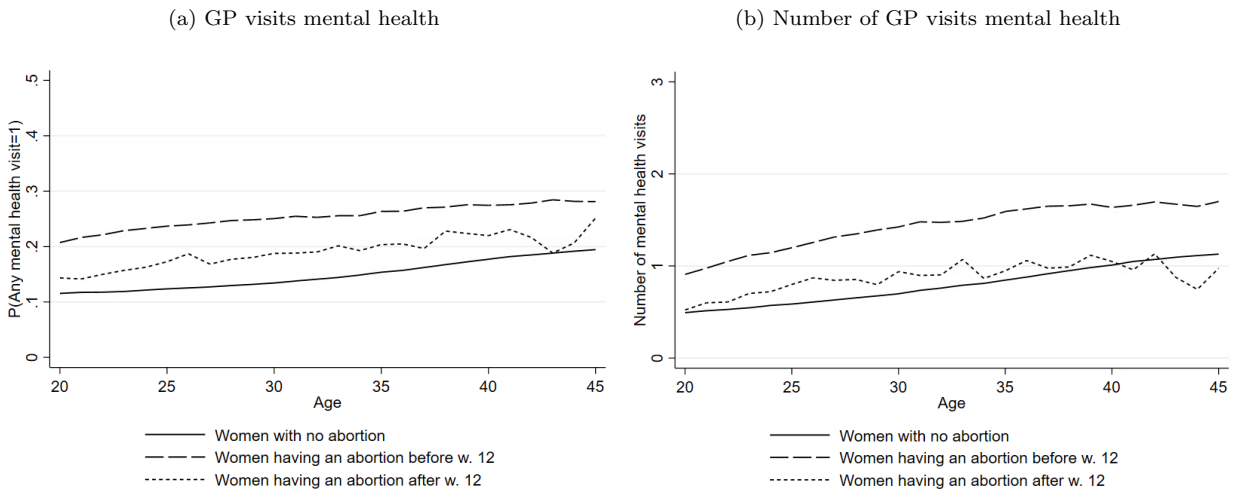
A similar pattern emerges when comparing mental health outcomes (Table 1, bottom panel; Figure 1). Two years prior to the procedure, women who undergo an abortion exhibit worse mental health than women without an abortion, both in terms of the probability of a mental health diagnosis and the number of GP visits for mental health reasons. Figure 1 shows that this gap persists across age groups. Mental health problems increase with age for all women, but the levels are consistently higher and the trend steeper among women with an abortion. This indicates that women with an abortion follow systematically different mental health trajectories than women without one, complicating direct comparisons to the general population. For this reason, in our main analysis we restrict attention to women who have an abortion and exploit variation in the timing of the procedure to estimate the effect of an abortion on mental health.

Table 1: Descriptive statistics for women with and without an abortion, measured two years prior to the procedure

	No abortion (1)	Abortion before w.12 (2)	Abortion after w.12 (3)	Difference (1) and (2) (4)	Difference (1) and (3) (5)
			Demographics		
Birth year	1983.49	1985.27	1981.95	-1.78***	1.55***
	(8.93)	(7.24)	(6.42)	[-61.70]	[9.31]
Age	29.00	26.05	30.29	2.94***	-1.30***
	(8.93)	(6.93)	(5.91)	[102.18]	[-7.80]
Immigrant	0.32	0.26	0.23	0.07***	0.09***
	(0.47)	(0.44)	(0.42)	[43.73]	[10.76]
University	0.54	0.26	0.57	0.28***	-0.03***
	(0.47)	(0.41)	(0.48)	[182.83]	[-3.76]
Number of children	0.55	0.57	0.65	-0.02***	-0.09***
	(0.95)	(0.97)	(0.89)	[-5.31]	[-5.36]
Childless	0.76	0.68	0.56	0.08***	0.20***
	(0.36)	(0.47)	(0.50)	[63.11]	[29.67]
Earnings	268750.84	242512.30	370137.08	26238.54***	-101386.24***
	(174950.55)	(168708.44)	(199034.17)	[45.82]	[-31.14]
Married/cohabiting	0.23	0.16	0.24	0.07***	-0.01
	(0.35)	(0.36)	(0.43)	[65.25]	[-1.63]
			Outcome		
P(Any mental health visit=1)	0.13	0.22	0.17	-0.08***	-0.04***
	(0.21)	(0.41)	(0.38)	[-110.90]	[-10.64]
Number of mental health visits	0.69	1.09	0.80	-0.40***	-0.11**
	(2.21)	(3.89)	(3.13)	[-51.20]	[-2.60]
Observations	1,129,732	101,114	2,897		

Note: *p<0.1; **p<0.05; ***p<0.01. Summary statistics of certain characteristics and outcome variables of women without an abortion (column 1), with an abortion before gestation week 12 (column 2) and after gestation week 12 (column 3). The sample is based on our estimation sample, including women born between 1969 and 1999. Women with an abortion undergo the abortion between 2009–2019 aged 20–40 years. Displayed are means computed two years before the procedure. Standard errors are shown in parenthesis. Birth year = birth year, Age = age in years, immigrant = 1 if not born in Norway, university = 1 if at least 16 years of education, number of children = number of children, childless = 1 if no child, earnings = annual earnings in NOK, married/cohabiting = 1 if married or cohabiting, P(mental health disorder=1) = 1 if at least one GP visit with a mental health diagnosis, number of mental health visits = number of GP visits per year with a mental health diagnosis. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, Earnings and Tax Registry, Education Registry, own calculations.

Figure 1: Mental health trend by age: Women with and without an abortion



Note: Share of women with mental health related GP visits (a) and average number of mental health-related GP visits (b) for women without an abortion, with an abortion before gestation week 12 and after gestation week 12. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

4 Empirical Strategy

As outlined above, we focus on estimating the effect of abortion on mental health within the sample of women who undergo an abortion. Specifically, we exploit variation in age at abortion within a *stacked* difference-in-differences framework to circumvent problems associated with conventional event-study designs under staggered treatment timing (see, e.g., De Chaisemartin and d'Haultfoeuille, 2023; Cengiz et al., 2019). In this approach, not-yet-treated women serve as the control group. In our setting, however, this strategy would implicitly assume that women who have an abortion in their early twenties are comparable to women who have an abortion in their thirties. This assumption is unlikely to hold, as women undergoing abortions at older ages typically differ in their career paths, socioeconomic characteristics, family and health trajectories. Moreover, abortion decisions are shaped by age-specific constraints and considerations –such as partnership stability, fertility intentions, and health risks– which further undermine the comparability of women across age-at-abortion cohorts. Younger women, in turn, tend to have lower educational attainment, lower earnings, and different medical backgrounds. These differences translate into systematically different mental health trajectories across age-at-abortion groups, rendering older women unsuitable control units for younger women.

To account for age at abortion and to construct control groups of women with comparable abortion ages, we adapt the stacked DiD approach proposed by Melentyeva and Riedel

(2023). Specifically, for each age-at-abortion cohort s, we construct a sub-panel that includes women who undergo an abortion at age a (the treated group) and women who undergo an abortion up to three years later (the control group).[3] Each sub-panel therefore comprises women aged $[a, a+4]$. We focus on abortion cohorts aged 20 to 40 and include four pre- and four post-abortion years for each cohort.

We then estimate the following DiD model using a TWFE regression across each sub-panel:

$$y_{ias} = \sum_{\substack{l=-4 \\ l\neq -2}}^{4} \beta_l^s \times \mathbf{I}[a - s = l] \times \mathbf{I}[a_i^0 = s] + \sum_{\substack{l=-4 \\ l\neq -2}}^{4} \alpha_l^s \times \mathbf{I}[a - s = l] + \gamma_a + \lambda_i \times s + \varepsilon_{ias} \quad (1)$$

where y_{ias} denotes the outcome for women i at age a belonging to the age-at-abortion cohort $s \in [20, 40]$. The term $\mathbf{I}[a - s = l]$ is an indicator for years relative to the age-at-abortion cohort, and $\mathbf{I}[a_i^0 = s]$ identifies treated observations within each sub-panel –namely, women whose abortion occurs at age $a_i^0 = s$. This allows treatment status to vary across sub-panels: a woman may serve as a control in some sub-panels and as treated in the sub-panel corresponding to her age-at-abortion cohort. The coefficients of interest, β_l^s, capture the effect of abortion on the outcome l years relative to the abortion event. $l = -2$ serves as a reference period to account for potential anticipation effects in the pre-abortion period. The specification further includes age, γ_a and individual $\times$ sub-panel, $\lambda_i \times s$, fixed effects, with standard errors clustered at the individual $\times$ sub-panel level.

We stack these TWFE regressions for all sub-panels across age-at-abortion cohorts and employ the corrective sample weights developed by Wing et al. (2024) in order to correct for the bias derived from weighting treatment and control trends differently across sub-panels in conventional stacked DiD regressions. Finally, we report the stacked coefficients as percentages of the pre-abortion outcome averages for treated women.

The primary identifying assumption of the stacked DiD approach is that, absent an abortion, outcomes for treated and control women would follow parallel trends. We assess the plausibility of this assumption by showing that pre-abortion estimates ($l < -2$) of the effects on mental health are close to zero (Figure 2). Additionally, Figure A.1 demonstrates that, within sub-panels[4], treatment and control groups follow parallel pre-abortion trends.

[3]Women exit the control group once they undergo an abortion. By restricting control women to their pre-abortion observations, we ensure that their outcomes are not influenced by the mental health consequences of abortion.

[4]For brevity, we group two age-at-abortion cohorts together.

Lastly, to verify that our estimates do not just reflect age or time trends, we conduct placebo tests by examining an unaffected outcome, namely GP visits for asthma diagnoses (Figure A.2, panel (a)), and by randomizing the age at abortion (Figure A.2, panel (b)).

5 Results

In this section, we present and discuss our results on the effect of an abortion on women's mental health. We begin with our main results on women who undergo an abortion before week 12 using the stacked DiD approach.[5] Finally, despite the substantial differences between women with and without an abortion (see Table 1), we broaden the analysis by comparing the mental health effects of an abortion to those of comparable women who do not have an abortion through a matching strategy. The mental health outcome is measured as a binary indicator that equals 1 if a woman visited her GP and received at least one mental health diagnosis within a given year, and 0 otherwise.

5.1 Main Results

Figure 2 plots weighted averages across age-at-abortion cohorts and shows the effect of an abortion before week 12 on women's mental health relative to their average outcomes two years before the procedure. Results are presented for the full sample (left column), women who already have at least one child at the time of abortion (middle column), and women without a child at the time of abortion (right column). We split the sample because socio-economic characteristics differ substantially between these groups (Table A.1). Women with a child are older, more educated, have higher earnings, and are more likely to cohabit with a partner. Mental health and separation outcomes are shown relative to the two-year pre-abortion average, while the probability of having a child is shown in absolute terms.

Panel (a) suggests that an abortion leads to a short-term increase in mental health problems (about 13%), which reverts to pre-abortion levels within one year. From two years after the abortion onward, women experience improvements in mental health. Panels (b) and (c) reveal that these improvements are driven entirely by women without children. For women with children, mental health returns to its pre-abortion level from two years onward.[6] Intensive margin results (number of mental health visits) depict a similar pattern

[5] We also report corresponding results for women undergoing an abortion after week 12 in the Appendix (Figure A.3). These results show a temporary spike in mental health problems around the time of the abortion, with mental health returning quickly to pre-abortion levels.

[6] Note that the effect sizes may appear relatively large because baseline levels of mental health problems are low, making moderate absolute changes translate into sizable relative changes. Moreover, these estimates capture the actual treatment effect of an abortion rather than an intention-to-treat effect, which also

as the likelihood of mental health visits (Figure A.4, panel (a)). Examining the two most common mental health conditions –anxiety and depression– reveals that the overall effect is primarily driven by depression, while anxiety remains largely unaffected (Figure A.4, panels (b) and (c)).

Our findings raise the question of what drives the post-abortion improvements among women without children. We consider two mechanisms: (i) changes in family dynamics (specifically, separations) and (ii) subsequent childbirth. To examine the first mechanism, we estimate the effect of an abortion on the probability of separating from a partner.[7] Panel (d) shows that separations increase around the time of the abortion and return to pre-abortion levels about three years later. The magnitude of this increase is similar for women with (panel (e)) and without children (panel (f)), although the effect is more persistent for women with a child. One interpretation is that women, especially those without children, may leave dysfunctional relationships, contributing to improved mental health. For women with children, separation may raise the burden of child-rearing as a single parent, which could explain the absence of mental health improvements (e.g., Dasgupta et al., 2025).

To test the second proposed mechanism, we estimate the effect of an abortion on the likelihood of having a child.[8] In the full sample (panel (g)), the probability of having a child is lower than pre-abortion levels in all post-periods. However, splitting by women with and without children reveals starkly different patterns (panels (h) and (i)): for women with children, the probability of another birth is consistently lower than before the abortion, whereas for women without children, the likelihood of giving birth increases over time. Childbirth may thus contribute to the mental health improvements observed among women without children, consistent with evidence that childbirth has short-term positive mental health effects (Ahammer et al., 2023; Barschkett and Bosque-Mercader, 2024).

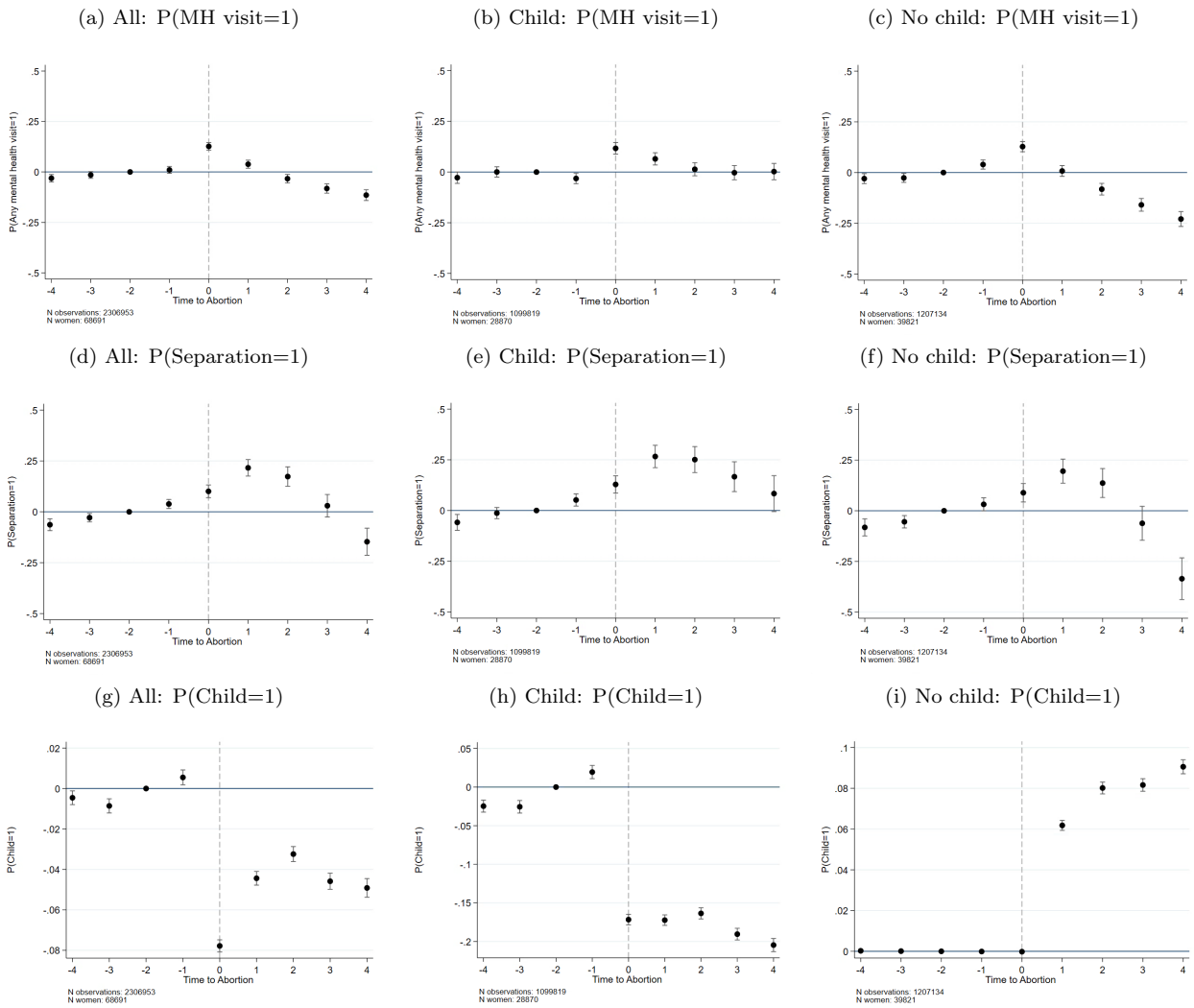
Next, to assess whether the two mechanisms interact –specifically, whether women who have a child post-abortion differ in their separation behavior from those who do not– we split women into three groups: (i) women without a child pre-abortion who have a child post-abortion, (ii) women with a child both pre- and post-abortion, and (iii) women without a child pre- and post-abortion. Figure A.5 shows that the separation effects are driven by women without children prior to the abortion, particularly those who subsequently have a child. Although subsequent fertility is endogenous, one interpretation is that disagreements over fertility contribute to separations, after which some women have a child with a new

contributes to the magnitude.

[7] Partners can be identified only if they are registered as cohabiting or married.

[8] A limitation of the stacked approach is that, by construction, the control group eventually undergoes an abortion, which may mechanically affect their subsequent probability of childbirth. This issue does not arise in our alternative matching approach, where the results confirm our main findings (see Section 5.2).

Figure 2: Effects of abortion



Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1). Only abortions performed before gestation week 12 are included. The graphs plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average outcomes in year $l = -2$. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels, MH = Mental health. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

partner. In contrast, women who already have a child tend to remain with their partners, especially if they have another child after the abortion. These women may be in more stable relationships, and the abortion may reflect fertility timing rather than a desire to avoid childbirth.

Finally, we conduct a mediation analysis for mental health, by including separations and subsequent childbirth as control variables in equation 1, estimated separately for women with and without a child pre-abortion. In our main analysis (Figure 2, panel (c)), mental health

improves by 22.9% four years after the abortion. Controlling for separations leaves this estimate essentially unchanged, whereas controlling for number of children reduces the effect to 15%. Although these controls are endogenous and the estimates should be interpreted with caution, the analysis suggests that a substantial share, around two-thirds, of the mental health improvements observed among women without children pre-abortion can be attributed to subsequent childbirth.[9]

Given pronounced shifts in partner dynamics around abortion, we examine whether partners' mental health is also affected. Mental health diagnoses increase by 2.7 percentage points for women and 2.5 percentage points for men (Figure A.4). Because baseline prevalence is lower among men (12% versus 22% for women), relative increases appear larger for men, though absolute changes are similar.[10] Partners with children exhibit slightly elevated mental health problems for several years, whereas those without children show modest improvements. Overall, abortion-related mental health responses extend to partners but remain comparable in absolute magnitude.

5.2 Abortion Effects Compared to Women Without an Abortion

In this section, we broaden our analysis to examine the mental health effects of an abortion not only within the population of women who have an abortion but also relative to comparable women who do not. As shown in Table 1 and Figure 1, women with and without an abortion differ substantially in their socio-economic characteristics and in their mental health levels (and trajectories). To make a meaningful comparison possible, we combine a matching approach with an event study framework, following common practice in related settings such as the job-displacement literature and research on relationship dynamics (e.g., Adams et al., 2024; Illing et al., 2024; Schmieder et al., 2023).

A key question is the choice of an appropriate control group. In our main matching approach, we use women who are neither pregnant nor give birth at that time as the control group. In additional analyses, we alternatively use pregnant women who do not have an abortion (i.e., women who give birth) as controls.

Specifically, for our main approach, we identify women without an abortion who are observationally similar to women who undergo an abortion based on key economic and demographic characteristics measured prior to the procedure. We implement a two-step matching procedure. First, we exactly match on age-at-abortion and on women's binned number of

[9] In Figure A.6, we also examine whether the effects differ by socio-economic characteristics or age groups. The patterns are broadly similar across all subgroups.

[10] Mental health problems are more prevalent—or at least more frequently diagnosed—among women than men (e.g., Yang et al., 2024). If men are less likely to seek care, partners' effects may be underestimated.

mental health GP visits in $t-1$, $t-2$, $t-3$ and $t-4$, where visits are grouped into bins of ten (e.g., 1–10 = bin 1, 11–20 = bin 2, etc.).[11] Second, within these exact-match cells, we estimate the propensity to undergo an abortion using immigrant status, education level, marital or cohabiting status, year of birth, being childless or not, residence in one of the four largest Norwegian cities (Oslo, Bergen, Stavanger, or Trondheim) and income quintiles measured in $t-2$. Because women who undergo an abortion exhibit markedly different mental health patterns than women who never do, incorporating pre-abortion mental health trajectories into the matching procedure is essential for constructing a credible counterfactual.[12] For each treated woman we assign a single matched control woman with the closest propensity score (without replacement).[13]

Next, we provide evidence that our matched controls represent a valid control group. First, Appendix Table A.2 shows that treatment and matched control groups are well balanced on observed characteristics. Second, Figure A.8 shows the share of women with a mental health-related GP visit, the share separating from their partner, and the probability of childbirth over time relative to the abortion event for the treatment and matched control groups. Levels and trends prior to the abortion are similar across the two groups, indicating that the matching procedure yields a comparable control group. However, trends begin to diverge in the year preceding the abortion, suggesting emerging differences between treatment and control groups already before the event. Using this matched treatment and control sample, we estimate the following event study specification:

$$y_{itc} = \sum_{\substack{k=-5 \\ k\neq -2}}^{5} \delta_k \times \mathbf{I}[t = c + k] \times Treat_i + \sum_{\substack{k=-5 \\ k\neq -2}}^{5} \gamma_k \times \mathbf{I}[t = c + k] + \alpha_i + X_{it}\beta + \varepsilon_{itc} \tag{2}$$

The main coefficients of interest are δ_k, which capture the differences in outcomes between women who undergo an abortion and their matched controls over event time.[14] We control for year-relative-to-baseline-year (γ_k) and individual (α_i) fixed effects as well as time-varying

[11] Control women are assigned a random "placebo" abortion year, drawn to match the distribution of abortions years (2009–2019) in the treated sample. Pregnant women and women giving birth in the event year are excluded.

[12] As a robustness check, we match on the number of mental health–related GP visits only in $t-2$, $t-3$, and $t-4$. The results are very similar to those from our main specification (Figure A.7).

[13] We have also match each treated woman to her ten nearest neighbors. The results are unchanged and available upon request.

[14] The event-study window is restricted to -4 to $+4$ years due to limited sample sizes outside this range. While endpoints ($k = \pm 5$) are included in the regressions to preserve the sample, only estimates from -4 to $+4$ are shown in the figures. Endpoint coefficients aggregate multiple years and should not be interpreted as dynamic treatment effects.

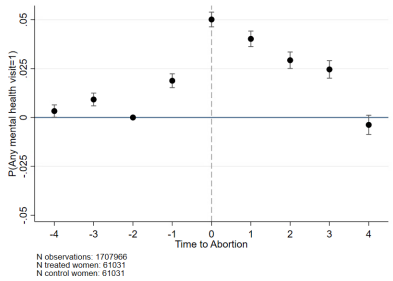
control variables (X_{it}), namely women's age.

Panels (a)–(c) of Figure 3 present the event-study estimates based on Equation 2 for mental health. Overall, these results are consistent with our main findings: women experience a short-lived increase in mental health problems following an abortion, which dissipates within a relatively short period. Specifically, women are 4.8 percentage points more likely to have a mental health-related GP visit in the year of the abortion, compared with their matched controls, corresponding to a 27% increase relative to the control groups mental health level two years before the abortion. The effect then gradually declines and is no longer detectable within four years after the abortion. These patterns are similar for women with and without children. Moreover, the matching approach corroborates our mechanisms analysis: abortions are associated with increased separations (Panels (d)–((f)), and women without prior children are more likely to give birth in the years following the abortion (Panel (i)).

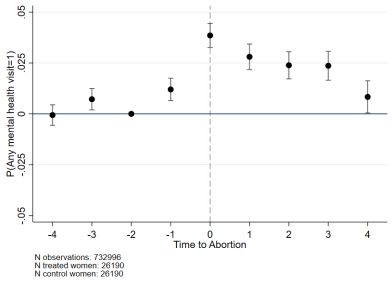
The estimated effects in the matching analysis are larger than those in our main analysis (27% versus 13% in the year of the abortion). This difference likely reflects the fact that, although the matching approach compares women who have an abortion to a broader population, the matched sample remains selective, consisting of women with similar –and relatively poor– pre-abortion mental health trajectories (see Figure 1). Accordingly, the results suggest that among women with worse baseline mental health, the abortion event –likely capturing not only the procedure itself but also the experience of an unwanted pregnancy and other correlated unobserved factors– leads to a transitory increase in mental health problems. Despite remaining endogeneity concerns, reflected in non-zero pre-trends, the matching results reinforce our main conclusion: abortions are associated with only short-lived increases in mental health problems and no persistent adverse effects. This conclusion is further supported by results using pregnant women who give birth in the event year as the control group (Figure A.9).

Figure 3: Matching results: Effects of abortion

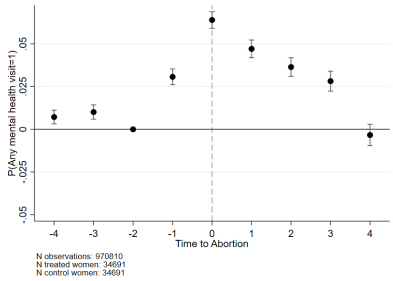
(a) All: P(MH visit=1)



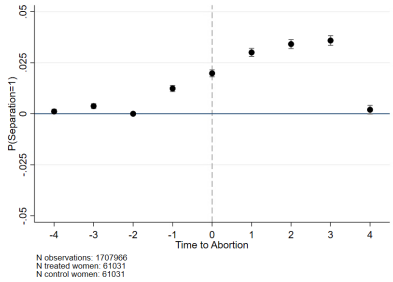
(b) Child: P(MH visit=1)



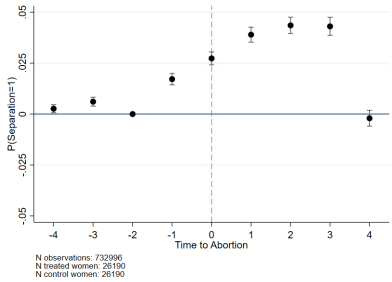
(c) No child: P(MH visit=1)



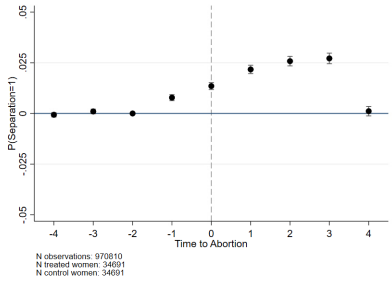
(d) All: P(Separation=1)



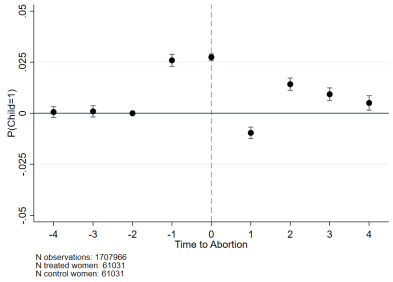
(e) Child: P(Separation=1)



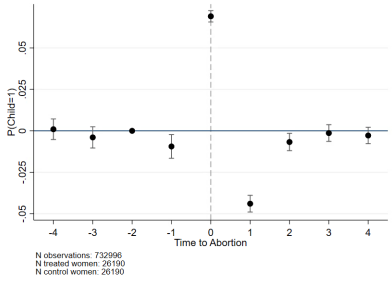
(f) No child: P(Separation=1)



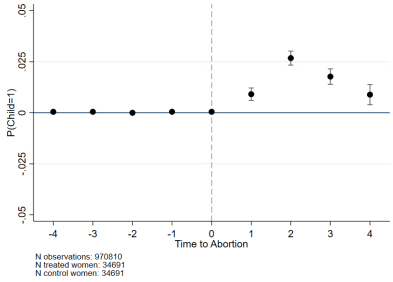
(g) All: P(Child=1)



(h) Child: P(Child=1)



(i) No child: P(Child=1)



Note: Panels (a)–(i) show pre- and post-abortion estimates of the effects of abortion on women's mental health, separations and probability to have a child based on equation (2). Only abortions performed after gestation week 12 are included. The control group includes matched women who are not pregnant in the event year. N treated women = number of treated women in the estimation, N control women = number of control women in the estimation, N observations = number of observations in the estimation, MH = Mental health. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

6 Conclusion

This paper provides new evidence on the short- and medium-run mental health consequences of abortion using high-quality Norwegian administrative data and a research design that exploits variation in abortion timing across age-at-abortion cohorts. By focusing on realized abortions in a context with legal and broadly accessible services, we identify the mental

health effects of abortion *per se* rather than the effects of gaining or losing access due to policy changes (e.g., Abboud, 2024; Clarke and Mühlrad, 2021; Farin et al., 2024; Jones and Pineda-Torres, 2024; Londoño-Vélez and Saravia, 2025; Noghanibehambari et al., 2025). We show that abortions are associated with an acute but temporary increase in the probability of GP visits for mental health reasons. Importantly, we find no evidence of persistent mental health deterioration in the four years following the abortion.

For abortions performed before week 12, mental health not only returns to pre-abortion levels but improves in the medium run among women who were childless at the time of the procedure. A mediation analysis suggests that roughly two-thirds of this improvement operates through subsequent childbirth – consistent with evidence showing the short-term mental health benefits of childbirth (e.g., Ahammer et al., 2023; Barschkett and Bosque-Mercader, 2024). In contrast, women who already have children revert to their pre-abortion mental health levels, with no long-term harm or benefit. Finally, extending the analysis to women who do not have an abortion but who are matched on observable characteristics reinforces our main conclusion: abortion does not lead to persistently adverse mental health outcomes.

These findings carry two central implications. First, they underscore the importance of timely mental health support around the time of abortion. Second, they provide no empirical support for restricting abortion access on the grounds of long-term psychological harm; we find no evidence of such harm, and in some cases, improved mental health trajectories. More broadly, our findings contribute to a growing literature demonstrating that abortion access is not detrimental to women's long-term well-being and that the mental health consequences of abortion depend critically on timing, circumstances, and family context.

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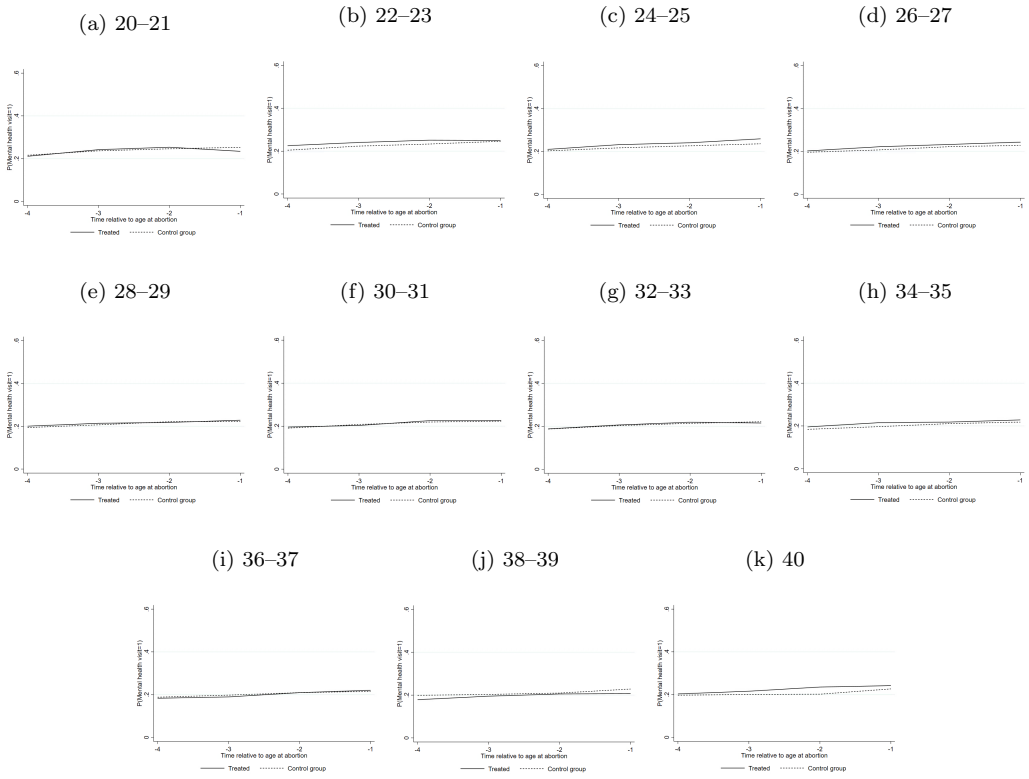
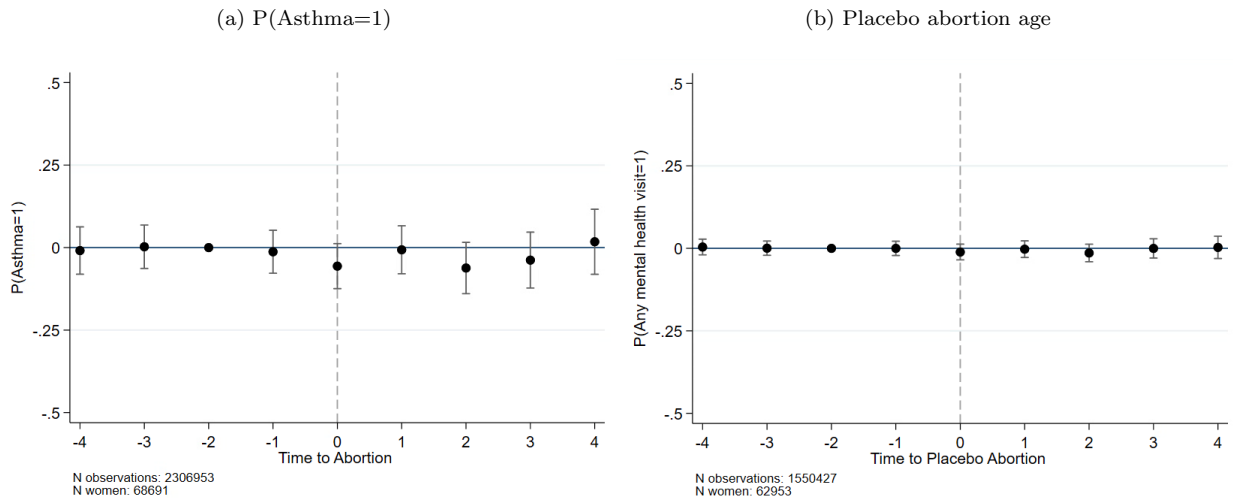
Supplemental Appendices

Figure A.1: Pre-abortion mental health for treatment and control groups by age-at-abortion cohort



Note: Raw pre-means of P(Mental health visit=1) for treatment and control groups for the age-at-abortion cohorts used in estimating equation (1). *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

Figure A.2: Placebo outcome and randomizing age of abortion



Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1). Only abortions performed before gestation week 12 are included. The graph plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average of the outcomes in year $l = -2$. In panel (b) age-at-abortion is randomized in a sample of women without an abortion following the distribution of age-at-abortion in our sample of women with an abortion. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

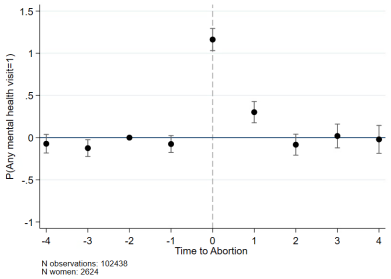
Abortions after week 12

Figure A.3 shows results on on the effect of abortions performed after week 12 on women's mental health, separations and subsequent childbirth. These abortions are predominantly conducted for medical reasons (e.g., severe fetal abnormalities) rather than because the pregnancy is unwanted. We therefore expect larger mental health responses. Figure A.3 panel (a) confirms this expectation: women experience a pronounced increase in mental health problems in the year of the abortion. However, mental health returns to pre-abortion levels from two years after the procedure onward. In contrast to abortions before week 12, women do not experience longer-term mental health improvements, but neither do they show persistent deterioration.

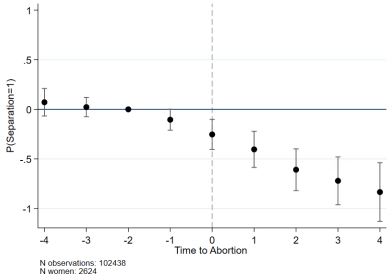
Turning to the two proposed mechanisms –separations and subsequent childbirth (panels (b) and (c))– we find that abortions after week 12 lead to fewer separations. This aligns with the descriptive evidence showing that women with late-term abortions tend to be in more stable relationships; the loss of a child may draw partners closer rather than increase the likelihood of separation. Patterns for subsequent births, however, more closely resemble those observed for abortions before week 12.

Figure A.3: Abortions after week 12

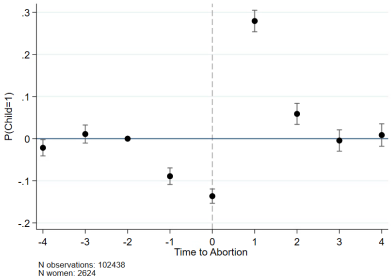
(a) Mental health: All



(b) Separations: All



(c) P(Child =1): All



Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1). Only abortions performed after gestation week 12 are included. The graphs plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average of the outcomes in year $l = -2$. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels, MH = Mental health. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

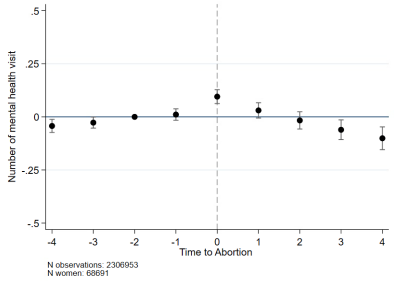
Table A.1: Descriptive statistics for women with and without a child

	Child (1)	No child (2)	Difference (1) and (2) (3)
	Demographics		
Birth year	1981.86	1986.88	-5.02***
	(5.83)	(7.28)	[-108.31]
Age	30.02	24.18	5.84***
	(5.56)	(6.72)	[135.36]
Immigrant	0.25	0.26	-0.01***
	(0.43)	(0.44)	[-4.17]
University	0.33	0.22	0.11***
	(0.46)	(0.38)	[41.15]
Number of children	1.79	0.00	1.79***
	(0.88)	(0.00)	[531.76]
Earnings	305214.51	209226.43	95988.09***
	(177894.45)	(156220.13)	[86.82]
Cohabiting	0.33	0.08	0.25***
	(0.47)	(0.26)	[108.44]
	Outcome		
P(Any mental health visit=1)	0.23	0.21	0.02***
	(0.42)	(0.41)	[5.54]
Number of mental health visits	1.19	1.05	0.14***
	(3.93)	(3.87)	[5.24]
Observations	32069	68596	100665

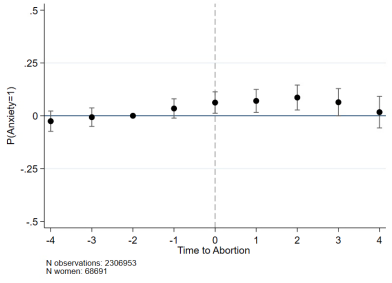
Note: *p<0.1; **p<0.05; ***p<0.01. Summary statistics of certain characteristics and outcome variables of women with and abortion before gestation week 12 with a child (column 1) and without a child (column 2). The sample is based on our estimation sample, including women born between 1969 and 1999 undergoing an abortion between 2009–2019 aged 20–40 years. Displayed are means computed two years before the procedure. Standard errors are shown in parenthesis. Birth year = birth year, Age = age in years, immigrant = 1 if not born in Norway, university = 1 if at least 16 years of education, number of children = number of children, childless = 1 if no child, earnings = annual earnings in NOK, married/cohabiting = 1 if married or cohabiting, P(mental health disorder=1) = 1 if at least one GP visit with a mental health diagnosis, number of mental health visits = number of GP visits per year with a mental health diagnosis. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, Earnings and Tax Registry, and Employment Registry, own calculations.

Figure A.4: Effects of abortion: Additional outcomes

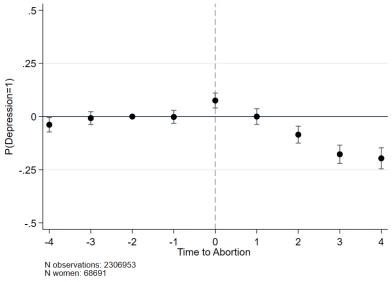
(a) All: NB of MH visits



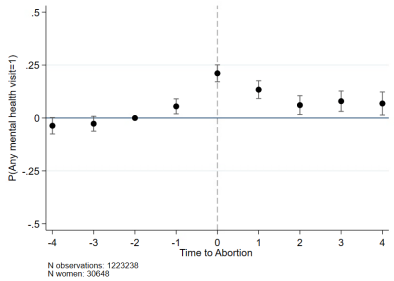
(b) All: P(Anxiety=1)



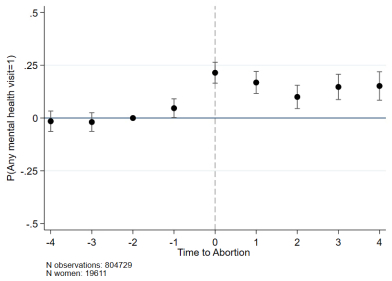
(c) All: P(Depression=1)



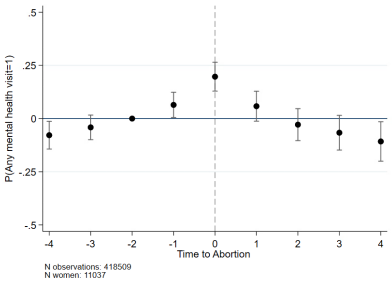
(d) All: Partner's P(MH visit=1)



(e) Child: Partner's P(MH visit=1)



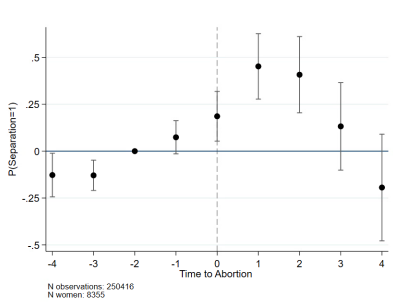
(f) No child: Partner's P(MH visit=1)



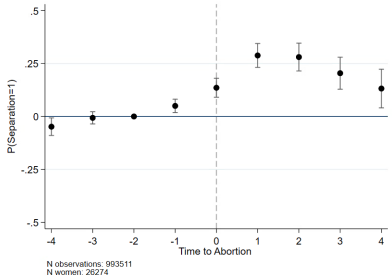
Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1). Only abortions performed before gestation week 12 are included. The graphs plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average of the outcomes in year $l = -2$. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels, MH = Mental health. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

Figure A.5: Separations by children

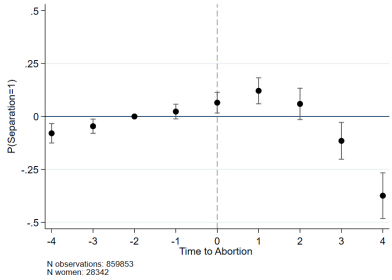
(a) No child pre-abortion, child post-abortion



(b) Child pre- and post-abortion



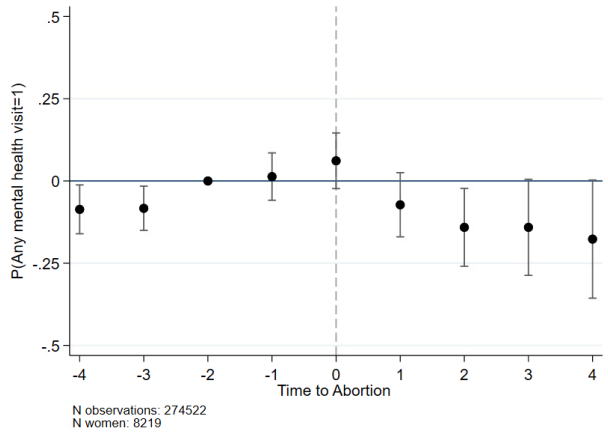
(c) No child pre- and post-abortion



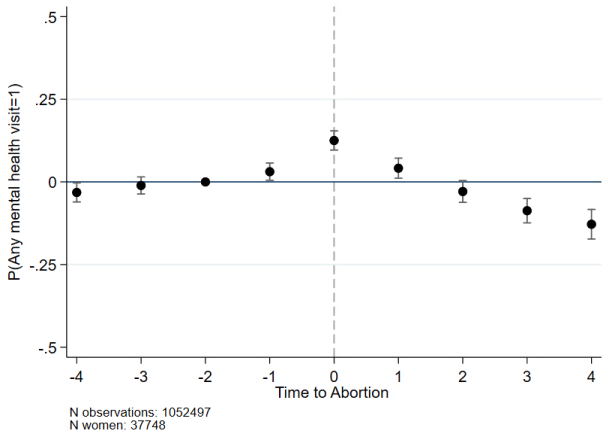
Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1) by number of children pre- and post abortion. Only abortions performed before gestation week 12 are included. The graphs plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average of P(Separation=1) in year $l = -2$. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

Figure A.6: Mental health effects of abortions by age, country of origin, and socio-economic status

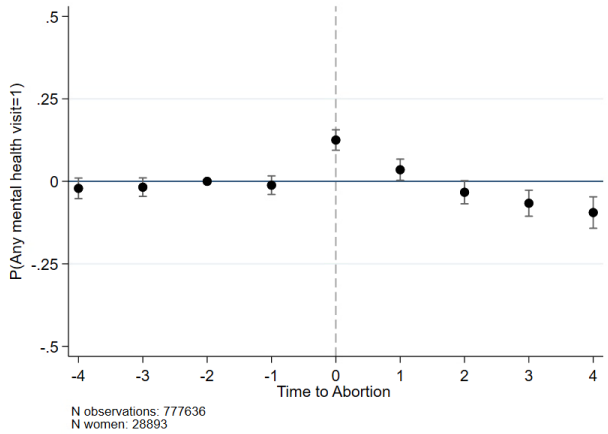
(a) Below age 20



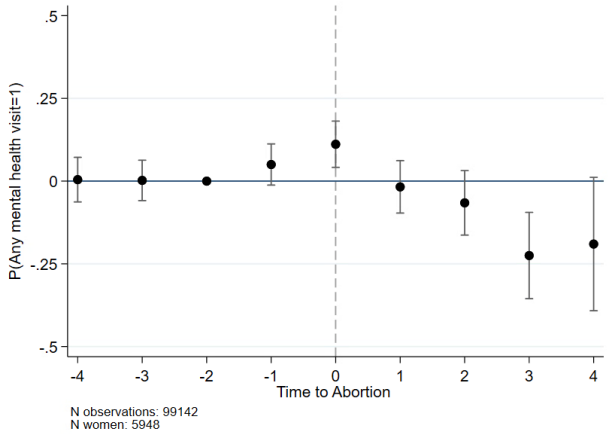
(b) Age 20–29



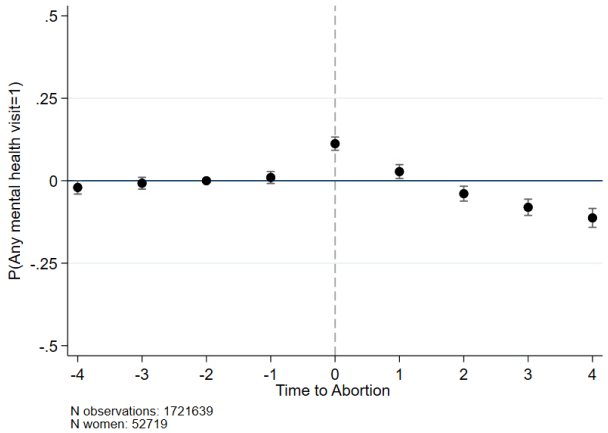
(c) Age 30–39



(d) Above age 40



(e) Scandinavians



(f) Non-scandinavians

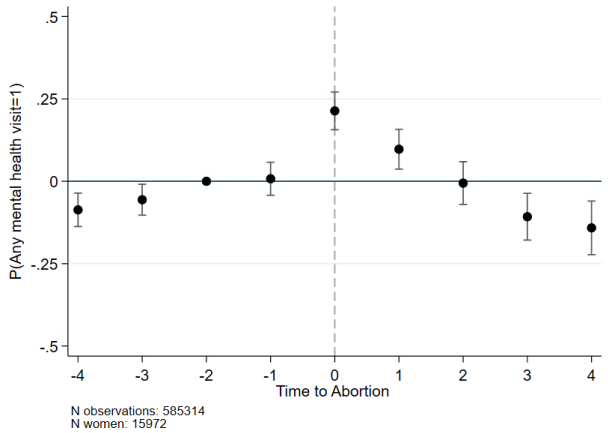
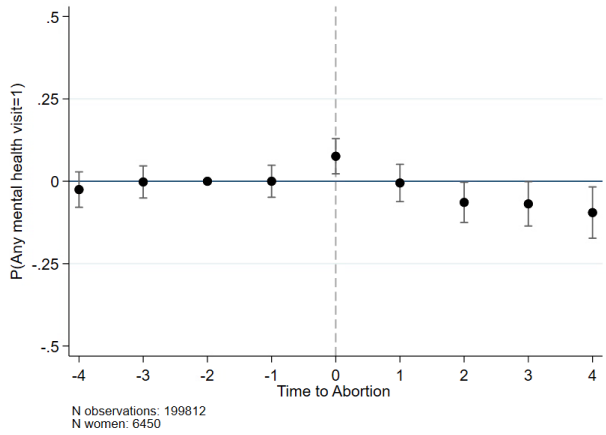
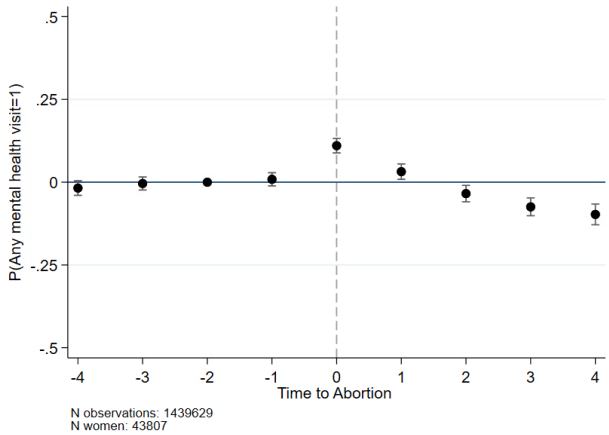


Figure A.6: Mental health effects of abortions by SES status and age (*continued*)

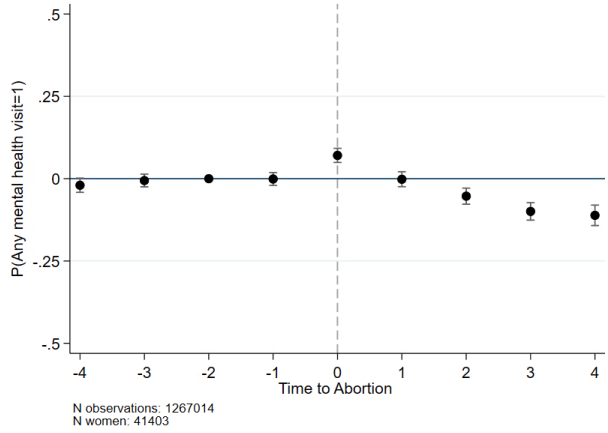
(g) Low SES (by parent's income)



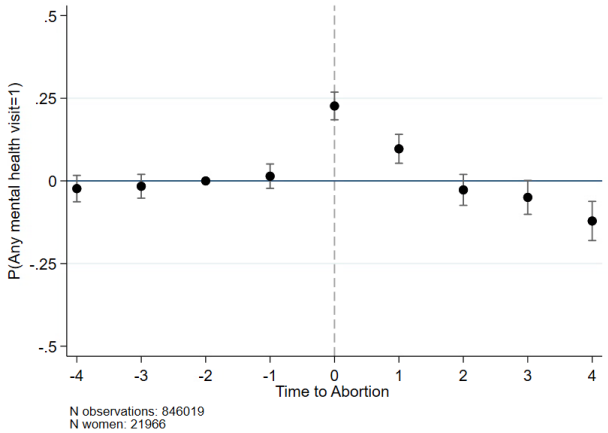
(h) High SES (by parent's income)



(i) No university education pre-abortion



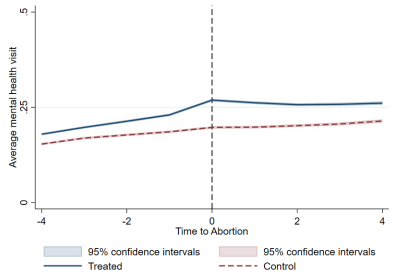
(j) University education pre-abortion



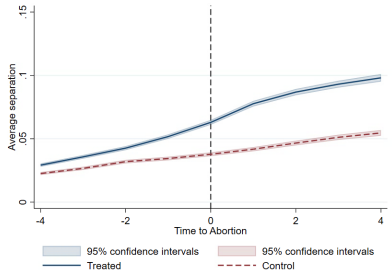
Note: Pre- and post-abortion estimates of the effects of abortion on women's outcomes based on equation (1) by age and SES characteristics. Only abortions performed after gestation week 12 are included. The graphs plot the weighted average of the age-at-abortion cohort-specific estimates relative to the pre-abortion average of P(Mental health visit=1) in year $l = -2$. Panel (a): women undergoing the abortion before age 20, panel (b): women undergoing the abortion aged 20–29, panel (c): women undergoing the abortion aged 30–39, panel (d): women undergoing the abortion aged 40 or older, panel (e): women from Scandinavia, panel (f): women living in Norway from outside Scandinavia, panel (g): women whose parents earn below median income, panel (h): women whose parents earn above median income, panel (i): women without university education per-abortion, panel (j): women with university education pre-abortion. N women = number of women in the estimation, N observations = number of observations in the estimation, i.e., women appear multiple times in different sub-panels. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

Figure A.7: Matching results excluding $MH_{t=-1}$ in matching

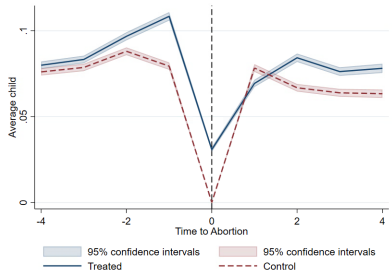
(a) All: P(MH visit=1) - trends



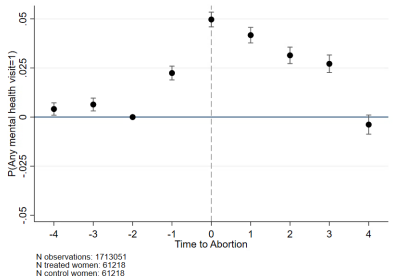
(b) All: P(Separation=1) - trends



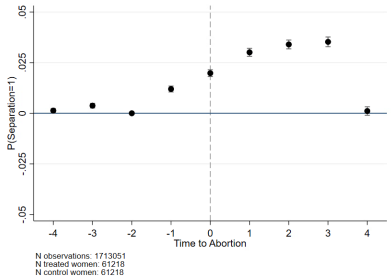
(c) All: P(Child=1) - trends



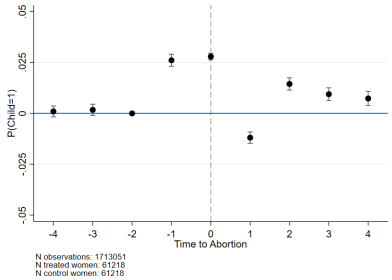
(d) All: P(MH visit=1) - ES



(e) All: P(Separation=1) - ES



(f) All: P(Child=1) - ES



Note: Panels (a)–(c) show the share of women with a mental health-related GP visit for treatment (blue line) and matched control group (red line). Panels (d)–(f) show pre- and post-abortion estimates of the effects of abortion on women's mental health based on equation (2). Only abortions performed after gestation week 12 are included. N treated women = number of treated women in the estimation, N control women = number of control women in the estimation, N observations = number of observations in the estimation, MH = Mental health, ES = Event Study. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

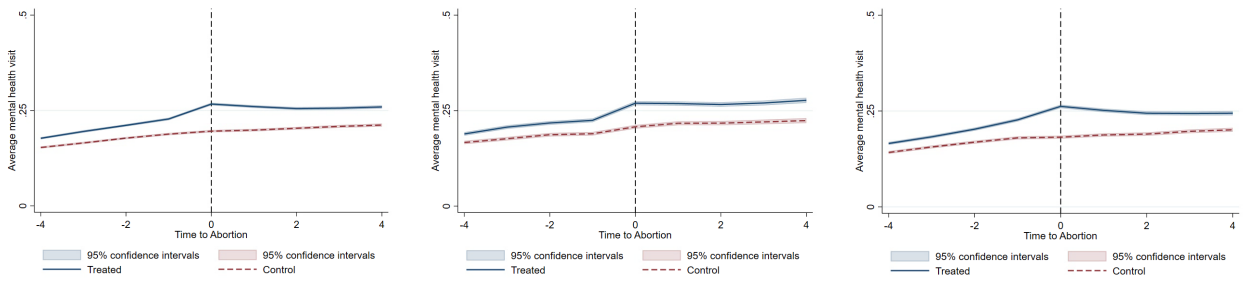
Table A.2: Balance table, measured two years prior to the procedure

	Matched control (1)	Treatment (2)	Difference (1) and (2) (3)
	Demographics		
Birth year	1985.40	1985.34	0.06
	(6.51)	(6.53)	[1.60]
Age	26.95	26.95	0.00
	(5.85)	(5.85)	[0.00]
Immigrant	0.27	0.27	-0.00
	(0.44)	(0.45)	[-1.89]
University	0.46	0.42	0.04***
	(0.50)	(0.49)	[14.07]
Number of children	0.61	0.64	-0.03***
	(0.96)	(0.99)	[-5.15]
Earnings	260532.69	259508.99	1023.70
	(169915.50)	(170180.42)	[1.05]
Married/cohabiting	0.17	0.17	-0.03
	(0.37)	(0.38)	[-0.32]
	Outcome		
P(Any mental health visit=1)	0.18	0.21	-0.03***
	(0.38)	(0.41)	[-14.84]
Number of mental health visits	0.86	0.95	-0.09***
	(2.84)	(2.89)	[-5.51]
Observations	61,031	61,031	

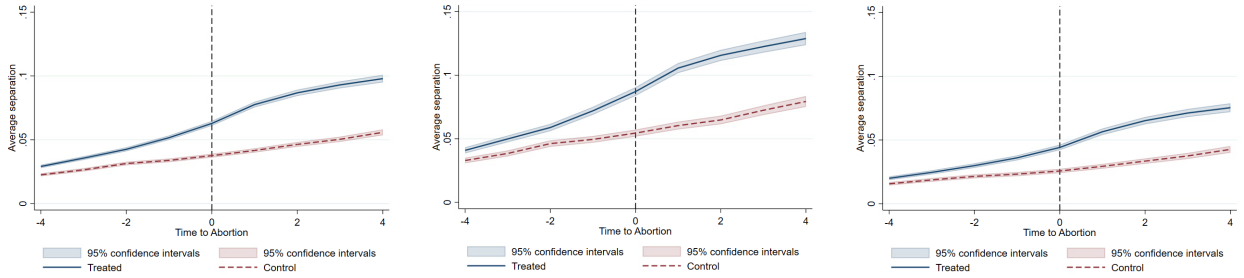
Note: *p<0.1; **p<0.05; ***p<0.01. Summary statistics of certain characteristics and outcome variables of matched control (column 1) and treatment women (column 2). Displayed are means computed two years before the procedure. Standard errors are shown in parenthesis. Birth year = birth year, Age = age in years, immigrant = 1 if not born in Norway, university = 1 if at least 16 years of education, number of children = number of children, childless = 1 if no child, earnings = annual earnings in NOK, married/cohabiting = 1 if married or cohabiting, P(mental health disorder=1) = 1 if at least one GP visit with a mental health diagnosis, number of mental health visits = number of GP visits per year with a mental health diagnosis. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, Earnings and Tax Registry, Education Registry, own calculations.

Figure A.8: Raw trends over time relative to abortion event

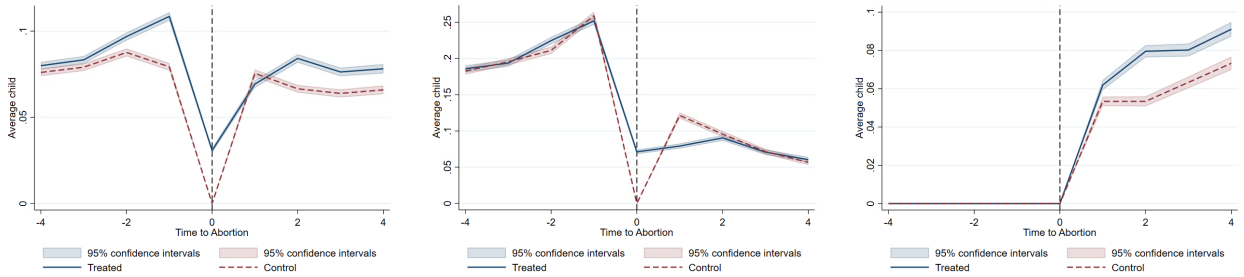
(a) All: P(MH visit=1) (b) Child: P(MH visit=1) (c) No child: P(MH visit=1)



(d) All: P(Separation=1) (e) Child: P(Separation=1) (f) No child: P(Separation=1)



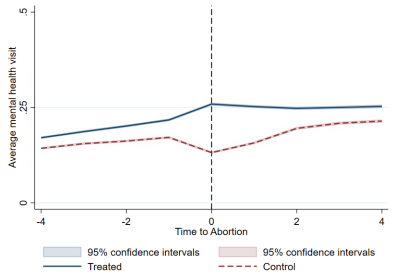
(g) All: P(Child=1) (h) Child: P(Child=1) (i) No child: P(Child=1)



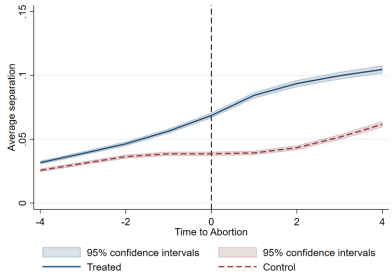
Note: Panels (a)–(i) show the share of women with a mental health-related GP visit, separation and having a child for treatment (blue line) and matched control group (red line) by relative time to the abortion event. Only abortions performed after gestation week 12 are included. The control group includes matched women who are not pregnant in the event year. MH = Mental health. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.

Figure A.9: Matching results with pregnant women as control group

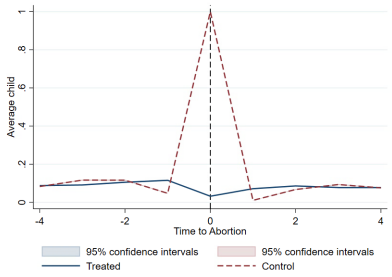
(a) All: P(MH visit=1) - trends



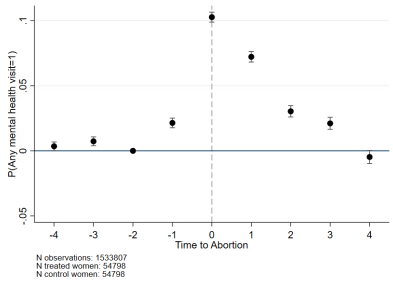
(b) All: P(Separation=1) - trends



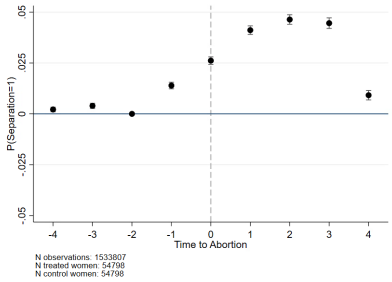
(c) All: P(Child=1) - trends



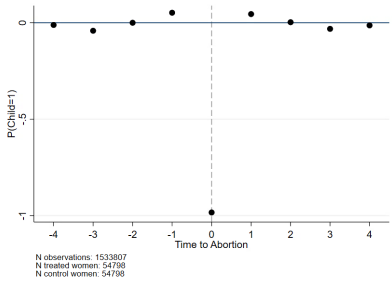
(d) All: P(MH visit=1) - ES



(e) All: P(Separation=1) - ES



(f) All: P(Child=1) - ES



Note: Panels (a)–(c) show the share of women with a mental health-related GP visit for treatment (blue line) and matched control group (red line). Panels (d)–(f) show pre- and post-abortion estimates of the effects of abortion on women's mental health based on equation (2). Only abortions performed after gestation week 12 are included. The control group includes matched women who are pregnant in the event year. N treated women = number of treated women in the estimation, N control women = number of control women in the estimation, N observations = number of observations in the estimation, MH = Mental health, ES = Event Study. *Source*: Norwegian Central Population Registry, Norwegian Patient Registry, Norwegian Medical Birth Registry, Norwegian Control and Payment of Health Refunds database, own calculations.