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Abstract

Intimate partner violence remains one of the most serious threats to women's safety worldwide, yet existing evidence on the effectiveness of large-scale institutional protection systems is limited and mixed. This paper evaluates the impact of Violence Prevention and Monitoring Centers on intimate partner violence (IPV) against women in Turkiye. Exploiting the staggered rollout of centers across provinces, we find that the opening of a center reduces female homicides, particularly those perpetrated by intimate partners, by approximately 20 percent. Complementary survey evidence shows that the opening of a center also reduces women's self-reported exposure to physical IPV by 20 percent, with larger effects among younger and less-educated women. Exploring potential mechanisms, we find that centers primarily reduce violence by lowering barriers to help-seeking and improving coordination across police, legal, and social services: following the opening of a center, women become more likely to seek support from women's organizations and social services, while direct applications to prosecutors decline. We find no evidence of effects on gender attitudes, labor market outcomes, relationship status, marriage market outcomes, or mental health, suggesting violence reductions operate through improved access to protection rather than changes in norms or economic independence. The estimated effects are stronger in provinces with more gender-progressive norms and stronger institutional capacity, highlighting the importance of complementary social and institutional environments.

Keywords: intimate partner violence, domestic violence, femicide, gender-based violence, IPV.
JEL Classifications: I18, J12, J16, K42, O15

ملخص

يظل العنف بين الشريكين أحد أخطر التهديدات لسلامة المرأة في جميع أنحاء العالم، ومع ذلك، لا تزال الأدلة المتاحة حول فعالية أنظمة الحماية المؤسسية واسعة النطاق محدودة ومتباينة. تُقيّم هذه الدراسة أثر "مراكز الوقاية من العنف ورصده" على الحد من العنف بين الشريكين (IPV) ضد المرأة في تركيا. وبالاعتماد على التوسع التدريجي في افتتاح هذه المراكز عبر مختلف المحافظات، تُظهر النتائج أن افتتاح المركز يقلل من جرائم قتل النساء — ولا سيما تلك التي يرتكبها الشركاء الحميمون — بنحو 20 في المائة. كما تؤكد بيانات المسح التكميلي أن افتتاح المركز يخفض من معدلات العنف بين الشريكين الجسدي المُبلّغ عنه ذاتيًا بنسبة 20 في المائة أيضًا، مع تسجيل آثار أكثر وضوحًا بين النساء الأصغر سنًا والأقل تعليمًا. وعند استكشاف الآليات الكامنة وراء هذا الأثر، نجد أن المراكز تحدّ من العنف في المقام الأول عبر تذليل العقبات التي تحول دون طلب المساعدة، وتعزيز التنسيق بين الشرطة والخدمات القانونية والاجتماعية؛ فبعد افتتاح المركز، يزداد إقبال النساء على طلب الدعم من المنظمات النسائية والخدمات الاجتماعية، في مقابل تراجع البلاغات المباشرة المقدمة إلى النيابة العامة (المدعين العامين). في المقابل، لم نرصد أي أدلة على وجود تأثيرات في التوجهات المرتبطة بالنوع الاجتماعي، أو مخرجات سوق العمل، أو الحالة الاجتماعية، أو مؤشرات الزواج، أو الصحة النفسية؛ مما يشير إلى أن انخفاض معدلات العنف يتحقق بفضل تسهيل الوصول إلى الحماية، وليس نتيجة تغير المعايير الاجتماعية أو تحقيق الاستقلال الاقتصادي. وتبرز هذه الآثار المقدرة بصورة أقوى في المحافظات التي تتسم بمعايير أكثر تقدمية تجاه النوع الاجتماعي وقدرات مؤسسية أعلى، مما يسلط الضوء على الأهمية البالغة لتكامل البيئتين الاجتماعية والمؤسسية.

1 Introduction

Intimate partner violence (IPV) remains a widespread social problem worldwide, with severe physical, psychological, and economic consequences for victims and their children (Peterson et al., 2018; Bhuller et al., 2024; Adams et al., 2024). Globally, 27 percent of women aged 15–49 who have been in a relationship report experiencing physical and/or sexual violence by their intimate partner (World Health Organization, 2021). These figures highlight not only the scale of the problem but also the persistent failure of many societies to provide effective protection for women, particularly in settings characterized by deep and enduring gender inequalities. Türkiye is one such context, where IPV has long been a serious concern and where the state has responded with a major set of legal and institutional reforms aimed at protecting women and preventing violence.

In 2012, the Turkish government enacted Law No. 6284 on the Protection of the Family and Prevention of Violence Against Women, a comprehensive legal framework designed to combat domestic violence in line with the provisions of the Council of Europe Convention on Preventing and Combating Violence Against Women and Domestic Violence, also known as the Istanbul Convention.[1] This law introduced a broad range of legal and administrative measures to safeguard potential victims and ensure their access to essential services.

As part of its institutional response, the government established the Violence Prevention and Monitoring Centers (*Şiddet Önleme ve İzleme Merkezleri*—SONIMs), with the dual mandate of implementing protective and preventive measures and providing comprehensive support services to victims of domestic violence. Initially launched in 14 pilot provinces in 2012, SONIMs were later expanded to all 81 provinces by 2019. These centers operate 24/7 and are staffed by multidisciplinary teams including social workers, psychologists, and legal counselors. SONIMs are tasked with delivering a broad range of integrated services, including legal assistance, psychosocial support, economic empowerment programs, emergency health referrals, and coordination of protection orders (Algan and Alev, 2024; Demirhan et al., 2023). They also serve as a hub for

[1] Law no. 6284, or the Law on the Protection of the Family and Prevention of Violence Against Women, was enacted on March 8, 2012, by the Turkish Parliament, and officially announced in *Resmî Gazete* No. 28239.

inter-agency coordination and data collection, and play a key role in monitoring compliance with court-mandated measures.

While these institutional reforms represent a significant policy response, there is no empirical evidence on their effectiveness in reducing IPV in Türkiye. Our study addresses that gap by evaluating the impact of SONIMs on female intimate partner homicides and multiple forms of IPV. We begin with an analysis of quarterly measures of province-level female homicides, which provides a credible empirical setting because the staggered rollout of SONIMs across provinces can be exploited in a difference-in-differences framework. The identifying assumption is that, absent the reforms, homicide trends in treated and untreated provinces would have followed similar trajectories. By comparing changes over time across these provinces, we aim to isolate the causal impact of SONIMs on the most severe form of IPV. To examine broader forms of IPV and potential mechanisms, we complement the female homicide analysis with evidence from the Turkish National Research on Domestic Violence Against Women, conducted in 2008 and 2014. This survey data also offers valuable insights into how SONIMs may influence other aspects of women's lives, including help-seeking behavior, gender attitudes, labor market outcomes, relationship dynamics, and mental health.

Using staggered policy rollouts across Turkish provinces, we show that the opening of SONIMs results in a significant reduction in female homicides. The event-study estimates reveal no evidence of differential pre-trends, followed by substantial post-opening declines that emerge after the first year. The magnitude of the estimates implies that, on average, approximately one female homicide per quarter was prevented in provinces with earlier SONIM openings, corresponding to a 20-21 percent reduction relative to pre-SONIM homicide levels. These reductions are driven almost entirely by decreases in intimate partner homicides, specifically violence perpetrated by current partners, while homicides committed by former partners remain unaffected. The results are robust across linear models and Poisson specifications designed for rare outcomes. We further document important heterogeneity across provinces. Specifically, the effects of SONIMs are strongest in provinces with less conservative gender norms and greater institutional and economic

capacity, highlighting the role of local social context and cross-agency coordination in shaping policy effectiveness. These findings provide causal evidence that institutional support centers can prevent the escalation of domestic violence into lethal outcomes, particularly where complementary social and institutional conditions are in place.

Using nationally representative survey data, we further show that SONIM openings reduce women's self-reported exposure to physical intimate partner violence. The decline is economically meaningful (approximately 21 percent relative to the outcome mean) and is concentrated among younger and less-educated women, who are typically more vulnerable and face greater barriers to seeking protection. Evidence on underlying mechanisms is consistent with the institutional design and functioning of SONIMs. By serving as centralized hubs that coordinate law enforcement, legal services, and social assistance, SONIMs lower barriers to help-seeking and improve the speed and reliability of protection. In practice, police operating within SONIMs work to document evidence of violence and, rather than routing cases through prosecutors, directly facilitate the issuance of protection orders often within 24 hours, thereby accelerating access to legal protection for women at risk. Consistent with this role, we find increases in women's use of protective and social services, particularly women's organizations and social assistance providers, alongside a decline in direct applications to prosecutors. Together, these results suggest that SONIMs reduce IPV primarily by streamlining legal pathways and improving institutional coordination, enabling vulnerable women to receive timely protection before violence escalates.

Finally, we examine additional potential mechanisms, and find no evidence that SONIMs affect gender attitudes, relationship status, marriage market outcomes, labor market outcomes, or mental health in the short run, indicating that the reductions in domestic violence are unlikely to be driven by changes in norms, economic independence, or marital selection. Taken together, these results suggest that SONIMs reduce IPV mainly by lowering barriers to help-seeking and improving institutional coordination for women at risk.

Our study contributes to the broader literature on the effectiveness of institutional measures in addressing domestic violence. There is considerable research indicating that public interventions

can effectively reduce IPV through various mechanisms. Economic support, for example, can lead to economic empowerment, reducing women's financial dependence on their abusers and enabling them to leave abusive relationships more safely (Buller et al., 2018; Haushofer et al., 2019).[2] Legal interventions, such as the enforcement of protection orders and the establishment of specialized courts and justice centers, enhance the legal recourse available to survivors and deter perpetrators from further violence (Christian, 2025; Garcia-Hombrados et al., 2024; Sviatschi and Trako, 2024). Moreover, community-based approaches that involve education and awareness campaigns can shift social norms and attitudes towards IPV, fostering environments that are less tolerant of violence (Abramsky et al., 2014).

Compared to many of these interventions, SONIMs represent a more centralized, state-led, and integrated institutional response. Unlike programs that focus narrowly on one dimension of IPV, such as legal protection or shelter provision, counseling, or reporting support, SONIMs offer a comprehensive, multi-service model under one roof that combines legal assistance, psychosocial counseling, emergency support, and coordination of protection orders within a unified agency structure. This institutional distinction is important in light of recent evidence showing that effectiveness of anti-violence centers depends in part on institutional design, policy targeting, and local context (Cerqua et al., 2025). SONIMs are mandated by national law, embedded in the Ministry of Family and Social Services, and designed to operate with standardized procedures and 24/7 availability, making them a more vertically integrated model of IPV intervention.

A relevant study for our paper is Sviatschi and Trako (2024), who examine Peru's Women's Justice Centers (WJCs), a one-stop institutional model that integrates police, legal, and medical services for victims of gender-based violence. They show WJCs reduce gender-based violence and generate positive spillovers for children's human capital. Our paper is complementary, but distinct in several ways. First, while both WJCs and SONIMs are multi-service institutions, they operate on different institutional margins. WJCs are designed primarily to improve women's access

[2]The evidence on the effectiveness of cash transfers is mixed as transfers targeting women can also lead to increases in threats of violence and psychological violence if men have incentives to use such violence as a tool for resource extraction (Bobonis et al., 2013).

to justice by integrating the complaint process and strengthening the likelihood that reports of violence translate into formal legal action. Consistent with this design, Sviatschi and Trako (2024) emphasize increases in reporting and prosecutions as central mechanisms. SONIMs, by contrast, are organized as state-run protection and monitoring centers whose core function is to coordinate police, legal, health, shelter, and social-service responses, including risk assessment, the rapid facilitation and monitoring of protective orders, and continued case management. Thus, our paper studies whether protection and monitoring centers can reduce IPV by lowering barriers to help-seeking and improving coordination across agencies before violence escalates. More broadly, it extends the literature from justice-centered institutional access to coordinated state protection systems as a path for improving women's safety.

At the same time, a large body of evidence cautions that policies aimed at empowering women can sometimes backfire by triggering male backlash (Eswaran and Malhotra, 2011; Bobonis et al., 2015; Erten and Keskin, 2024). In Türkiye, increases in women's education and employment have previously been associated with greater financial control and psychological violence (Erten and Keskin, 2018), and reductions in women's employment (Erten and Keskin, 2021) and targeted safety interventions such as panic buttons (Tumen and Ulucan, 2024) have generated patterns consistent with retaliation. Related evidence from other contexts highlights how institutional design can shape these responses. For example, a randomized housing lottery in Argentina increased intimate partner violence when housing assets were jointly owned, but reduced violence when ownership was held solely by women, underscoring how constraints on women's ability to exit relationships can exacerbate violence (Lagomarsino and Rossi, 2024). Similar concerns arise in the United States where mandatory arrest laws have been associated with increases in female partner violence (Iyengar, 2009). Against this backdrop, the fact that SONIMs reduced violence rather than exacerbating it is particularly notable. Their emphasis on risk assessment, case management, and sustained follow-up may help prevent the abrupt disruptions that can provoke retaliation, allowing women to exit violent situations more safely.

Our findings also complement recent work on the interaction between law, institutions, and

social norms. Sanin (2024) shows that domestic violence laws are most effective when they align with prevailing norms supporting women's exit from abusive relationships, while Gulesci et al. (2025) document severe backlash when laws conflict with conservative attitudes toward divorce. Asik and Mocan (2024) demonstrate that Türkiye's entry into, and later withdrawal from, the Istanbul Convention shifted social norms in ways that had large effects on female homicides. We contribute to this literature by showing that SONIMs are especially effective in provinces with more gender-equal norms, highlighting how institutional capacity and social context interact to shape policy impacts.

Taken together, our results underscore the importance of moving beyond legislation alone toward the creation of robust, well-designed institutions that translate legal rights into real protection. By demonstrating the effectiveness of SONIMs, our study provides evidence that integrated, state-led support systems can reduce IPV without triggering the backlash observed in other settings. These findings have direct implications for policy in Türkiye and offer broader lessons for countries seeking to design institutional responses to gender-based violence.

The rest of the paper is organized as follows. Section 2 describes the institutional context. Section 3 presents the data sources. Section 4 outlines the empirical strategy. Sections 5 and 6 discuss the primary results and explore potential mechanisms. Section 7 concludes the paper.

2 The Violence Prevention and Monitoring Centers (SONIMs)

Türkiye officially adopted the Council of Europe Convention on Preventing and Combating Violence Against Women and Domestic Violence on November 24, 2011, after ratification by the Turkish Parliament. The subsequent legal framework, Law No. 6284, "Family Protection and Prevention of Violence against Women", was enacted on March 8, 2012 to align national legislation with the Convention's standards on protecting women from violence. SONIMs were formally authorized by this legislation as key institutions responsible for implementing prevention and protection measures, coordinated by the Republic of Türkiye Ministry of Family and Social Policies

(RTMFSP, 2012).

The rollout of SONIMs began in 2012 with the establishment of centers in 14 pilot provinces,[3] with the intention of extending coverage nationwide in subsequent years. As illustrated in Figure 1, the expansion proceeded in phases: by 2015, SONIMs operated in 40 provinces, rising to 49 in 2016, and reaching all 81 provinces by 2019. In parallel with this institutional rollout, statistics from the Ministry of Family and Social Services indicate that the number of individuals served by SONIMs increased markedly from 19,183 in 2013 to 193,451 in 2019, reaching 313,475 by 2023.[4]

SONIMs serve as the central institutional mechanism through which victims of domestic violence are protected, supported, and connected to relevant state institutions. SONIMs are responsible for coordinating the issuance and monitoring of protective and preventive measures, alongside the provision of psychosocial, legal, health, and shelter services (RTMFSP, 2013b). A core protective function of SONIMs is the rapid facilitation of restraining orders, which are designed to ensure the immediate safety of victims of violence.

In practice, when a woman arrives at a SONIM, whether through direct application, referral by the police or courts, hotline (ALO 183), or third-party notification, her case is assessed through an initial intake interview, and a case file is opened. SONIM staff evaluate the level of risk faced by the victim and, when necessary, initiate urgent protective interventions. As documented in both the regulatory framework and qualitative studies of SONIM operations, police officers stationed at SONIMs play a key role in this process by accompanying victims to a hospital to obtain a medical assault report and subsequently assisting them in securing a restraining order from a judge, typically within 24 hours (RTMFSP, 2013b; Altiparmak, 2015; Recber, 2018). Once a protective order is issued, victims are commonly referred to shelters or guesthouses (*konukevleri*) to ensure access to a safe and confidential place to stay, particularly in cases involving imminent danger.

A defining feature of the SONIM model is that these protective procedures are centrally coordi-

[3]These provinces are Adana, Ankara, Antalya, Bursa, Denizli, Diyarbakır, Gaziantep, Mersin, İstanbul, İzmir, Malatya, Samsun, Trabzon, and Şanlıurfa.

[4]See `https://www.aile.gov.tr/sgbd/istatistik-sayfalari/aylik-istatistik-bulteni/`. While the vast majority of individuals served by SONIMs are women, they also provide services to children and men. For instance, in 2023, of the total individuals served, 273,222 were women, 28,352 were men, and 11,901 were children.

nated within the SONIM, rather than relying on victims to navigate multiple institutions independently. Unlike earlier institutional arrangements in which women often filed direct complaints with prosecutors, the SONIM system consolidates reporting, documentation, protective-order requests, and service referrals under a single coordinating body (Can, 2021). This centralized structure reduces procedural delays, limits repeated victim testimony across institutions, and minimizes retraumatization, while ensuring that police, judicial authorities, health services, and social services act in a coordinated manner (Recber, 2018). In this sense, SONIMs function not merely as service providers but as coordination hubs that manage the entire protective process.

Following the initial risk assessment, multidisciplinary teams composed of social workers, psychologists, and legal professionals prepare individualized intervention plans. These plans may include psychosocial counseling, legal assistance, economic support, vocational training, and referrals to child or health services, alongside continued monitoring of the enforcement of protective orders. In some cases, the plans may refer women to employment and job-placement services. Social assessment reports are prepared to document the victim's social, economic, and psychological conditions and to facilitate coordination with judicial and administrative authorities (RTMFSP, 2013a; Can, 2021).

Importantly, the descriptive studies emphasize that protective orders play a critical role in reducing the risk of severe and lethal violence against women. Studies of SONIM implementation highlight that restraining orders, when issued rapidly and combined with shelter placement and police monitoring, serve as a key mechanism for interrupting escalating violence and preventing femicide (Altiparmak, 2015; Recber, 2018; Can, 2021). By centralizing the process of obtaining and enforcing these orders, SONIMs strengthen the state's capacity to respond swiftly to high-risk cases and to provide women with immediate physical protection.

Throughout the intervention process, SONIMs conduct regular follow-ups to monitor victim safety and service outcomes. If a woman relocates to another province, her case file is transferred to the receiving SONIM, ensuring continuity of care across jurisdictions. All case records, protective orders, and service outcomes are maintained in a centralized electronic system, reinforcing

accountability and enabling ongoing monitoring (RTMFSP, 2013a). In addition to direct service provision, SONIMs engage in prevention through training, community outreach, and awareness activities aimed at reducing violence and challenging harmful gender norms. Operating on a 24/7 basis with interdisciplinary teams, SONIMs constitute a central pillar of Türkiye's institutional infrastructure for preventing domestic violence and protecting women at risk.

3 Data

3.1 Female Homicide Records

The data on female homicides come from the "Male Violence Monitoring Portal," a database maintained by the independent media outlet Bianet.[5] Bianet compiles data on female homicides, physical and sexual assaults on women, and child abuse from national and local press daily, verifying the information with the Turkish Bar Association and the General Directorate of Security when necessary.[6] According to the website, the Male Violence Monitoring Report database records only women who have been killed as a result of male violence, excluding non-gender-based violence cases.[7] The dataset includes the date and location of each homicide and details about the perpetrator. This allows us to distinguish homicides committed by current intimate partners, former partners, and non partners.

The dataset provides high temporal frequency, which enables us to exploit the staggered rollout of SONIMs and to examine changes over time. We construct a quarterly province-level panel for the period used in our analysis. Because homicides are documented and investigated events, the

[5]Publicly accessible high-frequency administrative data on domestic violence incidents and homicides in Türkiye do not exist, limiting our ability to use official statistics. Additionally, current judicial statistics do not separately categorize female homicides or domestic violence and are not available in high frequency. Given these limitations, news data on female homicides serve as the most reliable source of information.

[6]Bianet's Male Violence report has previously been used in academic studies, including research on Covid-19 curfews and femicides (Asik and Ozen, 2021), analyses of the geographical distribution, economic development, and femicides (Kavakli, 2022), and on the impact of exit from The Council of Europe Convention on Preventing and Combating Violence Against Women and Domestic Violence on femicides in Türkiye (Asik and Mocan, 2024). For details, see: `http://bianet.org/english/gender/134394-bianet-is-monitoring-male-violence`.

[7]See `https://erkeksiddeti.org/hakkinda/` for Bianet's data collection methodology (in Turkish).

counts reflect incidents that are objectively verified and are therefore less affected by concerns about underreporting or shifts in reporting behavior that may influence survey-based measures of intimate partner violence.[8]

Although the data source extends beyond this period, we restrict our analysis to female homicides from 2010–2019 to exclude the post-pandemic years. Our dataset includes 2,628 female homicides across all provinces of Türkiye. Of these cases, 1,972 were perpetrated by a current (66 percent) or former intimate partner (34 percent). The average female homicide rate per one hundred thousand women is 13.4 per quarter, while the rate for women murdered by intimate partners is 10.

We analyze heterogeneity in the estimated effects on female homicides by incorporating a set of additional variables. We use provincial vote shares of the Justice and Development Party (JDP) in the 2007 general elections, obtained from official election results published by the Supreme Election Council of Türkiye (YSK) to examine heterogeneity by gender norms. As an indicator of poverty, we utilize the provincial percentage of households reporting that they are unable to meet their basic needs, as reported in the Indicator Values of the Well-Being Index for Provinces published by the TurkStat. We also use Türkiye's official classification of metropolitan provinces, as defined under the relevant legislation and published by the Ministry of Interior of Türkiye. Finally, we analyze heterogeneity across provinces with different levels of economic activity, using real GDP per capita for 2010 from the TurkStat.

3.2 Self-Reported Data on IPV and Potential Channels

The individual level data on domestic violence come from the 2008 and 2014 waves of the Turkish National Survey on Domestic Violence Against Women (NSDVAW), provided by the Turkish Statistical Office (TurkStat). These datasets consist of 20,257 women aged between 15 and 59 in Türkiye. The survey includes information on household socioeconomic indicators, individual

[8] Asik and Mocan (2024) compares the monthly female homicides provided by Bianet with the monthly totals published by the Police Academy of Türkiye during the covid period and shows that totals in two sources differ only by a few women.

demographic characteristics, labor market and marital histories, mental health status, gender role attitudes, and help-seeking behavior of domestic violence victims. The domestic violence module provides detailed data on experiences of physical, sexual, and psychological violence. The survey sample consists of women, including those who were ever married, those who were in a relationship, and those who had never been in a relationship. Within each household, one eligible woman was randomly selected for an interview.

Interviews were conducted in private with one randomly selected woman per household. Respondents were informed that their answers would remain confidential, and interviewers followed established procedures to ensure the safe and accurate reporting of sensitive domestic-violence information, in line with World Health Organization guidelines.[9] To reduce underreporting, the questionnaire used behaviorally specific questions that asked about concrete acts such as pushing, slapping, or forced sex instead of broad terms like "violence" or "abuse." Interviewers received specialized training, confidentiality was rigorously maintained, and respondents were provided with information on support services. These measures are designed to strengthen both the reliability of the data and the safety of participants (Yuksel-Kaptanoglu et al., 2014).[10]

The violence variables are constructed as binary indicators capturing whether a woman has experienced physical, sexual, or psychological violence perpetrated by her intimate partner in the 12 months preceding the survey. Physical violence encompasses acts such as slapping or throwing objects with the potential to cause harm; pushing, shoving, or pulling hair; hitting with the fist or object in a manner that inflicts injury; kicking, forcing onto the ground, or beating; and choking or burning. Psychological violence refers to behaviors including insulting, humiliating, and scaring or threatening. Sexual violence is defined by forced sexual acts, coerced sexual relations arising from fear of the partner's reaction, and degrading sexual acts.

Gender role attitudes are measured using respondents' level of agreement with a set of state-

[9] Yuksel-Kaptanoglu et al. (2014) describe the study's sampling and survey design and note that the fieldwork adhered to World Health Organization ethical and security standards.

[10] Despite these measures, it remains possible that SONIMs increased women's willingness to disclose experiences of intimate partner violence. If reporting behavior changed as a result, our estimates would likely understate the true effects.

ments reflecting normative views on gender relations. These include whether a woman should refrain from arguing with her partner when she disagrees with him; whether she should have autonomy over spending her own income; whether men are justified in beating their partners under certain circumstances; whether disciplining children through physical punishment is acceptable; whether men should also share household responsibilities such as cooking and cleaning; whether male family members are responsible for a woman's behavior; and whether it is a woman's duty to engage in sexual activity with her husband. To summarize variation across these items, we construct a composite gender attitudes index by averaging the standardized scores of the individual attitude measures.

One limitation is that the survey includes only two waves, in 2008 and 2014, which provides limited time variation for analysis. This restricts the empirical design to a comparison of treated and control provinces before and after the introduction of SONIMs, without the possibility of incorporating the staggered rollout or estimating dynamic effects. Although self-reported measures may in principle be influenced by changes in awareness or willingness to disclose violence, we see little indication that SONIM openings altered gender attitudes in ways that would systematically affect reporting. Even with this constraint, the NSDVAW serves as a valuable complement to the homicide data. Its detailed micro-level information makes it possible to study mechanisms and behavioral responses that cannot be examined using administrative sources alone.

Table 1 provides descriptive statistics for women in the NSDVAW surveys. The sample consists of women who have ever been in a relationship, with an average age of approximately 37 and substantial variation in education levels. Most respondents live in urban areas and report Turkish as their mother tongue. On average, husbands are about five years older than their partners, and schooling differences tend to favor men. Regarding intimate partner violence, 9 percent of women report experiencing physical violence in the past year, 25 percent report psychological violence, and 7 percent report sexual violence. Labor force participation is relatively low, with fewer than one in five women having worked in the previous week and only one fifth reporting personal income. The majority of the sample is married, while the shares of divorced, separated, or widowed

women are small. The table also summarizes key gender-attitude measures, which show considerable variation in views on domestic responsibilities, decision-making, and the acceptability of violence.

As shown in Table A1 and Table A2, to assess whether rollout of SONIMs is systematically correlated with provincial characteristics, we conduct two balance tests using both the quarterly femicide dataset and the 2008–2014 self-reported survey data. In both exercises, each cell corresponds to a separate regression of the corresponding variable on the SONIM treatment indicator and a varying combination of time, province, and region-time fixed effects. The regressions use quarterly observations and include province and time fixed effects in column 1, and additionally five–region-time interactions in column 2. The variables include the main outcome variables and the covariates used in the analysis, ordered by femicide and self-reported data. Across both datasets, we find no systematic associations between SONIM rollout and the variables used in our analyses. The only exception is hospital beds per capita, which appears significant in the second specification in the balance test for femicide data and in the first for the self-reported data. However, the direction and magnitude of this coefficient are unstable across specifications. Taken together, the results provide strong evidence that there is no systematic relationship between the main variables and the provincial rollout of SONIMs, which supports our identification strategy.

4 Empirical Strategy

This section describes the approach we used to estimate the causal effect of SONIM rollout on female homicides. We proceed in three steps. First, because rollout is staggered across provinces, we use the Callaway and Sant'Anna (2021) difference-in-differences (CSDID) estimator to construct baseline event-study plots and assess pre-treatment dynamics. Second, recognizing that female homicides are low-frequency count outcomes, we implement the non-linear staggered-ATT estimator of Wooldridge (2021) to obtain our preferred causal estimates. The estimation period is from 2010 to 2019. Following the recommendation by Callaway and Sant'Anna (2021), we use

time-invariant controls measured at baseline year 2010 to avoid conditioning on variables potentially affected by treatment, which would violate the conditional parallel trends assumption. These control variables are 2010 baseline i) GDP per capita (in logs), ii) province population (in logs), iii) hospital beds per capita (in logs), iv) share of women with high school and above degrees, and the unemployment rate at 26 Nuts-2 region level. We also control for Arabic- and Kurdish- speaking population (based on 1965 censuses) and 5 region dummies.[11] These variables are aimed to capture differences in development levels across provinces as well as to account for factors that might affect domestic violence. Both the CSDID estimator and staggered-ATT estimator of Wooldridge (2021) inherently control for unit and time fixed effects.

4.1 CSDID event-study approach

We begin with the CSDID group-time average treatment effects to produce event-study plots and test for pre-trends in a linear difference-in-differences (DID) framework.

Let G_g denote the group of provinces that first received a SONIM in year g. For each treatment cohort g and time period t, we estimate group-time average treatment effects:

$$ATT(g,t) = E[Y_t(g) - Y_t(\infty)|G_g = 1], \tag{1}$$

where $Y_t(g)$ represents the potential outcome at time t for provinces first treated in year g, and $Y_t(\infty)$ denotes the potential outcome had treatment never occurred. The group-time ATTs are then aggregated into an overall treatment effect:

$$ATT = \sum_g w_g \sum_t w_{g,t} ATT(g,t), \tag{2}$$

where w_g and $w_{g,t}$ are weights proportional to group size. We use not-yet-treated provinces as the comparison group, following the recommendations of Sun and Abraham (2021) for settings with

[11] The five region dummies are adopted from the Demographic and Health Surveys (DHS), which divide Türkiye into West, East, Center, North and South.

staggered adoption. This choice avoids the "forbidden comparisons" highlighted by Goodman-Bacon (2021), where already-treated units serve as controls for newly-treated units.

4.2 Nonlinear staggered ATT estimation for count outcomes

Because the primary outcome for province-level analysis—female homicides—is a low-frequency count variable, we complement the CSDID plots with a non-linear staggered-treatment estimator following Wooldridge (2021), which is compatible with conditional mean models (e.g., Poisson) and delivers causal ATTs while avoiding inappropriate fits such as negative predictions.

Let Y_{pt} denote the count outcome in province p and period t, and let $D_{pt} = 1\{t \geq T_p\}$ indicate treatment exposure after adoption time T_p (with $T_p = \infty$ for never-treated). This approach specifies (for untreated potential outcomes) a conditional mean model

$$\mathbb{E}[Y_{pt}(0) \mid \mathscr{X}_{pt}] \;=\; m(\alpha_p + \lambda_t),$$

and for treated potential outcomes at event time k,

$$\mathbb{E}[Y_{pt}(1) \mid \mathscr{X}_{pt}] \;=\; m(\alpha_p + \lambda_t + \theta_k),$$

where $m(\cdot)$ is a known link/mean function (we primarily use the Poisson log-link $m(u) = \exp(u)$), α_p and λ_t are unit and time effects, and θ_k are event-time shifts. The parameter of interest is the event-time ATT in levels:

$$\mathrm{ATT}(k) \;=\; \mathbb{E}\big[Y_{pt}(1) - Y_{pt}(0) \mid t - T_p = k,\, T_p < \infty\big].$$

Estimation follows a two-step algorithm: (i) estimate the conditional mean model for untreated outcomes using not-yet-treated and never-treated observations to recover fixed-effect components (or their partial estimates), and (ii) use inverse-probability-type moment conditions to isolate θ_k while ensuring comparisons are only between treated-at-g units and appropriate controls (not

already-treated units). The resulting $\widehat{\theta}_k$ are transformed back to the ATT scale using the model's link function.

We report both the CSDID linear event-study figures (useful for visual comparison and placebo checks) and Poisson ATT estimates (preferred for inference on the count outcome). Differences between the two inform sensitivity to functional form and to low-count behavior.

4.3 Two-way fixed effects (TWFE) approach

For the analysis based on the NSDVAW data, event-study or staggered non-parametric estimators are infeasible because the survey consists of only two waves. We therefore estimate a TWFE specification at the individual level to check whether the results on self-reported IPV align with CSDID estimates on female homicides.

Our baseline TWFE specification takes the following form:

$$Y_{ipt} = \beta(SONIM_{pt}) + \gamma X_{ipt} + \theta Z_{pt} + \delta_p + \tau_t + \varepsilon_{ipt}, \tag{3}$$

where Y_{ipt} represents the outcome for individual i in province p at time t, and $SONIM_{pt}$ is a binary indicator equal to one for all periods from the opening of a SONIM in province p at time t onward, and zero otherwise. X_{ipt} denotes individual-level controls, including the woman's age fixed effects, mother tongue indicators, and urban residence indicator. Z_{pt} represents province-specific time-varying controls including the logarithm of GDP per capita, population, the number of hospital beds per capita, the unemployment rate at the 26-region level, and the number of women with high school and above degrees. δ_p represents province fixed effects and τ_t captures time effects.

5 Results

5.1 The Effects of SONIMs on Female Homicides

We begin by examining the dynamic effects of SONIM openings on female homicides. Figure 2 presents event-study estimates for four categories of female homicides: all female homicides, intimate partner homicides, current partner homicides, and ex-partner homicides. These estimates are obtained by aggregating the group-time ATTs from Eq. 1 across groups of provinces at each relative time period.[12] As shown in Figure 2, there are no discernible pre-existing differences in female homicide trends between treated and untreated provinces, as all pre-trend coefficients are statistically indistinguishable from zero. While the first year after SONIM openings shows no clear impact, effects begin to emerge after the fourth quarter, resulting in a decline of around two female homicides per province per quarter. Intimate partner homicides follow a similar trajectory with a reduction of about one homicide per quarter, driven primarily by decreases in current-partner homicides after the first year of SONIM rollouts. In contrast, we find no evidence of a significant impact on ex-partner homicides. The staggered DID estimates reveal a statistically significant reduction in female homicides. In Panel A, the estimated average treatment effect of the SONIMs on the treated (ATT) provinces suggests a decline in the number of female homicides by 0.73, which corresponds to a 20.3 percent reduction relative to the pretreatment sample mean of 3.6 female homicides per quarter per province. In Panel B, we observe that the bulk of this decline took place through declines in intimate partner homicides. Specifically, provinces with an earlier SONIM opening experienced a decline of 0.69 intimate partner homicides per quarter after the opening compared to provinces where SONIM had not opened yet. Relative to the sample mean of 3.44 in the pretreatment period, this decline corresponds to a 20.1 percent reduction in homicides perpetrated by intimate partners.

[12] We restrict the analysis to an eight-quarter window around SONIM openings to ensure that estimates are based on sufficient support at each event time, to maintain precision given the low-frequency of homicides, and to focus on the period in which the effects of SONIMs are most likely to emerge.

In Panel C and D of Figure 2 (Continued), we examine whether the effect of SONIMs on intimate partner homicides operates through violence committed by current partners versus ex-partners. The event-study in Panel C shows that the opening of a SONIM leads to a statistically significant reduction of 0.53 female homicides perpetrated by current partners, which corresponds to a 19.5 percent decline relative to the pretreatment mean. In contrast, Panel D provides no evidence of a statistically significant decline in female homicides committed by ex-partners.[13] Hence, these results suggest that SONIMs reduce intimate partner homicides primarily by mitigating lethal violence within ongoing relationships, rather than by affecting violence perpetrated by former partners.

Since our violence measures represent the number of independent occurrences of homicides per unit of time, assuming a Poisson distribution for homicides might be preferable to linear specifications. Female homicides are low-frequency count outcomes, making Poisson models more appropriate than linear estimators for accurately capturing their distribution and avoiding negative fitted values. Wooldridge (2021) proposes estimation algorithms for the identification of ATTs that allow for staggered interventions under non-linear models. The TWFE framework by Wooldridge (2021) extends the DID methods to staggered treatment timing, ensuring that the estimated effects are not biased by treatment effect heterogeneity or by comparisons of already-treated units to newly treated ones. This estimator is, therefore, particularly useful when policies such as prevention helplines, enforcement reforms, or support centers are rolled out at different times across regions and when the outcomes are rare, discrete events such as domestic violence-related homicides.

In Table 2, we assess the validity of our results by using the Poisson DID estimator proposed by Wooldridge (2021). As in our baseline analysis, we use the same set of control variables; 2010 values of log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, NUTS2-unemployment rate, Kurdish and Arabic speaking population

[13] Although the event-study coefficients in Panel D turn temporarily negative in quarters 4 and 5 following a SONIM opening, they subsequently revert to zero, and the implied average treatment effect is small (-0.16) and statistically insignificant.

(both in logs). We also include DHS region dummies interacted with time dummies.[14] For Poisson estimations, we allow for anticipation up to four quarters as the planning and budgetary allocations for the establishment of these centers are approved by December of each year.[15] As shown in Table 2, the results are consistent with those obtained using the Callaway and Sant'Anna (2021) estimator. The estimated semi-elasticities in columns 1 and 2 indicate that SONIMs reduce the overall female homicides by 28 percent, with the majority of this reduction driven by a decrease of approximately 21 percent in intimate partner homicides. The effect sizes are slightly larger but consistent with those implied by the CSDID estimator. The estimate in column 3 is somewhat less precise (p-value 0.167) and implies that a SONIM opening reduces female homicides by current partners by 11 percent. Consistent with earlier results, we do not detect a statistically meaningful impact on homicides perpetrated by ex-partners (column 4).

Overall, the event-study and staggered DID estimates consistently show that SONIM openings lead to sizable reductions in female homicides, driven primarily by declines in IPV within ongoing relationships. The robustness of these findings across linear and Poisson specifications strengthens the interpretation that SONIMs effectively prevent the escalation of domestic violence into lethal outcomes.

In Figure 3, we assess heterogeneity in our main effects across province characteristics that proxy for variation in gender norms and institutional capacity.[16] First, we consider Justice and Development Party (JDP) vote share as a proxy for more conservative gender norms. The JDP, which has governed Türkiye continuously since 2002, is commonly associated with a religiously conservative political identity that emphasizes traditional family structures and gender roles in its discourse. The estimates reported in Figure 3 indicate the effects of SONIMs on female homicides are concentrated in more progressive provinces with below-median JDP vote shares, whereas no statistically significant effects are detected in provinces with stronger electoral support for the JDP.

[14] Because ex-partner homicides are the rarest type of crime in the data, we encounter convergence issues with the Poisson estimations. Accordingly, column 4 does not include control variables to ensure convergence.

[15] The results are robust to using the default option of anticipation at $g-1$.

[16] Appendix Figure A1 provides the results for female homicides by intimate partners as an additional outcome variable, showing very similar results.

This result is consistent with women's ability to access, utilize, and benefit from formal support mechanisms. In local contexts where traditional gender roles and male-dominated social structures are more prevalent, women may encounter greater practical or social barriers to seek assistance from public institutions, including SONIMs. As a result, the presence of a SONIM alone may be insufficient to translate into meaningful protection for women, even when services are formally available. This interpretation is consistent with prior research emphasizing that the effectiveness of legal and institutional reforms depends on their interaction with local social and administrative environments, rather than differences in attitudes toward violence itself (Acemoglu and Jackson, 2017; Sanin, 2024).[17]

Second, given that institutional capacity varies systematically with economic development and urbanization in Türkiye, we analyze heterogeneity across provinces by GDP per capita, metropolitan status, and economic hardship. Estimates reported in Figure 3 suggest stronger effects in higher-income provinces and slightly larger effects in more metropolitan areas, although these differences are not statistically significant. In contrast, heterogeneity by economic hardship is pronounced with SONIMs exhibiting larger effects in provinces where a smaller share of households struggle to meet basic needs. Taken together, these results suggest that SONIMs are more effective in provinces with greater economic resources and institutional capacity, where coordination among law enforcement, social services, NGOs, and other stakeholders involved in preventing and monitoring violence against women is stronger.

To put our results into perspective, the magnitude of the estimated effects is broadly consistent with prior evidence on institutional and legal interventions aimed at reducing severe violence against women. In our setting, SONIM openings are associated with roughly a 20 percent reduction in female homicides. By comparison, evidence from Peru's women's justice centers, which integrate police, legal, and medical services within a single institution, points to reductions of around 10 percent in multiple measures of gender-based violence, including an approximately 7

[17]The heterogeneity we document does not necessarily reflect higher baseline levels of intimate partner violence against women in provinces with stronger JDP support. In fact, in the quarter immediately preceding SONIM openings, female homicide rates are lower in above-median JDP provinces than in below-median JDP provinces.

percent decline in female deaths due to aggression (Sviatschi and Trako, 2024). In the United States, the adoption of personal protection order laws has also been linked to sizable declines in lethal violence, including a 15.4 percent reduction in female firearm homicides (Christian, 2025). Additional evidence from cross-country analyses supports effects of similar magnitude. Using DHS data from 54 developing countries, Nguyen and Le (2022) show that domestic violence legislation reduces more severe physical violence against women by nearly 20 percent relative to the sample mean.

5.2 The Effect of SONIMs on Self-reported Measures of Intimate Partner Violence

We next examine how the introduction of SONIMs affects women's self-reported risk of experiencing intimate partner violence (IPV) using data from the NSDVAW. Panel A of Table 3 indicates that women report a lower likelihood of experiencing physical violence from their intimate partners in affected provinces after the introduction of SONIMs.[18] The most saturated specification in column 3 indicates a reduction of 1.9 percentage points, corresponding to a 20.5 percent decline relative to the mean.

The subsequent panels explore heterogeneity in the treatment effects by women's age and educational attainment. Panels B and C show that the estimated reductions in physical IPV are concentrated among women younger than 35, which is the median age in our sample. In contrast, the estimates for women aged 35 and older are smaller and statistically indistinguishable from zero, suggesting that younger women, who may have fewer resources and face greater constraints in seeking protection, benefit more from the introduction of SONIMs. Panels D, E, and F examine differences by education level and reveal a similar pattern. The declines in IPV risk are larger among women with lower levels of education, particularly those with a middle school education or less, and the effects are strongest among illiterate women. These results are consistent with the

[18] We also assess whether SONIMs influence women's likelihood of experiencing psychological or sexual violence from their intimate partners. As reported in Appendix Table A3, we find no statistically significant effects on either outcome.

interpretation that SONIMs may be especially effective in reaching and supporting women who are both younger and more socioeconomically vulnerable, and who may confront the greatest barriers to accessing help or exiting abusive relationships. These individual-level patterns also complement the earlier finding that SONIMs are most effective in provinces with more progressive norms and stronger institutional capacity. Taken together, the results suggest that the effectiveness of SONIMs depends both on the local institutional and social environment and on whether the most vulnerable women, those who are younger and less educated, are effectively reached by the services these centers provide.

6 Potential Channels

In this section, we examine several potential mechanisms through which SONIM openings could affect women's risk of experiencing IPV. Specifically, we focus on five sets of channels: (i) help-seeking behavior, (ii) gender attitudes, (iii) labor market outcomes, (iv) relationship status and marriage market indicators, and (v) measures of mental health.

6.1 Help-Seeking Behavior

The implementation of SONIMs, along with their close coordination with other local institutions, provides women experiencing violence with clearer and more reliable ways to seek assistance from law enforcement, legal authorities, or women's organizations. One of the core responsibilities of SONIMs is to support women in reporting incidents to the relevant institutions that can deliver appropriate protection and support. In practice, this can mean referring a woman to the police when a protection order or criminal investigation is warranted, or connecting her with women's NGOs and social services that provide shelter, safe housing, and legal advice on matters such as custody or divorce. By serving as a centralized hub for legal, psychosocial, and protective services, SONIMs help reduce the fragmentation of available resources and make it more likely that women, especially those in the most vulnerable situations, can access timely and coordinated assistance.

To explore how SONIMs may have influenced victims' help-seeking behavior, we use responses from the NSDVAW surveys, focusing on women who reported ever experiencing IPV. Because this is a select and relatively small sample, we prefer to interpret our results as suggestive. Table 4 reports the effects of SONIM openings on whether these women sought assistance from protective and social services, including the police, gendarmerie, women's organizations, social services, hospitals, and municipalities. The first row shows estimates for a z-score index that combines these indicators. The estimates indicate a significant increase of 0.11 standard deviations in women's help-seeking behavior through applications to these protective and social services. Looking at the individual components of the index, we observe significant increases in help-seeking through women's organizations and social services. These institutions are central to linking women with shelters, legal counseling, and financial assistance that enables them to secure safety, rebuild their lives, and move toward greater independence.[19] Although the estimates for help-seeking from police and hospitals are less precise, their magnitudes are sizable relative to the sample means.[20]

Table 5 presents the results for help-seeking behavior through legal services. The estimates in the first row show a decline of 0.15 standard deviations in the legal services index following the introduction of SONIMs. Examining individual components of the index, there is a significant decline in women's applications to prosecutors rather than lawyers. This decline may reflect a shift in how women access legal support after SONIMs were established. One possibility is that women increasingly receive legal counseling and case guidance through women's NGOs, which they often reach through SONIM referrals. Another is that police may now direct women to SONIMs instead of sending them directly to prosecutors, allowing SONIM staff to coordinate the required legal steps. In both scenarios, SONIMs appear to function as an intermediary that consolidates and simplifies access to legal services, reducing the need for women to seek out prosecutors on their own.

[19]These findings are consistent with the feedback we received in interviews with SONIM social workers who suggested that NGOs are more effective in penetrating disadvantaged neighborhoods and helping women get access to immediate support.

[20]Since the sample in this analysis only includes women who previously experienced domestic violence, we may be underpowered to detect some of the treatment effects due to the limited sample size.

6.2 Attitudes towards Domestic Violence

The implementation of SONIMs may also shape women's attitudes toward domestic violence. By signaling that the state is actively confronting domestic violence through specialized prevention centers, these initiatives can raise awareness of women's rights and protections available to them. Greater awareness may reduce women's tolerance of abusive behavior and shift perceptions of what constitutes acceptable treatment. These shifts in attitudes may also influence how women respond to survey questions, potentially introducing reporting bias if increased awareness leads to greater recognition and disclosure of abusive behaviors that previously went unreported or were not identified as abuse.

In Table 6, we examine whether the introduction of SONIMs affected women's gender attitudes, including their views on domestic violence. The first row reports estimates for a gender attitudes index, which is a z-score based on women's agreement or disagreement with the statements listed in subsequent rows.[21] Higher values on this index correspond to more gender-equal attitudes. The estimates show no evidence of a significant impact of SONIM expansion on women's gender attitudes. The individual component estimate of whether women agree with the statement of "men can beat their partners in certain situations" is also insignificant, and only one of the seven individual components shows a statistically significant effect towards a less gender-equal attitude. Taken together, these findings suggest that SONIMs did not substantially shift underlying gender norms. This also indicates that our main results are unlikely to be driven by changes in reporting behavior stemming from increased awareness or shifts in attitudes induced by the policy.

6.3 Relationship Status and Marriage Market Indicators

We next consider whether the openings of SONIMs have any impact on women's relationship status or marriage market outcomes. If these centers enable women to obtain assistance in filing for divorce, provide access to shelters, and help them remain separated from their intimate partners, the

[21] Two components are reverse coded: "a woman should be able to spend her money as she wishes" and "men should also do housework, e.g., cooking and cleaning."

resulting reduction in exposure to a potentially violent partner could also account for the observed effects. In Table 7, the results show no evidence of a significant impact on the probability of being married, divorced, separated, or widowed.[22] Table 8 further examines whether SONIM openings have an impact on other marriage market outcomes, including age difference between partners, schooling difference between partners, an indicator for whether the woman had a say in who she married, and the number of children in the household. Again, we find no evidence of a significant impact on those outcomes. Overall, these results suggest that changes in relationship status or marriage market dynamics are unlikely to account for the reductions in IPV we document.

6.4 Labor Market Outcomes

We examine whether the effects we observe might stem from changes in women's employment or income. One of the stated objectives of SONIMs is to promote women's economic empowerment, for example, by assisting them in seeking job opportunities or facilitating access to vocational training. In principle, these channels could reduce economic dependence on an abusive partner and lower the risk of IPV. However, the estimates reported in Table 9 show no statistically significant impact of SONIM openings on the likelihood of working in the previous week, having personal income, or being employed in specific sectors such as agriculture, industry, or services. These findings indicate that SONIMs did not meaningfully alter women's short-term labor market outcomes during the study period. It is therefore unlikely that changes in employment or income account for reductions in IPV risk that we document. That said, it is possible that pathways to economic empowerment through employment and income do not materialize immediately, and therefore the absence of labor market effects does not rule out longer-run impacts through these channels.

[22] We also examine whether SONIM openings influenced the probability of ever having been in a relationship or ever being married, as reported in Appendix Table A4. We find no evidence of effects on these outcomes.

6.5 Measures of Mental Health

Finally, we examine whether the establishment of SONIMs affected women's mental health. In addition to providing shelter and assistance with legal or protective services, SONIMs offer counseling aimed at helping women cope with trauma and rebuild emotional resilience. If these services successfully reduce mental distress, they could improve women's overall well-being, enhance their capacity to make independent decisions, and lower their tolerance for abuse from intimate partners.

Following Altindag et al. (2022) and Erten and Keskin (2020), we create three standardized mental distress indices based on the 20-Item Self Reporting Questionnaire (SRQ-20) developed by the World Health Organization (WHO, 1994). The SRQ-20 stands out as one of the few mental health screening instruments developed specifically for use in low- and middle-income countries. Specifically, we construct three summary indices: (i) a mental distress index, calculated as the mean of the z-scores for 20 mental health indicators; (ii) a somatic distress index, based on the average of four bodily-symptom indicators that provide relatively objective measures of anxiety and depression; and (iii) a non-somatic distress index, derived from the average of the remaining 16 indicators reflecting more subjective assessments of anxiety and depression. Following (Anderson, 2008), all indices are standardized to have a mean of 0 and a standard deviation of 1. Higher values of indices reflect greater mental distress. Table 10 presents the results. We do not find evidence that SONIM openings led to measurable changes in any of the mental distress indices. The estimated effects are statistically insignificant and economically small, with point estimates below 0.05 standard deviations and confidence intervals that rule out moderate short-run effects on women's mental health.

7 Conclusion

This study provides causal evidence on the effectiveness of integrated, state-led institutional protection systems in reducing intimate partner violence. We investigate the impact of Türkiye's Violence Prevention and Monitoring Centers (SONIMs) on women's risk of intimate partner vio-

lence, drawing on data on female homicides and survey data on women's experiences of domestic violence, together with a research design that takes advantage of the staggered rollout of these institutions across provinces over time. Our analysis shows that the establishment of SONIMs has played a significant role in reducing some of the most severe forms of violence against women. In particular, provinces that opened these centers experienced sizable declines in female homicides committed by intimate partners. Event-study estimates reveal no evidence of diverging trends before SONIMs were introduced, which supports the interpretation that these results reflect causal policy effects rather than pre-existing provincial differences. In addition, supplementary evidence from survey data indicates that the presence of these centers substantially reduced women's self-reported risk of physical violence perpetrated by their intimate partners.

Our analysis of mechanisms indicates that these reductions operate primarily through changes in access to protection rather than through shifts in norms or socioeconomic conditions. Following the opening of a center, women at risk of violence become more likely to seek help from women's organizations and social services, while direct applications to prosecutors decline, consistent with centers functioning as coordination hubs that streamline access to legal and protective services. In contrast, we find no evidence that centers affect gender attitudes, labor market outcomes, relationship status, marriage market outcomes or mental health, suggesting that the main channel is improved institutional coordination and reduced barriers to help-seeking rather than changes in economic independence or social norms.

Our findings have important policy implications. They underscore the importance of building coordinated institutional systems that translate legal protections into timely and accessible services for women at risk. The results also highlight the importance of complementary social and institutional environments, as centers are most effective in provinces with more gender-progressive norms and stronger institutional capacity. More broadly, the evidence from Türkiye suggests that integrated service models that combine legal, social, and protective functions within a single institutional structure can play a central role in reducing intimate partner violence without generating evidence of backlash, offering lessons for countries seeking scalable and coordinated responses to

gender-based violence.

Finally, our findings raise a broader concern about institutional continuity. Because SONIMs function as coordination hubs that connect women to police, legal, and social services, the protection they provide depends on sustained operation and cross-agency integration. If such systems were to be disrupted or defunded after communities and frontline agencies have come to rely on them, the gains in women's safety we document could be difficult to maintain. This concern is particularly relevant given that the reductions in violence we document appear to operate through improved access to institutional protection or lowering barriers to help-seeking rather than through shifts in norms or economic conditions, which suggests that institutional presence is a necessary condition for these efforts to persist.

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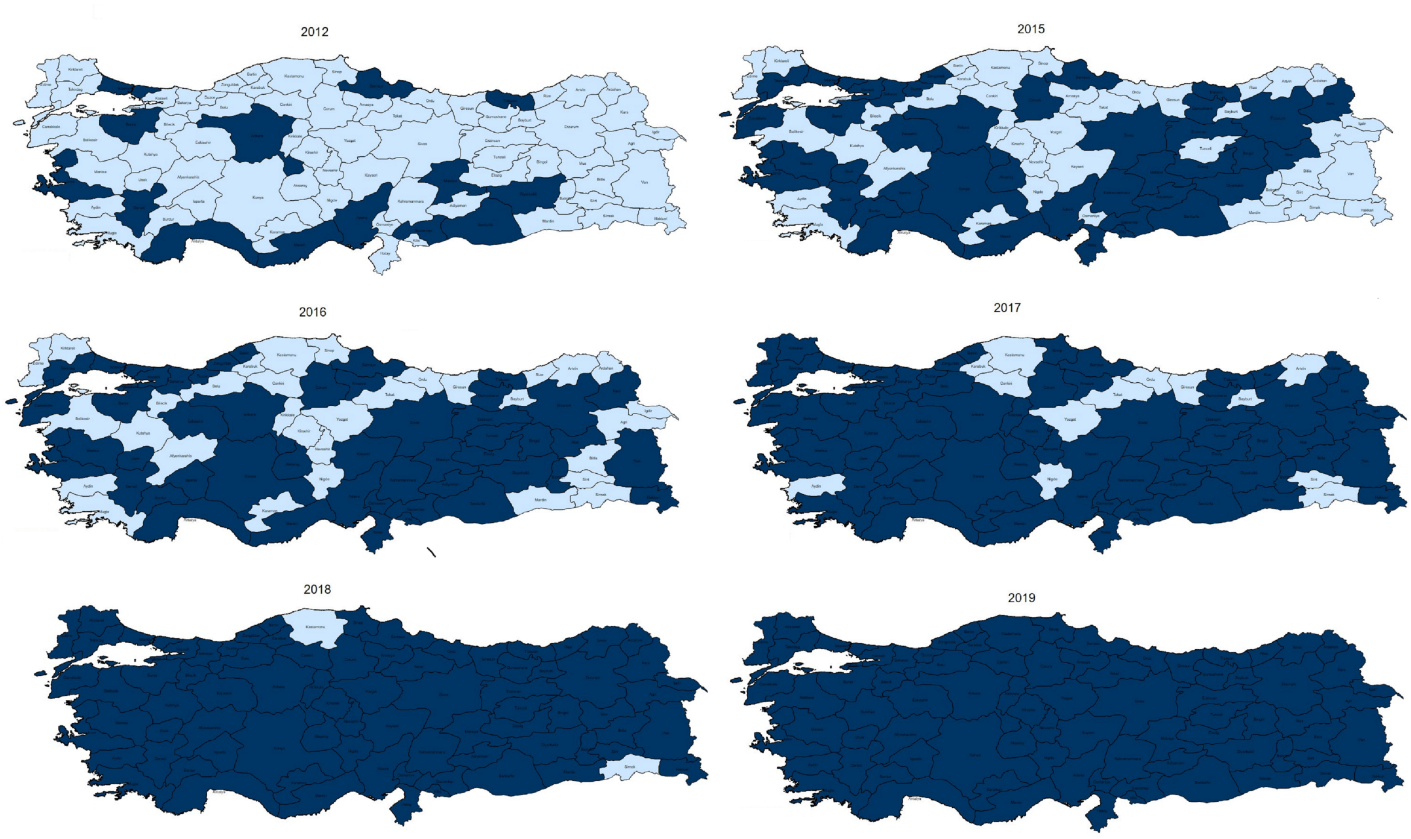
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FIGURE 1: ROLLOUT OF SONIMS ACROSS TURKISH PROVINCES, 2012-2019



Notes: Provinces shaded in dark blue indicate the presence of an operational SONIM, while light blue indicates no operational center in that year. The figure is based on data obtained from the Ministry of Family, Labour and Social Services in Türkiye.

FIGURE 2: EFFECTS OF SONIMS ON FEMALE HOMICIDES

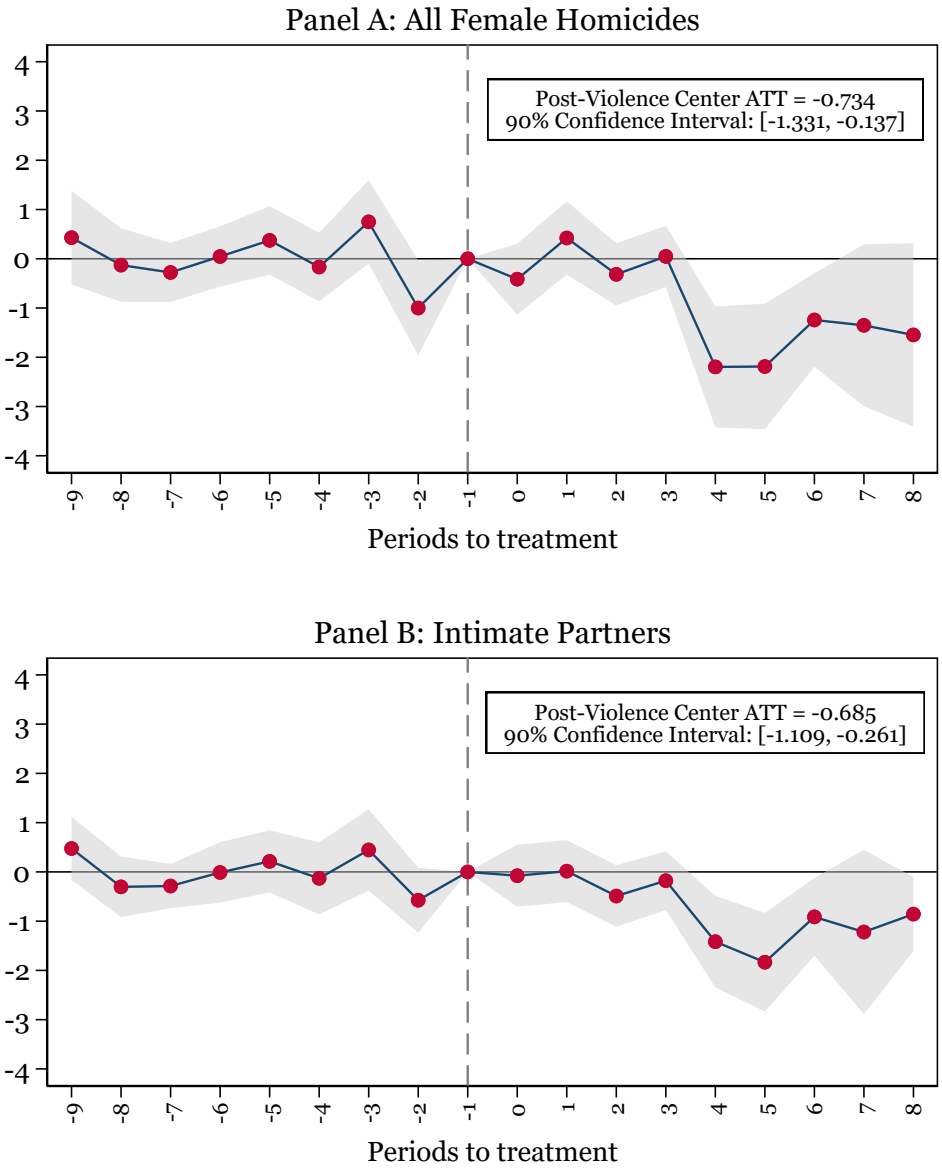
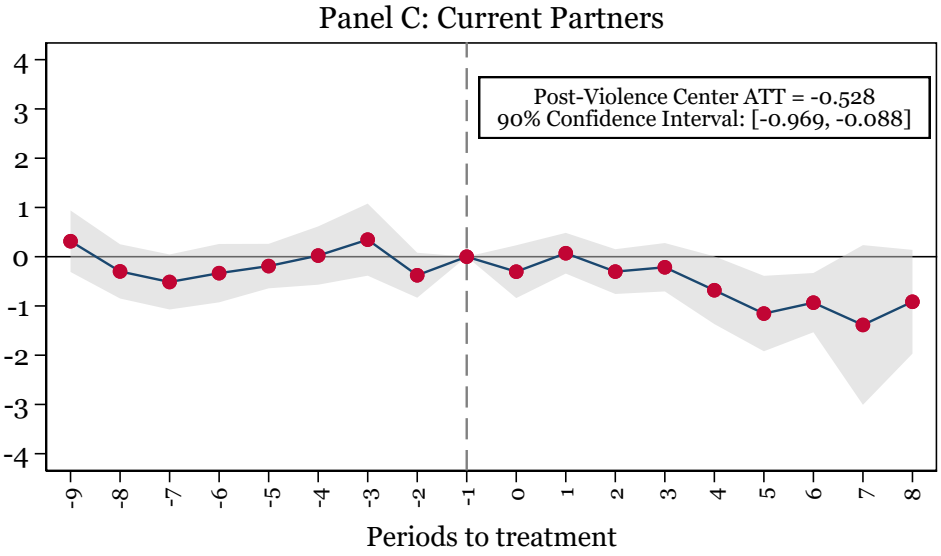
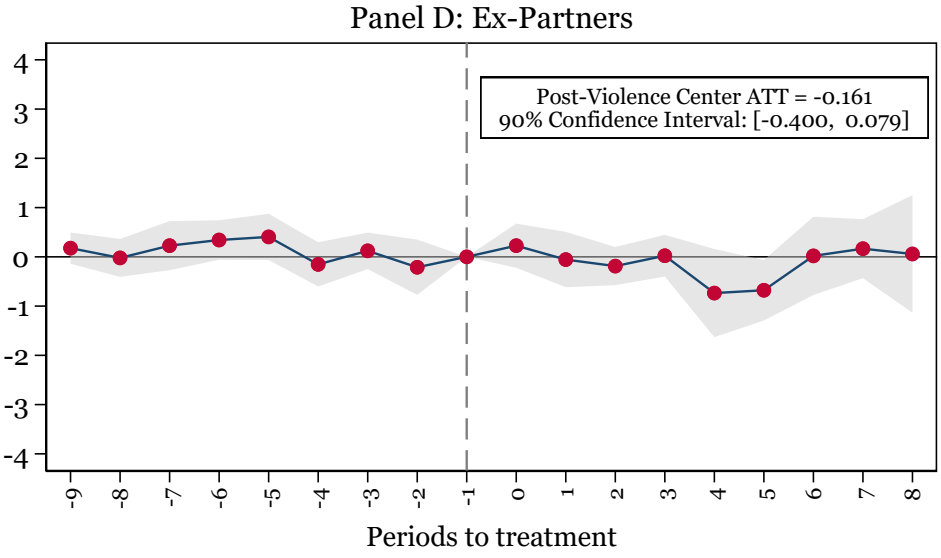


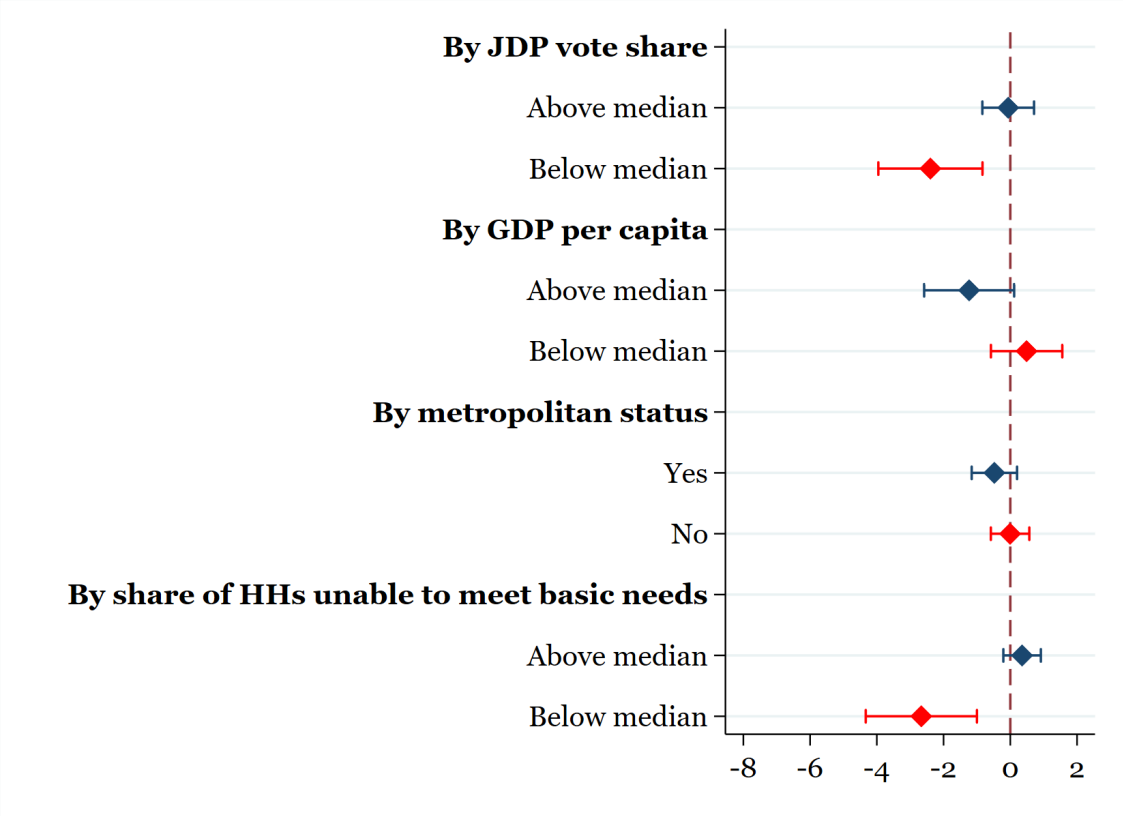
FIGURE 2: EFFECTS OF SONIMS ON FEMALE HOMICIDES BY CURRENT AND EX-PARTNERS (CONTINUED)





Notes: The figure plots event-study estimates from the dynamic DID estimator proposed by Callaway and Sant'Anna (2021). In Panel C, the outcome is the number of intimate partner homicides perpetrated by the current intimate partner at the province-quarter level. In Panel D, the outcome is the number of intimate partner homicides perpetrated by the ex-partner at the province-quarter level. Event time is relative to the last quarter before treatment for each province. ATT coefficients are estimated using the csdid command in STATA based on the doubly robust stabilized inverse probability weighting by Callaway and Sant'Anna (2021). The estimations control for the natural logarithms of baseline GDP per capita, province population, number of women with high school and above degrees, hospital beds per capita, Arabic- and Kurdish-speaking population (based on 1965 censuses), unemployment rate at 26 Nuts-2 region level and 5 region dummies. 90% confidence bands are reported based on standard errors clustered at province level.

FIGURE 3: HETEROGENEITY BY PROVINCE CHARACTERISTICS



Notes: The figure displays the effects of SONIMs on the number of female homicides by province characteristics. The sample is split at median by province characteristics (as defined in the data section), and ATT coefficients are estimated using the csdid command in STATA based on the doubly robust stabilized inverse probability weighting by Callaway and Sant'Anna (2021). 90% confidence bands are reported based on standard errors clustered at province level.

TABLE 1: SUMMARY STATISTICS

	Mean	SD	Min	Max	N
Intimate partner violence in the last 12 months					
Physical violence	0.09	0.29	0.00	1.00	18420
Psychological violence	0.25	0.43	0.00	1.00	18363
Sexual violence	0.07	0.25	0.00	1.00	18382
Demographic and partner characteristics					
Age	36.58	11.16	15.00	59.00	18420
Urban	0.72	0.45	0.00	1.00	18420
Turkish mother tongue	0.97	0.18	0.00	1.00	18420
Kurdish mother tongue	0.03	0.17	0.00	1.00	18420
Arabic mother tongue	0.00	0.04	0.00	1.00	18420
Years of education	6.25	4.14	0.00	20.00	17940
Illiterate	0.15	0.35	0.00	1.00	18419
Age difference between husband and wife	4.69	5.90	-34.00	89.00	16845
Schooling difference between husband and wife	-1.88	3.45	-17.00	11.00	17171
Marriage Decision	0.41	0.49	0.00	1.00	16980
Number of children	2.32	1.77	0.00	20.00	18413
Labor market outcomes					
Worked last week	0.18	0.38	0.00	1.00	18417
Has personal income	0.21	0.41	0.00	1.00	18412
Worked in agriculture	0.11	0.31	0.00	1.00	18420
Worked in industry	0.02	0.14	0.00	1.00	18420
Worked in services	0.16	0.37	0.00	1.00	18420
Relationship status					
Married	0.86	0.35	0.00	1.00	18420
Divorced	0.02	0.15	0.00	1.00	18420
Separated	0.01	0.08	0.00	1.00	18420
Widowed	0.03	0.18	0.00	1.00	18420
Gender attitudes					
A woman should not argue with her partner if she disagrees with him	0.48	0.50	0.00	1.00	18276
Men can beat their partners in certain situations	0.22	0.42	0.00	1.00	18370
A woman should be able to spend her money as she wishes	0.67	0.47	0.00	1.00	18214
Men should also do housework, e.g., cooking and cleaning	0.68	0.47	0.00	1.00	18322
It may be necessary to beat children for discipline	0.33	0.47	0.00	1.00	18342
Men in the family are responsible for a woman's behavior	0.47	0.50	0.00	1.00	18081
It is a woman's duty to have sexual activity with her husband	0.23	0.42	0.00	1.00	18187

Notes: This table reports summary statistics (mean, standard deviation, minimum, maximum, and number of observations) for selected variables. The sample includes women who have ever been in a relationship. Partner characteristics refer to the most recent partner, and all violence variables capture experiences within the past 12 months.

TABLE 2: EFFECTS OF SONIMS ON FEMALE HOMICIDES USING POISSON DID ESTIMATIONS

	(1) Female Homicides	(2) Intimate Partners	(3) Current Partners	(4) Ex Partners
Treatment × post	-0.328**	-0.239*	-0.117	-0.030
	(0.155)	(0.128)	(0.085)	(0.058)
Percentage change	-28%	-21%	-11%	-3%
Pre-treatment mean	3.60	3.44	2.72	0.72
Observations	3,159	3,159	3,159	3,159
Controls	Yes	Yes	Yes	No

Notes: Data source for female homicides between 2010 and 2019 is Bianet's Male Violence Monitor. The two-way fixed effects coefficients associated with the staggered rollout of SONIMS are estimated using the jwdid algorithm with Poisson option provided by Wooldridge (2021). Specifications in columns 1-3 include full interaction of time and policy dummies with initial values of log of GDP per capita, log number of hospital beds per capita, share of women with high school education or above, NUTS2-unemployment rate, Kurdish and Arabic speaking population (both in logs). The specifications in columns 1-3 also include DHS region dummies interacted with time dummies. Due to convergence issues in Poisson estimations, the specification for ex-partner crimes in column 4 does not include control variables. Anticipation up to 4 quarters is allowed. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 3: EFFECTS OF SONIMS ON PHYSICAL IPV

Panel A: Full sample	(1)	(2)	(3)
Treat × post	-0.014	-0.017*	-0.019*
	(0.011)	(0.010)	(0.010)
Observations	18,420	18,420	18,420
Outcome mean	0.0926	0.0926	0.0926
Panel B: Women younger than 35			
Treat × post	-0.016	-0.027*	-0.027**
	(0.017)	(0.014)	(0.014)
Observations	8,624	8,624	8,624
Outcome mean	0.1218	0.1218	0.1218
Panel C: Women older than or equal to 35			
Treat × post	-0.016	-0.013	-0.014
	(0.011)	(0.012)	(0.012)
Observations	9,796	9,796	9,796
Outcome mean	0.0669	0.0669	0.0669
Panel D: Illiterate women			
Treat × post	-0.077***	-0.069***	-0.064**
	(0.026)	(0.025)	(0.026)
Observations	2,722	2,722	2,722
Outcome mean	0.1043	0.1043	0.1043
Panel E: Women who completed middle school or less			
Treat × post	-0.017	-0.018*	-0.018*
	(0.011)	(0.010)	(0.010)
Observations	14,017	14,017	14,017
Outcome mean	0.0998	0.0998	0.0998
Panel F: Women with above middle school education			
Treat × post	-0.007	-0.007	-0.008
	(0.016)	(0.015)	(0.015)
Observations	3,920	3,920	3,920
Outcome mean	0.0638	0.0638	0.0638
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on an indicator of whether the respondent experienced physical IPV in the last 12 months for the full sample and different sub-samples. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 4: THE EFFECTS OF SONIMS ON HELP-SEEKING THROUGH PROTECTIVE AND SOCIAL SERVICES

	(1)	(2)	(3)
Protective and social services index	0.056	0.112*	0.112*
	(0.066)	(0.066)	(0.066)
Observations	6,882	6,882	6,882
Outcome mean	0.0000	0.0000	0.0000
Police or gendarmerie	0.001	0.008	0.006
	(0.023)	(0.026)	(0.026)
Observations	6,469	6,469	6,469
Outcome mean	0.0587	0.0587	0.0587
Women's organizations	0.003	0.005*	0.006*
	(0.003)	(0.003)	(0.003)
Observations	5,939	5,939	5,939
Outcome mean	0.0020	0.0020	0.0020
Social services	0.005	0.009**	0.009**
	(0.003)	(0.004)	(0.004)
Observations	6,011	6,011	6,011
Outcome mean	0.0028	0.0028	0.0028
Hospitals	0.016	0.018	0.018
	(0.015)	(0.013)	(0.013)
Observations	6,335	6,335	6,335
Outcome mean	0.0406	0.0406	0.0406
Municipalities	-0.006	-0.005	-0.005
	(0.005)	(0.005)	(0.005)
Observations	5,548	5,548	5,548
Outcome mean	0.0023	0.0023	0.0023
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region $\times$ year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for help-seeking behavior for women who ever experienced IPV. The first row reports estimates for a composite z-score index based on all components listed in other rows. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 5: THE EFFECTS OF SONIMS ON HELP-SEEKING THROUGH LEGAL SERVICES

	(1)	(2)	(3)
Legal services index	-0.162*	-0.154*	-0.152*
	(0.087)	(0.081)	(0.081)
Observations	6,429	6,429	6,429
Outcome mean	-0.0000	-0.0000	-0.0000
Lawyer	-0.002	0.001	0.001
	(0.012)	(0.013)	(0.013)
Observations	5,711	5,711	5,711
Outcome mean	0.0228	0.0228	0.0228
Prosecutor	-0.039**	-0.038**	-0.039***
	(0.016)	(0.014)	(0.015)
Observations	6,374	6,374	6,374
Outcome mean	0.0307	0.0307	0.0307
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region $\times$ year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for help-seeking behavior for women who ever experienced IPV. The first row reports estimates for a composite z-score index based on all components listed in other rows. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, unemployment rate. Column 2 adds five-region indicators interacted with the post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 6: THE EFFECTS OF SONIMS ON GENDER ATTITUDES

	(1)	(2)	(3)
Gender attitudes index	0.053	0.054	0.044
	(0.053)	(0.048)	(0.051)
Observations	18,413	18,413	18,413
Outcome mean	0.0131	0.0131	0.0131
A woman should not argue with her partner if she disagrees with him	-0.022	-0.015	-0.022
	(0.025)	(0.021)	(0.020)
Observations	18,276	18,276	18,276
Outcome mean	0.4840	0.4840	0.4840
A woman should be able to spend her money as she wishes	0.030	0.019	0.022
	(0.023)	(0.021)	(0.021)
Observations	18,214	18,214	18,214
Outcome mean	0.6718	0.6718	0.6718
Men can beat their partners in certain situations	-0.039	-0.029	-0.033
	(0.026)	(0.022)	(0.024)
Observations	18,370	18,370	18,370
Outcome mean	0.2229	0.2229	0.2229
Men should also do housework, e.g., cooking and cleaning	0.037*	0.025	0.028
	(0.022)	(0.020)	(0.019)
Observations	18,322	18,322	18,322
Outcome mean	0.6798	0.6798	0.6798
Men in the family are responsible for a woman's behavior	-0.014	-0.010	-0.014
	(0.026)	(0.026)	(0.028)
Observations	18,081	18,081	18,081
Outcome mean	0.4660	0.4660	0.4660
It is a woman's duty to have sexual intercourse with her husband	0.043*	0.057**	0.053**
	(0.023)	(0.022)	(0.022)
Observations	18,187	18,187	18,187
Outcome mean	0.2253	0.2253	0.2253
It may be necessary to beat children for discipline	0.007	0.014	0.007
	(0.026)	(0.026)	(0.025)
Observations	18,342	18,342	18,342
Outcome mean	0.3308	0.3308	0.3308
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region $\times$ year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for gender attitudes for the sample of women in domestic violence module. The first row reports estimates for a composite z-score index based on all components listed in other rows, and higher values reflect more equal gender norms. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 7: THE EFFECTS OF SONIMS ON RELATIONSHIP STATUS

	(1)	(2)	(3)
Married	0.021	0.018	0.014
	(0.017)	(0.016)	(0.016)
Observations	18,420	18,420	18,420
Outcome mean	0.8603	0.8603	0.8603
Divorced	-0.003	-0.001	0.000
	(0.006)	(0.006)	(0.007)
Observations	18,420	18,420	18,420
Outcome mean	0.0226	0.0226	0.0226
Separated	-0.005	-0.006*	-0.005
	(0.003)	(0.003)	(0.003)
Observations	18,420	18,420	18,420
Outcome mean	0.0064	0.0064	0.0064
Widowed	-0.002	-0.004	-0.003
	(0.006)	(0.006)	(0.006)
Observations	18,420	18,420	18,420
Outcome mean	0.0330	0.0330	0.0330
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for relationship status for the sample of women in domestic violence module (conditional on being in a relationship). All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 8: THE EFFECTS OF SONIMS ON MARRIAGE MARKET OUTCOMES

	(1)	(2)	(3)
Age difference between husband and wife	-0.627**	-0.549*	-0.506
	(0.314)	(0.315)	(0.311)
Observations	16,845	16,845	16,845
Outcome mean	4.6886	4.6886	4.6886
Schooling difference between husband and wife	-0.093	-0.040	-0.075
	(0.130)	(0.123)	(0.121)
Observations	17,171	17,171	17,171
Outcome mean	-1.8789	-1.8789	-1.8789
Marriage decision	0.031	0.024	0.023
	(0.021)	(0.017)	(0.019)
Observations	16,980	16,980	16,980
Outcome mean	0.4117	0.4117	0.4117
Number of children	0.009	0.006	0.009
	(0.085)	(0.079)	(0.083)
Observations	18,413	18,413	18,413
Outcome mean	2.3244	2.3244	2.3244
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. Age difference between husband and wife is calculated as husband's age at the time of survey minus wife's age. Schooling difference is computed as husband's total years of schooling minus wife's total years of schooling. Marriage decision is a binary variable coded as 1 if the marriage was self-decided, and 0 if it was arranged by families, through abduction, exchange (berdel), or other traditional means. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 9: THE EFFECTS OF SONIMS ON LABOR MARKET OUTCOMES

	(1)	(2)	(3)
Worked last week	0.028	0.031	0.024
	(0.018)	(0.019)	(0.017)
Observations	18,417	18,417	18,417
Outcome mean	0.1775	0.1775	0.1775
Has personal income	0.002	0.002	0.008
	(0.022)	(0.020)	(0.020)
Observations	18,412	18,412	18,412
Outcome mean	0.2141	0.2141	0.2141
Worked in agriculture	0.007	0.021	0.004
	(0.029)	(0.027)	(0.018)
Observations	18,420	18,420	18,420
Outcome mean	0.1063	0.1063	0.1063
Worked in industry	-0.002	-0.001	-0.002
	(0.007)	(0.006)	(0.007)
Observations	18,420	18,420	18,420
Outcome mean	0.0187	0.0187	0.0187
Worked in services	0.012	0.013	0.018
	(0.017)	(0.015)	(0.015)
Observations	18,420	18,420	18,420
Outcome mean	0.1597	0.1597	0.1597
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for labor market outcomes for the sample of women in domestic violence module. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE 10: THE EFFECTS OF SONIMS ON WOMEN'S MENTAL HEALTH

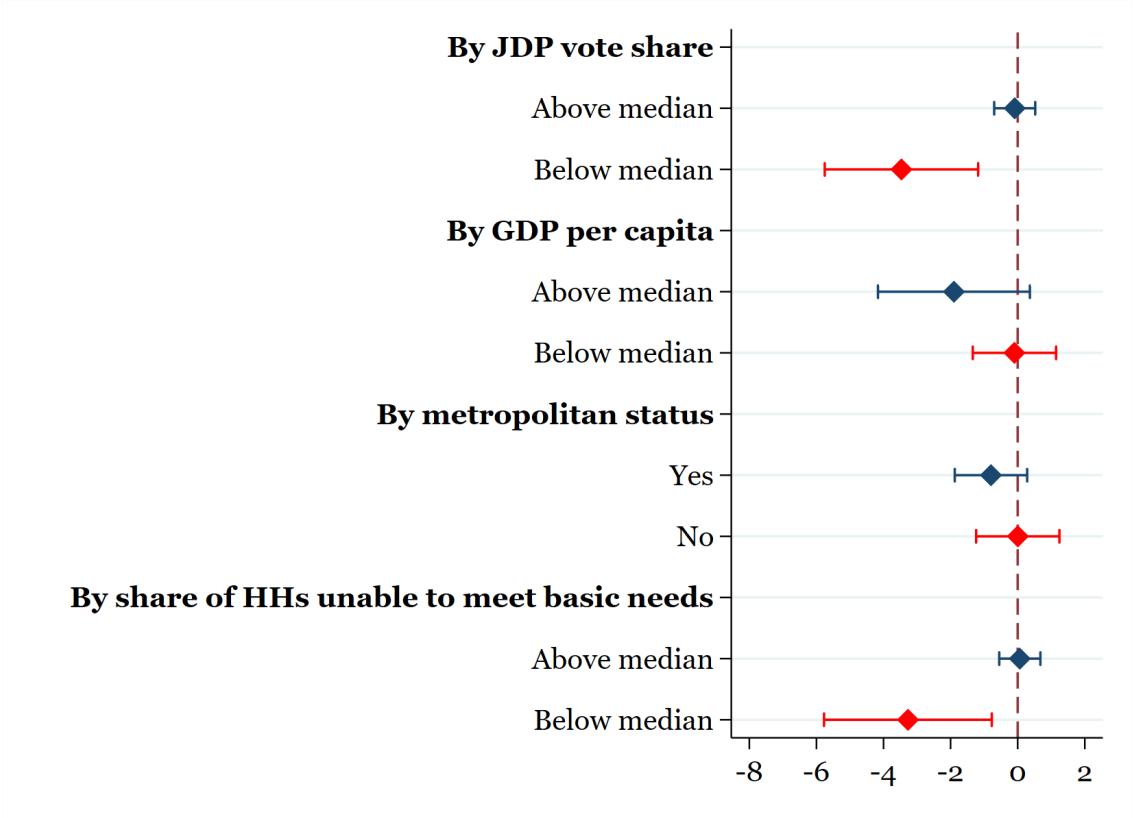
Mental distress index	-0.021	-0.026	-0.023
	(0.041)	(0.035)	(0.036)
Observations	20,255	20,255	20,255
Outcome mean	-0.0000	-0.0000	-0.0000
Somatic mental distress index	0.017	0.029	0.030
	(0.040)	(0.038)	(0.038)
Observations	20,255	20,255	20,255
Outcome mean	0.0000	0.0000	0.0000
Non-somatic mental health distress index	-0.037	-0.047	-0.044
	(0.041)	(0.036)	(0.037)
Observations	20,255	20,255	20,255
Outcome mean	-0.0000	-0.0000	-0.0000
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on the standardized mental health index (z-score) of women in the domestic violence module. The mental health index is constructed from a set of individual indicators that take the value 1 if the respondent reported experiencing the problem and 0 otherwise, and then standardized to have mean zero and unit variance. Somatic indicators include headache, hand tremors, indigestion, and stomach discomfort, while non-somatic indicators capture emotional, cognitive, and behavioral symptoms such as anxiety, panic, guilt, and irritability. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with the post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

APPENDIX

Additional Figures and Tables

FIGURE A1: Heterogeneity by Province Characteristics: Intimate Partner Homicides



Notes: The figure displays the effects of SONIMs on the number of intimate partner homicides by province characteristics. The sample is split at median by province characteristics (as defined in the data section), and ATT coefficients are estimated using the csdid command in STATA based on the doubly robust stabilized inverse probability weighting by Callaway and Sant'Anna (2021). 90% confidence bands are reported based on standard errors clustered at province level.

TABLE A1: BALANCE TESTS FOR STAGGERED ROLLOUT OF SONIMS

Dependent variable	(1)	(2)
Log of GDP per capita	0.013	0.013
	(0.010)	(0.011)
Log of population	0.010*	0.008
	(0.006)	(0.007)
Share of women with high school education or above	-0.001	-0.000
	(0.001)	(0.001)
Hospital beds per capita	-109.085	-176.732**
	(78.943)	(84.482)
Unemployment rate	1.009	1.087
	(0.874)	(1.052)
Province fixed effects, time fixed effects	Yes	Yes
Five-region $\times$ time fixed effects	No	Yes

Notes: Data source for female homicides between 2010 and 2019 is Bianet's Male Violence Monitor. This table reports estimates from regressions of provincial-level variables on SONIM treatment indicator. Each cell in the table corresponds to a separate regression of the corresponding single provincial-level variable on the SONIM treatment indicator. For femicide-related outcomes, quarterly data are used and the specifications include province and year–quarter fixed effects. For other provincial characteristics, annual data are used with province and year fixed effects. Column 1 includes province and year fixed effects. Column 2 adds five-region indicators interacted with post indicator. Standard errors are clustered at the province level. Since the unemployment rate is only available at the NUTS2 (26-region) level, fixed effects and clustering are implemented at the NUTS2 level rather than at the province level in the corresponding regressions. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE A2: BALANCE TEST FOR SURVEY DATA

Dependent variable	(1)	(2)
Log of GDP per capita	-0.015	-0.000
	(0.022)	(0.023)
Age	-0.214	-0.224
	(0.344)	(0.345)
Share of women with high school education or above	0.001	0.001
	(0.002)	(0.001)
Urban	-0.036	-0.059
	(0.078)	(0.064)
Hospital beds per population	-0.000*	-0.000
	(0.000)	(0.000)
Unemployment rate	0.199	0.243
	(0.895)	(0.951)
Province fixed effects, time fixed effects	Yes	Yes
Five-region $\times$ time fixed effects	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. This table reports estimates from regressions of provincial-level variables on SONIM treatment indicator. Each cell in the table corresponds to a separate regression of the corresponding single provincial-level variable on the SONIM treatment indicator. For femicide-related outcomes, quarterly data are used and the specifications include province and year–quarter fixed effects. For other provincial characteristics, annual data are used with province and year fixed effects. Column 1 includes province and year fixed effects. Column 2 adds five-region indicators interacted with post indicator. Standard errors are clustered at the province level. Since the unemployment rate is only available at the NUTS2 (26-region) level, fixed effects and clustering are implemented at the NUTS2 level rather than at the province level in the corresponding regressions. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE A3: EFFECTS OF SONIMS ON PSYCHOLOGICAL AND SEXUAL IPV

Panel A: Psychological violence	(1)	(2)	(3)
Treat × post	-0.006	-0.003	-0.003
	(0.021)	(0.019)	(0.019)
Observations	18,438	18,438	18,438
Outcome mean	0.2462	0.2462	0.2462
Panel B: Sexual violence			
Treat × post	0.016	0.011	0.010
	(0.010)	(0.010)	(0.010)
Observations	18,466	18,466	18,466
Outcome mean	0.0676	0.0676	0.0676
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region × year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators of whether the respondent experienced psychological IPV and sexual IPV in the last 12 months for the full sample and different sub-samples. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE A4: THE EFFECTS OF SONIMS ON EVER HAVING A RELATIONSHIP OR EVER BEING MARRIED

	(1)	(2)	(3)
Ever had a relationship	-0.008	-0.011	-0.009
	(0.014)	(0.013)	(0.013)
Observations	20,257	20,257	20,257
Outcome mean	0.9152	0.9152	0.9152
Ever married	0.005	0.005	0.005
	(0.009)	(0.009)	(0.009)
Observations	20,257	20,257	20,257
Outcome mean	0.8434	0.8434	0.8434
Time-varying province characteristics	Yes	Yes	Yes
Province fixed effects, post indicator, year fixed effects	Yes	Yes	Yes
Five-region $\times$ year fixed effects	No	Yes	Yes
Individual controls	No	No	Yes

Notes: Data are from the 2008 and 2014 NSDVAW. The table presents average treatment effects of the SONIM openings on indicators for relationship status for women in full sample. All specifications include province fixed effects, a post indicator, year fixed effects, and time-varying province characteristics, including log of GDP per capita, number of hospital beds per capita, share of women with high school education or above, and unemployment rate. Column 2 adds five-region indicators interacted with post indicator. Column 3 adds individual covariates, including age fixed effects, indicators for mother tongue, and an indicator for urban locations. Outcome means are listed in rows under observation numbers. Standard errors in parentheses are clustered at the province level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.