

Do Voters Respond to Violence Against Women?

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January 15, 2026

Abstract

Violence against women (VAW) is a major social harm and a central target of political advocacy by elites and social movements. Yet, citizens' demand-side role in confronting VAW remains underexplored. Do voters support anti-VAW policy action by shifting their electoral choices when femicides shock their local communities? This paper examines this question in Spain—a case with high public salience of gender-based violence. Leveraging an original municipality-level dataset of lethal VAW events, I estimate the causal impact of femicides on local electoral support for socialists, conservatives, and the radical left. Using a staggered difference-in-differences design and matching techniques, I find that femicides are largely electorally inconsequential. Most estimated coefficients are statistically insignificant and substantively tiny. Where any effect appears, it is weak and clustered around the passage of Spain's landmark 2004 law against gender violence. Overall, the results align most closely with voters' indifference toward VAW, casting doubt on the capacity of bottom-up democratic responsiveness to address structurally unequal forms of violence that have been historically confined to the private sphere.

Keywords: Violence against women, local shocks, electoral behavior, staggered difference-in-differences

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1 Introduction

Violence against women (VAW) is the most pervasive human rights violation worldwide, cutting across cultural contexts, political regimes, and levels of economic development. Globally, one in three women have experienced physical or sexual violence at the hands of an intimate partner over her lifetime ([World Health Organization, 2021](#)), and its most extreme manifestation, femicide, results in roughly 50,000 deaths¹ annually ([UNODC, 2025](#)). Unsurprisingly, its immense social magnitude renders VAW a high-salience domestic problem and a major focus of transnational political action, structuring the discourse and policy responses of political parties ([Annesley et al., 2015](#); [Lavizzari and Pirro, 2024](#); [Weeks et al., 2024](#)), international organizations ([Montoya, 2013](#); [Medie and Walsh, 2021](#)), and social movements ([Weldon, 2013](#); [Hall, 2015](#)).

However, whereas anti-VAW mobilization by elites ([Bochenkova et al., 2023](#)) and organized civil society has been extensively studied (see [Htun and Weldon, 2012](#)), the role of ordinary citizens in demanding policy action against VAW remains poorly understood. Specifically, prevailing accounts of policy-making to combat gender-based violence emphasize the agency of feminist movements in advancing legal reforms and policy initiatives designed to protect women. Non-activist, average voters are rarely examined as either sources of, or constraints on, political will in the fight against VAW. Thus, whether voters form part of anti-VAW coalitions and whether they translate such preferences into electoral mandates for policy change remains an open empirical question. This paper addresses this gap by examining the electoral impact of femicides on voters' choices.

In particular, I focus on Spain, where VAW incidents are extensively documented (see Appendix) and where VAW has occupied a central place in some of the country's most

¹This figure includes only intimate-partner femicides, a substantial but not exhaustive fraction of all VAW killings.

salient and contested legal reforms ([Bosch-Fiol and Ferrer-Perez, 2020](#); [Donato, 2023](#)).

Leveraging municipality-level data on femicides and electoral behavior across nine national elections, I evaluate a set of alternative theories of voter response to VAW, testing whether femicides induce voters' rejection of VAW, trigger retrospective accountability, activate issue ownership dynamics, or simply fail to elicit electoral responses. Previewing the results, I find that femicides are largely electorally inconsequential at the municipal level, with only extremely modest and election-specific effects when VAW and related policy reforms were highly salient. If anything, citizens appear largely unmoved, electorally, by gender-based killings.

The paper proceeds as follows. I first introduce four competing accounts of voters' responses to VAW and I lay out their likely observational consequences within the Spanish party system. Next, I discuss the empirical strategy, which mixes a staggered difference-in-differences design with matching techniques. After presenting the results and assessing their robustness, I conclude.

2 VAW and electoral behavior

2.1 Electoral responses to tragedy

A large body of research shows that voters react electorally to unanticipated negative shocks such as natural disasters, financial scandals, mass shootings, or episodes of political violence. This body of research offers multiple and heterogeneous explanations linking negative occurrences to voters' behavior. For instance, sudden harmful events may operate as "focusing events" that redirect public attention toward a social problem and activate political demand for corrective action ([Birkland, 1998](#)) (an *electoral mandate* effect). Furthermore, voters may also punish incumbents for personal and collective misfortunes, irrespective of whether governments could realistically prevent them (a *retrospective accountability* ef-

fect). Finally, issue-ownership theories (Petrocik, 1996) predict that parties perceived as especially competent in a policy domain may benefit electorally when tragedies linked to that domain occur outside their time in office, but may instead be punished once they control the relevant policy-making venue and outcomes fall short of expectations (Plescia and Kitzinger, 2018) (an *issue-ownership* effect).

VAW, and femicides in particular, meet many of the conditions under which these theoretical expectations should operate, at least in democratic contexts enjoying free press and legal and social norms fostering gender equality. First, femicides are sudden, emotionally charged events that disrupt local communities and foreground the extreme physical and psychological harm borne by women. Moreover, they attract intense media attention and generate sustained public discussion, primarily in local settings but sometimes country-wide or even internationally. They are also typically framed as failures of criminal justice, social services, and policing efforts, potentially fueling anger and frustration at state's ineffectiveness. Lastly, femicides are frequently the target of pungent political confrontation. Although combating crime constitutes a commitment universally endorsed by political parties, combating gender-based violence is not without controversy across political ideologies (see Araújo and Gatto, 2022). Whereas the Left generally advocates decisive action against VAW, conservative parties have sometimes been reluctant to view VAW as a public problem requiring public intervention. More extremely, some radical populist right-wing parties deny its very existence as a distinct form of violence and oppose any policy measures aimed at curbing it. Thus, VAW structures a relevant axis of political conflict susceptible of discursive capitalization by parties.

Alternatively, VAW also presents an interesting case to expect timid or outright indifferent electoral reactions. In contrast to broad-based violent crime and other diffuse

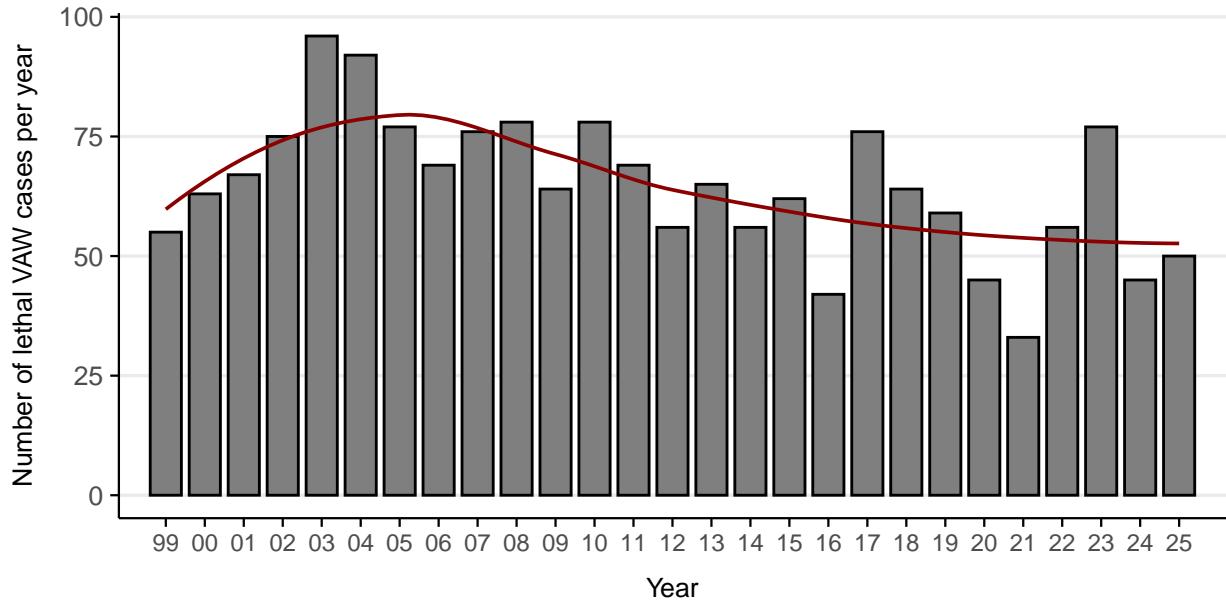


Figure 1. Lethal VAW cases in Spain per year

Note: The smooth red curve is estimated using a locally weighted polynomial regression fitted to annual counts

shocks such as earthquakes or financial scandals, the gender-specific nature of VAW limits its perception as a “universal threat.” VAW renders targeting asymmetries readily visible, as only women are susceptible to victimization. It is therefore relevant to examine whether voters are less inclined to mobilize in response to particularistic forms of crime. Moreover, although VAW has progressively occupied public discourse in advanced democracies, enduring patriarchal values still portray it as a problem to be dealt with “behind closed doors” ([Straus et al., 1980](#)). VAW’s politicization within voters’ minds cannot be taken for granted despite sustained media and political attention. Thus, there are good reasons to suspect that voters may remain electorally unmoved by femicides (an *indifference* non-effect).

2.2 Partisan distribution of VAW’s effects in Spain

Building on the preceding discussion, I now apply these broad theoretical expectations to the empirical context examined in this paper (i.e., Spanish national legislative elections from 2000 onward). Spain offers a particularly relevant setting to study electoral responses to VAW, given both the availability of fine-grained VAW data thanks to close

monitorization by feminist organizations and the existence of well-defined party positions on gender-based violence. Although femicides are relatively rare, over the past quarter century they have stabilized at around sixty cases per year (see [Figure 1](#)), repeatedly jolting public opinion. In particular, I derive distinct empirical expectations for the three main party families competing during the period of interest (2000-2023): socialists (the Spanish Socialist Workers' Party, or *PSOE*), conservatives (the Popular Party, or *PP*), and the radical left (represented by different parties across periods—and even simultaneously within certain periods—including *IU*, *Podemos*, and *Sumar*).

Starting with an *electoral mandate* interpretation of lethal VAW occurrences, femicides should heighten the salience of womens' physical and psychological suffering and activate voter demand for corrective public action. To the extent that political parties differ in their willingness to recognize VAW as a public problem and to support state intervention, these shocks should generate asymmetric electoral responses. Parties that consistently advocate strong anti-VAW policies—namely, socialists and the radical left—should benefit electorally following femicides, whereas parties that have been more reluctant to endorse an anti-VAW commitment should be disadvantaged, viz., the conservative Popular Party.

Drawing on *issue-ownership* theories of negative shocks, these generate more conditional expectations as to VAW's impact on electoral behavior. In Spain, PSOE has historically played a central role in institutionalizing violence against women as a public policy domain. Since the democratic transition, socialist governments have maintained close ties with feminist movements and spearheaded key institutional developments, beginning with the creation of the Instituto de la Mujer in 1983 and culminating in the 2004 Organic Law on Integrated Protection Measures against Gender Violence (*LIVG*, hereafter), widely regarded as a landmark reform ([Corradi and Donato, 2024](#)). As a result, PSOE has come

to be widely perceived as the primary issue owner of VAW. Under this logic, femicides occurring prior to the enactment of the 2004 law should increase electoral support for PSOE by activating demand for stronger policy intervention. Once a comprehensive legal framework is in place, however, continued femicides may instead depress socialist vote shares, as voters evaluate outcomes against an established policy benchmark and penalize perceived shortcomings in implementation and effectiveness. No systematic effects are expected for other party families, which lack comparable ownership of the issue.

Retrospective accountability-based explanations, by contrast, do not hinge on ideology or issue positions. If voters interpret femicides as failures of protection attributable to public authorities, electoral punishment should accrue to incumbent governments regardless of their particular party label. Under this mechanism, femicides should generate conditional electoral effects depending on which party controls executive office at the time of the event, whereas non-incumbent parties may benefit or simply remain unaffected.

Finally, it is possible that femicides fail to generate electoral responses altogether, and instead they are passively observed by voters. If voters perceive VAW as a private matter, as detached from political responsibility, or as insufficiently preventable through public action, such events may not translate into shifting political preferences. Under this *indifference-based* interpretation, femicides would not produce systematic electoral effects for any party family. [Table 1](#) summarizes the empirical expectations derived from these competing theoretical perspectives.

3 Empirics

3.1 Data and descriptive patterns

This paper asks how Spanish citizens respond electorally to VAW cases occurring in the municipalities where they live. To probe this question, I leverage an original dataset con-

Table 1. Partisan predictions for voters' response to VAW lethal outcomes

Theory	Socialists	Conservatives	Radical left
Mandate	+	-	+
Issue ownership	+/-	No effect	No effect
Accountability	+/-	+/-	+/-
Indifference	No effect	No effect	No effect

Note: Entries indicate the expected direction and relative magnitude of electoral effects following a femicide.

taining virtually all news-reported gender-related femicides occurred in Spain from 1999 through 2025. I constructed this dataset by first scraping the main Spanish feminist memorial websites dedicated to documenting VAW and then manually matching each reported case to its corresponding news coverage in national or local newspapers (see more information in Appendix A). These memorial websites offer two clear advantages over the figures reported by the Government Delegation for Gender Violence (i.e., Spain's national authority monitoring these crimes). First, as unofficial lists produced by feminist organizations, they aim at reporting all victims “murdered solely because they [were] women, together with children who were killed as a means of inflicting harm upon them” ([Plataforma Cordobesa Contra la Violencia a las Mujeres, nd](#)). This expansive counting criterion captures forms of violence against women that extend beyond the narrow classification rule in force until 2022, which limited recognition to crimes committed by current or former intimate partners. Crucially, it stands to reason that local public opinion will respond to VAW regardless of its statistical classification. Second, they provide case-level data disaggregated to the municipal level, sometimes including a link to the corresponding journalistic report. Official figures are instead offered at the provincial level as aggregate counts.

As a result, this dataset contains 1) intimate-partner femicides; 2) female parricides (i.e., the killing of female relatives such as mothers, grandmothers, or mothers-in-law); 3) femicides perpetrated by acquaintances, strangers, or clients in the context of prostitution;

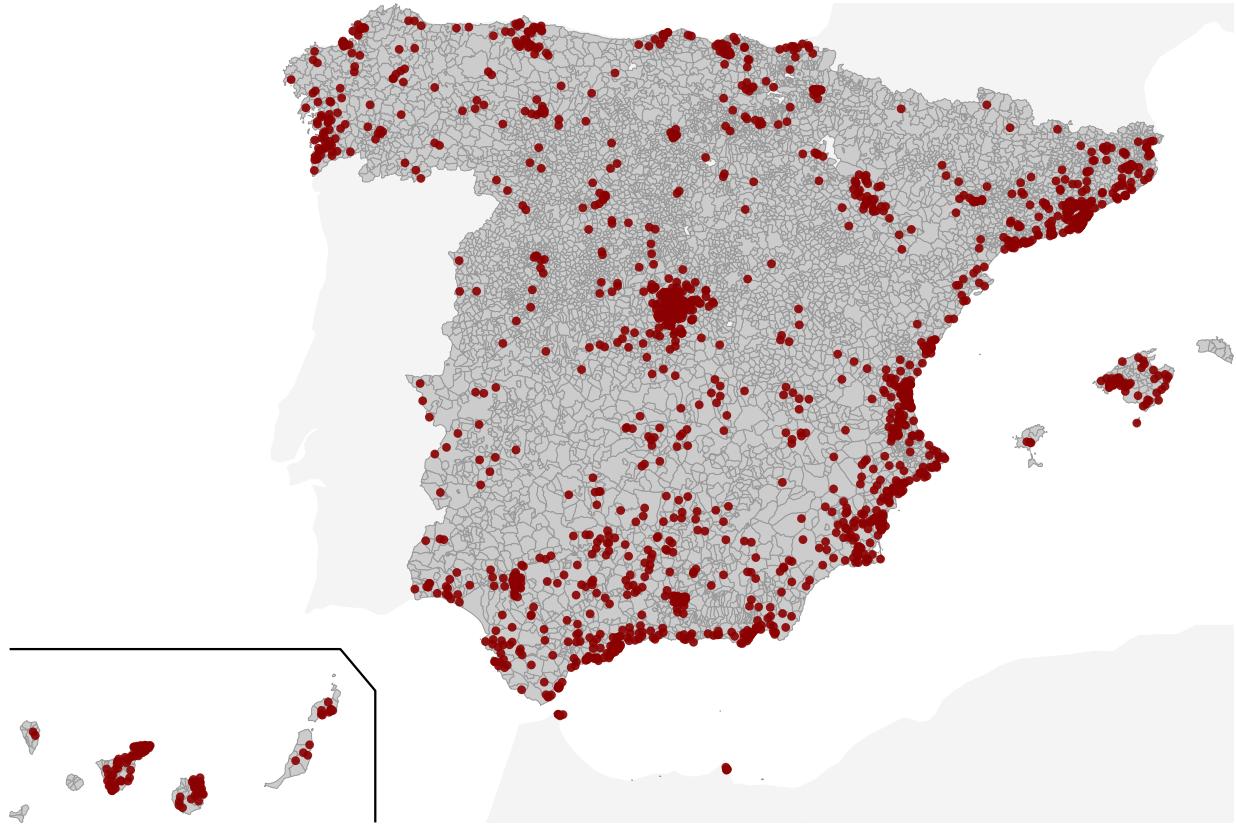


Figure 2. Spatial distribution of lethal VAW cases in Spain (1999-2025).

Note: Each red point denotes a lethal VAW event at the municipal level. Points are plotted at municipal centroids. Slight jitter is applied where multiple events overlap.

and 4) infanticides perpetrated as a form of VAW². Overall, these killings comprise 1745 events spanning all of Spain's territory since 1999. Figure 2 shows the geographical dispersion of VAW lethal outcomes across municipalities in Spain, with the resulting spatial pattern closely mirroring Spain's donut-like geodemographic spread (i.e., higher density in coastal areas and empty in the center like a donut).

After merging this VAW dataset with electoral results for all Spanish national legislative elections since 2000, I obtain a balanced panel of 8068 municipalities measured across nine elections over more than two decades. This panel excludes municipalities with more than 150,000 electors, as I expect the political impact of VAW cases to become empirically un-

²This last form of VAW refers to the so-called *vicarious violence*: violence exerted against the children of a woman with a view to wield psychological harm over her ([Verge, 2021](#)).

tractable in massive urban settings characterized by weak social ties and where information diffusion is highly localized rather than citywide. More obviously, even if *some* large-city residents are exposed to a VAW case, the treatment effect would be diluted across hundreds of thousands of voters. Municipalities that separated or merged during the study period are also dropped.

3.2 Staggered DiD

In order to probe the impact of VAW cases on electoral behavior in Spanish municipalities, I implement a staggered difference-in-differences (DiD) design. Given that standard two-way fixed effects (TWFE) regressions are prone to bias when treatment timing exceeds the classical 2x2 framework ([De Chaisemartin and d'Haultfoeuille, 2020](#); [Sun and Abraham, 2021](#)), I employ the staggered difference-in-differences estimator proposed by [Callaway and Sant'Anna \(2021\)](#). By using never- or not-yet-treated comparison groups, this approach calculates cohort- and time-specific average treatment effects and avoids conventional TWFE bias. Substantively, this method enables studying effect heterogeneity across elections as suggested by issue-ownership and accountability explanations. Letting $G_i \in \{0, 1, \dots, T\}$ index the election period in which municipality i first experiences a VAW lethal outcome (with $G_i = 0$ for never-treated municipalities), the average treatment effect (ATT) of a VAW case can be expressed as:

$$ATT(g, t) = \mathbb{E}[Y_{it}(g) - Y_{it}(0) \mid G_i = g]. \quad (1)$$

where Y_{it} denotes the electoral outcome of interest (e.g., vote shares for the socialists, conservatives, radical left, or radical right); $Y_{it}(g)$ is the potential outcome at election t if municipality i first experiences a VAW lethal outcome in period g , whereas $Y_{it}(0)$ is the potential outcome at t in the absence of a VAW crime by that time.

3.3 Selection bias and matching

Eq.(1) exploits the geographical and annual variation in the occurrence of VAW lethal outcomes to explain local shifts in political preferences. However, in accordance with a long tradition in the sociological literature demonstrating the spatial non-randomness of criminal activity (Cohen and Felson, 1979; Sherman et al., 1989; Weisburd et al., 2024), the likelihood of municipalities experiencing VAW crimes is presumably correlated with various observable and unobservable covariates that might also explain voting patterns and electoral trends. For instance, factors such as urban development (Beyer et al., 2013), unemployment (Torrubiano-Domínguez et al., 2015), or even certain types of crop production associated with drug trade (Murillo et al., 2018) have been discussed by previous research as potential determinants of VAW. Moreover, underlying local electoral preferences (i.e., this paper's *explanandum*) can also correlate with femicides, as sexist attitudes widespreadness (Gracia et al., 2025) and gender equality underdevelopment (Redding et al., 2017) have been shown to predict VAW in Spain. Finally, given that gender-based killings clearly follow population density patterns (see Figure 2), occurrence of these events will be more frequent in urban, densely populated areas than in rural zones. To the extent that any of these covariates predict municipality-level electoral trends, the causal interpretation of the DiD estimator in Eq.(1) is seriously jeopardized.

To mitigate selection bias, I construct a matched sample based on a set of pre-treatment covariates. They comprise municipality characteristics such as urban development, size, or population, as well as pre-treatment electoral turnout and vote shares for the three main political actors. Figure 3 represents the pre- (*black dots*) and post-matching (*red dots*) differences between treated and control units. As readily apparent, matching shrinks municipality heterogeneity within a conventional threshold of ± 0.2 mean difference for all

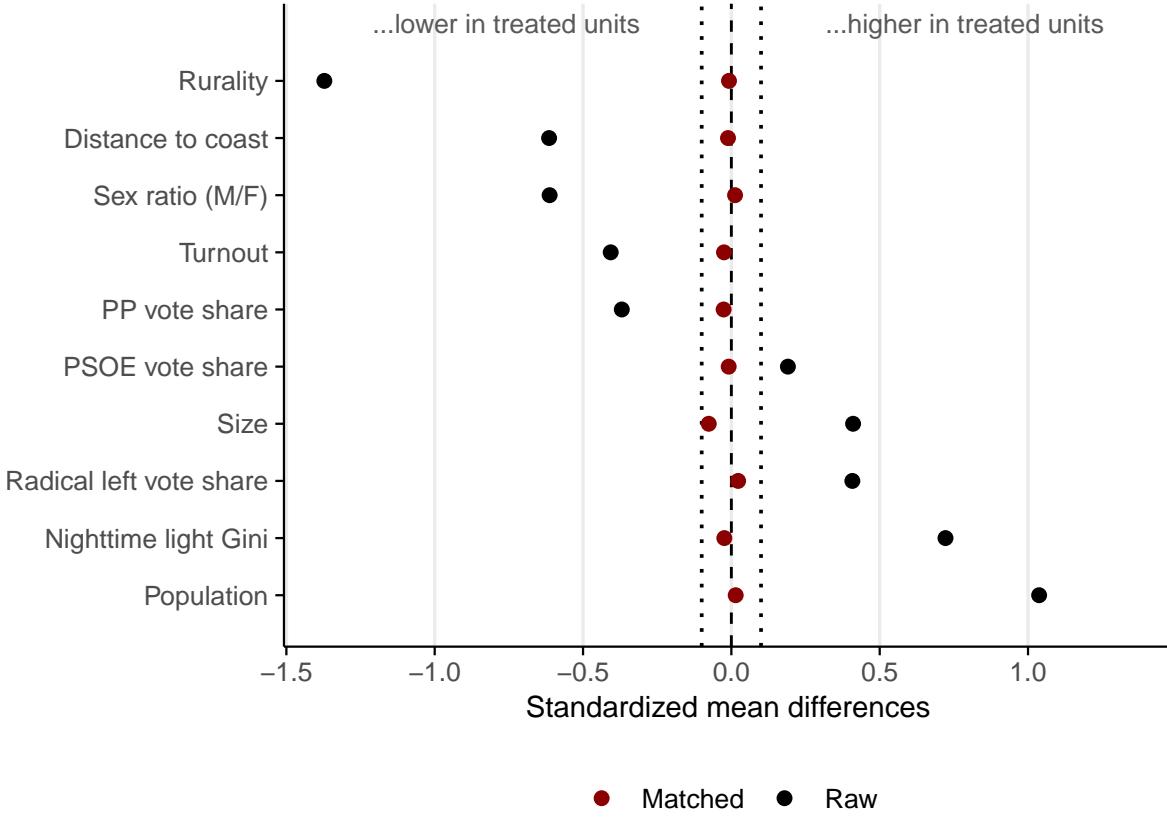


Figure 3. Standardized mean differences across relevant covariates before and after matching

covariates. Specifically, I employ cohort-specific nearest-neighbor propensity-score matching with 0.2 caliper and replacement.

4 Results

Figure 4 presents the results of the staggered DiD models for three relevant electoral outcomes (i.e., vote shares for socialists, conservatives, and the radical left). In particular, it plots the average effect across four estimators from Callaway and Sant’Anna (2021): estimates by calendar time (“C”), by time to treatment (“D”), by treatment cohort (“Group”), and by treatment cohort-calendar grouping (“Group-Time”). Overall, Figure 4 provides little to no evidence that femicides have an impact on electoral behavior. Most estimated coefficients do not reach conventional levels of statistical significance, and those two that do have extremely small size effects of around ± 0.5 percentage points. Spanish voters therefore

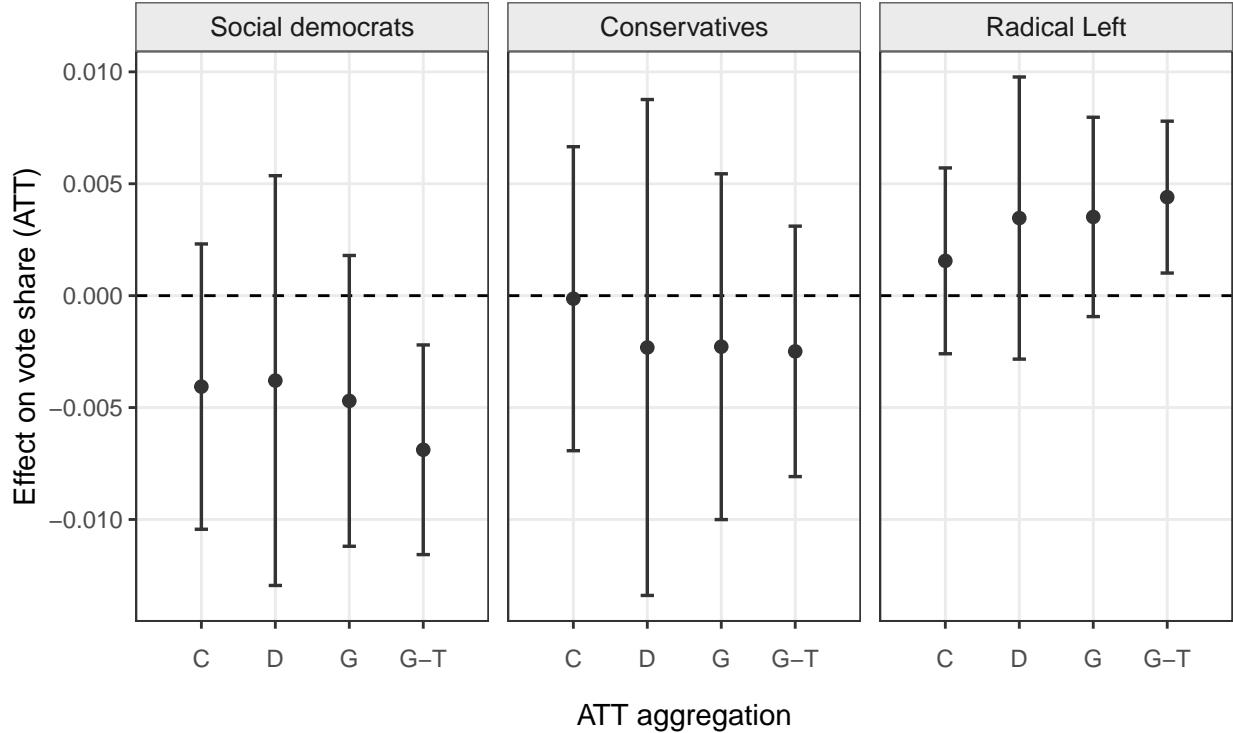


Figure 4. Lethal VAW effect with alternative difference-in-differences estimators

appear not to react electorally to VAW, leaving their electoral decision-making unchanged after femicides disrupt local social life. This evidence contradicts focusing-events, issue-ownership, and retrospective accountability arguments, and is compatible with the claim that voters are indifferent to femicides taking place in their municipalities.

To reiterate, issue-ownership and accountability explanations do not care exclusively about the average electoral effect of femicides. Rather, they consider this effect to be conditional on the identity of the party controlling executive government. Specifically, an issue-ownership effect implies electoral gains for socialists before the enactment of their flagship VAW legislation and electoral losses once that reform is in place. Under a retrospective accountability account, femicides should penalize the incumbent government regardless of party. Electoral losses should accrue to whichever party controls the executive at the time of the event, while non-incumbent parties should either benefit electorally or remain unaffected.

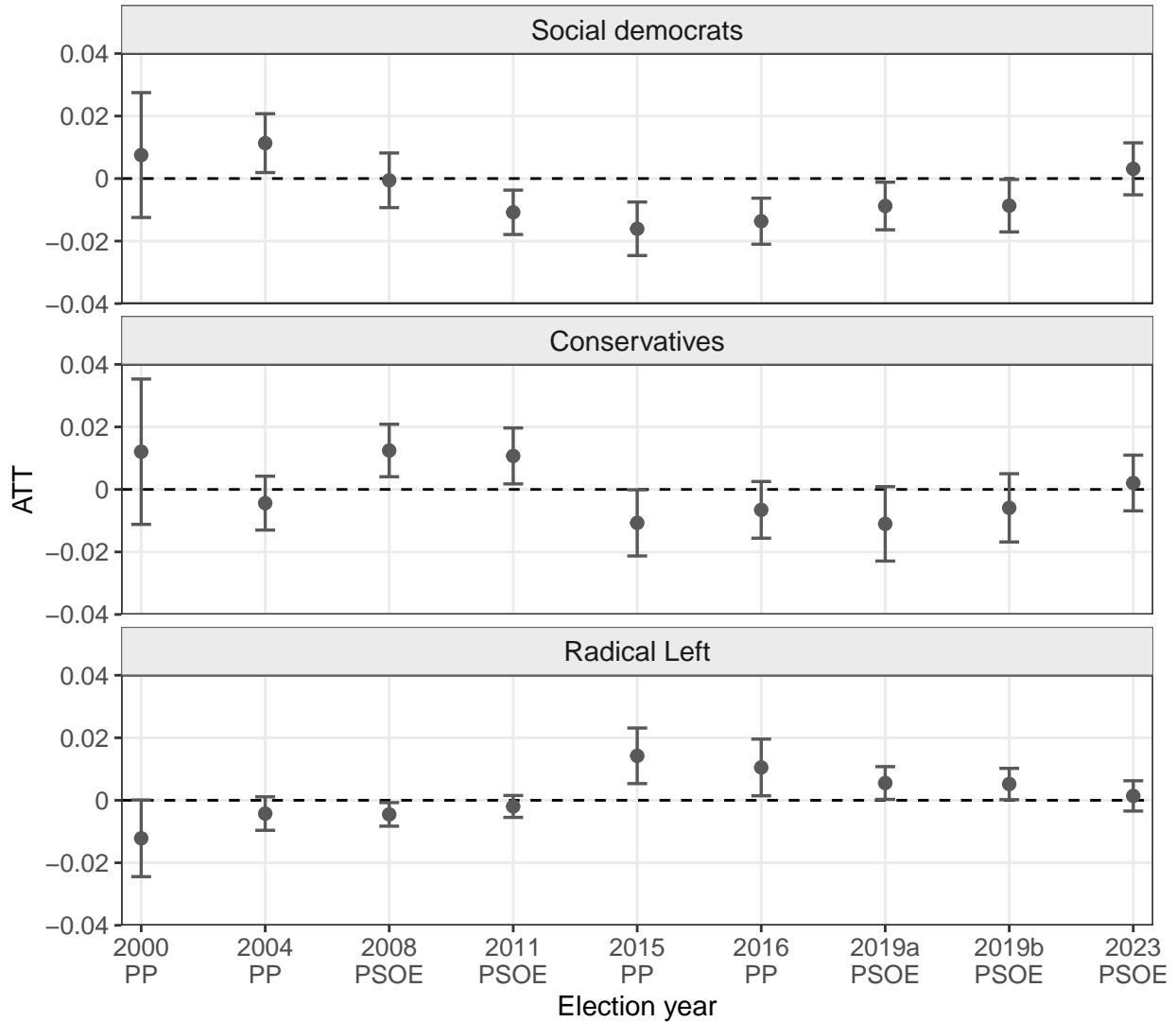


Figure 5. Calendar-specific VAW effect on electoral support for socialists, conservatives, and the radical left

Figure 5 tests these expectations by showing calendar-specific treatment effects (i.e., average effects of femicides on electoral support disaggregated by election year). Below each year, the plot shows the incumbent government. Again, the evidence is not consistent with retrospective accountability and only timidly supports an issue-ownership account. Whereas incumbent governments are not generally punished for VAW lethal outcomes, the average effect for socialists (*top panel*) is consistent with an issue-ownership interpretation: immediately before the passing of the *LIVG* in 2004, femicides appear to increase support for PSOE; after the bill is passed, VAW events seem to shrink social democratic vote

shares across municipalities. Interestingly, conservatives seem to capitalize on this punishment vote in the immediate elections after the law approval. Although these effects clear conventional significance levels, notice how their sizes are extremely small, rounding ± 1 percentage point for all coefficients. Even if an issue-ownership interpretation is consistent with [Figure 5](#), effect sizes cast doubt on the empirical relevance of this explanation.

5 Robustness

In this section, I explore the robustness of these results to alternative specifications and methodological choices. Specifically, concerns may arise that the observed electoral indifference to VAW crimes is an artifact of sampling large cities, including femicides occurring long before elections, and spatial spill-overs. First, one might argue that the null results are driven by the inclusion of relatively large municipalities (around 150,000 residents), where the social salience of femicides may be diluted by population size and concentrated forms of information spread. To address this concern, I re-estimate the DiD models restricting the sample to progressively smaller municipalities (125,000, 100,000, 50,000, and 25,000 residents). The results remain virtually unchanged across all specifications.

Furthermore, psychological accounts of electoral behavior emphasize voters' short time horizons and their tendency to forget politically relevant events. Because the baseline specification includes femicides occurring up to four years before each election, the null findings could reflect such forgetfulness. I examine this possibility by sequentially restricting the treatment to municipalities that experienced a femicide within three, two, and one year prior to the election.

Finally, Eq.(1) assumes treated municipalities to be independent from controls in that exposure to femicide constitutes a shock contained within municipality-level local life (SUTVA assumption). However, if femicides affect social communities that transcend ad-

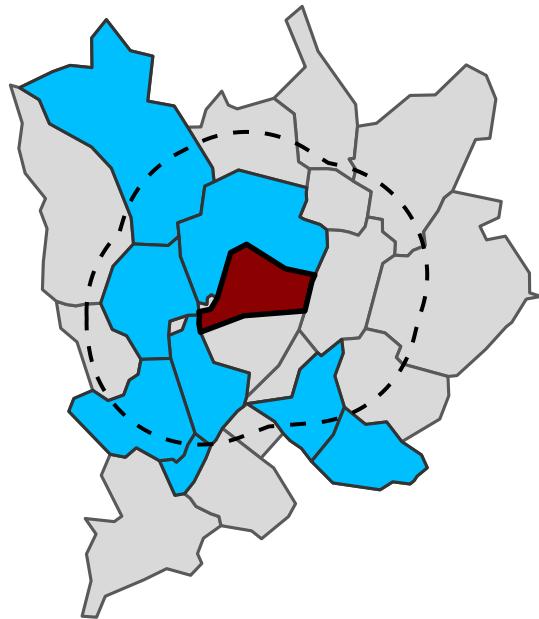


Figure 6. Matched controls within 5 km of a treated municipality in Barcelona (province).
Note: Treated municipality in dark red; matched controls in blue. Dashed line represents a 5 km ring buffer.

ministrative boundaries, neighboring municipalities classified as controls in the DiD design may also be indirectly treated, biasing estimates downward. This concern is exacerbated by the use of matching—and in particular the inclusion of a geographical variable capturing distance to the nearest coastline. In some matched cohorts, the share of control municipalities sharing a boundary with a treated unit reaches 25%. In contrast, adjacency exposure in the raw sample is substantially lower: 10.8% for the cohort with the highest number of adjacent controls. [Figure 6](#) illustrates this issue using a treated municipality in northeastern Spain, *Lliçà de Vall*, shown in red, and its matched control municipalities in blue. As an example, for this municipality the matching algorithm selects eight controls located within only 5 km of *Lliçà de Vall* (dashed circumference). This pattern indicates that matching amplifies geographic proximity between treated and control units, implying that a nontrivial share of matched controls is plausibly subject to indirect treatment exposure. To address this concern, I re-estimate all DiD models restricting the matched

control group to municipalities located outside a 5 km buffer around treated municipalities. Results remain unchanged.

6 Conclusion

This paper examined whether lethal violence against women generates electoral responses among ordinary voters, with the aim of clarifying the role of mass electorates in the demand-side politics of VAW. Specifically, it asked whether voters exposed to femicides exert bottom-up pressure on public officials to curb gender-based violence. Across a wide range of specifications, femicides in Spain are electorally inconsequential at the local level. Only in a narrow set of elections surrounding the passage of the 2004 *LIVG* do extremely weak and time-contingent effects emerge: immediately prior to the reform, socialists—longstanding issue owners of VAW—gain votes in municipalities experiencing femicides, whereas in subsequent elections they are penalized, with conservatives initially and the radical left later faring marginally better at the polls. In short, I find scant evidence that local exposure to lethal VAW events affects electoral behavior.

Among the four theoretical frameworks considered (viz., *electoral mandate*, *issue ownership*, *retrospective accountability*, and *indifference*), this evidence is most consistent with the latter interpretation. These findings have important theoretical implications, both within VAW studies and for electoral politics more broadly. On the one hand, they contribute to an open empirical question—often neglected in the literature on the politics of VAW—about whether public outrage over femicides naturally translates into electoral pressure. Although lethal VAW crimes shock local communities and inflame public opinion, the channel linking moral indignation to electoral behavior appears broken somewhere in the chain, suggesting a disconnect between recognition of harm and electoral sanctioning. This pattern illustrates an important scope condition of existing theories of electoral re-

sponsiveness to collective tragedy: VAW crimes, which “only” target half of the population and have historically been confined to the private sphere, generate weak or null reactions among voters.

Overall, the electoral impact of VAW is too small to plausibly discipline parties or sustain policy coalitions electorally. This is consistent with the widespread attention devoted to elites and social movements’ agency in the VAW literature at the expense of voters’ voice. Anti-VAW policy in Spain and elsewhere in the world seems less driven by electoral mandates than by elite initiative, international norms, and mobilization by organized civil society. This evidence, therefore, highlights the limits of democratic responsiveness in the face of structurally unequal forms of violence. When protection of women against patriarchal victimization is at stake, voters’ reaction capacity proves utterly barren.

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SUPPLEMENTARY MATERIAL

for

Do Voters Respond to Violence Against Women?

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1	VAW Dataset	A-2
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1 VAW Dataset

Event-level data on lethal VAW come from multiple memorial websites administered by private individuals or feminist organizations. These include:

Ibasque <https://ibasque.com/mujeres-muertas-en-espana-por-violencia-machista/>

Feminicidio.net <https://feminicidio.net/category/feminicidio/>

Plataforma Cordobesa <https://plataformacordobesa.com/computo/>

Some of the events reported on these websites are accompanied by online news coverage, while others are not. To match the latter with their corresponding media reports, I conducted systematic online searches using the available information (e.g., the victim's name, date of the event). When multiple articles were available, I selected the most detailed one and stored its full text to recover missing or incomplete information. I then excluded all femicides for which no news coverage could be located (e.g., cases lacking the victim's name), as well as incidents occurring outside Spain or cases that were ultimately found to fall outside the scope of violence against women (e.g., drug-related killings).

2 Nighttime Lights Gini Measurement

Nighttime lights provide a widely used proxy for local economic activity. I exploit their spatial distribution to capture within-municipality inequality in economic activity, a dimension relevant for matching municipalities exposed to VAW with comparable local contexts (i.e., same municipality-level internal economic structure). Let $L_{i,t}$ denote nighttime light intensity and $P_{i,t}$ population density in pixel i at time t , and define pixel-level lights per capita as:

$$v_{i,t} = \frac{L_{i,t} + 1}{P_{i,t}}. \quad (2)$$

For each municipality m , I retain populated pixels with finite $v_{i,t} > 0$, forming the set $\mathbf{v}_{m,t}$, and compute spatial inequality as the Gini coefficient:

$$G_{m,t} = \frac{1}{2N_m \bar{v}_{m,t}} \sum_{i=1}^{N_m} \sum_{j=1}^{N_m} |v_{i,t} - v_{j,t}|, \quad (3)$$

where N_m is the number of populated pixels. Higher values of $G_{m,t}$ indicate a stronger concentration of economic activity within the municipality, and vice versa.

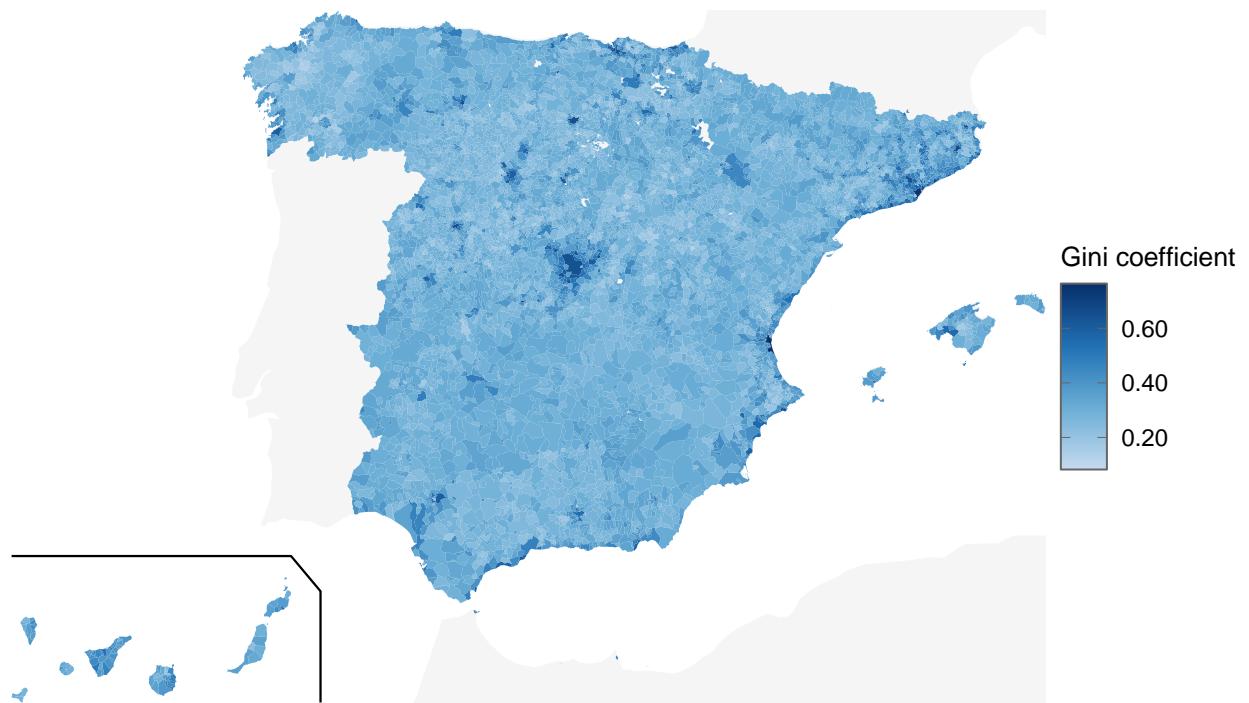


Figure A1. Average nighttime lights Gini measure for Spain (1996-2020)

3 Additional Tables

Table A1. Municipal-Level Covariates

Name	Description	Source
Rurality	Degree of urban development	Fanjul (2024)
Size	Total surface area of the municipality, measured in square kilometers.	Own elaboration with data from Hernández (2024)
Distance to coast	Great-circle distance (in kilometers) from the municipal centroid to the nearest coastline.	Own elaboration with data from Hernández (2024)
Population	Total resident population in the municipality.	Spanish Ministry of Interior
Sex ratio	Number of men per 100 women in the municipal population.	Spanish Ministry of Interior
Nighttime light Gini	Gini coefficient of nighttime light intensity within the municipality, capturing intra-municipal economic inequality.	Own elaboration with data from Li et al. (2020) (see more details in Appendix)
Turnout	Electoral turnout rate in municipal elections.	Spanish Ministry of Interior

Table A2. Descriptive Statistics

Name	N	Mean	SD	Min	Max
Total votes	80,276	1,917.914	5,326.655	1.000	89,233.000
PSOE vote share	80,276	0.314	0.147	0.000	0.875
PP vote share	80,276	0.399	0.203	0.000	1.000
Vox vote share	80,276	0.037	0.070	0.000	1.000
Left vote share	80,276	0.079	0.076	0.000	0.885
Turnout	80,276	0.746	0.080	0.011	1.111
Rurality	80,276	2.821	0.435	1.000	3.000
Size (km ²)	80,276	60.585	86.241	0.123	1,748.638
Distance to coast (km)	80,276	126.599	93.491	0.000	357.016
Population	80,276	3,575.236	10,308.937	3.000	148,918.000
Sex ratio	80,276	112.319	25.435	32.609	1,000.000
Nighttime light Gini	80,276	0.305	0.099	0.008	0.982

Note:

All statistics are computed on a common complete-case sample across all variables.

4 Additional Figures

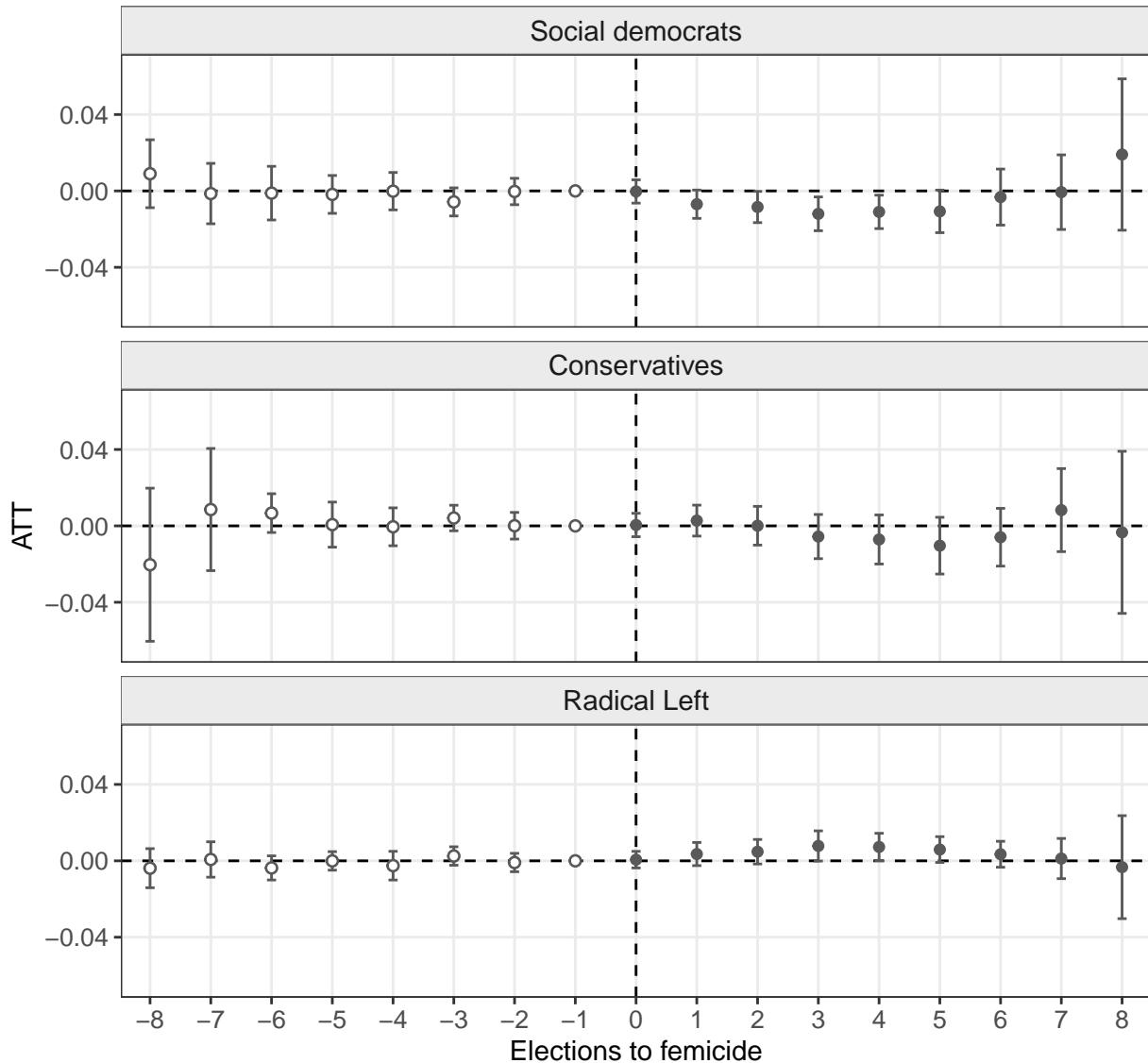


Figure A2. Event-study estimates of VAW on electoral behavior