Women politicians reduce violence against women: Evidence from Mexico

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Abstract

Do women politicians better address violence against women than men politicians? While much attention has been given to the role of women politicians in legislatures, much less is known about their impact on gendered outcomes when they hold executive positions. This study estimates the effects that women politicians in local office have on violence against women in Mexico using a preregistered regression discontinuity design of close elections. We find that women mayors reduce some of the most egregious violent crimes committed against women compared to men mayors, and that this effect seems to become more pronounced the longer women politicians are in office. The findings highlight the importance of women political leaders for women's safety and security.

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1 Introduction

Do women politicians better address violence against women (VAW)¹ than men politicians? VAW is a pervasive problem across the world, with one in three women experiencing physical or sexual violence at least once in their lifetime (World Health Organization 2021). While some research finds that women's representation in national legislatures matters for the creation, support, and implementation of gendered laws, policies, and programs (Franceschet et al. 2012; Cain Miller 2016; Piscopo 2014; Barnes 2016; Clayton and Zetterberg 2018; Volden et al. 2018; Barnes and Holman 2020; Barnes et al. 2021), scholars looking specifically at VAW have found no association between the number of women in legislatures and the implementation, comprehensiveness (Beer 2017), or progressiveness of policies to combat VAW (Htun and Weldon 2012). However, at the sub-national level, studies examining the topic in India and Indonesia find that women representation in local governments does matter for addressing citizen attitudes and behaviors towards VAW (Beaman et al. 2009; Iver et al. 2012; Kuipers 2020). Yet, beyond the effect of women's representation in local councils on citizen beliefs and behavior towards VAW, significant gaps remain in our understanding of the impact of women politicians—and particularly women in executive positions—on actual instances of VAW.

This article examines whether women mayors better address VAW in Mexico, a context where 66% of women have suffered at least one form of violence during their lives (INEGI 2017) and an average of ten women are murdered per day (OECD 2017). We follow a pre-registered quasi-experimental research design to estimate the causal effect of electing a woman politician on VAW.² Specifically, we use a regression discontinuity design (RDD) to compare VAW outcomes in municipalities where women politicians defeated men politicians with municipalities where men politicians defeated women

¹VAW is defined as "any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life" (United Nations 1993).

²Pre-Analysis Plan was registered in the Open Science Foundation registry prior to data collection and is available at –.

politicians.

Drawing on data from the 2018 local elections across 1,324 municipalities and VAW outcomes during the three-year mayoral terms that followed (2019-21), we find that women politicians that narrowly win office reduce VAW, particularly severe forms of VAW, including homicides of women and young women. Moreover, estimates *increase* the longer a woman politician is in office, suggesting that women politicians reduce VAW and that this effect increases the longer they are in office. Specifically, our results suggest that women mayors prevent 3 homicides of women and 2.3 homicides of young women during the first two years of their term. Additional exploratory tests show that women politicians also reduce homicides of men during their first year in office but have no effect on other non-VAW crimes. Our results suggest that women's representation in executive positions at the local level may be one important pathway to address VAW.

Context

Mexico has the fourth highest proportion of women in the national legislature worldwide, with almost complete gender parity (Inter-Parliamentary Union 2022). At the local level, women held 26% of mayoral positions by 2018 (ONU Mujeres 2018) – increasing from 6% over the last three decades (Vázquez Garcia 2010; Cárdenas Acosta 2019). Women's political representation also matters to voters, with 86.7% believing women are better political leaders than men (LAPOP 2021).

VAW is a serious issue in Mexico, with over 66% of women suffering at least one form of violence during their lives (INEGI 2017), and ten women being murdered per day, on average (OECD 2017). The high prevalence of VAW has made it a politically salient issue that has become a key campaign topic in many electoral races (Arista 2022), with 96% of women and 94% of men believing that VAW is "a grave or very grave issue" (Morán Breña and Galindo 2021).

The Mexican government has created institutions specifically to address women's issues, including their safety. At the federal level, the National Institute for Women

promotes and advances women's issues,³ the National System for the Prevention, Attention, Punishment and Eradication of Violence Against Women coordinates inter-agency efforts against VAW across all levels of governments,⁴ and the National Commission to Prevent and Eradicate Violence Against Women designs national policies meant to address VAW.⁵ At the sub-national level, each state and municipality has its own Institute for Women. Together with the National Institute for Women, these state- and municipal-level agencies jointly manage Women Development Centers, which are facilities designed to provide services, support, education, and other resources to empower women (Instituto Nacional de las Mujeres 2020).

We focus on local politics and women mayors in Mexico because local politicians tend to have the closest links to citizens and thus be more responsive to local issues. We believe mayors provide an appropriate case because Mexico's federal system bestows considerable de jure powers to local governments and mayors also enjoy considerable de facto power (Selee 2011, 2012). This power provides mayors with the means to design and implement policies aimed at protecting women through the local government, law enforcement, and Women Development Centers. First, local governments can create and implement programs or agencies meant to address social issues, usually as part of the annual Municipal Development Plan. Second, most mayors have power over local law enforcement, including appointing the police chief, controlling public safety expenditures, and coordinating local policing efforts with state and federal authorities. This allows mayors to enact certain organizational changes and policies meant to address VAW through law enforcement. Third, mayors can also influence the Women Development Centers in their jurisdictions because they are responsible for providing (or not) the facilities, hiring the operational staff, appointing the head of the municipal Institute for Women, and coordinating with the State Institute for Women to hire the personnel that provides professional services (Instituto Nacional de las Mujeres 2020).

³See website here.

⁴See website here.

⁵See website here.

2 Data

Mexican mayors are elected by plurality rule, serve for three years and typically start their terms towards the end of the election year. We collect data on the 1,324 local elections that took place in 2018 across 22 states,⁶ and VAW data for the three years of the mayoral administration (2019–2021).

Using data from each state's electoral agency on municipal elections, we hand-code the gender of the first and second place candidates⁷, the number of votes they received, and the total number of votes to calculate the winning margin.⁸ Figure 1 shows the geographic distribution municipalities where elections took place in which a woman candidate defeated a man and vice versa. Of the 1,324 municipalities, 559 (42%) held elections where a woman and a man were the top two vote-receiving candidates.

VAW is a broad concept that encompasses various forms of violence. We use multiple measures to capture different dimensions of this concept for each of the three years of the 2018 mayoral administration (2019 – 2021). We explore these outcomes both disaggregated by year of the mayors' term (2019, 2020, 2021) to see whether there are temporal effects, and pooled (total instances during the three years of the administration) to see whether there are overall effects. We use counts for these measures because that is what we pre-registered. Table 1 shows the descriptive statistics of each variable for our full sample.

First, to measure femicides, or the intentional murder of women because of their gender, we create two measures using death certificate data from Mexico's National Institute of Statistics and Geography (INEGI 2021b).⁹ First, we use the total number

⁶25 states held local elections in 2018. We exclude municipalities in the state of Oaxaca, as is standard in the literature, because hundreds of municipalities follow indigenous self-governance that use different electoral rules. We also exclude municipalities in the states of Tabasco and Yucatán due to lack of data on the gender of candidates.

⁷Details on how gender was coded can be found in the Online Appendix, Section A3.

⁸In the pre-analysis plan we stated that we would use electoral data from a third-party repository Magar (2018). However, in the process of validating the data we found inaccuracies and thus hand-collected official data for each election from each state's electoral agency.

⁹Since 2015 the Mexican government classifies certain intentional homicides as femicides if they are deemed to meet at least one of nine criteria outlined in Article 325 of the Federal Penal Code. However, experts argue that the official data severely under-counts actual femicides non-randomly (Torreblanca)

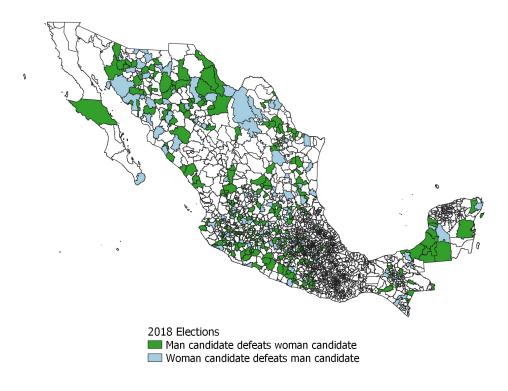


Figure 1: Geographic distribution of elections in sample.

of homicides of women.¹⁰ Second, we create a measure of homicides of young women, defined as women between the ages of 15 and 44, to more closely measure homicides of women that may be the result of gender-based violence. We set this age range because sources find that the majority of femicide victims in Mexico (SEGOB et al. 2017) and Latin America (Economic Commission for Latin America and the Caribbean 2021) fall within this age group. One limitation is that data on homicides of women and young women are available for 2019 and 2020, but not 2021.

To measure other forms of VAW, we use official data on instances of crimes reported to authorities, including the number of reported cases of sexual harassment, sexual abuse, rape, and domestic violence from 2019 to 2021 (SESNSP 2022). One limitation is that these reported crimes are not disaggregated by the gender of the victim. However,

^{2018;} Flores 2021). To overcome this potential bias, we exclude official femicide numbers and instead rely on death certificate data.

¹⁰This is the standard practice of various human rights organizations in Mexico (Torreblanca 2018; Flores 2021).

Table 1: Full sample summary statistics of VAW outcomes at the municipality level.

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Statistic	Mean	St. Dev.	N
2019			
Homicides of women	2.08	6.85	559
Homicides of young women	1.43	4.90	559
Femicides	0.48	1.48	559
Rape	7.05	22.46	559
Domestic violence (in tens)	11.08	385.82	559
Sexual abuse	14.44	50.85	559
Sexual harassment	3.40	13.70	559
2020			
Homicides of women	2.10	6.84	559
Homicides of young women	1.49	5.38	559
Femicides	0.46	1.29	559
Rape	6.76	23.36	559
Domestic violence (in tens)	12.07	404.38	559
Sexual abuse	13.67	44.76	559
Sexual harassment	4.15	13.63	559
2021			
Femicides	0.57	1.76	559
Rape	8.14	27.34	559
Domestic violence (in tens)	13.88	451.53	559
Sexual abuse	17.12	56.97	559
Sexual harassment	5.17	16.86	559
Pooled			
Homicides of women	4.17	13.44	559
Homicides of young women	2.92	9.98	559
Femicides	1.51	4.22	559
Rape	21.95	71.08	559
Domestic violence (in tens)	37.03	$1,\!231.07$	559
Sexual abuse	45.23	151.57	559
Sexual harassment	12.71	43.12	559

since the vast majority of sexual crimes and domestic violence crimes are perpetrated against women (CDC 2021; Jaitman and Anauati 2019), we believe that these data are a valid measure of our proposed concept. Additionally, these data measure reported, not actual, crimes, and therefore understates the prevalence of these crimes (Jaitman and Anauati 2019).

3 Research Design

Estimating the effect women politicians may have on VAW is not straightforward. Simply comparing VAW outcomes between municipalities with women mayors against those with men mayors may result in biased estimates arising from endogeneity issues. To address this concern, we estimate an RDD of close elections.

Our research design exploits close mayoral races in 2018 where either: (1) a woman candidate narrowly defeats a man candidate, or (2) a man candidate narrowly defeats a woman candidate.¹¹ By comparing the outcomes for women and men who narrowly defeated an opponent of the opposite gender, we can estimate the causal effect of electing women politicians on VAW if the continuity assumption is met (De la Cuesta and Imai 2016).

Formally, we estimate the following specification:

$$y_i = \alpha + \tau W_i + \beta f(X_i) + \epsilon_i \tag{1}$$

where y_i denotes the different VAW measures, X_i is the margin of victory that takes positive values when a woman candidate wins and negative values when a man candidate wins, W_i is a binary variable that takes the value of 1 when $X_i \geq 0$ and 0 otherwise, and $f(X_i)$ is a polynomial that denotes the functional form used to estimate the model. The coefficient of interest is τ , which estimates the causal effect of having a woman mayor on outcome y_i . Since X_i is measured from a plurality electoral system,

¹¹We do not include close elections where the top two candidates were of the same gender, as the counterfactual of these elections would be a candidate of the same gender winning the election.

the RDD has multiple cutoffs and τ can thus be interpreted as the weighted average of the local average treatment effect across vote shares (Cattaneo et al. 2016). However, if we assume constant treatment effects, τ can be interpreted like a single-cutoff RDD design: the overall average of the local average treatment effect.¹²

Following the literature, we estimate first and second-order polynomials (Calonico et al. 2014; Gelman and Imbens 2019) using optimal bandwidths that minimize the mean-squared error (Calonico et al. 2014) and robust standard errors. We report and interpret conventional RDD estimates in the main body and include the robust bias-corrected RDD estimates in Online Appendix Section A4. Results across the two estimation methods are consistent, but conventional RDD estimates are more conservative than the bias-corrected estimates. We therefore report only the conservative results here. We rely on the rdrobust package in R to estimate the RDD (Calonico et al. 2015). 14

3.1 Identification and Threats to Inference

The key assumption of the RDD is that potential outcomes are continuously distributed at the treatment cutoff; that is, the only change at the cutoff is the treatment status (De la Cuesta and Imai 2016). We provide evidence that the continuity assumption is met.

First, the continuity assumption could be violated if candidates can influence their assignment-to-treatment (the margin of victory) and sort nonrandomly around the threshold. We conduct the McCrary test (McCrary 2008) to examine whether there is candidate sorting around the cutoff, and find no evidence of manipulation of the

¹²See Appendix Section A6 for more details.

¹³RDDs using this method employ triangular kernel such that observations closer to the threshold are given more weight. This is the standard approach in the literature (Cattaneo et al. 2019).

¹⁴In our pre-registered research design, we noted that we planned to estimate the RDD using two procedures to calculate optimal bandwidths: Imbens and Kalyanaraman (2012) (herein IK) (Imbens and Kalyanaraman 2012) and Calonico, Cattaneo, and Farrell (2020) (herein CCF) (Calonico et al. 2020). However, CCF improves upon the MSE-optimal bandwidth selectors from IK, as discussed in Calonico et al. (2014). Therefore, we only calculate bandwidths using CCF's method.

running variable.¹⁵ We also use a nonparametric test (Cattaneo et al. 2020) and find no evidence of sorting. Both tests support the continuity assumption. All robustness checks for sorting are presented in Appendix Section A1.

Second, discontinuities in confounders at the threshold could violate the identification assumption. Using data on municipality-specific sociodemographic factors from the 2010 Census (INEGI 2021a), including gender-specific variables such as the number of women, women-run households, and economically active women, and the average education of women, we conduct balance tests by estimating the RDD with these sociodemographic variables as outcomes. These tests show no discontinuity at the threshold (results shown in Appendix Table A.1).

Beyond the identification assumption, two additional scenarios could threaten inference: (1) women running for and systematically winning close races in places with low VAW levels, or (2) a confounder leading to *both* women systematically winning close elections and low levels of VAW.

To address these concerns we estimate two placebo RDDs to demonstrate that electing a woman candidate in 2018 has no effect on past VAW outcomes – specifically homicides of women and young women in 2010 and 2017 (results shown in Appendix Tables A.2 and A.3). We select 2010 because it is the same year as the sociodemographic data and 2017 because potential candidates for the 2018 election had to register their candidacy in late 2017.

Null results in both placebo tests provide compelling evidence that women politicians did not self-select into and win close elections in municipalities with low VAW levels, and that there is no spurious correlation due to some third confounder driving both low VAW levels and the electoral success of women politicians in close elections. Figure 2 shows the raw data using homicides of women for both placebos and the post-election sample. Balance tables and placebo RDD results are shown in Appendix

¹⁵Caughey and Sekhon (Caughey and Sekhon 2011) argue that this assumption could be violated if some candidates are more likely to win narrow victories because of financial or experiential advantages, though de la Cuesta and Imai (De la Cuesta and Imai 2016) highlight that for this mechanism to violate the continuity assumption, candidates would need to be incredibly precise in their manipulation, which is unlikely.

Section A1.

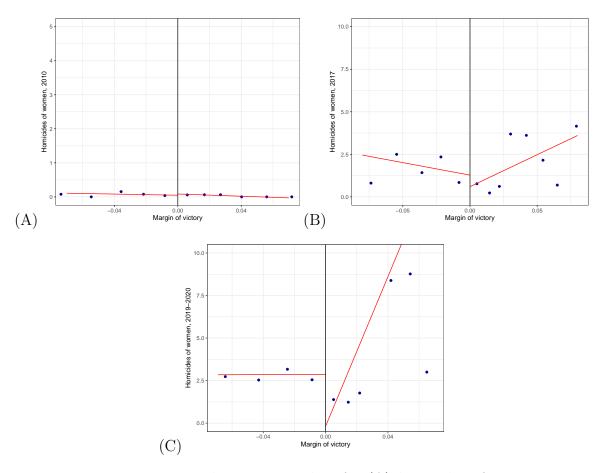


Figure 2: Linear regression discontinuity plots for (A) homicides of women in 2010 (placebo), (B) homicides of women in 2017 (placebo), (C) homicides of women from 2019-2020. Running variable is winning margin. Bandwidths are optimized to minimize the mean-squared error. Data is binned using spacing estimators.

4 Results

The main RDD estimates for the different VAW outcomes are shown in Table 2 and visualized in Figure 3. The plots in Figure 3 show the RDD point estimates and confidence intervals for the effect of women politicians on various VAW outcomes during their first (2019), second (2020), and third (2021) years in office, as well as pooled results for their three-year administration. The dots represent the estimated coefficients, while the thick and thin lines represent 90% and 95% confidence intervals, respectively. The y-axis shows the effect size, while the x-axis shows the year. The first row presents the

results for the different measures of homicides of women, and the second row displays results for other measures of VAW. The first column shows RDD estimates using a linear specification while the second column reports RDD estimates with a more flexible second-order polynomial specification. RDD results using higher order polynomials, though not pre-registered and thus not included here, are consistent with the results of the quadratic RDD model, showing statistically significant negative results that increase in size through a woman mayor's term.

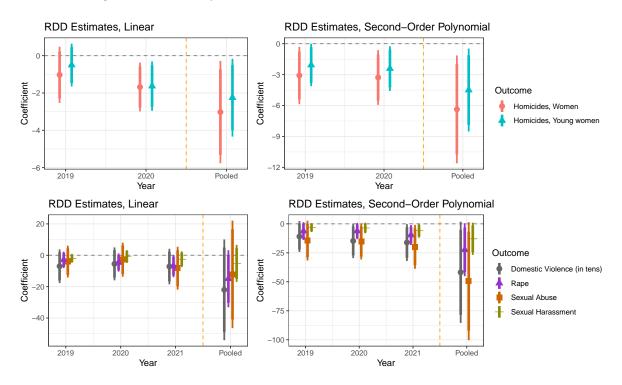


Figure 3: Regression discontinuity results of electing women politicians with 90% and 95% confidence intervals.

We find that all point estimates are negative, which is consistent with the conclusion that women politicians reduce VAW. However, there are important nuances across model specifications. Most notably, we find strong causal evidence that women politicians reduce the most severe form of VAW: homicides of women and young women. Both linear and quadratic RDD results find that women politicians reduce homicides of women and young women. Moreover, all point estimates *increase* in size the longer

¹⁶Some of these results run counter to the expectations we preregistered in our pre-analysis plan; we hypothesized that women politicians would increase the reporting of VAW.

a woman politician is in office, suggesting that women politicians reduce homicides of women and that they reduce it more the longer they are in office, though these coefficients are not statistically different from each other. Specifically, the more conservative linear RDD point estimates find that during their second year in office, women politicians reduce homicides of women by 0.62 standard deviations (SDs) (SD = 2.691 among observations within the MSE optimal bandwidth, to the left of the cutoff) and homicides of young women by 0.77 SDs (SD = 2.127 among observations within the MSE optimal bandwidth, to the left of the cutoff). When looking at the first two years in office, women politicians reduce homicides of women by 0.52 SDs (SD = 5.857 among observations within the MSE optimal bandwidth, to the left of the cutoff) and homicides of young women by 0.53 SDs (SD = 4.228 among observations within the MSE optimal bandwidth, to the left of the cutoff). These effects are substantively large, as they suggest that during their first two years in office, women mayors prevent 3.025 homicides of women and 2.252 homicides of young women.

For VAW-related crimes, including rape, sexual harassment, sexual abuse, and domestic violence, both linear and quadratic point RDD estimates are negative, and they also increase in size by the third year of a mayor's term. However, linear RDD results are only statistically significant at the 10% level for rape during the third year of a mayor's term. Conservative linear RDD point estimates suggest that women politicians reduce rapes by 0.47 SDs (SD = 14.695 among observations within the MSE optimal bandwidth, to the left of the cutoff) during their third year in office. Quadratic RDD estimates, nevertheless, are statistically significant at the 10% level for sexual abuse in 2019, rape, domestic violence and sexual abuse in 2020, and at the 5% level for rape, domestic violence, sexual abuse, and sexual harassment in 2021. Finally, the pooled results using the quadratic RDD are all negative and statistically significant at p < 0.1.

A scope condition of our design is that it can only speak to close elections and not to women politicians that win or lose elections by wide margins, as they may be systematically different than women involved in close elections. Another consideration is that

Table 2: Regression discontinuity results: Effect of women politicians on VAW.

	Linear RDD			Quadratic RDD				
	2019	2020	2021	Pooled	2019	2020	2021	Pooled
Homicides of women n Bandwidth	-1.029 (0.769) 210 0.073	-1.680** (0.666) 205 0.070		-3.025** (1.400) 201 0.069	-3.082** (1.419) 228 0.081	-3.277** (1.357) 220 0.077		-6.370** (2.669) 222 0.078
Homicides of young women n Bandwidth	-0.503 (0.584) 227 0.081	-1.632** (0.676) 179 0.061		-2.252** (1.065) 199 0.068	-2.068** (1.051) 241 0.086	-2.417** (1.109) 223 0.078		-4.498** (2.051) 224 0.079
Femicides n Bandwidth	-0.024 (0.252) 298 0.115	-0.227 (0.156) 254 0.092	-0.280 (0.294) 274 0.105	-0.289 (0.616) 300 0.117	-0.613* (0.343) 311 0.122	-0.650*** (0.237) 268 0.101	-0.738** (0.374) 293 0.112	-2.187*** (0.830) 284 0.108
Rape n Bandwidth	-2.894 (2.657) 249 0.090	-4.622 (2.960) 194 0.067	-6.842* (3.638) 195 0.067	-14.968 (9.279) 206 0.070	-6.325 (3.927) 257 0.095	-6.223* (3.590) 264 0.100	-9.676** (4.408) 264 0.099	$ \begin{array}{r} -22.353*\\ (11.669)\\ 261\\ 0.097 \end{array} $
Domestic violence (in tens) n Bandwidth	-6.991 (5.486) 219 0.076	-5.486 (5.350) 265 0.100	-7.182 (5.771) 255 0.092	$ \begin{array}{c} -22.026 \\ (16.390) \\ 244 \\ 0.087 \end{array} $	-10.939 (6.825) 274 0.104	-14.746* (7.578) 275 0.105	-16.141** (8.097) 268 0.101	-41.816* (22.285) 273 0.103
Sex abuse n Bandwidth	-4.051 (5.175) 264 0.099	-2.824 (5.552) 274 0.104	-8.264 (6.969) 240 0.085	-12.191 (17.487) 263 0.098	-14.431^* (8.771) 259 0.097	-15.286* (7.918) 266 0.101	-19.832** (9.670) 258 0.096	$ \begin{array}{r} -49.477^{*} \\ (25.976) \\ 260 \\ 0.097 \end{array} $
Sexual harassment n Bandwidth	-1.939 (1.420) 222 0.077	-0.830 (2.091) 295 0.113	-2.536 (2.557) 265 0.100	-5.174 (6.026) 262 0.098	-3.263* (1.951) 284 0.108	-3.577 (2.319) 311 0.122	-5.964** (3.030) 295 0.113	-12.942* (7.079) 293 0.112

Conventional RDD estimates. The bandwidth represents the optimal bandwidth that minimizes mean-squared errors. Robust standard errors shown in parentheses.

^{*} p < 0.1, ** p < 0.05, *** p < 0.01

our measures of VAW crimes are reports of these crimes, not actual instances. Thus, an alternative interpretation of our results that we cannot empirically rule out is that women politicians that win close elections may simply reduce reporting of VAW and not their actual prevalence. However, because the results using homicides—measured through official death certificates, not reports—show that women politicians reduce homicides of women and because previous research shows that women politicians increase VAW reporting (Iyer et al. 2012), we interpret the results using crime reports as a reduction in these crimes and not as a negative reporting effect. This interpretation has an additional implication: if women politicians in our sample also cause an increase in the reporting of VAW crimes, our estimates will be underestimating the true effect that women politicians have on reducing instances of VAW.

4.1 Additional Tests

One alternative explanation for the results could be that women politicians are simply better at addressing all types of violence and crime—not only those related to gender. While this explanation would not affect our main findings—that women politicians reduce VAW—nor the conclusion that women's political representation may be one way to address VAW, it could lead to a different interpretation of the results. To explore this possibility, we estimate the RDD using outcome measures of other types of violence and crime: the homicides of men and young men, as well as four of the most prevalent crimes in Mexico (extortion, home burglary and vehicle theft, kidnapping, and drug dealing). We note that these outcome variables and analyses were not pre-registered, and should thus be seen as exploratory.

We find that women politicians cause a short-term (first year in office) statistically significant reduction on homicides of men and young men. However, unlike the results for homicides of women and young women where effect sizes increase during the second year of a woman politician's term, the coefficients for homicides of men and young men in the second year decrease and lose their statistical significance at the 5% level.

We also find that women politicians have no effect on the prevalence of reported non-VAW crimes for any year. These results suggest that women have an overall effect on reducing homicides in general, though this effect is short-lived for homicides of men but persistent for homicides of women, and no effect on non-VAW crimes. Results are discussed in detail and shown in Appendix Section A5.

5 Discussion

Do women politicians reduce VAW? While a large body of literature has studied the incorporation of women into federal and state-level political positions and its effects on women's issues, much less is known about the effects of women's political representation at the local level, particularly in leadership roles. Looking at Mexico, we find that women politicians that narrowly defeat men politicians in mayoral elections reduce various forms of actual and reported VAW instances, and that this effect appears to strengthen over a woman mayor's term in office. Our results suggest that women's leadership in local politics may be an important factor for improving women's well-being and safety. These findings are consistent with and complement existing studies showing that women's political representation at the local level matters for the behavior and attitudes of citizens regarding gendered issues (Beaman et al. 2009; Iyer et al. 2012; Kuipers 2020).

Still, Iyer et al. (2012) find that women's representation in local governments in India did not reduce instances of VAW despite increasing reporting and arrests of these crimes. The context may provide answers about conditions that may facilitate the effects we find. Mexico is a country where VAW is a salient social and political issue, where women's political representation is high, and where institutions specifically designed to help women exist at multiple levels of government. The different findings suggest women's political representation is not a panacea: there are still significant barriers that must be confronted to comprehensively reduce VAW, including meaningful reforms of predominantly masculine institutions and political spaces. Future research would

benefit from investigating exactly how women politicians affect the prevalence of VAW and the tools and institutions that allow them to do so. Uncovering the mechanisms through which women politicians impact VAW and the conditions that facilitate these mechanisms has important implications and may speak to how women's representation can have similar effects in contexts outside of Mexico. Nevertheless, in a world where a woman or girl is killed every 11 minutes (UN Women 2022), our findings suggest that women's political representation may be one important component to improving women safety.

References

- Arista, L. (2022). Candidatos 2022 compiten con propuestas para frenar violencia hacia las mujeres.
- Barnes, T. D. (2016). Gendering Legislative Behavior: Institutional Constraints and Collaboration. Cambridge University Press.
- Barnes, T. D., Beall, V. D., and Holman, M. R. (2021). Pink-collar representation and budgetary outcomes in us states. *Legislative Studies Quarterly*, 46(1):119–154.
- Barnes, T. D. and Holman, M. R. (2020). Gender quotas, women's representation, and legislative diversity. *The Journal of Politics*, 82(4):1271–1286.
- Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., and Topalova, P. (2009). Powerful women: does exposure reduce bias? *The Quarterly journal of economics*, 124(4):1497–1540.
- Beer, C. (2017). Left parties and violence against women legislation in mexico. Social Politics: International Studies in Gender, State & Society, 24(4):511–537.
- Cain Miller, C. (2016). Women actually do govern differently. New York Times.
- Calonico, S., Cattaneo, M. D., and Farrell, M. H. (2020). Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs. *The Econometrics Journal*, 23(2):192–210.
- Calonico, S., Cattaneo, M. D., and Titiunik, R. (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica*, 82(6):2295–2326.
- Calonico, S., Cattaneo, M. D., and Titiunik, R. (2015). rdrobust: An R Package for Robust Nonparametric Inference in Regression-Discontinuity Designs. *The R Journal*, 7(1):38–51.
- Cattaneo, M. D., Idrobo, N., and Titiunik, R. (2019). A Practical Introduction to Regression Discontinuity Designs. Cambridge University Press.
- Cattaneo, M. D., Jansson, M., and Ma, X. (2020). Simple local polynomial density estimators. *Journal of the American Statistical Association*, 115(531):1449–1455.
- Cattaneo, M. D., Titiunik, R., Vazquez-Bare, G., and Keele, L. (2016). Interpreting regression discontinuity designs with multiple cutoffs. *The Journal of Politics*, 78(4):1229–1248.
- Caughey, D. and Sekhon, J. S. (2011). Elections and the regression discontinuity design: Lessons from close u.s. house races, 1942-2008. *Political Analysis*, 19(4):385–408.
- CDC (2021). Preventing intimate partner violence.
- Clayton, A. and Zetterberg, P. (2018). Quota shocks: Electoral gender quotas and government spending priorities worldwide. *The Journal of Politics*, 80(3):916–932.

- Cárdenas Acosta, G. (2019). El principio de paridad de genero y el incremento de las presidentas municipales en mexico: análisis comparativo del periodo 2005-2017. Debate feminista, 57:83–107.
- De la Cuesta, B. and Imai, K. (2016). Misunderstandings about the regression discontinuity design in the study of close elections. *Annual Review of Political Science*, 19(1):375–396.
- Economic Commission for Latin America and the Caribbean (2021). The pandemic in the shadows: femicides or feminicides in 2020 in latin america and the caribbean.
- Flores, S. (2021). Las cifras oficiales de feminicidios en mexico no reflejan la realidad de este delito. *Animal Politico*.
- Franceschet, S., Krook, M. L., and Piscopo, J. M., editors (2012). *The Impact of Gender Quotas*. Oxford University Press.
- Gelman, A. and Imbens, G. (2019). Why high-order polynomials should not be used in regression discontinuity designs. *Journal of Business & Economic Statistics*, 37(3):447–456.
- Htun, M. and Weldon, S. L. (2012). The civic origins of progressive policy change: Combating violence against women in global perspective, 1975–2005. *American Political Science Review*, 106(3):548–569.
- Imbens, G. and Kalyanaraman, K. (2012). Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies*, 79(3):933–959.
- INEGI (2017). Encuesta nacional sobre la dinámica de las relaciones en los hogares (endireh 2016) principales resultados.
- INEGI (2021a). Censo de población y vivienda 2010.
- INEGI (2021b). Mortalidad.
- Instituto Nacional de las Mujeres (2020). Modelo de Operación: Centros para el Desarrollo de las Mujeres. Instituto Nacional de las Mujeres.
- Inter-Parliamentary Union (2022). Women in parliaments: World classification.
- Iyer, L., Mani, A., Mishra, P., and Topalova, P. (2012). The power of political voice: Women's political representation and crime in india. *American Economic Journal:* Applied Economics, 4(4):165–93.
- Jaitman, L. and Anauati, V. (2019). The dark figure of crime in latin america and the caribbean. *Journal of Economics, Race, and Policy*, 3(1):76–95.
- Kuipers, N. (2020). The effect of electing female candidates on attitudes toward intimate partner violence. *The Journal of Politics*, 82(4):1590–1595.
- LAPOP (2021). The americas barometer.
- Magar, E. (2018). Recent mexican election vote returns repository.

- McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics*, 142(2):698–714.
- Morán Breña, C. and Galindo, J. (2021). El 62% de la ciudadania considera inadecuada la actitud de lópez obrador respecto al feminismo.
- OECD (2017). Building an Inclusive Mexico: Policies and Good Governance for Gender Equality. OECD Publishing.
- ONU Mujeres (2018). Participación politica de las mujeres a nivel municipal: Proceso electoral 2017-2018.
- Piscopo, J. M. (2014). Beyond hearth and home: Female legislators, feminist policy change and substantive representation in mexico. Revista Uruguaya de Ciencia Politica, 23(2):87–110.
- SEGOB, INMUJERES, and ONU Mujeres (2017). La violencia feminicida en mexico, aproximaciones y tendencias 1985-2016.
- Selee, A. (2011). Decentralization, democratization, and informal power in Mexico. Penn State University Press.
- Selee, A. (2012). Municipalities and policymaking. In Ai Camp, R., editor, *The Oxford Handbook of Mexican Politics*. Oxford University Press.
- SESNSP (2022). Incidencia delictiva.
- Torreblanca, C. (2018). ¿que contamos cuando contamos "feminicidios"? Animal Político.
- UN Women (2022). Facts and figures: Ending violence against women.
- United Nations (1993). Declaration on the elimination of violence against women.
- Volden, C., Wiseman, A. E., and Wittmer, D. E. (2018). Women's issues and their fates in the us congress. *Political Science Research and Methods*, 6(4):679–696.
- Vázquez Garcia, V. (2010). Women and municipal governments in mexico: What do we know? what do we still need to know? Gestión y política pública, 19(1):111–154.
- World Health Organization (2021). Devastatingly pervasive: 1 in 3 women globally experience violence.