Female Mayors and Violence Against Women: Evidence from Mexico
ONLINE APPENDIX

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Appendix

A Spatial Distribution of Treated and Control Units

A related but different concern may be spatial sorting, i.e. that women politicians only win close elections in certain regions. In order to demonstrate that there is no spatial sorting of treated versus untreated municipalities, Figure A1 shows the geographic distribution of our sample. Of the 1,476 municipalities we collected data on, 611 (41.4%) held elections where a woman and a man were the top two vote-receiving candidates. Municipalities where elections took place in which a woman candidate defeated a man are shown in light blue ($n = 216$) and where a man candidate defeated a woman are shown in green ($n = 394$). Municipalities where both candidates were the same gender are white and not included in the RDD estimations.[1] The map reveals that municipalities with a woman mayor are not spatially clustered in any particular region of Mexico.

[1]We also exclude municipalities in the states of Tabasco and Yucatán due to lack of data on the gender of candidates. Any states that did not hold elections in 2018 are similarly not included in the estimations.

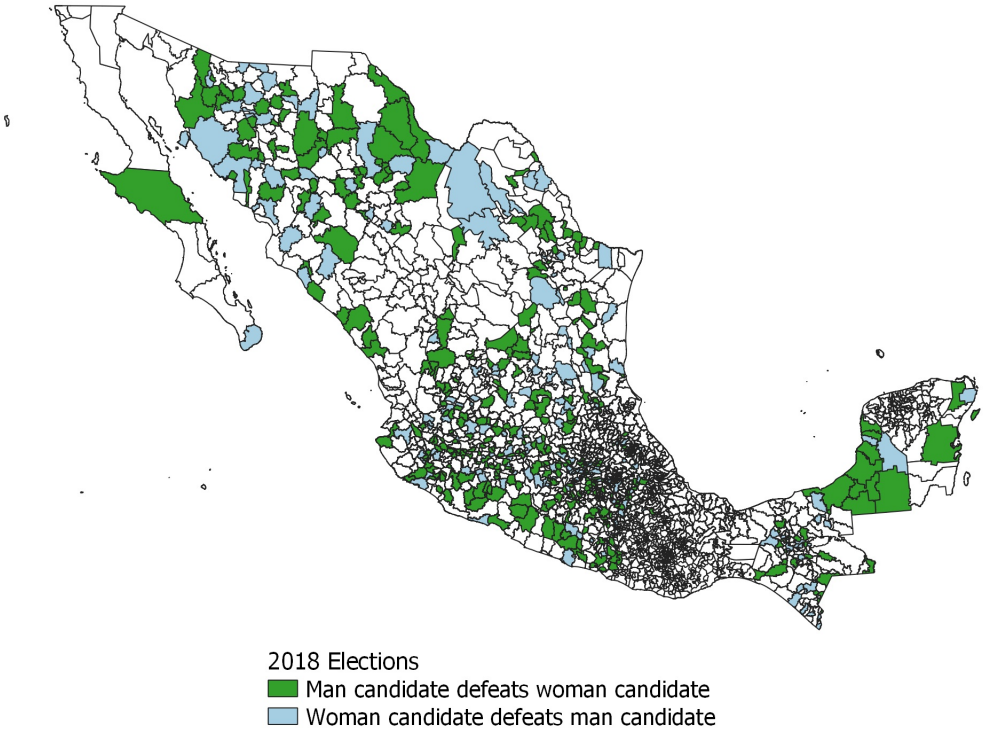

Figure A1: Geographic distribution of municipalities with elections in 2018 where either a woman candidate defeated a man candidate (show in light blue) or a man candidate defeated a woman candidate (shown in green). Source: data collected by authors and RAs from state electoral agency websites.

B Coding Candidate Sex

The Mexican government provides the sex of the winning candidate that becomes mayor, but the sex of candidates that do not win is not systematically collected or reported.[2] This information is crucial for our study because the identification strategy relies on comparing municipalities where a woman candidate barely defeats a man candidate and municipalities where a man candidate barely defeats a woman candidate. We thus hand-code the sex of the first and second place candidates in each election using information from state electoral agencies. Here we describe the data collection procedure for this information.

We recruited two undergraduate research assistants (RAs) and provided them with the political party and number of votes for each first and second place candidate for all municipal elections in 2018 from Magar (2018). This information also included the sex of the winning candidate. To identify the sex of the second place candidate, the RAs were instructed to search for the electoral results of each municipality in each state's electoral agency. This is because municipal election data is stored by each state's electoral agency, not the federal electoral agency. For each state, the RAs searched for the list of candidates that included their political party and electoral results and matched the official state election results to Magar's data. For each election, the RAs (1) identified the candidate that received the second most electoral votes and coded whether that candidate was a woman or a man based on their name, (2) verified that the first and second place candidates and their parties matched across sources, and (3) verified that the number of votes for the first and second place candidates matched across sources. The principal investigators (PIs), two of whom are of Mexican origin, trained the RAs and verified their work.

In Mexico, the vast majority of names are easily attributable to a sex/gender. For names that are not gender-specific, that the RAs could not code, or that the RAs were unsure about, they were instructed to leave blank spaces and highlight them for further review by the PIs. The PIs then went through the names the RAs could not identify and made coding

[2]Some states do report this information, though rarely in a systematic manner, while others do not.

decisions based on the name, and if the name was still unclear, they determined their sex based on background research on each one of these unknown candidates. For example, the PIs routinely verified a candidate's sex/gender through the candidate's personal campaign website or news stories covering the candidates.

C VAW Summary Statistics

Table C1 shows the summary statistics for the VAW outcomes in our sample across time and pooled over the three years of the mayoral term (2019-21).

Table C1: Summary statistics of VAW outcomes at the municipality level.

Statistic	Mean	St. Dev.	N
2019			
Homicides of women	1.96	6.61	611
Homicides of young women	1.35	4.73	611
Rape	6.60	21.56	611
Domestic violence (in tens)	10.40	37.03	611
Sexual abuse	13.44	48.77	611
Sexual harassment	3.20	13.13	611
2020			
Homicides of women	1.97	6.57	611
Homicides of young women	1.40	5.16	611
Rape	6.34	22.41	611
Domestic violence (in tens)	11.31	38.82	611
Sexual abuse	12.71	42.95	611
Sexual harassment	3.90	13.09	611
2021			
Homicides of women	1.99	6.49	611
Homicides of young women	1.38	4.88	611
Rape	7.63	26.22	611
Domestic violence (in tens)	12.97	43.34	611
Sexual abuse	15.87	54.66	611
Sexual harassment	4.84	16.18	611
Pooled			
Homicides of women	5.93	19.10	611
Homicides of young women	4.13	14.20	611
Rape	20.56	68.20	611
Domestic violence (in tens)	34.68	118.17	611
Sexual abuse	42.02	145.41	611
Sexual harassment	11.93	41.37	611

D Continuity of Observations

Regression Discontinuity Designs (RDD) rely on the assumption that potential outcomes are continuously distributed at the treatment cutoff, with treatment assignment determined only by the running variable – in this case the winning margin for women candidates. That is, treatment assignment should be orthogonal to any confounding variable that may affect violence against women (VAW). The RDD assumption could be violated if treatment assignment is correlated with any variable that influences VAW. The continuity assumption could also be violated if there is precise manipulation at the cutoff, i.e., if mayoral candidates are able to influence their assignment-to-treatment (the margin of victory) and sort nonrandomly around the threshold. We employ three sets of tests to provide evidence that the continuity assumption is met: formal tests of sorting; balance tests for the continuity of covariates around the threshold; and a placebo test with past VAW outcomes, specifically homicides of women and young women in 2010 and 2017. We select 2010 for the placebo test because it corresponds to the sociodemographic data from the 2010 Census we use in our analysis, and 2017 because potential candidates for the 2018 election had to register their candidacy by late 2017. Null results found in each of the robustness checks indicate the continuous potential outcomes assumption is met and that treatment assignment is orthogonal to other municipal characteristics that could affect VAW.

D.1 Sorting Tests

D.1.1 McCrary Test

The RDD assumption would be violated if mayoral candidates can influence their assignment-to-treatment (the margin of victory) and sort nonrandomly around the threshold. In order to formally verify that there is no candidate sorting around the treatment cutoff, we conduct a standard McCrary test (McCrary 2008) and present the results here. This test uses the same RDD framework to explore outcomes around the cutoff but uses the density of observations

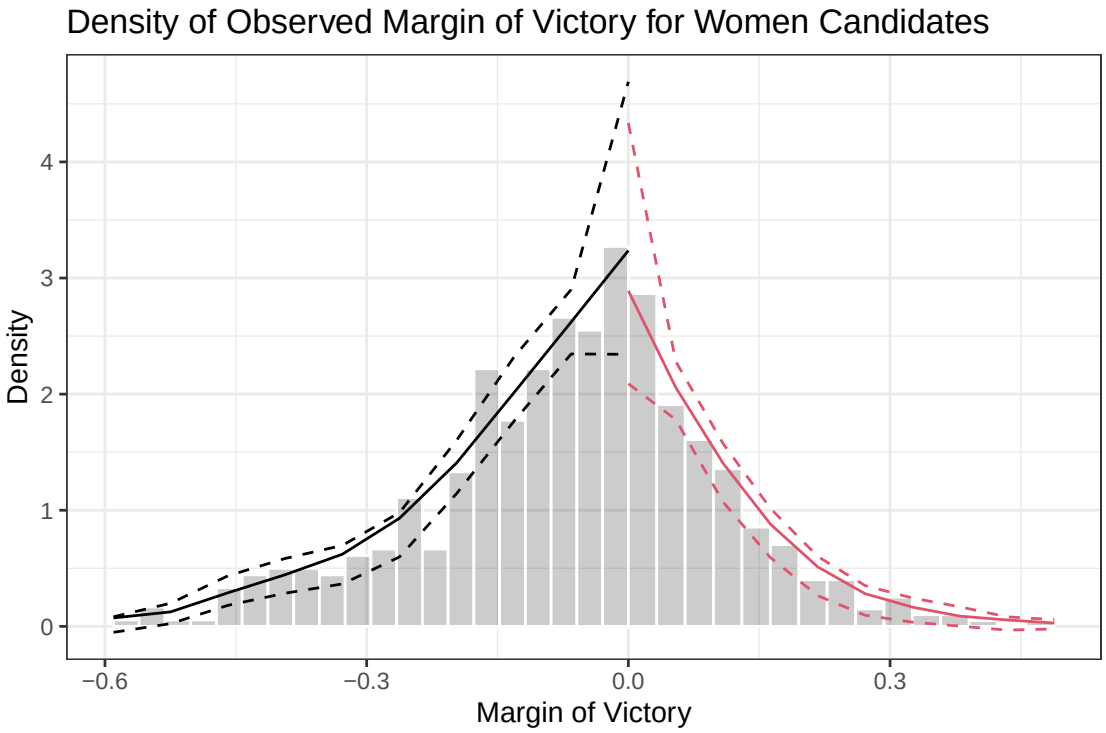

Figure D1: Distribution of Margin of Victory Around the Threshold (Calonico et al. 2015)

as the outcome rather than the primary VAW outcomes of interest used in the main analysis. If the density of observations is discontinuous around the threshold, 0% margin of victory, then the assumption of continuous potential outcomes is violated. Figure D1 shows the binned number of observations below and above the 0% margin of victory threshold, with the density of observations on either side of the threshold overlaid (and 95% confidence intervals). Observations above the threshold indicate municipalities where a woman candidate beat a man. Although there is a small "jump" with a lower density of observations located above the threshold, this discontinuity is not statistically significant. There does not appear to be any identifiable sorting below or above the threshold. We conduct a formal test using the `R` package `rdd` (Dimmery 2016), and find that the log difference in density height is -0.1271 (binwidth = 0.0144, $p = 0.423$). This null result suggests that the continuity assumption is likely to hold in our research context.

D.1.2 Nonparametric Test

To provide further evidence, we also validate the continuity of observations using a nonparametric test from Cattaneo et al. (2020) (using the `R` package `rddensity`) that does not require binning. The nonparametric test (using jackknife standard errors) also indicates no evidence of sorting around the cutoff (density difference $= -0.305$; $t = -0.348$; $p - value = 0.728$; effective $n = 455$).

D.2 Covariate Balance

The RDD assumption could be violated if the treatment assignment is not orthogonal to a variable that may affect VAW. To rule out this possibility, we show that confounding variables are continuous around the cutoff. Using municipality-level gender-disaggregated sociodemographic data from the 2010 Census, we conduct balance tests by estimating the RDD with potentially confounding variables as outcomes (e.g., the number of women, women-run households, and economically active women, as well as the average education of women).

The plots in Figure D2 show the regression discontinuity for the sociodemographic outcomes. In all plots, observations to the left of the cutoff represent municipalities where men politicians defeated women politicians, while observations to the right of the cutoff represent municipalities where women politicians defeated men politicians. The y-axis in all plots is a different sociodemographic measure, while the x-axis represents the margin of victory in the 2018 mayoral election, with positive values indicating a winning margin for the woman politician. For visual simplicity, the data is binned using spacing estimators, as is recommended by the literature.

We estimate the RDD following the same procedure as the main RDD results (using the `R` package `rddensity`). Table D1 shows the results. We find no discontinuity at the threshold for any of the sociodemographic variables. The findings support the assumption that treatment assignment is orthogonal to other confounding characteristics of municipalities that could influence VAW.

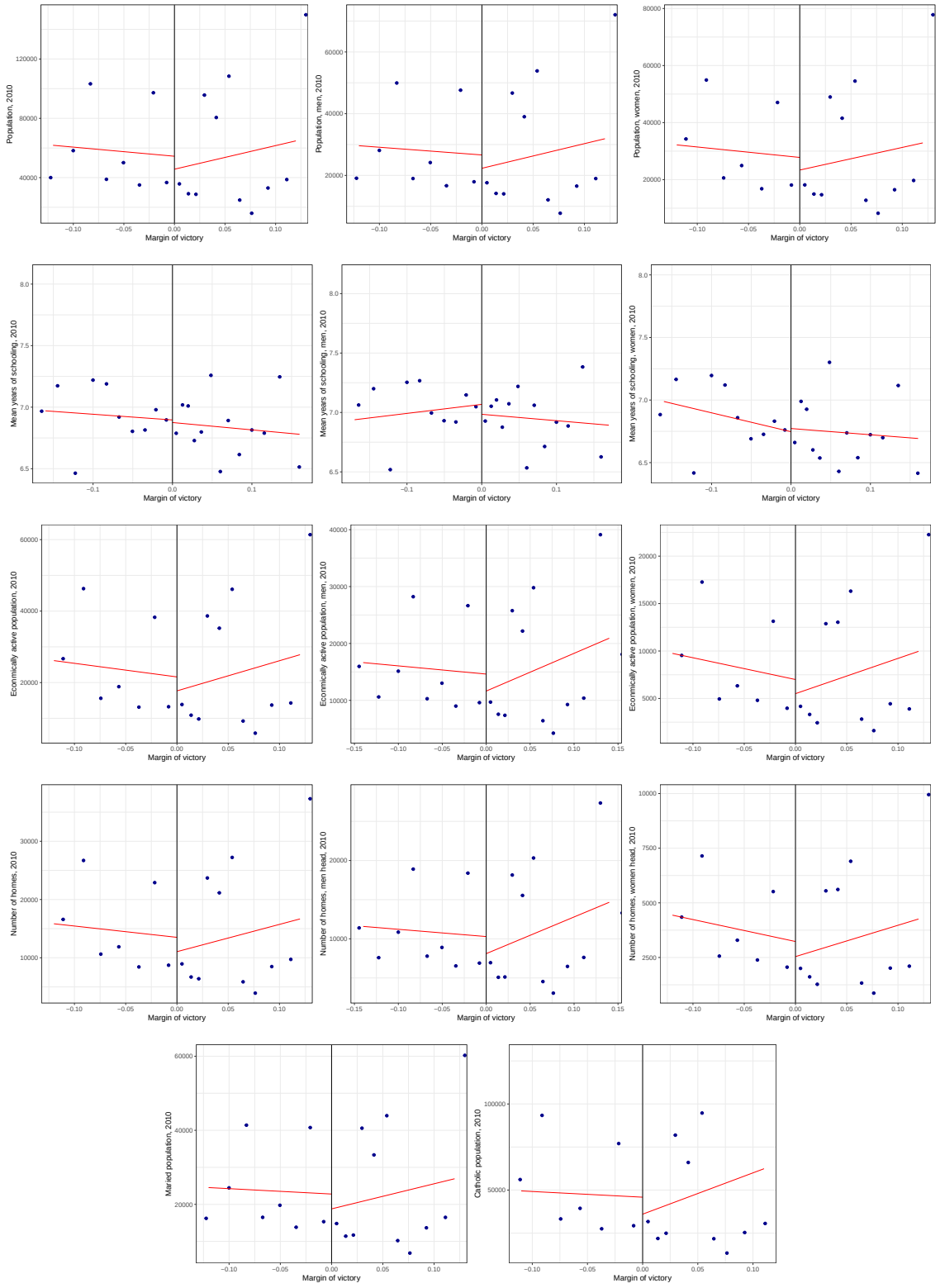

Figure D2: Regression discontinuity plots for sociodemographic covariates (INEGI 2021a). Running variable is the margin of victory. Data is binned using spacing estimators.

Table D1: Covariate balance: Women politicians and demographic variables, RDD estimates.

Outcome	Estimate	SE	p	Bandwidth	Polynomial	Obs
Population	−10,300.67	25,502.60	0.69	0.13	1	361
Population, men	−4,264.72	12,462.07	0.73	0.12	1	343
Population, women	−10,300.67	25,502.60	0.69	0.13	1	361
Mean years of schooling	−0.02	0.28	0.94	0.16	1	408
Mean years of schooling, men	−0.06	0.30	0.84	0.14	1	373
Mean years of schooling, women	−0.02	0.28	0.94	0.16	1	408
Economically active population	−4,316.27	11,069.29	0.70	0.13	1	355
Economically active population, men	−2,419.81	6,996.46	0.73	0.12	1	345
Economically active population, women	−4,316.27	11,069.29	0.70	0.13	1	355
Number of homes	−2,400.75	6,473.91	0.71	0.12	1	341
Number of homes, men head	−1,733.08	4,793.21	0.72	0.12	1	341
Number of homes, women head	−2,400.75	6,473.91	0.71	0.12	1	341
Married pop, 12 y/o and older	−4,024.35	10,522.69	0.70	0.12	1	347
Catholic population	−5,556.28	21,119.69	0.79	0.12	1	341

D.3 Placebo Test with Past VAW Outcomes

We also use a placebo test to provide further evidence addressing two concerns: (1) that women politicians are self-selecting into and winning close elections in municipalities with high VAW levels and (2) that our findings are spurious and the result of a spurious correlation due to some third confounding variable driving both lower rates of VAW and the electoral success of women politicians in close elections.

We use homicides of women and young women in two separate years: 2010 because this corresponds to the sociodemographic Census data we use in our analysis and therefore serves as a consistent reference point; and 2017 because politicians had to register as candidates for the 2018 election by late 2017. Data from both years would tell us whether women politicians are self-selecting and winning close elections in municipalities with high or low VAW levels. However, the placebo test using VAW data from 2017 is most relevant because potential 2018 election candidates must register themselves at the end of 2017.

The plots in Figure D3 show the regression discontinuity for the placebo outcomes. In all plots, observations to the left of the cutoff represent municipalities where men politicians defeated women politicians, while observations to the right of the cutoff represent municipalities where women politicians defeated men politicians. The y-axis in all plots is a different

placebo measure, while the x-axis represents the margin of victory in the 2018 election, with positive values indicating a winning margin for the woman politician. The top row shows results for placebo measures from 2010 and the bottom row shows results for placebo measures from 2017. For visual simplicity, the data is binned using spacing estimators, as is recommended by the literature.

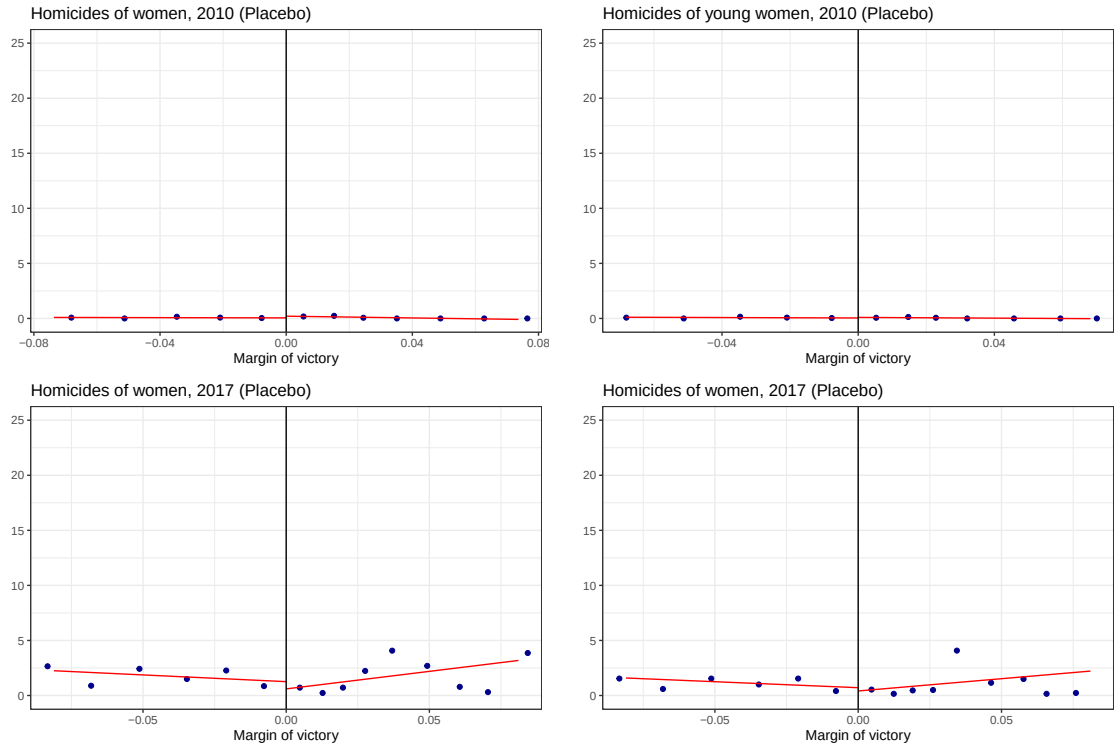

Figure D3: Placebo regression discontinuity plots for homicides of women and young women. Top row uses data from 2010, bottom row uses data from 2017. Running variable is winning margin. Data is binned using spacing estimators.

We estimate the RDD with these measures as outcomes and using the same specification as the main results (using the `R` package `rddensity`). Results are shown in Tables D2 and D3. We find that electing a woman candidate in 2018 has no effect on these *past* VAW outcomes. This provides compelling additional evidence that women are not self-selecting into electoral races in municipalities that are particularly dangerous (or safe) for women or electorally beneficial for women, and lends support to the as-if-random assumption.

Table D2: Women politicians and homicides of women in 2010, placebo test, RDD estimates.

Outcome	Estimate	SE	p	Bandwidth	Polynomial	Obs
Homicides of women	0.15	0.11	0.18	0.07	1	231
Homicides of women	0.18	0.13	0.18	0.11	2	317
Homicides of young women	0.05	0.08	0.50	0.07	1	216
Homicides of young women	0.06	0.08	0.50	0.11	2	325

Table D3: Women politicians and homicides of women in 2017, placebo test, RDD estimates.

Outcome	Estimate	SE	p	Bandwidth	Polynomial	Obs
Homicides of women	−0.66	0.65	0.31	0.08	1	253
Homicides of women	−1.17	0.90	0.19	0.09	2	279
Homicides of young women	−0.30	0.42	0.48	0.08	1	253
Homicides of young women	−0.64	0.55	0.25	0.09	2	270

D.4 Placebo Cutoffs

Table D4: Homicides of women, 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	1.610	1.571	3.167	−7.022
	(3.135)	(6.189)	(3.230)	(12.487)
n	226	335	103	40
Bandwidth	0.131	0.123	0.060	0.060

* p <0.1, ** p <0.05, *** p <0.01

Table D5: Homicides of young women, 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	1.084	1.122	1.498	−4.915
	(2.219)	(4.584)	(2.319)	(8.037)
n	222	334	103	39
Bandwidth	0.128	0.123	0.059	0.056

* p <0.1, ** p <0.05, *** p <0.01

Table D6: Rape, 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	5.475	0.743	16.181	−30.752
	(12.434)	(15.064)	(19.120)	(36.574)
n	308	315	145	38
Bandwidth	0.173	0.114	0.080	0.055

* p <0.1, ** p <0.05, *** p <0.01

Table D7: Domestic violence (in tens), 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	39.998	1.458	30.452	15.688
	(29.625)	(29.780)	(33.456)	(83.854)
n	373	334	163	48
Bandwidth	0.203	0.123	0.087	0.069

* p <0.1, ** p <0.05, *** p <0.01

Table D8: Sexual abuse, 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	43.184	22.400	41.921	−14.743
	(32.285)	(38.940)	(35.653)	(64.641)
n	399	321	142	38
Bandwidth	0.217	0.118	0.079	0.053

* p <0.1, ** p <0.05, *** p <0.01

Table D9: Sexual harassment, 2019-2021. RDD estimates. Placebo cutoffs (c = -0.2, -0.1, 0.1, 0.2).

	Cutoff -0.2	Cutoff -0.1	Cutoff 0.1	Cutoff 0.2
Estimate	11.574	4.617	12.306	−6.639
	(11.079)	(11.162)	(12.244)	(16.305)
n	318	315	203	40
Bandwidth	0.179	0.115	0.110	0.060

* p <0.1, ** p <0.05, *** p <0.01

E Compensating Differentials

Even with district-level balance, RDDs based on candidate characteristics (e.g., gender) could be capturing both the characteristic effect and compensating differentials (Marshall 2024), affecting interpretation of results. The direction of the bias is unclear.

On the one hand, coefficients may be biased upward if the compensating factors are positively correlated with the outcomes. For example, if women who defeat men in narrow elections are more competent on average, if voters have a negative bias against women politicians, if women disproportionately come from parties that emphasize anti-VAW efforts, or if women benefit from vertical political alignment due to parties placing female candidates in weaker districts (Lucardi and Micozzi 2022).

Alternatively, certain factors could result in downward bias and mask the effects of gender. First, if women face lower barriers to politics (e.g., strong party commitment to gender parity or gender quotas) the selection process for female candidates might be less stringent, resulting in men being more competent on average than their female counterparts. Second, parties disproportionately nominating women in safer districts could result in women who defeat men being weaker candidates. Lastly, if women who barely win have less political experience, then male winners might be better at securing resources, passing policies, or managing local politics.

Unfortunately, we do not have data on candidate characteristics to bound the effect, but we test (1) whether women come from different parties and (2) whether they benefit from political alignment. For political party, we create four variables, one variable for each major party that take on the value of 1 if they belong to the corresponding party (Morena, PRI, PAN, PRD) and 0 otherwise, and estimate RDDs using these variables as outcomes. For political alignment, we count the number of years each mayor shares party ID with their state's governor during their three-year term and use this at the RDD outcome.

Below we show that neither of these potential alternatives accounts for the observed results. Nevertheless, other compensating differentials may still be at play. However, we

Table E1: Party of winning candidate. RDD Estimates.

	Morena	PRI	PAN	PRD
Woman mayor	0.111	0.076	0.006	0.029
	(0.078)	(0.108)	(0.106)	(0.040)
p	1	1	1	1
n	404	363	310	366
Bandwidth	0.153	0.132	0.106	0.134

* p <0.1, ** p <0.05, *** p <0.01

contend that many of these potential differentials—party decisions about where to nominate women, meeting gender quotas, voter biases for or against women, and municipal police reactions to women mayors, among others—are not differentials that would invalidate the design or interpretation of the results, but rather manifestations of the pre-existing gender dynamics that explain why we see differences in outcomes. Rather than a potential limitation, these gender dynamics are integral to how gender shapes women's entry, socialization, and leadership in politics. That is, they are precisely the gender dynamics that may result in women and men politicians having different preferences and characteristics that impact their performances as mayors, including in addressing VAW.

Table E1 shows null effects for differences in political parties. Table E shows the main results on VAW while controlling for whether a candidate belongs to Morena, the largest party in 2018. All coefficients are larger and the effects for rape and domestic violence become statistically significant at the 0.1 level.

Table E3 shows that women mayors tend to share about six more months with political alignment within their three-year term than men mayors. Table E4 shows the main results on VAW while controlling for years of political alignment. Coefficients are slightly larger than the main results.

Table E2: Main results controlling for party of candidate. RDD Estimates.

	Hom. of women	Hom. of young women	Rape	Domestic violence (in tens)	Sex abuse	Sex harassment
Woman mayor	−5.281**	−3.411**	−17.384*	−29.168*	−26.091	−8.689
	(2.210)	(1.548)	(8.926)	(16.495)	(17.081)	(5.821)
Morena control	Yes	Yes	Yes	Yes	Yes	Yes
p	1	1	1	1	1	1
n	235	243	224	249	279	282
Bandwidth	0.074	0.077	0.070	0.080	0.091	0.093

* p <0.1, ** p <0.05, *** p <0.01

Table E3: Years mayor shares party with governor 2019-2021. RDD Estimates.

	(1)
Woman mayor	0.498*
	(0.292)
p	1
n	333
Bandwidth	0.118

* p <0.1, ** p <0.05, *** p <0.01

Table E4: Regression discontinuity results: Effect of women politicians on VAW, 2019-2021. Controlling for years sharing party with governor.

	Hom. of women	Hom. of young women	Rape	Domestic violence (in tens)	Sex abuse	Sex harassment
Woman mayor	−4.202**	−2.573*	−13.992	−23.261	−19.764	−6.733
	(1.969)	(1.397)	(8.698)	(15.924)	(16.080)	(5.539)
Control pol. align.	Yes	Yes	Yes	Yes	Yes	Yes
p	1	1	1	1	1	1
n	229	241	224	249	277	281
Bandwidth	0.073	0.076	0.070	0.080	0.091	0.092

* p <0.1, ** p <0.05, *** p <0.01

F Main RDD Results: Alternative Bandwidths

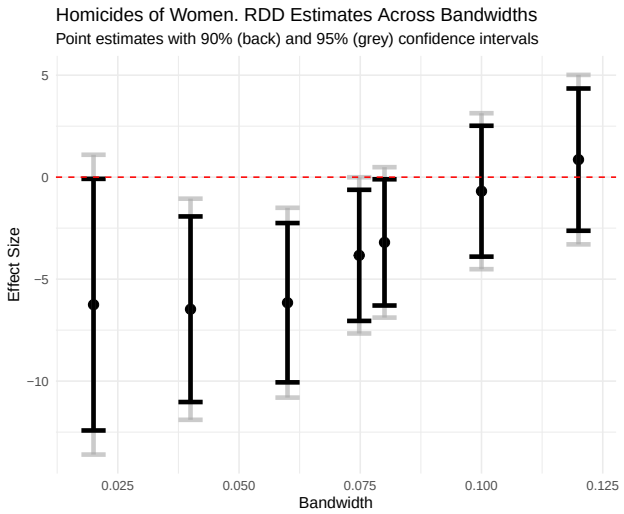

Figure F1: Homicides of women, 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.075 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

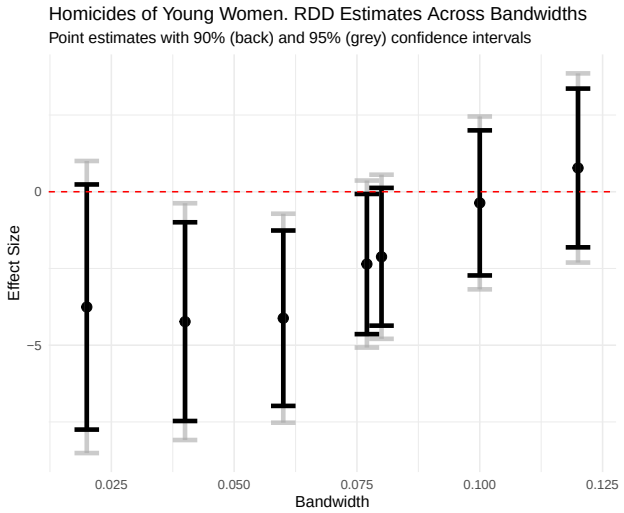

Figure F2: Homicides of young women, 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.077 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

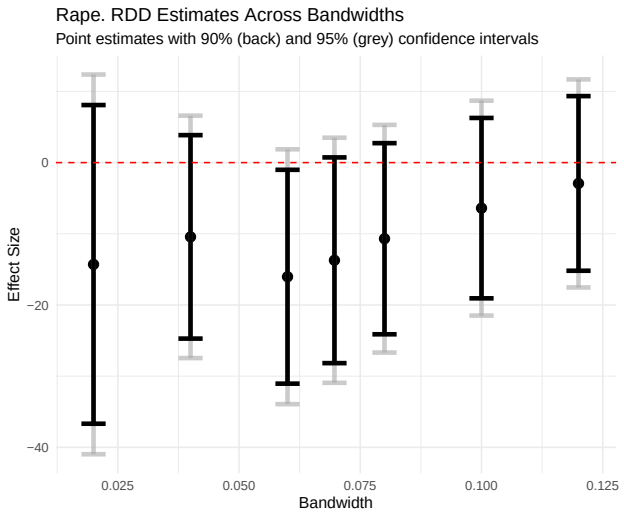

Figure F3: Rape, 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.070 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

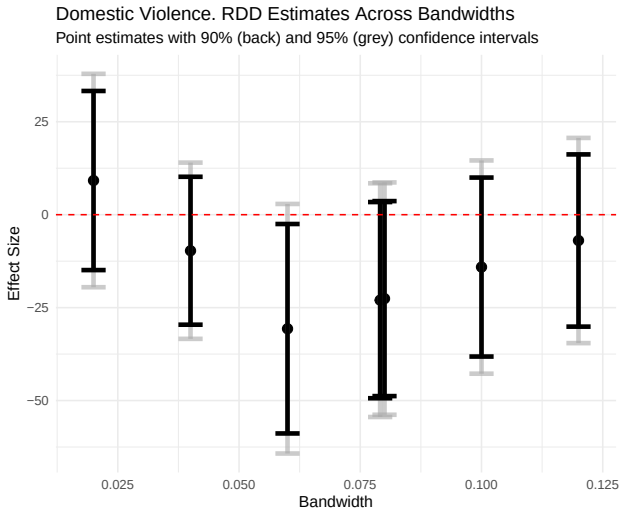

Figure F4: Domestic violence (in tens), 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.079 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

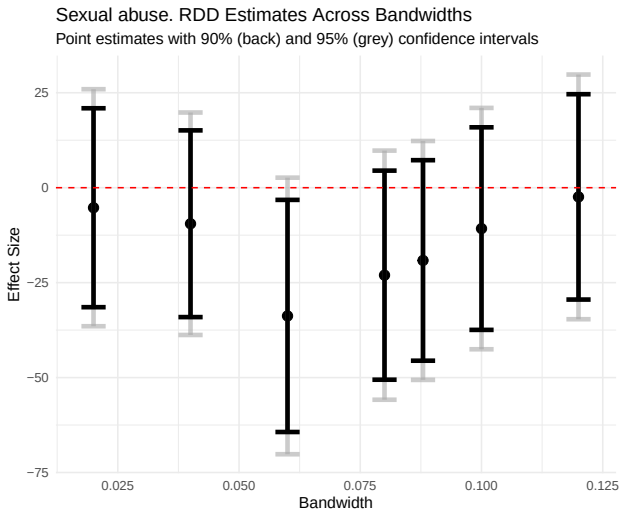

Figure F5: Sexual abuse, 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.088 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

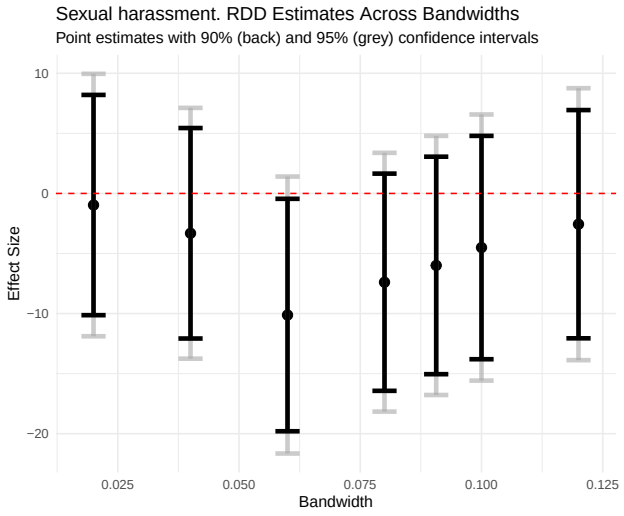

Figure F6: Sexual harassment, 2019-2021, RDD estimates across bandwidths. Bandwidth = 0.091 shows the data-driven optimal bandwidth selection that minimizes the mean-squared error (Calonico et al. 2014).

G Main RDD: Alternative Estimation

Table G1: Regression discontinuity results. Effect of women politicians on VAW, 2019-2021. Local randomization estimation and 95% confidence intervals.

Outcome	Estimate	P-Value
Homicides of women	-11.085	0.000
Homicides of young women	-7.702	0.000
Rape	-18.882	0.001
Domestic violence (in tens)	-27.849	0.013
Sex Abuse	-36.684	0.011
Sex Harassment	-13.890	0.002

H Main RDD Results: Higher-Order Polynomials

Table H1: Regression Discontinuity Estimates for third order polynomial (p=3)

Outcome	Polynomial	Coefficient	Std. Error	P-Value
Homicides of women	3	-10.171	4.005	0.011
Homicides of young women	3	-6.766	2.927	0.021
Rape	3	-18.546	11.483	0.106
Domestic violence (in tens)	3	-25.370	18.257	0.165
Sex abuse	3	-32.586	23.548	0.166
Sex harassment	3	-12.298	8.024	0.125

Table H2: Regression Discontinuity Estimates for fourth order polynomial (p=4)

Outcome	Polynomial	Coefficient	Std. Error	P-Value
Homicides of women	4	-11.058	4.257	0.009
Homicides of young women	4	-7.242	3.096	0.019
Rape	4	-12.461	12.003	0.299
Domestic violence (in tens)	4	-21.804	17.706	0.218
Sex abuse	4	-35.718	24.692	0.148
Sex harassment	4	-11.283	8.448	0.182

I Main RDD Results: Accounting for Population

We also estimate the main results controlling for population. Table I1 shows the results for the full mayoral term. Figure I1 shows the RDD coefficients and confidence intervals across different bandwidths of homicides of (young) women, indicating that the effect is negative for various bandwidths of narrow elections. The coefficients are all negative and slightly smaller and less precisely estimated than the main results in the text. Homicides of women remains statistically significant at the 0.10 level.

Since population is balanced at the threshold, these results suggest that population is not a confounder but still absorbs some of the variance. This is likely due to precision loss from multicollinearity. Even if population is balanced, it could still be correlated with the outcome (homicides) and adding it as a control increases standard errors due to multicollinearity, making statistical significance harder to reach. This could lead to a loss of significance, even if the true effect remains unchanged. It could also be that while women politicians reduce VAW, larger populations mechanically have more crime. Including population absorbs some of the variance in the outcome that was previously attributed to the treatment (women politicians). This reduces the coefficient size because the estimated effect is now net of population size. Under this interpretation, the loss of statistical significance is likely due to reduced precision or attenuated coefficient magnitudes rather than bias correction. Alternatively, adding an unnecessary covariate in a local RDD can introduce noise if it is not interacting meaningfully with the running variable. This might exaggerate small variations in the outcome and reduce the apparent effect of the treatment.

We include the standard RDD in the main text for additional reasons. If population is already balanced and does not strongly predict the outcome, controlling for it might unnecessarily complicate the model without adding much value. Second, and perhaps more importantly, overcontrolling could potentially obscure the true treatment effect if population mediates the relationship between mayoral gender and VAW. That is, if population mediates the relationship between the treatment (mayoral gender) and the outcome (VAW), controlling

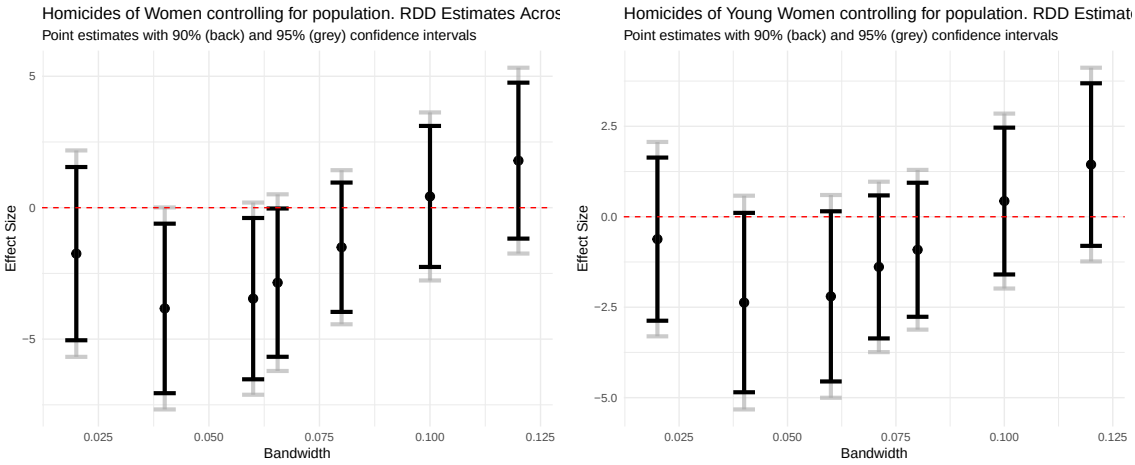

Figure I1: Homicides of women and young women, 2019-2021, RDD estimates across bandwidths controlling for population.

for it could "soak up" part of the treatment effect. For example, women mayors might reduce VAW by implementing policies that are more effective in smaller municipalities where community networks are tighter and norms can be more easily manipulated. In this case, population is not just a background characteristic but part of the causal pathway. By controlling for population, we essentially "block" this pathway and underestimate the true effect of having a woman mayor on VAW.

We therefore caution interpretation of these results.

Table I1: Regression Discontinuity Estimates, 2019-2021, controlling for population.

Outcome	Polynomial	Coefficient	Std. Error	P-Value
Homicides of women	1	-3.071	1.708	0.072
Homicides of young women	1	-1.550	1.183	0.190
Rape	1	-6.324	7.102	0.373
Domestic violence (in tens)	1	-11.217	14.841	0.450
Sex Abuse	1	-3.162	14.961	0.833
Sex Harassment	1	-2.169	5.195	0.676

J Probing Mechanisms

Women politicians may affect the prevalence of VAW through various mechanisms (INMUJERES 2005, 2022). Mayors in Mexico have significant *de jure* and *de facto* influence over policy, administrative, budgetary and staffing decisions (Selee 2011, 2012), which can affect the supply and functioning of agencies, programs, and policies designed to curb gendered violence. For example, mayors have power over Municipal Institutes for Women (e.g., *Centros para el Desarrollo de las Mujeres* or CDM, and *Instancias Municipales de las Mujeres del Estado* or IMM), tasked with supporting women and preventing VAW (Instituto Nacional de las Mujeres 2020). Municipal governments have considerable discretion over the provision of public services such as education, welfare, public safety infrastructure, and women's services (Simpser et al. 2016; Vázquez 2005), factors which can affect women's socioeconomic status and their subsequent vulnerability to VAW (Lawson 2012; Arthur and Clark 2009). Since women policymakers have been shown to pursue more policies that impact women (Hessami and Lopes da Fonseca 2020; Lippmann 2022), it is reasonable to assume that when women hold local office, some may take a more proactive approach to addressing VAW. It is also possible that women's political representation can also indirectly influence VAW by changing citizen attitudes towards women and VAW (Beaman et al. 2009; Iyer et al. 2012; Kuipers 2020).

Some of these possible mechanisms are observable and measurable (e.g., the number of women staffers), some are qualitative or hard to measure (e.g., workshops organized for women, collaboration with women's organizations to promote women's safety, events and services provided by Municipal Women Institutes), and others than may be more indirect and difficult to identify (e.g., providing better lighting in public spaces, supporting extracurricular activities in public schools, raising awareness by speaking more about women's topics at events, providing food baskets to struggling families, implementing job programs for men).

We use two complementary strategies to probe possible mechanisms through which women politicians may influence the prevalence of VAW within their jurisdictions. First,

we conduct qualitative research on women mayors that won very close elections to illustrate some real world actions taken by women politicians that are explicitly gendered. Second, we evaluate the impacts of these efforts by leveraging quantitative data from the 2020 Census of Municipal Governments to measure clearly gendered administrative factors that may be affected by the presence of a woman mayor.

J.1 Woman Mayors and Anti-VAW Actions

First, women mayors may take explicit actions to combat VAW. To examine these possible actions, we conduct qualitative research into a subset of the women politicians in our sample that won very close elections. Specifically, we search all women mayors that won with under 2% of the vote, which provides 33 women mayors. We found publicly available online news and government reports for 18 of these mayors taking at least one action to explicitly address VAW, which corresponds to 55% of the subsample. We underscore that the actions listed here likely undercount both the number of women mayors taking these actions and their actions since they only include information that what was reported, publicly available, and indexed through the Google search engine.

Table J1 provides a list of explicitly gendered actions taken by women mayors during the term we analyze. While we do not claim that these actions alone account for the effects we find, we find them incredibly insightful because they provide real-world examples of steps taken by women politicians that could potentially reduce VAW. A common thread was that many of these women were celebrated as the first woman mayor in their municipality. This provides suggestive evidence that women's representation is public and even celebrated in some instances. More concretely, we find evidence of a wide variety of actions taken by these women mayors to bring awareness to and address VAW, with mayors often using Municipal Women's Institutes to implement programs, workshops, events, and provide services.

Table J1: Subsample of women mayors who won very close elections (winning margin ≤2%) and actions to address VAW

Women mayors in subsample
Miriam Caballero Arras (Buenaventura, CH); Sara Eugenia Castillón Ochoa (Mascota, JA); Marisol Cruz García (Tecamachalco, PU); María Elena de Anda Gutiérrez (Tepatitlán de Morelos, JA); María Cristina Díaz Salazar (Guadalupe, NL); Mireya González Pérez (Tepango de Rodríguez, PU); Marisol González Torres (Jiquipilco, MX); María Itzé Camacho Zapiain (Lázaro Cárdenas, MI); Dolores López de la Cruz (Ayotoxco de Guerrero, PU); Nora Francisca Medina Campa (Villa Hidalgo, SO); Marlit Moreno Álvarez (Xochiapulco, PU); Flora Lina Mungarro Garibay (Benito Juárez, SO); Eva Patricia Salazar Marroquín (Allende, NL); Esmeralda Sánchez González (Tamuín, SL); Araceli Solórzano Solórzano (Tancítaro, MI); Jerónima Toledo Villalobos (San Cristóbal de las Casas, CS); Karla Erika Valdenegro Gamboa (Mapastepec, CS)
Actions by women mayors in subsample
Held events and workshops on the empowerment of women.
Inaugurated and participated in the Race to Commemorate Women's Day.
Implemented programs that provided food baskets and basic services for women.
Participated in annual March for the International Women's Day alongside head of the Municipal Women's Institute.
Created shelter for vulnerable persons via the Municipal Women's Institute.
Created System Against Violence Against Women via the Municipal Women's Institute.
Carried out advertising campaigns supporting women to prevent and eradicate VAW.
Invested and distributed sowing machines to women to support self-employment.
Acquired contract from state government to employ women in municipality to make school uniforms.
Supported psychological services via the Municipal Women's Institute and the Youth Institute.
Created programs to raise awareness about respecting women.
Inaugurated exposition of women entrepreneurs.
Promoted therapy through the Municipal Women's Institute.
Attended International Women's Day events and promoted various programs ran by the Municipal Women's Institute and the Network for Assistance to Women Victims of Violence.
Spread awareness about preventing VAW through videos on social media.
Spread awareness about preventing VAW and labor challenges faced by women through social media and promoted women's empowerment.
Participated in the Regional Security Board on the International Day to Eliminate Violence Against Women and spoke about protecting women and eradicating VAW.
Spoke alongside public security agents about preventive actions to reduce VAW.
Signed agreement to support pregnant women who need access to hospitals.
Held various women-related activities and events: March Against Violence Against Women, public informative talks about VAW, public talks to women about self-esteem and crime prevention, and workshop of self-defense techniques for women.
Held exposition to promote women-crafted products.
Held workshops through the Center for Women's Development to promote and provide attention and services to women about a host of issues.
Attended event by the Mexican Association of Women Entrepreneurs.
Held event commemorating International Women's Day.
Advanced the representation of women public servants in local government.
Coordinated with governor to support small businesses, including women-owned businesses.

Table F2: Subsample of women mayors who won very close elections (winning margin $\leq$2%) and actions to address VAW (continued)

Actions of women mayors in subsample
Inaugurated municipal market, which supports local businesses, including women making and selling artisanal products.
Held public conferences about municipal government advances in addressing VAW.
Publicly promoted and highlighted bravery of women who denounce VAW.
Implemented "Safe Woman" App that functions as a mobile alert with geolocation and direct link to municipal police.
Created public agenda to protect women.
Publicly promoted the municipality's women's shelters.
Promoted women-owned businesses in collaboration with the Mexican Association of Women Business Owners.
Held seminar on policies to address VAW at local university.
Created Municipal Women's Institute and promoted Institute's programs.
Inaugurated Center for Women's Development to run various programs for women.
Held talks on VAW, gender equality, women's rights, and other related topics at various public schools.
Held conference for 200 women on the International Women's Day.
Participated in "A Day Without a Woman" protest and encouraged citizens and business to do so as well.
Provided monthly informational meetings with citizens about eradicating VAW.
Held workshops for women small business-owners.
Acted as ambassador for the "Women and Peace" campaign.
Publicly celebrated women in public health and advocated for victims of VAW at an event held for International Women's Day.
Held public event celebrating the 65th anniversary of women's suffrage and honored powerful women who fought for gender equality.

J.2 Women Mayors and Local Governments

Second, women mayors' efforts to counter VAW could result in systematic effects that we can test quantitatively, for example, if they influence the way that local administrations look and function. To investigate this possibility, we leverage the Census of Municipal Governments conducted every two years by Mexico's National Institute of Statistics and Geography (*Instituto Nacional de Estadística, Geografía e Informática* or INEGI). During our period of analysis (2019-2021) only one census was conducted, and it collected information on municipal governments at the end of 2020. Using this data, we narrow in on gendered outcomes that may measure pathways through which women politicians affect VAW. We discard gendered characteristics that are hard to impact in the short-term (e.g., how many buildings Municipal Women's Institutes own, and how many institutions exist that address women's issues, among others), and instead focus on factors that could possibly be affected within a three-year mayoral term. We thus focus on (1) the percent of support staff in the municipal council that are women, (2) the percent of women who lead municipal government institutions (since mayors have power over their appointment), (3) the percent of the budget designated to municipal government institutions that address gender and women issues, (4) whether the municipal government opened formal channels for citizens participation (dummy), (5) whether municipal public security institutions had a specialized unit to address gender-based violence (dummy), and (6) whether municipal public security institutions provided care and/or services aimed at specialized care for victims (dummy). We then estimate the RDD using these variables as outcome measures.

Table 2 in the main text presents the results, suggesting several mechanisms through which women mayors may reduce VAW. First, women politicians increase the percentage of women support staff in the municipal council and the proportion of women leading municipal institutions. This shift in the gender composition of local leadership and administrative staff aligns with findings that women mayors expand the share of women public employees (Alberti et al. 2022). A greater presence of women in government could enhance institutional

awareness of gender-based violence and foster policies more responsive to VAW.

Additionally, we find that local public security institutions in women-led municipalities are more likely to offer specialized services for victims and, though not statistically significant, are also more likely to have dedicated police units addressing gender-based violence. The presence of specialized services may lead to shifts in police behavior and increased reporting, contributing to a decline in VAW. Furthermore, specialized police units, even if their impact is not statistically robust, could enhance institutional capacity to respond to gender-based violence. Victims who receive targeted support and protection may be less vulnerable to future victimization, reinforcing long-term reductions in VAW.

Though not statistically significant, results also suggest that women mayors allocate a higher percentage of the budget to institutions addressing gender issues and create formal channels for citizen participation. This could indicate that women politicians prioritize gender-related policies and are more responsive to citizen demands, enabling sustained efforts to combat VAW. Together, these mechanisms suggest that women mayors influence VAW by institutionalizing gender-responsive policies and fostering environments where violence against women is less likely to persist.

K RDD Results: Homicides of Men and Non-VAW Crimes

To investigate whether the presence of a women mayor has a general effect on overall violence and crime, rather than a specific effect on VAW, we also estimate the main RDD specification using non-VAW outcomes. Specifically, we estimate the RDD using outcome measures of other types of violence and crime: the homicides of men, homicides of young men, and four of the most prevalent crimes in Mexico (extortion, home burglary and vehicle theft, kidnapping, and drug dealing). We note that these outcomes and analyses were not pre-registered and should thus be seen as exploratory. Data on homicides comes from death certificate data from 2019 and 2020 and is collected from Mexico's National Institute of Statistics and Geography (INEGI) (INEGI 2021b). Data on crimes is from the Executive Secretariat of the National Public Security System SESNSP) (SESNSP 2022), and measures reported crimes from 2019 - 2021. Descriptive statistics of these outcomes are shown in Table K1.

Table K1: Summary statistics: Homicides of men and non-VAW crimes (2019-2021)

Statistic	Mean	St. Dev.	N
Homicides of men	15.97	49.51	611
Homicides of young men	11.87	38.16	611
Extortion	4.54	16.98	611
Theft	115.15	457.52	611
Drug dealing	26.77	116.94	611
Kidnapping	0.43	1.29	611

The plots in Figure K1 show the regression discontinuity for the non-VAW outcomes. In all plots, observations to the left of the cutoff represent municipalities where men politicians defeated women politicians, while observations to the right of the cutoff represent municipalities where women politicians defeated men politicians. The y-axis in all plots is a different placebo measure, while the x-axis represents the margin of victory in the 2018 election, with positive values indicating a winning margin for the woman politician. For visual sim-

plicity, the data is binned using spacing estimators, as is recommended by the literature. Interpretation of the plots should be undertaken with caution.

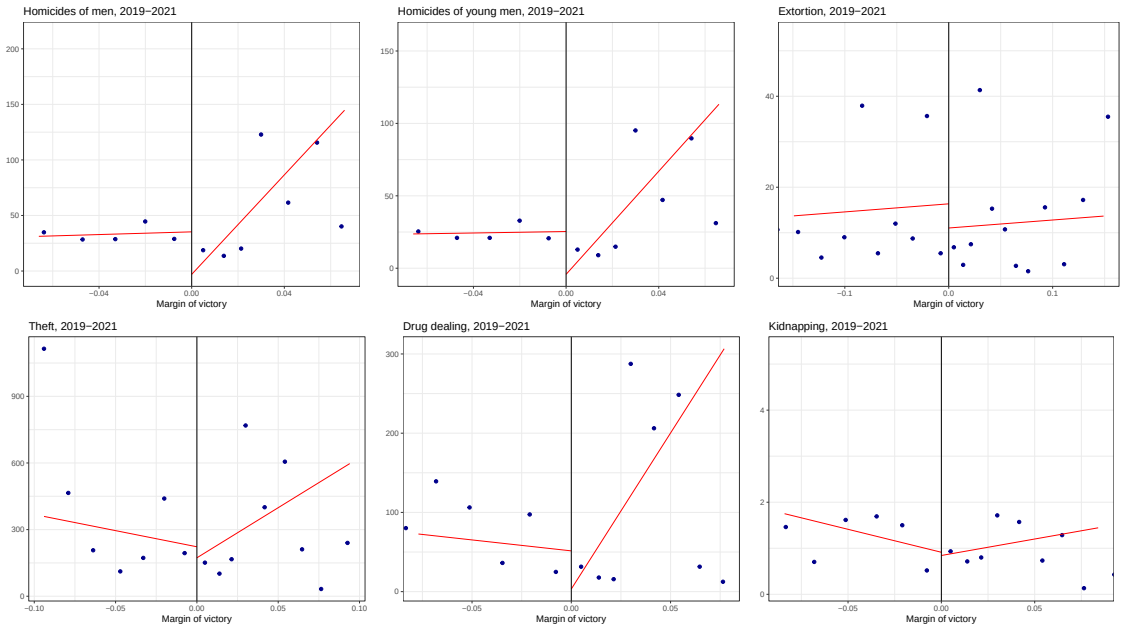

Figure K1: Regression discontinuity plots for homicides of men and young men, and non-VAW crimes, including extortion, theft, drug dealing and kidnapping. Running variable is winning margin. Data is binned using spacing estimators.

Yearly RDD results for these additional tests are shown in Table K2 and pooled results are shown in Table 2 in the main text. First, we find that women politicians that win narrow elections have a short-term negative effect on homicides of men and young men after first year in office, but that these effects become smaller and lose their statistical significance at the 5% level during a woman politician's second year in office. The effect sizes for the first year of a woman's administration are similar in size across homicides of women and men. That is, the point estimates are all close to the mean number of homicides of their respective measures. This tells us that in the first year of the mayoral term, the effects are substantively large for homicides of both men and women. However, these effects become larger during the second year of term for homicides of women and remain statistically significant, while the coefficients for homicides for men get smaller and lose their statistical significance at the 5% level during a woman politician's second year in office. In other words, the effect of a

women mayor on a reduction in homicide instances is short-lived for homicides of men and consistent for homicides of women, becoming even more pronounced in subsequent years. This suggests that while municipalities led by women may have fewer overall homicides compared to municipalities led by men, that women mayors have a distinct and persistent effect on VAW.

Table K2: Women politicians and Non-Vaw Outcomes, RDD estimates.

Outcome	Year	Estimate	SE	p	Bandwidth	Polynomial	Obs
Homicides, men	2019	−12.06	5.98	0.04	0.07	1	203
Homicides, men	2020	−7.78	4.98	0.12	0.08	1	243
Homicides, men	2021	−14.83	7.17	0.04	0.07	1	211
Homicides, young men	2019	−9.41	4.58	0.04	0.07	1	205
Homicides, young men	2020	−6.85	4.02	0.09	0.07	1	228
Homicides, young men	2021	−10.31	5.32	0.05	0.07	1	228
Extortion	2019	−0.59	2.70	0.83	0.10	1	296
Extortion	2020	−2.08	3.89	0.59	0.15	1	404
Extortion	2021	−2.23	4.44	0.61	0.14	1	380
Theft	2019	−31.42	50.90	0.87	0.09	1	284
Theft	2020	−8.22	50.90	0.87	0.09	1	284
Theft	2021	−5.95	50.08	0.91	0.10	1	289
Drug dealing	2019	−3.35	13.43	0.80	0.08	1	253
Drug dealing	2020	−18.22	18.63	0.33	0.08	1	243
Drug dealing	2021	−28.60	20.71	0.17	0.07	1	231
Kidnapping	2019	−0.06	0.30	0.84	0.10	1	289
Kidnapping	2020	0.04	0.18	0.82	0.09	1	270
Kidnapping	2021	0.004	0.18	0.98	0.07	1	234

Second, we also find that women politicians have no effect on the prevalence of reported non-VAW crimes for any year (no results are statistically significant at either $p < 0.05$ or $p < 0.1$). Interestingly, though not statistically significant, some point estimates for kidnapping, theft, and extortion are positive, suggesting that the consistent negative effects on VAW crimes are not due to some phenomenon wherein all crimes and forms of violence are lower in municipalities with women mayors. This provides strong evidence that women politicians are having an effect on VAW outcomes specifically.

Together, these results suggest that women politicians reduce VAW crimes – particularly severe forms of VAW – and not crimes in general, though they do have some short-term

effect on homicides of men as well.

L Pre-Analysis Plan and Deviations

The pre-analysis plan (PAP) was registered prior to data collection and is available at the Open Science Foundation Registry at the following link: .

This section explicitly identifies and explains deviations from the PAP.

First, we only specified that we would use covariate balance tests to check the RDD continuity assumption. In addition to the covariate balance tests we registered, we also chose to use formal sorting tests, because it has become standard practice and provides even more robustness than the original PAP anticipated. An additional robustness check we run is a placebo test using past outcomes as the dependent variable. We did not register this test in the PAP. Again, this is an additional robustness check that provides further credibility to the main results.

Second, in 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) and Calonico et al. (2020) (herein CCF). However, CCF improves upon the MSE-optimal bandwidth selectors from IK, as discussed in Calonico et al. (2014), and we therefore only calculate bandwidths using this method.

Third, in the PAP we specified that data on local elections would come from a third-party repository. However, after beginning the data collection on the gender of candidates we noticed that some of the election results were not completely accurate. This is likely because election results take time to verify. We therefore collected and verified each election result directly from each state's electoral agency.

Fourth, we did not register how we would probe mechanisms. After concerns over possible mechanisms arose, we began to consider how we could address those. Given the lack of data on the topic, we turned to the 2021 Census of Municipal Governments that measures various administrative characteristics at the end of 2020 and found some relevant variables. We also decided that qualitative information could complement the quantitative evidence given the limitations of the latter.

Fifth, we only planned to run the RDD using VAW measures as outcomes. When the question arose as to whether women politicians affect other forms of violence and crimes that are not gendered, we decided to run additional analyses using homicides of men and non-VAW crimes (extortion, theft, kidnapping, and drug dealing). These tests were not included in the PAP. Nevertheless, we decided to estimate the RDD using these outcomes following the research design we *had* registered so as to not deviate from the original plan. It should also be noted that these are additional tests and not main results.

Finally, the PAP included a preliminary plan to explore heterogeneous effects. However, after collecting election and gender data we decided that the sample size was likely not large enough to give us the power to conduct these tests. We therefore decided against collecting additional data. We believe that assessing the mediating effect of organized crime and gender-based civil unrest, as suggested in the PAP, may be important for understanding the mechanisms through which women politicians can reduce VAW, and we hope to explore these factors in future work.

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