

# Law 215/2012 and female voter turnout: Does Educational Distance Matter?

Gaia Taiani \*

## Abstract

Law No. 215/2012 introduced gender quotas for Italian municipal councils between 5,000 and 15,000 residents to boost women's representation at the local level. Using a Regression Discontinuity Design, this study examines how the reform influenced turnout among female voters, with a particular focus on the educational link between candidates and constituents. Indeed, two potential mechanisms could play a role: first, voters could be more likely to participate when they share a similar academic background with a candidate, and second, they may be motivated to support high-achieving women. We find the nonparametric LATE estimate to be negative and statistically significant at the 10% level ( $\approx -1.90$  pp,  $p = 0.072$ ), indicating that the quota alone did not mobilize women, but rather determined a small decrease in female turnout. At the same time, educational distance exhibits a robust negative effect ( $\approx -0.83$  pp per unit gap,  $p < 0.001$ ), showing that turnout rises as candidates' education aligns more closely with that of the electorate.

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\*PhD Candidate, University of Catania, Department of Economics and Business  
Mail: [gaia.taiani@phd.unict.it](mailto:gaia.taiani@phd.unict.it)

## 1. Introduction

Gender inequality around the globe is still a significant issue. In developing and under-developed countries, women lack basic human rights, while worldwide, they continue to face discrimination and gender-based violence. Politics is no exception. The global average percentage of women in national parliaments is approximately 27.5%, with Europe only slightly above the mean at 31.9%. Italy performs slightly better, with a female representation in the Parliament of 32.8%. However, it is still far from achieving a gender balance.

Female under-representation in political bodies is an issue as it violates the democratic principle of fair representation established by the Italian Constitution (art. 3 and 51). Consequently, the Italian legal framework has undergone several reforms (e.g., Law No. 81/1993, Law No. 215/2012).

Building on recent evidence from Italy regarding the effect of Law No. 215/2012 on the voter turnout gap (Coman & Shair-Rosenfield, 2025), this study investigates whether educational similarity or distance between female voters and candidates shapes women's propensity to vote in local elections, and whether this identity-based affinity amplifies or counteracts the mobilizing influence of the quota reform. Indeed, two potential mechanisms may play a role: first, women may be more inclined to vote when they share a similar educational background with a female candidate, fostering a sense of representation (educational proximity); second, they may be inspired to support highly educated female candidates, regardless of their own education level (aspirational identification). The analysis explores whether a stronger affinity in educational background with same-sex candidates translates into greater electoral participation among women.

Specifically, Law No. 215/2012 introduced two key measures to promote gender parity in local elections: a mandatory gender quota requiring that at least one-third of candidates on electoral lists be women, and a gender-conditioned double-preference voting system, which allows voters to express two preferences—provided they are for candidates of different genders. These institutional changes are designed to increase women's presence among candidates and incentivize their election. In this context, we aim to assess whether female voters are more likely to participate in local elections when they perceive a stronger connection with female candidates based on shared or aspirational educational characteristics. Prior research supports this notion, showing that greater representation of minority groups among candidates tends to enhance political engagement within those groups (Kim, 2019).

The entry into force of this law impacted the gender composition of Italian municipal

councils, increasing the number of elected female councilors by about 13.9 percentage points (Andreoli et al., 2022), indicating that simply having more female representation on the electoral lists affects the election outcome. Even if, according to public opinion, reforms of this kind can be controversial, it is clear that they enhance a more equitable political representation. In line with this reasoning, Baltrunaite et al., 2019 found an increase of 18 percentage points in the proportion of women in local councils led by the introduction of this law. According to the authors, the double preference voting mechanism effectively encourages voters to support women. Additionally, the study observed changes in voter behaviour in subsequent higher-level elections, suggesting spillover effects from the policy.

This study advances the literature by introducing the concept of educational distance, that is, the difference in educational attainment between female voters and female candidates, as a potential mechanism that strengthens the impact of gender quotas on women's political participation. While previous research has focused on whether an increasing share of women on the ballot can reduce the gender turnout gap through symbolic representation (Coman & Shair-Rosenfield, 2025), this paper investigates whether a more personal and relatable cue, i.e., the educational background, contributes to this effect. Thus, this study offers a novel perspective on how women respond to electoral politics by introducing a dimension that, so far, has received limited attention in the literature.

According to our results the quota reform by itself did not produce any mobilization of female voters. Indeed, our nonparametric RDD estimate shows a small but significant at the 10% downward jump in the gender turnout gap at the 5,000-resident cutoff ( $LATE \approx -1.90$  pp,  $p = 0.072$ ), indicating that the introduction of the law had a slight negative effect on female turnout. By contrast, the educational distance between female candidates and local women has a robust, negative effect on turnout ( $\approx -0.83$  pp,  $p < 0.001$ ) independently of the treatment, suggesting that municipalities where candidates' educational profiles more closely match those of the electorate experience higher female participation.

The findings contribute not only to the evaluation of gender quota policies but also to broader discussions on how political engagement strategies can be refined to enhance inclusiveness and participation. Indeed, a comprehensive understanding of the impact of laws and the differences that arise within a heterogeneous territory such as Italy is crucial for fostering a more equitable and sustainable society. In particular, these results suggest that perceived similarity in background rather than symbolic representation via quotas is the primary mechanism underpinning women's electoral engagement.

The paper is structured as follows. Section 2 reviews the related literature and delves

into the legal framework. Section 3 sets out the empirical strategy, detailing the identification approach, baseline specification, and validity checks. Section 4 describes the data, variable construction, and cleaning procedures. Section 5 presents the main results and robustness analyses. Section 6 discusses the implications, concluding with directions for future research.

## 2. Background

### 2.1. Related Literature

A large number of countries across Europe and Latin America have been adopting gender quota mechanisms, either through party rules or electoral law, to raise women's political representation. Within Europe, one influential case is Sweden's Social Democratic Party (SAP), which in 1993 adopted a centrally mandated "zipper" rule requiring strict alternation of women and men on party lists. Besley et al., 2017 report that this requirement produced a sizeable rise in the share of women elected in the 1994 election of about 10 percentage points, while also raising the competence of male politicians who saw their seats "taken" by women.

Another example is Spain, which provides quasi-experimental evidence from a legislated gender quota. Bagues and Campa, 2019 study the staggered application of the 2007 parity law to municipal elections, initially binding in municipalities above 5,000 inhabitants and extended in 2011 to those above 3,000, using an RDD around the population thresholds. They find that quotas increased the share of women among candidates by roughly 8 p.p. and among councillors by about 4 p.p., but detect no significant effects on voter turnout, women's leadership in the executive, or female-stereotyped spending categories.

Turning from institutional design to the electorate, Bellani and Hidalgo-Hidalgo, 2025 instrument women's education with compulsory-schooling reforms across nine European countries and show that higher female education increases the percentage of women elected to regional parliaments. This appears to be determined by greater female political interest and more egalitarian gender-role attitudes among women as education grows, with little evidence of shifts in men's attitudes.

Finally, individual-level evidence from Germany indicates that descriptive representation does not necessarily translate into higher female turnout. Using an RD that exploits close mixed-gender district races in 2013 and subsequent turnout in 2017, Neugart and Zuazu, 2025 find no effect on women's (or men's) turnout, which can be interpreted as a

lack of “symbolic” spillovers in this setting.

Taken together, the European literature suggests that quotas are effective at changing who gets elected, while effects on mass participation are context-dependent. By contrast, increasing women’s education appears to raise female representation partly by shifting women’s political engagement and attitudes. These patterns motivate our own RD study: we ask whether education shapes female voter turnout, and how these effects compare to institutional levers such as quotas.

Turning to our reform, a growing body of work exploits Italy’s Law 215/2012 to study heterogeneous outcomes. Our discussion builds most directly on Baltrunaite et al., 2019 and Coman and Shair-Rosenfield, 2025. Coman and Shair-Rosenfield, 2025 test whether expanding the supply of female candidates narrows the gender gap in turnout. Using an IV combined with a DiDisc design, they document only a modest reduction in the turnout gap despite the law’s clear boost to women’s presence on the ballot.

Baltrunaite et al., 2019 provide the closest modeling blueprint for our setting. Like us, they implement an RDD at the law’s 5,000-resident cutoff, but focus on representation rather than turnout. They find that the reform increased the share of elected female councillors by about 18 percentage points, with most of the effect attributable to the gender-conditioned double-preference rule rather than the list quota itself. Consistent evidence comes from Andreoli et al., 2022, who, exploiting geographic variation in a DiD framework, estimate a 13.9 p.p. rise in female councillors and show that greater female presence shifts local budgets toward social spending, such as childcare, education, health, while reducing administrative costs.

Beyond representation and budgets, Baraldi et al., 2023 examine unintended consequences for political violence, finding an increase on the order of 0.6 times the pre-reform mean, which they interpret as consistent with women’s greater honesty constraining criminal capture. Using a 1986–2015 panel, Acconcia and Ronza, 2021 show that a higher share of women in office is associated with more government stability—roughly two additional years in office. Finally, Baraldi and Fosco, 2025 link a larger female share in councils to significant reductions in air-pollutant emissions, aligning with evidence that women prioritize ESG-type outcomes.

Relatedly, De Paola et al. analyze the earlier, and subsequently annulled, Law 81/1993, exploiting its interruption in a DiD and finding persistent gains in women’s representation, especially in more highly educated municipalities, underscoring the role of education as an amplifier of gender-balance reforms.

## 2.2. Legal framework

Gender quotas are policies that require a minimum presence of each gender among candidates or officeholders to accelerate gender balance in politics and the workplace.<sup>1</sup> Quotas can be statutory (mandated by law) or voluntary (adopted by parties or organizations).<sup>2</sup> The reform studied in this paper, i.e., Law No. 215 of 23 November 2012 is a *statutory* quota.

This reform was issued to enhance the principle of gender equality entrenched in the Italian Constitution: article 3 establishes formal and substantive equality, article 37 guarantees equal rights and pay for women workers, and article 51 (as amended in 2001) mandates specific measures to promote equal opportunities in access to public offices and elected positions.<sup>3</sup>

In detail, Law No. 215/2012 presents a quite complex structure. For municipalities with inhabitants between 5,000 and 15,000, the law introduced two key measures: (i) a list quota capping each sex at two-thirds of candidates; and (ii) a double gender preference rule, allowing voters to express two preferences only if they concern candidates of different sex (otherwise, the second preference is annulled). In addition, this discipline applies only to municipalities in ordinary-statute regions. The special-statute regions of Sicily, Sardinia, Friuli Venezia Giulia, Trentino-Alto Adige/Südtirol, and Valle d'Aosta present their own regional legislation, often adopting equivalent measures<sup>4</sup>.

Moreover, within their legislative competences, several regions have adopted complementary measures and sanctions (e.g., list inadmissibility or financial penalties) to secure compliance with gender-balance provisions in regional and local elections.<sup>5</sup>

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<sup>1</sup>European Institute for Gender Equality (EIGE), “Quota”, available at: <https://eige.europa.eu/publications-resources/thesaurus/terms/1304>.

<sup>2</sup>International Institute for Democracy and Electoral Assistance (International IDEA), “Gender quotas database”, available at: <https://www.idea.int/data-tools/data/gender-quotas-database/quotas>.

<sup>3</sup>*Constitution of the Italian Republic* (official English translation), Senate of the Republic, available at: [https://www.senato.it/documenti/repository/istituzione/costituzione\\_inglese.pdf](https://www.senato.it/documenti/repository/istituzione/costituzione_inglese.pdf).

<sup>4</sup>Camera dei deputati (Italian Chamber of Deputies), available at: <https://leg16.camera.it/561?appro=899> (last accessed: 14 August 2025).

<sup>5</sup>Senato della Repubblica, Servizio studi, *La parità di genere nella legislazione elettorale regionale*, Dossier n. 220, available at: [https://www.senato.it/show-doc?id=1162021&leg=18&part=dossier\\_dossier1&tipodoc=DOSSIER](https://www.senato.it/show-doc?id=1162021&leg=18&part=dossier_dossier1&tipodoc=DOSSIER).

### 3. Model Identification

Testing the relationship between women’s electoral success and the similarity in education levels between female candidates and voters is challenging due to structural endogeneity. The institutional reform introduced by Law 215/2012 overcomes this issue by serving as an exogenous treatment that ensures a causal interpretation of our analysis.

The design of the reform is particularly well-suited to empirically test the core hypothesis of this study—namely, that the increase in female voter turnout following the reform is further amplified when female candidates and voters share similar levels of educational attainment. To this end, a Regression Discontinuity Design (RDD) is employed, exploiting the population threshold established by the law.

Indeed, Law 215/2012 applies exclusively to municipalities with a population of at least 5,000 and a maximum of 15,000 residents. These eligibility cutoffs generate a discontinuity that can be leveraged to identify the causal effect of the policy. By comparing municipalities located just above and just below the threshold, assumed to be otherwise comparable in their socio-economic and demographic characteristics, it becomes possible to isolate the specific impact of the reform from confounding factors. This approach thus provides a credible identification strategy to evaluate how educational proximity moderates the effect of gender quota policies on women’s political participation.

#### 3.1. Regression Discontinuity Design

As previously mentioned, Law 215/2012 does not apply to municipalities with fewer than 5,000 inhabitants. Hence, we use this threshold as the cutoff for the Regression Discontinuity Design (RDD), assuming that municipalities near this threshold share similar characteristics aside from the applicability of the reform. This approach allows us to estimate the causal effect of the law using an alternative identification strategy.

We build this model on Baltrunaite et al., 2019, who adopted a Sharp RDD to analyze the effect of Law 215/2012 on the share of female councilors in municipal elections, and on Coman and Shair-Rosenfield, 2025, who combine an IV model and a DiDisc design to evaluate the effect of the reform on the gender turnout gap. Similarly, Baraldi et al., 2023 employed both DiD and RDD strategies to evaluate the law’s effects on mafia-related violence, further confirming the usefulness of these approaches in assessing the policy’s causal impacts.

The decision to use the 5,000 population threshold instead of 15,000 is based on the

fact that most municipalities in Italy are relatively small <sup>6</sup>. This choice, in line with Baltrunaite et al., 2019, ensures a larger number of observations, leading to more consistent estimates. Municipalities in regions affected by the law that have just below 5,000 inhabitants serve as the comparison group for those just above the threshold, which are subject to the policy.

To compare the effect of education similarities between female candidates and voters on turnout in municipalities just above and just below the threshold, the study employs a Sharp RDD. This analysis meets the three defining features of a Sharp RDD (Cattaneo et al., 2020). First, the running variable, municipality population size, is (nearly) continuous, as it takes many values rather than being categorical. Second, while there are two potential cutoffs (5,000 and 15,000), only one is used in the analysis. Third, there is perfect compliance, as all municipalities with a population above 5,000 receive the treatment, while those below 5,000 do not.

The assumption that units with similar score values on either side of the cutoff are comparable is the fundamental concept on which all RD designs are based. To validate this assumption, I follow Baltrunaite et al., 2019 and test for discontinuity at the threshold by providing an RD plot with binned averages. If a visible jump occurs at the cutoff, followed by a continuation of the previous trend, it indicates that the policy affected the variable under investigation. In this case, the RD treatment effect is measured as the vertical distance between the two regression curves at the cutoff, which corresponds to the Local Average Treatment Effect (LATE) (Angrist & Pischke, 2009).

Under this assumption, the regression of the RD model is specified as follows:

$$\begin{aligned}
Y_m = & \alpha + \beta D_m + \gamma \text{EduDist}_m + \delta (D_m \times \text{EduDist}_m) + \theta_1 (\text{Population}_m - 5,000) \\
& + \theta_2 (\text{Population}_m - 5,000)^2 + \theta_3 (\text{Population}_m - 5,000)^3 \\
& + \lambda_1 D_m \cdot (\text{Population}_m - 5,000) + \lambda_2 D_m \cdot (\text{Population}_m - 5,000)^2 \\
& + \lambda_3 D_m \cdot (\text{Population}_m - 5,000)^3 + X_m + \varepsilon_m.
\end{aligned} \tag{1}$$

Let  $Y_m$  denote the female voter turnout in municipality  $m$ . The treatment indicator  $D_m$  equals 1 if a municipality's population exceeds the 5,000-inhabitant threshold, and 0 otherwise.

$\text{EduDist}_m$  measures the absolute difference between the average education level of female councilors elected under the reform and the pre-reform average education level of women in the municipality.

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<sup>6</sup>ISTAT, "Popolazione residente e dinamica della popolazione. Anno 2023", 16 dicembre 2024.

Here,

$$\text{EduDist}_m = \left| \overline{\text{Edu}_m^{\text{councillors}}} - \overline{\text{Edu}_m^{\text{women}}} \right|$$

Since  $\text{EduDist}_m$  increases with the degree of mismatch, a positive estimate  $\hat{\delta} > 0$ , our main coefficient of interest, would suggest that larger educational gaps enhance the effect of the quota law on female turnout. In contrast, a negative  $\hat{\delta} < 0$  would indicate that a closer educational match between candidates and voters strengthens the turnout response, consistent with the idea that identity-based proximity enhances political engagement.

$\text{Population}_m$  is the running variable, centered at the cut-off point of 5,000 to ensure that the estimated treatment effect captures the discontinuity at the exact threshold. To control for potential smooth effects of municipal size on voter turnout, we include up to a third-order polynomial in the running variable  $\text{Population}_m - 5,000$ . Crucially, we allow this polynomial to interact with the treatment indicator  $D_m$ , thereby estimating separate functional forms of the running variable on either side of the cutoff. This is a standard practice in RDD estimation, as it avoids imposing symmetry in the relationship between the running variable and the outcome across treated and control groups. Such flexibility helps ensure that the estimated treatment effect at the threshold is not driven by functional form misspecification (Cattaneo et al., 2020).

To ensure valid inference, the bandwidth is selected using the MSE-bias-corrected procedure developed by Calonico et al., 2017, which balances the trade-off between bias and variance in nonparametric estimation.<sup>7</sup>

### 3.2. Validating Identifying Assumptions: McCrary Test

To validate the credibility of the RDD model, we perform a McCrary density test to assess the potential manipulation of the running variable at the cutoff. This test, originally proposed by McCrary, 2008, examines whether there is a discontinuity in the density of the running variable at the threshold, which would suggest that individuals may have sorted around the cutoff to gain treatment status, thereby violating the key assumption of the RDD that units cannot precisely manipulate the running variable. In this study, we implement the test using the methodology developed by Cattaneo et al., 2018<sup>8</sup>. This approach estimates the density of the running variable on both sides of the cutoff using local polynomial techniques and then tests for statistically significant differences. A failure to reject the null hypothesis of continuity supports the validity of the design by suggesting that there is no evidence of strategic behavior around the threshold.

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<sup>7</sup>This method is implemented via the `rdrobust` package in STATA.

<sup>8</sup>Ibidem.

## 4. Data

This study relies on detailed data from the 2011 Italian Population Census, made publicly available by the Italian National Institute of Statistics (ISTAT) and downloaded from its official data portal. Given the absence of annual municipal-level data on education, the 2011 census represents a consistent and reliable proxy for the demographic and socio-educational structure of Italian municipalities at the onset of the electoral reform introduced by Law 215/2012.

The empirical analysis draws upon five key datasets from the census. First, the dataset on educational attainment of the population aged six and over provides information on the number of individuals, disaggregated by municipality, gender, and highest level of education completed (e.g., primary, secondary, tertiary). Second, education indicators offer derived statistics, such as the share of residents with tertiary education or the proportion of individuals without formal qualifications. Third, the dataset on current activity status captures labour market participation and economic activity, again broken down by gender and age cohort. Fourth, activity indicators provide employment and unemployment rates at the municipal level. Finally, the resident population dataset includes the total population count, disaggregated by gender and age group.

All these data sources were merged using the unique municipality code (ITTER107) to create a comprehensive dataset combining socio-demographic and educational information for each locality. The reference year, 2011, is adopted as a proxy for municipal characteristics in 2013, the year when the first municipal elections under the reformed electoral law took place. Although this involves a temporal mismatch, the choice is justified by the relative structural stability of local demographic and educational profiles over short periods, particularly in the context of municipal-level analysis.

The outcome variable of interest—female voter turnout in municipal elections—is obtained from official data released by the Italian Ministry of the Interior. It is measured as the proportion of registered female voters who cast a valid vote.

The central variable in this study is educational proximity, which is defined as the absolute difference between the average level of education of female elected candidates and that of female voters within each municipality. While information on voter education is derived from the 2011 census, data on the educational background of candidates comes from administrative electoral records, also provided by the Italian Ministry of the Interior. This dataset contains individual-level information on all municipal officeholders in Italy as of December 31, 2013, including their gender, official position, municipality of service, educational attainment, and professional background. By relying on this source, the anal-

ysis is able to extract two key variables: the gender of elected officials, used to identify female candidates, and their level of education, used to compute the average educational attainment of women elected in each municipality.

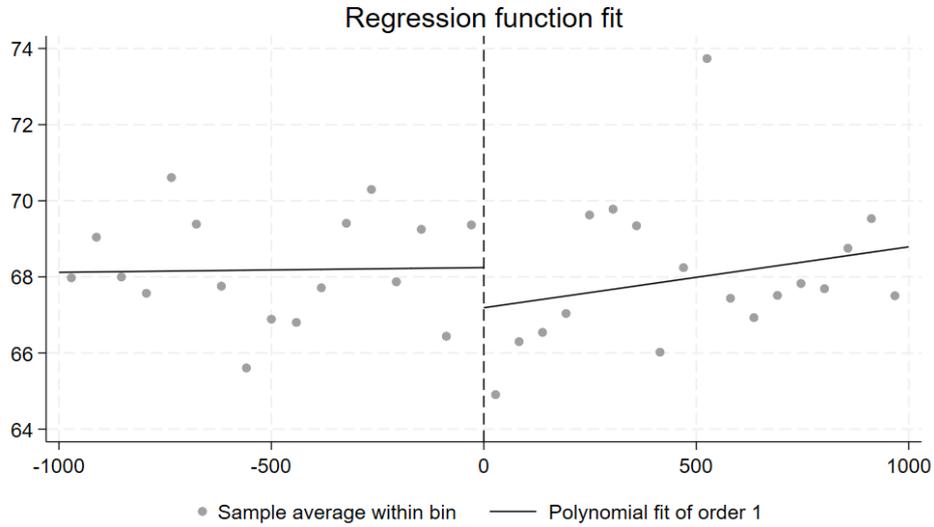
This information is crucial to construct the educational proximity variable, as it allows for a direct comparison between the educational level of elected female officials and that of the female resident population. In doing so, the analysis can directly investigate the effect of educational proximity on female voter turnout. To ensure temporal coherence with the implementation of the reform, the sample is restricted to female officials elected during the first municipal elections held after the enactment of Law 215/2012. This restriction ensures alignment with the timing and scope of the reform and improves the validity of the causal inference strategy.

To provide internal consistency across sources, all datasets were harmonized using the official municipality codes, and municipalities with missing or inconsistent information on education or electoral outcomes were excluded from the analysis. The final dataset—after excluding municipalities with missing values on key covariates—includes over 5,000 Italian municipalities, of which those just below and just above the 5,000-resident threshold serve as our control and treatment groups. For the RDD analysis, we focus on the local window of approximately 600 municipalities within  $\pm 1,000$  inhabitants of the cutoff. This subsample provides sufficient observations on each side of the threshold to yield precise, credible estimates of the local treatment effect.

## **5. Empirical Evidence**

### **5.1. RD Plot and LATE**

This section begins by presenting the graphical results of the regression discontinuity design (RDD) to visually assess the presence and direction of the treatment effect at the 5,000-inhabitant threshold. This provides an intuitive first look at the relationship between municipal population and female turnout.

**Figure 1***Local Linear RDD Fit of Female Turnout Around the 5,000-Inhabitant Cutoff*

The local linear RDD plot displayed in Figure 1<sup>9</sup> reveals a clear discontinuity in female turnout at the 5,000-inhabitant cutoff, confirming a sharp change in behavior at the treatment threshold. However, contrary to the expected increase in turnout, the discontinuity is downward: female turnout actually falls in municipalities just above the 5,000-resident threshold. The plots using local quadratic and cubic fits (Appendix Figures 3 and 4) confirm the presence and direction of the discontinuity, further reinforcing the robustness of the visual evidence across different functional forms.

We now turn to the formal estimation of the local average treatment effect (LATE) to assess whether the negative discontinuity observed in the RDD plot is confirmed by statistical inference.

**Table 1***Local Linear RDD Estimate of Female Turnout at the 5,000-Inhabitant Cutoff*

Label	Estimate	<i>z</i> -stat	$P >  z $	95% CI
RD Effect	-1.8959	-1.7993	0.072	[-8.4677, 0.3618]

The local linear RDD estimate<sup>10</sup> (Table 1) indicates a negative discontinuity in female turnout of approximately 1.9 percentage points at the 5,000-inhabitant cutoff, which is marginally significant at the 10% level ( $p = 0.072$ ), allowing us to reject the null hypothesis of no discontinuity. This finding supports the visual evidence from the RDD plot

<sup>9</sup>Figure 1 is obtained using the `rdplot` command in STATA.

<sup>10</sup>Computed using `rdrobust` in STATA.

(Figure 1), where we observe a clear downward jump in turnout just above the threshold. Although surprising at first glance, this pattern may reflect deeper dynamics of voter perception: rather than feeling empowered by an increase in female candidates, some women may still consider men as being better prepared for political office, leading to lower motivation to vote when the candidate list becomes more feminized. Alternatively, women voters may perceive female-heavy candidate lists as indicative of *tokenism* rather than genuine empowerment, thereby dampening their electoral participation.

## 5.2. Regression Results

We now turn to the formal estimation of the RDD model using parametric specifications.

**Table 2**

*Full Cubic RDD Model with Educational Distance Interaction (Bandwidth  $\pm 1,000$ )*

Variable	Coefficient	Std. Error	t-statistic	P-value
$D$ (Treatment)	-0.6075	0.7738	-0.79	0.433
$\text{EduDist}_m$	-0.8320	0.2284	-3.64	0.000
$D \times \text{EduDist}_m$	0.4158	0.3312	1.26	0.210
run	-0.002124	0.003388	-0.63	0.531
run <sup>2</sup>	$-5.05 \times 10^{-6}$	$7.55 \times 10^{-6}$	-0.67	0.504
run <sup>3</sup>	$-3.38 \times 10^{-9}$	$4.80 \times 10^{-9}$	-0.71	0.481
$D \times \text{run}$	0.006339	0.004729	1.34	0.181
$D \times \text{run}^2$	$-2.12 \times 10^{-6}$	$1.09 \times 10^{-5}$	-0.19	0.846
$D \times \text{run}^3$	$6.66 \times 10^{-9}$	$6.94 \times 10^{-9}$	0.96	0.338
$\text{EduDist}_m$	-0.05518	0.22827	-0.24	0.809
<i>tasso_att_fem</i> (Female Activity)	0.007078	0.021525	0.33	0.742
<i>tasso_att_masc</i> (Male Activity)	0.10487	0.02374	4.42	0.000
<i>tasso_disoc_fem</i> (Female Unemp.)	0.02971	0.04246	0.70	0.484
<i>tasso_disoc_masc</i> (Male Unemp.)	0.14953	0.05336	2.80	0.005
<i>tasso_disoccg_fem</i> (Fem. Long-term)	-0.01475	0.0119998	-1.23	0.220
<i>tasso_disoccg_masc</i> (Masc. Long-term)	-0.00920	0.01498	-0.61	0.539
avg_part_masc (Male Turnout)	0.94231	0.00914	103.06	0.000
_cons	-3.84835	1.39232	-2.76	0.006

Observations: 632;  $R^2 = 0.9454$ ; Robust standard errors.

Table 2 presents estimates from the cubic-polynomial RDD with interactions and controls, restricted to municipalities within  $\pm 1,000$  residents of the 5,000-inhabitant cutoff. The coefficient of the educational distance variable,  $\text{EduDist}_m = \overline{\text{Edu}}_m^{\text{councillors}} - \overline{\text{Edu}}_m^{\text{women}}$ , is  $\hat{\beta} = -0.83$  ( $p < 0.001$ ). Because  $\text{EduDist}_m$  is defined so that higher positive values indicate that elected female councilors are more highly educated than the local female electorate, the negative sign implies that *greater educational disparity* reduces female turnout by approximately *0.83 percentage points* per unit difference. Equivalently, as the educational gap *shrinks*, female participation *rises*. This result underscores the importance of identity-based affinity: women appear more motivated to vote when they see candidates whose educational experience mirrors their own, suggesting that a shared background is a key mobilization signal in electoral politics. The positive interaction term ( $\hat{\delta} = 0.42$ ,

$p = 0.21$ ) suggests that the negative slope of distance on turnout is somewhat attenuated in treated municipalities, although this moderation is not statistically distinguishable from zero. The polynomial terms in the centered population variable and their interactions with treatment are jointly insignificant, implying that allowing different quadratic and cubic trends above and below the cutoff does not drive the results. Among the additional covariates, higher male activity rates, male unemployment, and male turnout are all significantly associated with increased female turnout, while the share of long-term unemployed shows no consistent effect. Overall, these findings underscore that educational affinity between women voters and female candidates is a key predictor of electoral participation; however, quota-induced shifts in candidate composition do not, by themselves, guarantee higher female turnout.

To verify that the choice of a cubic polynomial does not drive our findings, we re-estimated the RDD model using both local quadratic and linear specifications (see Appendix Tables 4 and 5). In each case, the coefficient on the treatment indicator remains statistically insignificant, indicating that the null effect at the 5,000-inhabitant threshold is not an artifact of an overly flexible functional form.

As a check on power, we estimate the same cubic interaction model on the full sample of Italian municipalities.

**Table 3**

*Full-Sample Cubic Model Estimates*

Variable	Coefficient	Std. Error	t-statistic	P-value
$D$ (Treatment)	0.5551	0.2372	2.34	0.019
$EduDist_f$	-0.1286	0.0951	-1.35	0.176
$D \times EduDist_f$	-0.3479	0.1354	-2.57	0.010
run	-0.0002	0.0001	-1.71	0.087
run <sup>2</sup>	$-5.25 \times 10^{-8}$	$2.87 \times 10^{-8}$	-1.83	0.068
run <sup>3</sup>	$-4.43 \times 10^{-18}$	$8.39 \times 10^{-19}$	-5.28	0.000
$D \times run$	0.0002	0.0001	1.61	0.108
$D \times run^2$	$5.25 \times 10^{-8}$	$2.87 \times 10^{-8}$	1.83	0.068
$EduDist_m$	-0.1515	0.1107	-1.37	0.171
<i>tasso_occ_masc</i>	0.3528	0.1814	1.95	0.052
<i>tasso_att_masc</i>	-0.2466	0.1688	-1.46	0.144
<i>tasso_disoc_masc</i>	0.2720	0.1063	2.56	0.010
<i>tasso_disoccg_masc</i>	0.0031	0.0055	0.57	0.571
<i>tasso_occ_fem</i>	0.3806	0.1120	3.40	0.001
<i>tasso_att_fem</i>	-0.3260	0.0987	-3.30	0.001
<i>tasso_disoc_fem</i>	0.1563	0.0423	3.70	0.000
<i>tasso_disoccg_fem</i>	-0.0011	0.0042	-0.26	0.796
avg_part_masc	0.9386	0.0040	234.90	0.000
_cons	-6.2542	0.9904	-6.31	0.000

Observations: 5,391;  $R^2 = 0.9341$ ; Robust standard errors.

Table 3 shows the results of estimating the full cubic RDD model on all 5,391 municipalities, without restricting to the  $\pm 1,000$ -resident window. In this specification, both the treatment indicator  $D$  (coefficient = 0.555,  $p = 0.019$ ) and its interaction with educational distance ( $D \times EduDist_f$ , coefficient = -0.348,  $p = 0.010$ ) are statistically significant at the 5% level. However, because this model no longer exploits the local comparability of units just below and above the 5,000-resident cutoff, these estimates are primarily descriptive. The observed effects may capture broader, underlying trends in turnout differences between larger and smaller municipalities rather than the discrete discontinuity induced by Law 215/2012 at the threshold. Consequently, we do not interpret these full sample coefficients as causal estimates of the quota reform, but we present them merely

for descriptive reasons.

We can conclude that the discontinuity in female turnout at the 5,000-resident threshold remains small and statistically insignificant across all specifications of the full model. This provides strong evidence that the introduction of gender quotas under Law 215/2012 did not, by itself, meaningfully mobilize female voters at the cutoff: possibly, simply increasing the number of female candidates may not enhance women’s perceptions of political competence or empowerment.

In contrast, the high significance of educational distance between female candidates and local women highlights the importance of identity-based affinity and suggests that perceived similarity and competence cues drive women’s electoral participation more powerfully than quota rules alone.

### 5.3. McCrary Test

To assess whether municipalities manipulated their population counts around the 5,000-resident threshold, we apply the McCrary (2008) density test <sup>11</sup>.

#### Figure 2

*Density-Discontinuity Test for Municipal Population at the 5,000-Resident Cutoff. The red and blue shaded areas show the estimated kernel densities (with 95% confidence bands) on the left and right of the threshold, respectively. The vertical line marks the cutoff at run = 0.*

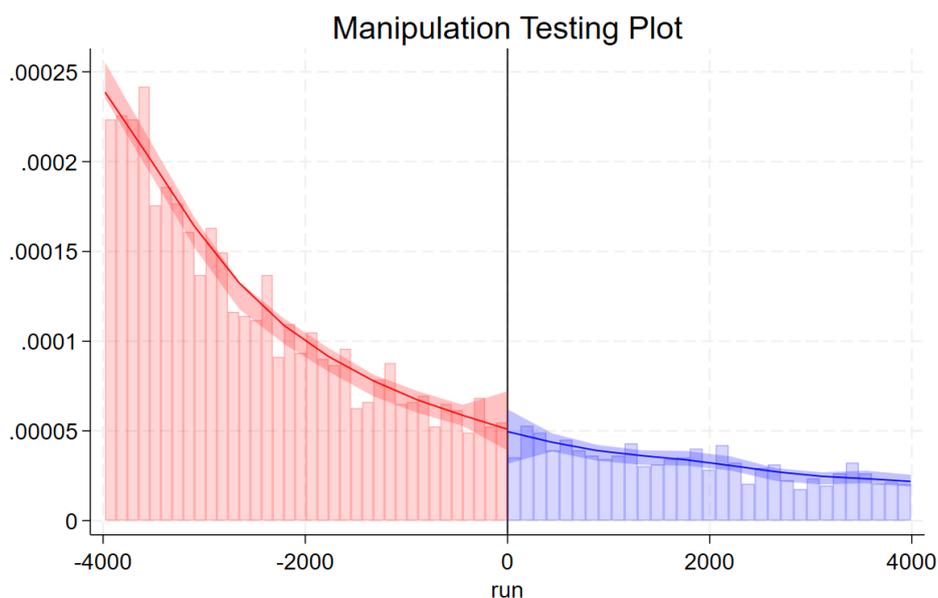


Figure 2 plots the estimated density of the centered running variable (run) on either

<sup>11</sup>We implement the `rddensity` package in STATA.

side of zero using triangular-kernel local polynomials of order 2 and data-driven bandwidths. The continuous fit and overlapping 95% confidence bands reveal no visible jump at the cutoff. Moreover, the McCrary test statistic, reported in the Appendix (Table 6), is  $T = -0.75$  ( $p = 0.453$ ), indicating no statistically significant manipulation of municipal population around the 5,000-resident threshold since we *fail to reject* the null hypothesis of continuity. Although some of the narrower “binomial” window tests (e.g.  $\pm 133$  and  $\pm 152$  residents) produce p-values just below 0.05, the overall robust estimate provides no evidence of sorting or mass points at the threshold.

This result supports the key RDD assumption that municipalities could not precisely manipulate their population to gain or avoid treatment status under Law 215/2012.

## 6. Discussion and Concluding Remarks

This study has applied a regression discontinuity design to evaluate the impact of Italy’s Law No. 215/2012, which mandates a one-third female quota for municipal council candidate lists in towns of 5,000–15,000 residents, on women’s electoral participation. Our nonparametric graphical analysis and local linear estimate contrasts with the previous evidence of Coman and Shair-Rosenfield, 2025, revealing a small but marginally significant *decline* in female turnout at the 5,000-resident cutoff. In other words, simply increasing the share of female candidates produced no mobilizing boost and may even have depressed female turnout slightly.

Estimating the fully specified parametric RDD model, including a cubic polynomial in the centered running variable, treatment interactions, and a set of labor-market and demographic controls, confirms this null effect. These findings underscore that the quota rule by itself did not meaningfully alter women’s propensity to vote at the threshold.

By contrast, our core novel mechanism, *educational distance* between elected female councillors and the local female electorate, emerges as a highly significant predictor of turnout. A one-unit increase in the signed education gap reduces female participation by approximately 0.83 percentage points ( $p < 0.001$ ), which implies that participation *rises* when the educational levels of the candidates are more closely aligned with those of voters. This identity-based affinity channel shows that women appear more motivated to vote when they perceive candidates as sharing their own background and competence.

It may seem surprising that a higher share of women on the ballot fails to boost, and even slightly depress, female turnout; however, female voters may interpret a mandated quota as a mere symbolic effort towards political equity rather than a genuine empowerment of women, thereby undermining confidence in female candidates’ legitimacy.

Alternatively, entrenched beliefs about gender and political competence may lead some women to view male candidates as better equipped for public office, offsetting any encouragement from increased female presence. Moreover, comparable evidence is observed in the context of Spanish local elections following the implementation of gender quotas, as examined by Bagues and Campa, 2019, who report no statistically significant effect on voter turnout. While their analysis pertains to a distinct national setting, the substantive similarity of the implementation and of their results to ours reinforces the robustness of this pattern across different institutional contexts.

We can conclude that gender quotas alone seem to be insufficient to mobilize women's electoral engagement. Instead, policymakers should pair quota rules with initiatives that enhance perceived competence and substantive representation (Ferraz & Finan, 2008). For example, training and mentoring programs for prospective female candidates can signal genuine capacity and reduce the perception of tokenism. Campaigns highlighting women's achievements and qualifications may also strengthen the "utility" motive in voter participation, as theorized by Downs, 1957.

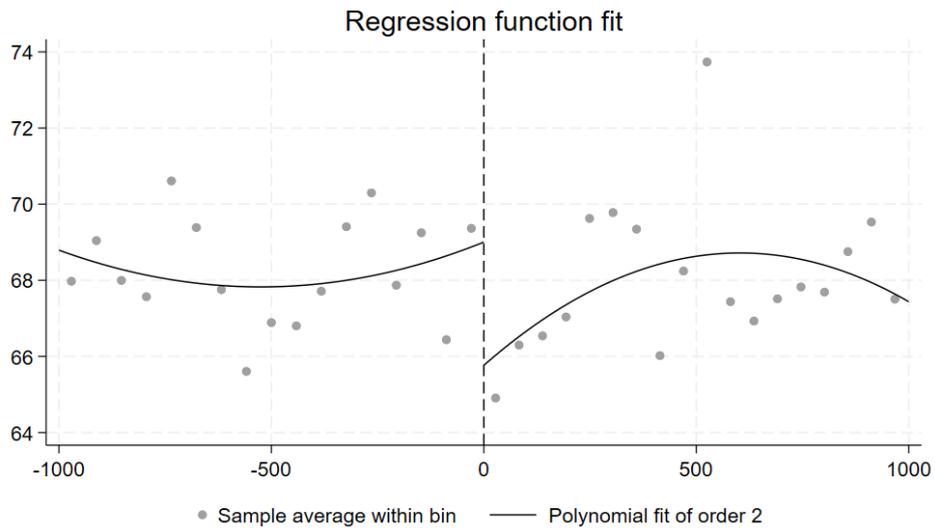
The educational distance mechanism underscores how socio-demographic affinity shapes reform effectiveness. Future research and policy design should consider not only numerical representation but also the substantive, identity-based connections between representatives and constituents. Gender quotas may increase female turnout by combining symbolic measures with programs that build real competence and trust.

## Appendix

### Appendix A: Graphs

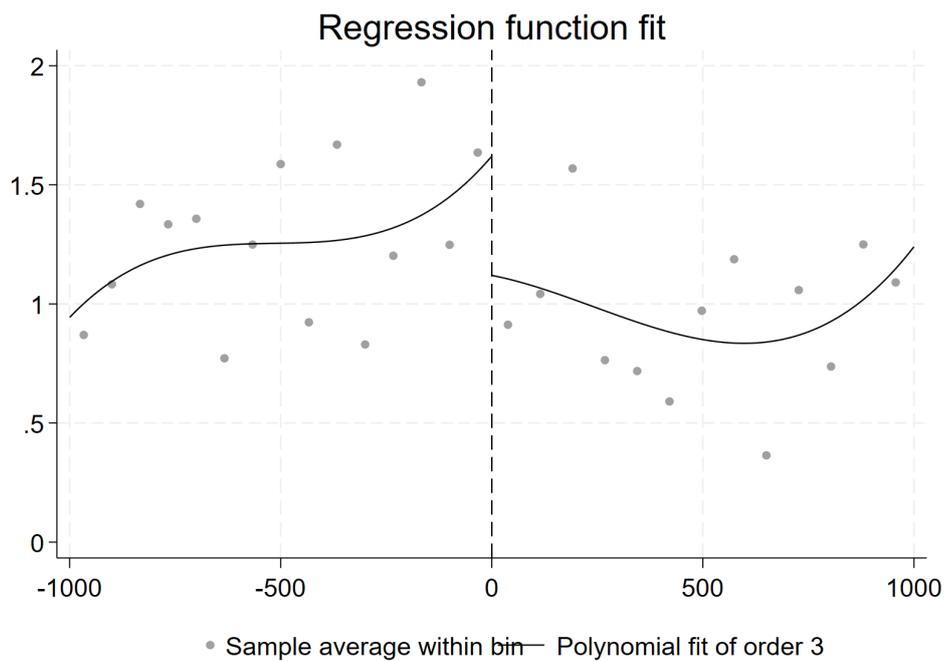
**Figure 3**

*Local Quadratic RDD Fit of Female Turnout Around the 5,000-Inhabitant Cutoff*



**Figure 4**

*Local Cubic RDD Fit of Female Turnout Around the 5,000-Inhabitant Cutoff*



## Appendix B: Tables

**Table 4**

*Quadratic RDD Model with Controls (Bandwidth  $\pm 1,000$ )*

Variable	Coefficient	Std. Error	t-statistic	P-value
<i>D</i> (Treatment)	-0.6081	0.6445	-0.94	0.346
<i>EduDist<sub>f</sub></i>	-0.8313	0.2290	-3.63	0.000
<i>D</i> × <i>EduDist<sub>f</sub></i>	0.4205	0.3308	1.27	0.204
<i>run</i>	-0.0000	0.0013	-0.03	0.978
<i>run</i> <sup>2</sup>	0.00000009	0.00000123	0.07	0.943
<i>D</i> × <i>run</i>	0.0022	0.0020	1.13	0.258
<i>D</i> × <i>run</i> <sup>2</sup>	-0.0000023	0.00000192	-1.20	0.229
<i>EduDist<sub>m</sub></i>	-0.0488	0.2279	-0.21	0.830
<i>tasso_att_fem</i>	0.0067	0.0215	0.31	0.753
<i>tasso_att_masc</i>	0.1051	0.0237	4.43	0.000
<i>tasso_disoc_fem</i>	0.0281	0.0425	0.66	0.508
<i>tasso_disoc_masc</i>	0.1496	0.0534	2.80	0.005
<i>tasso_disoccg_fem</i>	-0.0143	0.0120	-1.20	0.232
<i>tasso_disoccg_masc</i>	-0.0091	0.0149	-0.61	0.544
<i>avg_part_masc</i>	0.9426	0.0091	103.29	0.000

Observations: 632;  $R^2 = 0.9453$ ; Robust standard errors.

**Table 5***Linear RDD Controls (Bandwidth  $\pm 1,000$ )*

Variable	Coefficient	Std. Error	t-statistic	P-value
<i>D</i> (Treatment)	-0.2385	0.5533	-0.43	0.667
<i>EduDist<sub>f</sub></i>	-0.8398	0.2285	-3.68	0.000
<i>D</i> × <i>EduDist<sub>f</sub></i>	0.4425	0.3291	1.34	0.179
<i>run</i>	-0.0001	0.0003	-0.39	0.698
<i>D</i> × <i>run</i>	0.00008	0.00048	0.16	0.869
<i>EduDist<sub>m</sub></i>	-0.0595	0.2276	-0.26	0.794
<i>tasso_att_fem</i>	0.0049	0.0211	0.23	0.817
<i>tasso_att_masc</i>	0.1047	0.0236	4.44	0.000
<i>tasso_disoc_fem</i>	0.0275	0.0422	0.65	0.516
<i>tasso_disoc_masc</i>	0.1499	0.0535	2.80	0.005
<i>tasso_disoccg_fem</i>	-0.0148	0.0119	-1.24	0.214
<i>tasso_disoccg_masc</i>	-0.0083	0.0150	-0.55	0.581
<i>avg_part_masc</i>	0.9433	0.0091	104.07	0.000
<i>_cons</i>	-3.6331	1.3463	-2.70	0.007

Observations: 632;  $R^2 = 0.9451$ ; Robust standard errors.

**Table 6***Density Manipulation Tests at the 5,000-Resident Cutoff***Panel A: Robust McCrary Test**

Statistic	Estimate	P-value
Density jump $T$	-0.7504	0.4530

Local polynomial order  $p = 2$ , triangular kernel, bandwidths  $h_{\text{left}} \approx 1327$ ,  $h_{\text{right}} \approx 1330$ .**Panel B: Binomial Window Tests ( $H_0: P(\text{obs} < c) = 0.5$ )**

Half-window	#obs $< c$	#obs $\geq c$	P-value
19	15	5	0.0414
38	20	13	0.2962
57	27	18	0.2327
76	34	24	0.2370
95	41	28	0.1480
114	49	32	0.0748
133	57	37	0.0495
152	65	43	0.0428
171	74	51	0.0487
190	81	62	0.1320

Notes: "Half-window" indicates the number of residents away from the cutoff.

## References

- Acconcia, A., & Ronza, C. (2021). The Stability Effect of Elected Women: Gender or Seniority? *CSEF Working Papers*, 611. <https://ideas.repec.org/p/sef/csefwp/611.html>
- Andreoli, F., Manzoni, E., & Margotti, M. (2022). Women at work: Gender quotas, municipal elections and local spending [This work was supported by the Luxembourg Fonds National de la Recherche [IMCHILD grant INTER/NORFACE/16/11333934 and PREFER-ME CORE grant C17/SC/11715898 ], the University of Verona [Ricerca di Base grants MOBILIFE-2017-RBVR17KFHX and PREOPP-2019-RBVR19FSFA ], and by MIUR [ PRIN 2017K8ANN4 : “New approaches to Political Economy: from methods to data”].]. *European Journal of Political Economy*, 75. <https://doi.org/10.1016/j.ejpoleco.2021.102175>
- Angrist, J., & Pischke, J.-S. (2009). Mostly Harmless Econometrics: An Empiricist’s Companion [Hardcover]. *Mostly Harmless Econometrics: An Empiricist’s Companion*.
- Bagues, M., & Campa, P. (2019). Can gender quotas in candidate lists empower women? evidence from a regression discontinuity design. *Journal of Public Economics*, –, –. <https://doi.org/10.1016/j.jpubeco.2019.104074>
- Baltrunaite, A., Casarico, A., Profeta, P., & Savio, G. (2019). Let the voters choose women. *Journal of Public Economics*, 180(100). <https://doi.org/10.1016/j.jpubeco.2019.104085>
- Baraldi, A. L., & Fosco, G. (2025). Clearing the air: Women in politics and air pollution. *Journal of Environmental Economics and Management*, 130, 103106. <https://doi.org/https://doi.org/10.1016/j.jeem.2024.103106>
- Baraldi, A. L., Immordino, G., Papagni, E., & Stimolo, M. (2023). Balance Laws: Mafia Fuels Political Violence. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.5177577>
- Bellani, L., & Hidalgo-Hidalgo, M. (2025). Bridging the gender gap: Women’s education and political representation. *Economics of Education Review*, 104, 102605. <https://doi.org/10.1016/j.econedurev.2024.102605>
- Besley, T., Folke, O., Persson, T., & Rickne, J. (2017). Gender quotas and the crisis of the mediocre man: Theory and evidence from sweden. *American Economic Review*, 107(8), 2204–2242. <https://doi.org/10.1257/aer.20160080>
- Calonico, S., Cattaneo, M. D., & Titiunik, R. (2017). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica*, 85(1), 229–261. <https://doi.org/10.3982/ECTA14160>

- Cattaneo, M. D., Idrobo, N., & Titiunik, R. (2020). A practical introduction to regression discontinuity designs: Foundations [Cambridge: Cambridge University Press]. *Elements in Quantitative and Computational Methods for the Social Sciences*.
- Cattaneo, M. D., Jansson, M., & Ma, X. (2018). Manipulation testing based on density discontinuity. *The Stata Journal*, 18(1), 234–261. <https://doi.org/10.1177/1536867X1801800115>
- Coman, E., & Shair-Rosenfield, S. (2025). Women on the ballot and women at the polls: How women’s representation shapes voter turnout in local elections. *Political Science Research and Methods*, 1–17. <https://doi.org/10.1017/psrm.2025.2>
- Downs, A. (1957). *An economic theory of democracy*. Harper & Row.
- Ferraz, C., & Finan, F. (2008). Exposing corrupt politicians: The effects of Brazil’s publicly released audits on electoral outcomes. *The Quarterly Journal of Economics*, 123(2), 703–745. <https://doi.org/10.1162/qjec.2008.123.2.703>
- Kim, J. H. (2019). Direct democracy and women’s political engagement. *American Journal of Political Science*, 63(3), 594–610. <http://www.jstor.org/stable/45132499>
- McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics*, 142(2), 698–714. <https://doi.org/10.1016/j.jeconom.2007.05.005>
- Neugart, M., & Zuazu, I. (2025). Women’s electoral success and female voter turnout: Evidence from individual voting data for germany. *Kyklos*, 78(3), 960–976. <https://doi.org/10.1111/kykl.12448>