

Block vote, open-list proportional representation, and women's electoral outcomes. Evidence from a quasi-experiment in Polish local elections

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Abstract

Although pioneering research suggested that proportional elections are better for women's outcomes than plurality rules, research scholarship accumulates growing evidence that this relationship depends on specific rules. We look at the impact of electoral rules on female participation in local legislative bodies using quasi-experimental variation in electoral systems in Poland. Below an exogenous population threshold, a mix of first-past-the-post and block vote was applied. Above the threshold, the system was open-list proportional representation. We find little difference between plurality and proportional elections on average. Furthermore, we find that voters chose women less often than men from the same ticket, even under block vote, i.e., when they could have supported all candidates from a chosen party, and even after controlling for the candidates' incumbency status, position on the ticket, and age. Our results point to the limited and heterogenous effects of electoral systems.

JEL classification: D72

Keywords: block vote, electoral rules; local legislative; female representation; regression discontinuity

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1. Introduction

The question of female representation in politics has recently been among the most discussed in academia and beyond attributable to the under-representation of women on the political stage across the globe. Scholars have been trying to identify which electoral systems promote more gender-balanced political systems. In particular, many studies have been dedicated to the differences between various versions of proportional representation and plurality systems. The question whether more women elected under OLPR or in plurality elections still lacks convincing evidence (Gulczyński et al., 2025).

We use a quasi-experimental setting in Poland to compare an open-list proportional representation (OLPR) system with a plurality system including first-past-the-post (FPTP) and block-vote (BV) districts. Several aspects of the electoral law make it well-suited for a well-identified causal analysis of how electoral rules affect female representation in politics. In three elections to municipality councils (in 2002, 2006, and 2010) two distinct electoral systems were applied simultaneously. In municipalities with above 20,000 inhabitants, OLPR was in place, while below the threshold councillors were elected under plurality rule in single-member (FPTP) and multi-member (BV) districts. We use this threshold to conduct a regression discontinuity (RD) analysis of an effect of electoral rules on female representation. In other words, we compare the municipalities that are just below and just above the arbitrary threshold, but are otherwise similar to each other. Then, we evaluate, which mechanisms may explain our results: gendered decisions to run, party dynamics, or voters' bias. In particular, we focus on the smaller municipalities to check whether women achieve better outcomes if voters can cast more votes in plurality elections.

Previous studies (most importantly, Gulczyński et al., 2025) show that FPTP is not worse for women than OLPR, and multiple-vote systems could be advantageous for women (Baltrunaite et al., 2019; Golder et al., 2017). In contrast with the latter, we find no significant differences between the plurality and OLPR systems, on average. Even more, in the

subsample of BV districts more women run and in the subsample of urban municipalities more women run and are elected in OLPR than under plurality rule, which would support the conclusion by Bieber and Wingerter (2022) that from women's "perspective, [one]-vote systems should be the preferred electoral system." We delve into potential mechanisms to address the puzzle why we observe no advantage of BV over OLPR in RD analysis. We cannot confirm women's strategic use of the plurality system to run as independent candidates, but we find suggestive evidence that parties include more women in larger districts. Importantly, although gender is much less important than incumbency, we demonstrate that voters decide against women even if they can choose all candidates from an electoral ticket.

We first present the reasons why we could expect BV to benefit women, relative to OLPR. The following section gives an overview of the institutional set-up in Poland. Section 4 describes the details of the data and the empirical approach. Section 5 compares women's outcomes under plurality and proportional systems. The mechanisms that explain the main findings are discussed in Section 6. Section 7 concludes the article.

2. Theoretical background

Although proportional representation systems were long believed to be generally better for women than plurality systems (Norris, 1985; Matland and Studlar, 1996; Castles, 1981; Rule, 1981; Kenworthy and Malami, 1999; Profeta and Woodhouse, 2022; Kunovich, 2012), recent literature has uncovered crucial caveats to this claim. Importantly, OLPR, as applied in Poland, even with a gender quota introduced later, does not bring about the same benefits as closed-list proportional representation (CLPR) (Gonzalez-Eiras and Sanz, 2021; Gulczyński et al., 2025; Nowacki, 2023). Several features of proportional representation are believed to benefit women, compared to majoritarian elections. In what follows, we present evidence for each of those arguments in the context of the specific rules under study.

In the elections under study, the threshold of 20,000 inhabitants divided municipalities into those with plurality systems and those with OLPR. The difference between both systems consists in the ability to run as independent candidates (in the former), the difference in district magnitude (from 2 to 5 under BV, and from 5 to 8 under OLPR), the length of tickets, and in the number of votes available to the voters. The details of the electoral systems are presented in the following section. Here, we present the theoretical background and expectations divided into three stages of the electoral process at which differences between female and male candidates may appear: (i) the decisions of the candidates to run, (ii) party strategies, and (iii) voters' choices among candidates on the ballot.

At the stage of decision to run, BV should bring advantages to female candidates over OLPR, even though plurality elections are believed to be more competitive. This may be particularly true in Poland where parties can nominate twice as many candidates as there are seats only under OLPR, but not under plurality rule. Since women are typically more competition-averse or even election-averse than men (Niederle and Vesterlund, 2007; Kanthak and Woon, 2015), this might translate into differences in participation. Given the well-known preference of voters to choose the candidates with the highest positions on the ticket, the competition for list placement is comparable under OLPR as under BV. However, what is often overlooked is that OLPR involves competition within parties at the stage of ticket ordering and later in the campaign. In contrast, at the campaign stage, BV could be associated with less within-party competition because all candidates can be selected simultaneously by the same voters. Thus, the level of competition could be a disadvantage of OLPR relative to BV. Yet, as Figure 1 shows, voters are not necessarily loyal to their party. This suggests that the elections under BV were still highly personalized and the competition was to a large extent between individuals, and not only between parties. We compare the probabilities of running between the systems in Section 5.

Furthermore, plurality elections give women the opportunity to run as independent can-

didates. In this way, they can overcome the gendered obstacles posed by parties. Therefore, we expect to find more women on tickets of local committees or those with fewer candidates than the maximal possible number (see Section 6.1).

BV also has advantages over FPTP for women at the stage of selection within parties. Plurality elections are typically associated with parties selecting the strongest candidate to run for office in a particular district, whereas in proportional elections the tickets should reflect a wide spectrum of voters. If voters appreciate diversity, they can split the ticket in BV (unlike in the single-vote FPTP), so parties have incentives to anticipate this reaction by presenting diverse tickets. In multi-member districts parties try to *"maximize their collective appeal (...) by including candidates representing all the major social cleavages in the electorate,"* (Norris, 2006, p.41) such as women and men. In particular, in longer tickets, lack of representation of a group (like women) can signal discrimination (Norris, 2006). In consequence, under BV, we should observe more women running in larger districts (see Section 6.1).

Moreover, scholars have argued that parties can increase diversity of their lists in proportional elections because districts are larger and parties can nominate more candidates (Norris, 2006; King, 2002). Yet, plurality elections typically produce less fragmented legislative bodies, with the largest parties getting more seats. Thus, if women are lower in the party hierarchy, additional seats for the party at the municipality level could help them get elected. For this reason, we compare council fragmentation in BV and OLPR with the expectation that lower levels fragmentation should help women (see Section 6.2).

Finally, OLPR (unlike CLPR) and BV are similar in that they both leave room for voters' discrimination against women (Dhima et al., 2021; Gendźwił and Żółtak, 2020). If voters discriminate against women, we should observe women receiving fewer votes than comparable men both in OLPR and in BV (see Section 6.3). However, under BV, voters have the chance to support all candidates on a ticket, so, if they are only mildly biased,

women should be discriminated against to a lesser extent in a multiple-vote system. Baltrunaite et al. (2019) show that more women are elected when voters may cast an additional preference vote for a candidate of the other gender, and argue that this works precisely because voters’ bias is limited. This is in line with experimental studies which show that voters do not openly prefer male candidates (Schwarz and Coppock, 2022). If voters’ bias is indeed small, more women should be elected where voters have several votes — a positive effect found in an experimental setting (Golder et al., 2017), but not in a cross-sectional correlational study of real local elections in Germany (Bieber and Wingerter, 2022).

A further reason to expect a female disadvantage under plurality rule is that the incumbency advantage is typically higher in majoritarian systems, and most incumbents are men (Lippmann, 2023; Schwindt-Bayer, 2005); we use individual-level data and information on candidates’ previous results to isolate gender differences from the incumbency advantage (see Section 6.3).

Poland’s municipal elections are not the only ones using BV or other multiple-vote systems, which further underlines the relevance of understanding their outcomes for women. Slovakia’s local council elections, multi-member ward elections in many local authorities in England and Wales, at-large elections to local councils and boards in many U.S. cities and counties, elections to the senate in the Philippines and, between 2014 and 2025, French municipalities below 1,000 inhabitants all use block vote or a close variant, in which voters may cast up to as many votes as there are seats (Lassébie, 2020). To the best of our knowledge, the effects of those systems on female representation have not been systematically analysed.

Overall, we start with the expectation that a plurality system, and BV in particular, should enhance women’s descriptive representation over OLPR: the general differences between plurality and proportional systems should not strongly favour the latter, and the availability of multiple votes and multi-member districts should support women if voters

are not strongly biased. We test whether this holds, on average, in Section 5, and explore the evidence for the mechanisms presented above in Section 6.

3. The institutional background

3.1. Local administration in Poland

Municipalities (Polish: *gmina*) are the principal units of administrative division in Poland and constitute the lowest tier of government.⁴ In the years under study, there were between 2,477 and 2,479 municipalities, varying in size between 1,246 and 1.6 million inhabitants. They carry a broad range of competences, from primary education to local infrastructure and spatial planning, and enjoy substantial autonomy over their own revenues, which stem from municipal assets, local taxes and fees, and they participate in a revenue sharing mechanism.

This relatively large fiscal autonomy is matched by a high degree of democratic accountability. The legislative body of each *gmina* is the elected municipal council (*rada gminy*) or, in a town, the town council (*rada miasta*).

We exclude from the analysis 66 municipalities, which have the special rights of districts (*miasta na prawach powiatu*). Besides all municipal competencies, they are vested with the competencies of districts, and thus with the competencies of an intermediary level of government. Since they are mostly the largest cities, they are anyway far from the population threshold on which we focus. We also exclude 32 municipalities that are larger than 50,000 inhabitants and have more seats in the council.

3.2. Elections in the years 2002 to 2010

In the period under study, elections took place every four years in all municipalities simultaneously. In small municipalities (below 20,000) between 2002 and 2010, the coun-

⁴There are two intermediary levels of governments called counties or poviats (*powiaty*) and voivodeships (*województwa*), respectively.

Table 1: Number of municipalities by year and type, below and above the threshold, 2002-2010.

Type	2002	2006	2010
Urban	115 / 89	115 / 89	114 / 89
Rural	1577 / 11	1569 / 11	1553 / 11
Urban-rural	443 / 113	451 / 113	468 / 113

cillors (members of the local councils) were elected in small districts via the plurality rule. The districts of between 1 and 5 seats were delineated differently, depending on the type of municipality. In rural municipalities (*gminy wiejskie*), the districts by default corresponded to the preexisting smallest administrative units (*sołectwa*), which comprise one or more villages. In urban municipalities (*gminy miejskie*), the municipality council was obliged to "take into account" the administrative divisions, but had the freedom to divide the municipality in more or less districts. The urban-rural municipalities (*gminy miejsko-wiejskie*, with at least one town) followed the first rule in rural areas, and the latter in urban areas.⁵

Most municipalities were rural and almost all rural municipalities had fewer than 20,000 inhabitants. Urban municipalities were almost evenly distributed below and above the threshold (Table 1). Among small municipalities (below the threshold), the average district magnitude was 2.39 for urban, 1.72 for rural, and 1.78 for urban-rural municipalities. Thus, urban municipalities stood out in terms of district magnitude, but were far from the possible average district magnitude of 5.

In single-member districts, the system was first-past-the-post (FPTP): each candidate ran alone (even if representing a party)⁶ and the candidate with the largest number of votes

⁵The status of the municipality depends directly on the status of the localities it comprises. The status of a town is awarded by the Council of Ministers upon request of the municipality council. It can be blocked by the regional representative of the government (*wojewoda*), Ministry of the Interior and Administration or the negative opinion of the inhabitants. The main motivations for (re)gaining urban status are prestige and better opportunities for socio-economic development.

⁶The electoral committees were registered separately in every electoral district. They had to collect 25 citizen signatures in each district in municipalities below the threshold of 20,000 inhabitants, and 150 signatures above the threshold.

was elected. In districts of between 2 and 5 members, candidates could run alone or in a ticket with a maximum number of candidates being equal to the number of seats assigned to the district. The voters could cast as many votes as there were seats in the district. This system (block voting, BV) allows for split tickets and, similarly to the single-member case, focuses more on the personalities of candidates. The candidates with the greatest individual number of votes were elected.

Indeed, many voters cast multiple votes. Table 2 shows the mean number of votes per one valid ballot by district magnitude. In two-member districts, voters used around 80% of the available votes. This number decreased with district magnitude, so that in five-member districts only 60% of votes were used in 2006 and 2010.

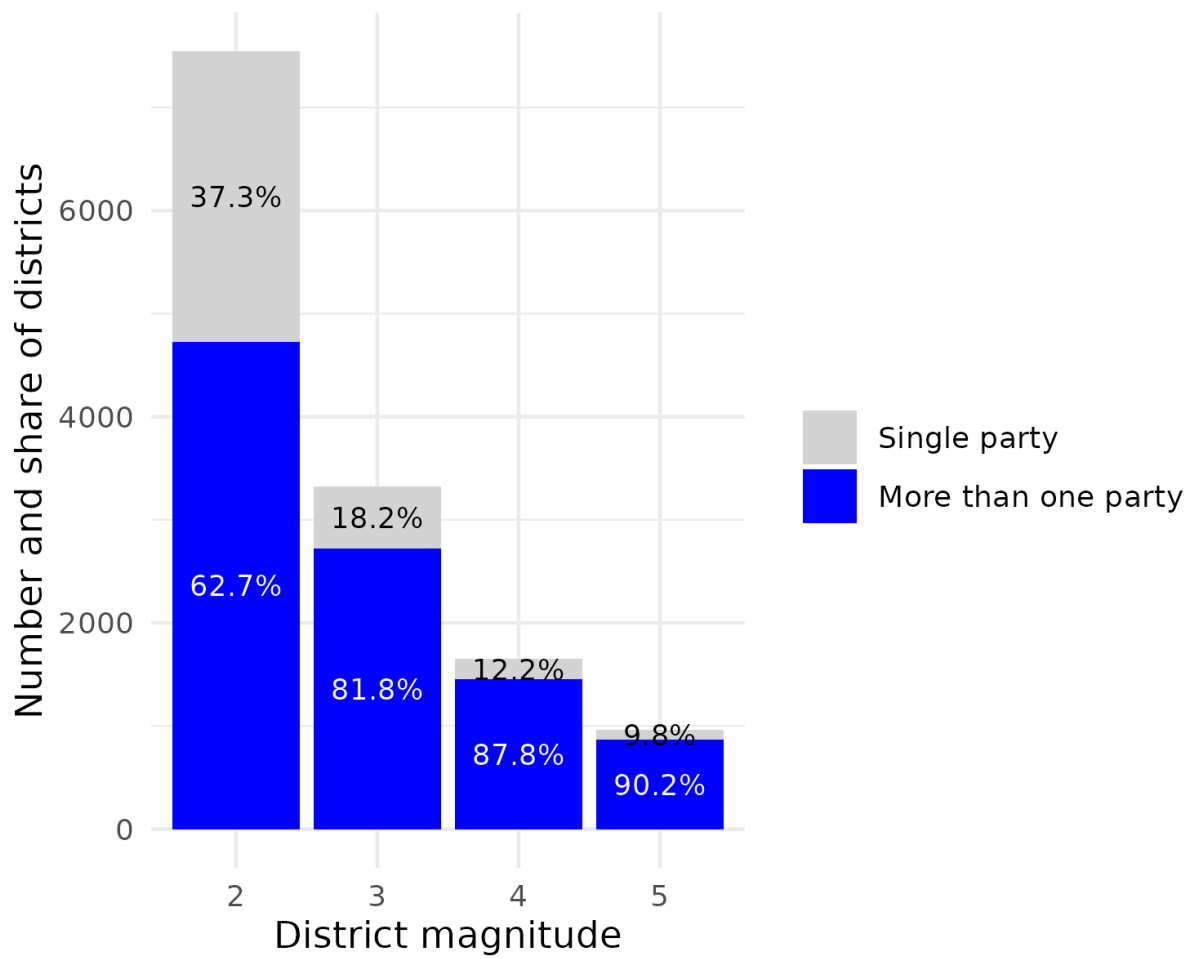
Table 2: Votes cast as a share of possible number of votes, by year and district magnitude.

Year / District magnitude	1	2	3	4	5
2002	100.0	82.1	75.9	73.2	70.2
2006	100.0	77.8	68.7	64.3	61.9
2010	100.0	78.6	70.0	65.2	62.9

Although we do not have data on individual voters' decisions, it is clear that voters did split tickets or abstained from supporting all candidates from their preferred party. If each voter supported all candidates from their preferred party, all candidates elected in one district would come from one party. Yet, the elected candidates came from different parties in 63% of two-member districts and in over 80% of larger districts (Figure 1).

In municipalities larger than 20,000 inhabitants, open-list proportional representation (OLPR) was in place. The d'Hondt method was used to translate votes into seats. Moreover, in the municipalities with the proportional systems, more members were elected from each district than in the municipalities with plurality elections, i.e., five to eight. Similarly to smaller towns, the municipality council was generally free to divide the municipality into districts. The average district magnitude for municipalities above the threshold amounted to 5.98 in urban, 6.31 in the few rural, and 6.23 in urban-rural municipalities. However,

Figure 1: Share of districts with more than one party represented on the council under BV, 2006-2010.



in larger municipalities the district magnitude was much less important because it did not influence the number of votes available to each voter (always equal to 1 in OLPR). The candidates' ticket in proportional elections had to contain, at minimum, the same number of candidates as the number of mandates assigned to a given district. To register, the ticket had to gather 150 voter signatures in a district, compared with 25 signatures in smaller municipalities. Thus, it was more difficult to register a list under OLPR and, in practice, a candidate had to run in a committee (party) with as many candidates as there were seats on the council.

Such differences in the ballot access requirements are not uncommon and are in line with the argument that plurality elections promote independent candidates, who should not face ballot access requirements that are too high, whereas in proportional elections competition occurs between committees or parties and the costs of entering local political markets are higher (Szczepankowska, 2010; Shugart and Carey, 1992; Gendźwił and Żółtak, 2014). It was therefore much easier for national political parties to penetrate local political markets under proportional elections (Kantorowicz, 2017; Kantorowicz and Köppl-Turyna, 2019), which we document and discuss in Section 6.2. In general, Polish local politics is dominated by non-partisans, particularly in smaller municipalities (Dudzińska, 2008; Gendźwił and Żółtak, 2014).

The final difference between the two systems is the size of the council. As we will show in the next subsection, while elections in 2014 used the same electoral system (FPTP) above and below the threshold, and two different council sizes, there was no difference in the fraction of women elected or in any other analysed outcomes. This suggests that the council size has no effect on women's chances. The summary of the institutional features of the municipal electoral systems used in the years 2002 to 2010 is presented in Table 3.

Table 3: Institutional details of electoral systems in the years 2002 to 2010

	Plurality	Proportional
Population size	<20,000	>=20,000
Electoral rule	FPTP and BV	Proportional (d'Hondt)
District magnitude	1 to 5	5 to 8
Number of votes per voter	1 to 5	1
No of signatures to register a party ticket in a district	Min. 25	Min. 150
Min. no. of candidates on the ticket	1	no. of seats
Max. no of candidates on the ticket	no. of seats	twice the no. of seats
Confounding factors		
Council size	15	21
Campaign spending limitation	750PLN	1000PLN

3.3. Elections in 2014

The local elections that followed, conducted in 2014, used a new election procedure. The 20,000-inhabitants threshold was removed and all members of the councils in all municipalities were elected via the plurality rule in single-member districts. Yet, the sizes of the council remained the same as in previous years. As mentioned above, we use this as a placebo (see Table A.17). The subsequent elections (in 2018 and 2024) are not analysed here because another reform changed the electoral systems again (see Gulczyński et al., 2025).

4. Data and methods

4.1. Data

The data we use come from the National Electoral Commission of the Republic of Poland. This contains information about all candidates standing for local councils, including their gender, age, citizenship, position on the ticket, the fraction of obtained votes, and whether the person was elected to the council or not. We match this information with data about the institutional set-ups of each municipality, i.e., the electoral system in place, the size of the council, the number of mandates from each electoral district in each municipality, urban or rural status, and mixed (see Pierzgalski et al. (2025)). The data include a total of 613,556 candidates, among which 179,718 were women.

We present the numbers of candidates and councillors, as well as the share of women in Tables 4 and 5. The number of candidates decreased, but the share of women among candidates and councillors was consistently growing in the years 2002-2010.

Table 4: Number of candidates and share of women in all elections, 2002-2014.

Year	No. of candidates	No. of female candidates	% female candidates < 20,000	% female candidates > 20,000
2002	185995	46310	24.4	26.5
2006	154777	44834	28.3	30.6
2010	148075	47243	31.7	32.3
2014	124709	41331	33.9	29.8
Total	613556	179718	29.1	29.8

Note: The sample includes only those municipalities that were always on the same side of the threshold, were not city-counties and did not have more than 21 seats in the council.

Table 5: Number of seats and share of women in all elections, 2002-2014.

Year	Number of seats		% Female councillors	
	Total	Female	below 20,000	above 20,000
2002	36498	6474	17.9	16.7
2006	36497	7834	21.8	19.2
2010	36498	9245	26.0	20.7
2014	36527	10010	27.9	24.0
Total	146020	33563	23.4	20.2

Note: The sample includes only those municipalities that were always on the same side of the threshold, were not city-counties and did not have more than 21 seats in the council.

4.2. Methods

To reiterate, in this article we respond to the following question: are more women elected in an OLPR or in a plurality system combining FPTP and BV? We proceed in two steps. First, we estimate whether more women are elected in plurality or in proportional elections, on average. Second, we investigate the mechanisms through which the plurality system could have been expected to increase women's representation.

In the first part, we estimate the conventional (sharp) regression-discontinuity (RD) estimator using the non-parametric approach.⁷ If $\mu_t(x) = \mathbb{E}[Y|X = x]$ is the expectation

⁷We use *rdrobust* and *rddensity* packages in R.

of Y given x , the conventional RD estimator is given by:

$$\tau = \lim_{x \rightarrow 0^+} \mu(x) - \lim_{x \rightarrow 0^-} \mu(x) = \mu_+ - \mu_-. \quad (1)$$

The main dependent variables are the share of votes obtained by women, share of women among candidates, and the share of women among councillors. The primary level of observation is the municipality.⁸ As municipalities differ by type (related to the degree of freedom in designing districts) and district magnitudes, we conduct separate RD analyses for rural, urban and rural-urban municipalities, and (at the district level) for the share of women elected in FPTP or BV only. Since we pool data from three elections, (almost all) municipalities are observed three times. For this reason, we cluster the standard errors at the municipality level.

We only include municipalities that are on the same side of the threshold in the years 2002-2010. This is because a shift from one side to the other implies a change in the electoral system and in the number of seats, which may influence the share of women on the council. When the number of available seats shrinks, the competition suddenly increases, which may have a larger impact on women. Also, the change of the electoral system between elections may also potentially have gendered consequences.

In the second part, we examine three mechanisms. We first document that more women run and are elected in multiple-member (BV) than in single-member (FPTP) districts. To explore the importance of parties, we then run OLS regressions at the committee (party) level. Finally, we focus on districts with more than one seat to demonstrate voters' potential bias against women: if a voter has a strong party preference, he or she can vote for all candidates from that party, so there should be no difference between female and male

⁸We have repeated the same calculations using district as the level of observation. However, after weighting districts proportionally to their magnitude, the results are the same.

candidates from the same committee who are on the same ticket. To show that voters often decide against women, we run OLS regressions at the individual candidate level and adjust for their position on the ballot and incumbent status, with fixed effects for tickets.

4.3. Validity of the RD design

Several conditions must be met for the sharp RD design to be valid. First, the running variable must deterministically predict the treatment, which in our case is fulfilled, as the law prescribes the population threshold of 20,000 inhabitants, and it is fully enforced.

Second, no manipulation of treatment should be possible. Although municipalities may have some incentives to be on the right side of the threshold (e.g., to have more seats on the council), they could achieve it only by purposefully attracting more inhabitants or falsifying voter register data. We do not find any evidence of sorting. The conventional density tests (see, Cattaneo et al., 2019, 2020) are presented in Table A.16 and Figures A.5-A.6.

Third, treatment must not be correlated with any outcome-determining factor. A larger share of women or young people, as well as higher population density could mean that the population is more supportive of women in politics. However, we find no discontinuity in population composition or population density at the threshold (Table A.15).

Finally, confounding factors should not be present at the analysed population threshold. As indicated in Table 3, two policies change at the 20,000 threshold: the size of the council and the limit to campaign financing. Regarding campaign expenditure limits, there is evidence that these are not strictly enforced, and thus are not binding. It is a well-known practice in Poland for parties to engage in so-called "pre-campaigning" in order to circumvent expenditure limits.

When it comes to council size, the changes to the electoral system were removed before the election of 2014, but the change in the council size remained in place. We find no

discontinuity for our dependent variables in 2014, and thus, there is no evidence that these institutional factors alone play any role (Table A.17).

5. Comparison of plurality and OLPR systems

5.1. Main results

We first check whether women’s electoral participation and outcomes differ between plurality and OLPR systems, on average. Table 6 and Figure 2 show the RD results at the municipality level: the share of women among candidates, the share of votes for women, and the share of women among councillors.⁹ The negative coefficients mean that women have better net results in the plurality system.

We find no discontinuity at the threshold of 20,000 inhabitants in any of the outcomes. At the data-driven MSE-optimal bandwidths (around 6,000–6,500 inhabitants), the point estimates are close to zero and the robust confidence intervals comfortably contain it; the results are also similar for higher-order polynomials (Table C.19). At narrower bandwidths, however, the estimates become imprecise and sensitive: as Figure 3 shows, for the votes variable the point estimates are larger and their 95% robust confidence intervals occasionally exclude zero (below $\sim 2,000$ inhabitants). We do not interpret this as evidence against our null result, but neither do we claim that these estimates can be dismissed conclusively; they are consistent with a range of effect sizes and cannot, on their own, rule out a discontinuity. We place greater weight on the estimates at the data-driven bandwidths, because the MSE-optimal bandwidth reflects a principled bias-variance trade-off (Imbens and Kalyanaraman, 2012; Calonico et al., 2014): reducing the bandwidth below this optimum sharply increases variance without a theoretical justification for doing so,

⁹Following the recommendations by Cattaneo et al. (2019), in all RD tables and figures, the coefficient and standard error is conventional, but the confidence interval is robust. This means that the interval is not centered around the point estimate.

and the 95% confidence intervals at the narrowest bandwidths span nearly ± 0.3 to ± 0.4 . The point estimates in Figure 3 converge toward zero as the bandwidth approaches the MSE-optimal value — a pattern more consistent with sampling variability than with a genuine discontinuity, which would instead tend to persist with shrinking standard errors as the bandwidth widens (Stommes et al., 2023; Hyytinen et al., 2018).

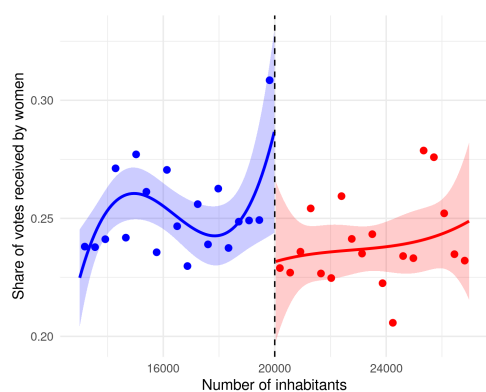
Table 6: Share of seats and votes won by women, share of women among candidates, municipality-level RD, 2002-2010.

	Candidates		Votes		Seats	
Coefficient	0.008	0.010	-0.018	-0.018	-0.030	-0.026
	[-0.020,0.036]	[-0.023,0.046]	[-0.047,0.014]	[-0.057,0.025]	[-0.068,0.012]	[-0.081,0.031]
SE	0.011	0.014	0.012	0.017	0.016	0.023
p-value	0.577	0.512	0.284	0.434	0.170	0.386
Bandwidth	6845	6223	6465	5793	8691	7688
N obs left	6405	6405	6398	6398	6405	6405
N obs right	639	639	639	639	639	639
Effective N left	736	615	664	555	1145	918
Effective N right	322	301	314	294	367	344
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

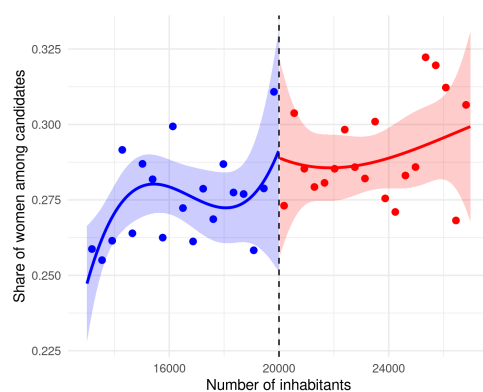
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; BV and FPTP combined) in p.p. divided by 100.

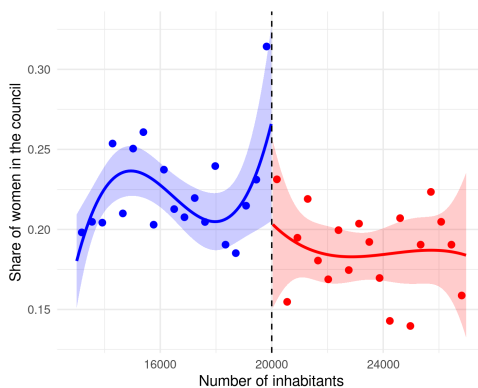
Figure 2: Share of seats and votes won by women, share of women among candidates, municipality-level RD, 2002-2010, plurality vs. OLPR.



(a) Share of votes won by women

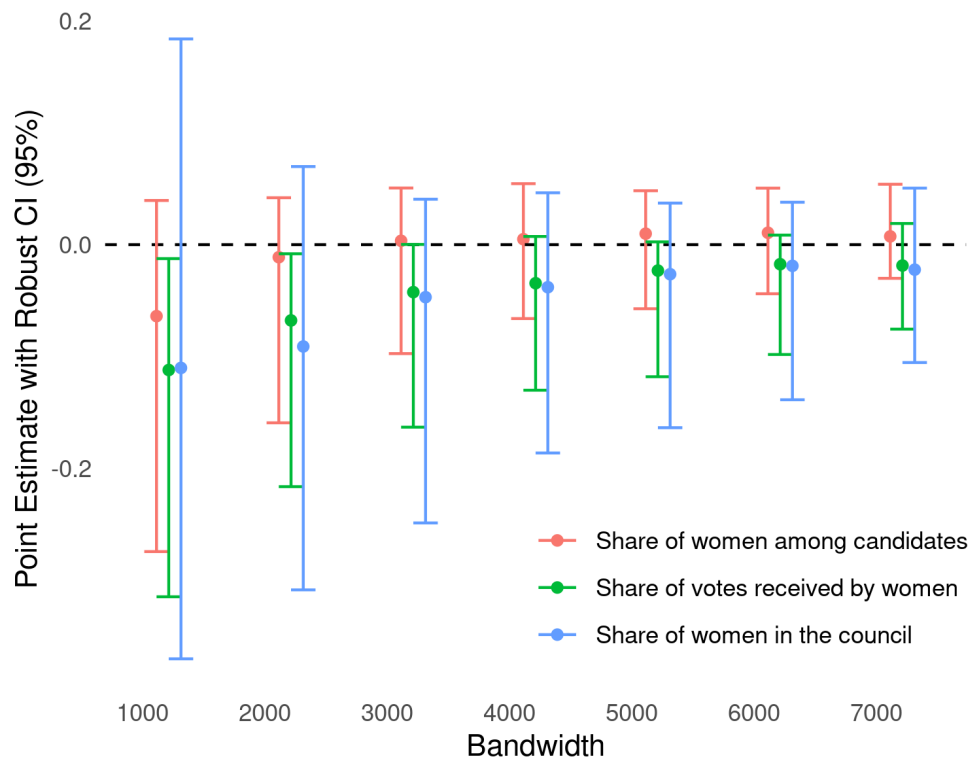


(b) Share of women among candidates



(c) Share of women on the council

Figure 3: Discontinuity in main variables for different bandwidths, 2002-2010, plurality vs. OLPR.



A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; BV and FPTP combined) in p.p. divided by 100.

5.2. Heterogeneity by type of plurality system

To separate the effect of the block vote system on women's electoral outcomes, we now run the RD regressions at the district level and separate the districts below the threshold into multi-member (Table 7) and single-member (Table 8).

We do not find discontinuity in the share of seats won by women in either system. In BV districts, there are slightly fewer female candidates than in OLPR (by 2.8 p.p.), but this difference disappears at the stage of voting and seat allocation. In single-member districts, women run at a similar rate as in OLPR, but get a higher share of votes than in OLPR (by 4.1 p.p.). Nevertheless, the differences between both plurality systems and OLPR in terms of share of seats won by women are not statistically significant. The difference in the share of candidates might be due to the fact that lists in OLPR may be twice as long as the number of seats, while the lists in BV are no longer than the number of seats. The candidates in the lower half of the lists do not get many votes, so the gender proportions among candidates may not translate into vote shares.

Table 7: Share of seats and votes won by women, share of women among candidates, district-level RD, only BV districts below the threshold, 2002-2010.

	Candidates		Votes		Seats	
Coefficient	0.026*	0.028**	-0.014	-0.015	-0.017	-0.015
	[0.004,0.062]	[0.010,0.059]	[-0.036,0.015]	[-0.032,0.008]	[-0.060,0.036]	[-0.046,0.024]
SE	0.013	0.011	0.010	0.008	0.019	0.015
p-value	0.025	0.005	0.408	0.252	0.628	0.540
Bandwidth	4968	5167	7226	7421	6836	6288
N obs left	20 224	20 224	20 224	20 224	20 224	20 224
N obs right	2234	2234	2234	2234	2234	2234
Effective N left	1417	1525	2656	2811	2357	2003
Effective N right	919	948	1150	1169	1120	1057
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (BV) in p.p. divided by 100.

Table 8: Share of seats and votes won by women, share of women among candidates, district-level RD, only FPTP districts below the threshold, 2002-2010.

	Candidates		Votes		Seats	
Coefficient	-0.009 [-0.042,0.017]	-0.013 [-0.038,0.004]	-0.031* [-0.065,0.000]	-0.041*** [-0.068,-0.023]	-0.033+ [-0.076,0.006]	-0.014 [-0.035,0.016]
SE	0.011	0.009	0.013	0.010	0.016	0.011
p-value	0.423	0.118	0.048	0.000	0.093	0.458
Bandwidth	5293	2564	5233	2341	9032	4559
N obs left	41 403	41 403	38 706	38 706	41 403	41 403
N obs right	2234	2234	2234	2234	2234	2234
Effective N left	3253	1233	3159	1013	7967	2707
Effective N right	974	402	963	355	1275	858
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (FPTP) in p.p. divided by 100.

5.3. Heterogeneity by municipality type

As described above, municipalities differ by type. In urban areas, municipalities have full discretion regarding their choice of district size, while in rural areas, the districts are usually bound to be small (village level). Therefore, conducting separate analyses by municipality type allows us to compare municipalities with a similar level of discretion on both sides of the threshold.

We find a positive impact of OLPR, relative to plurality, in urban municipalities, but not in rural or urban-rural ones (Table 9). It is particularly relevant because, among municipalities below the threshold, the average district magnitude is the largest in urban ones. This means that in those municipalities where the list can be longest and voters can cast most votes under block vote, fewer women are elected than in similar (urban) municipalities with a proportional system. There, the OLPR has a similar positive impact on the share of women among candidates and (slightly smaller on) the share of votes received by women (Table D.20). For the rural and mixed municipalities, the coefficients are

negative but non-significant. It should be noted that there are only 11 rural municipalities above the threshold, hence, this comparison is rather inconclusive. The difference at the threshold is still non-significant if we combine the rural and urban-rural categories. Again, in Figure D.7, we show that the results are stable for various bandwidths. The results are similar if we run regressions at the district level and include only multi-member (BV) urban districts, i.e., exclude single-member districts with FPTP (Table B.18). It is unlikely that the difference in effects between urban and other municipalities is driven by the urban voters' generally higher support for women. If this was the dominant difference, we would expect voters in BV to use their multiple vote in at least a similarly pro-female way as in OLPR. The BV should be more beneficial in less conservative environments (as in Baltrunaite et al. (2019)) and our result suggests an opposite pattern. However, our design does not allow us to rule out other explanations for this heterogeneity, such as rural-urban differences in attitudes towards women, candidate supply, party organisation, and other contextual characteristics.

Table 9: Share of seats won by women, RD, 2002-2010, by municipality type.

	Urban		Rural		Urban-Rural	
Coefficient	0.095*	0.092*	-0.178	-0.175	-0.029	-0.030
	[0.026,0.203]	[0.017,0.207]	[-0.459,0.054]	[-0.485,0.076]	[-0.086,0.024]	[-0.101,0.039]
SE	0.040	0.042	0.105	0.112	0.023	0.029
p-value	0.012	0.021	0.121	0.153	0.267	0.384
Bandwidth	4876	5568	2413	2502	7011	7150
N obs left	344	344	4699	4699	1362	1362
N obs right	267	267	33	33	339	339
Effective N left	114	134	21	24	411	426
Effective N right	74	80	14	15	200	200
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; BV and FPTP combined) in p.p. divided by 100.

5.4. *Interpreting the null results*

A credible null result requires more than a confidence interval that contains zero: it requires that the design be powered to detect an effect of the magnitude the theory predicts (Abadie, 2020). We therefore assess the precision of our estimates directly. For each specification, we compute the minimum detectable effect (MDE) at 80% power for a two-sided test at the 5% level. The MDE is the smallest true effect we would reject the null against in 80% of repeated samples; an estimated null is therefore informative to the extent that the MDE lies below the effect size predicted by theory. As a complementary, model-free quantity, we also report the largest effect excluded by the 95% robust confidence interval. The relevant benchmark is the gap in women’s representation that the comparative literature attributes to electoral systems, on the order of 8–12 percentage points between proportional and majoritarian rules (e.g., Lijphart, 1999), and as much as 18–22 points for preference-voting reforms (Baltrunaite et al., 2019).

Table 10 reports the results. Our main estimates exclude effects of that size: at the municipality level the MDE ranges from 3.9 to 6.4 percentage points, and the 95% intervals exclude effects larger than 4.6–8.1 points. The same holds for the block-vote and single-member district comparisons, where MDEs lie between 2.2 and 4.2 points. The design is therefore powered to detect effects of the size the literature leads us to expect, so the absence of such effects from our estimates is unlikely to be a consequence of insufficient power.

Three features of the design make the most common non-power explanations for a spurious null less plausible. First, our outcomes—the shares of women among candidates, votes, and seats—are official administrative counts recorded identically across all municipalities and election years, and they are well dispersed across municipality types and district magnitudes. Second, treatment assignment at the 20,000-inhabitant threshold is statutory and sharp, compliance is perfect by construction, and the density and placebo tests reported

in Section 4 show no sorting around the cutoff. Third, women’s shares cluster around 20–25%, far from either bound, so the estimates are not compressed by floor or ceiling effects.

The reduced-form null is reinforced by direct evidence on the behavioral mechanism. Our individual-level results show that even under the block vote, where a voter may support every candidate on a ticket including all women, women receive fewer votes than otherwise comparable men. The channel through which additional votes were expected to benefit women is thus tested directly and the evidence runs against the prediction.

We are deliberately cautious about two subsamples. The estimates for rural municipalities and for the five-seat districts on both sides of the threshold carry much larger standard errors and correspondingly large MDEs, driven by small effective samples near the cutoff. These specifications can exclude only implausibly large effects; we therefore read them as corroborating, not decisive, evidence, and we rest our inference on the convergence of the precisely estimated municipality- and district-level results with the individual-level mechanism.

Table 10: Minimum detectable effects based on bias-corrected inference

Specification	Outcome	SE	MDE (80%)	CI excludes >	Effective N (L / R)
Municipality level (main)	Candidates	0.014	3.9 pp	4.6 pp	615 / 301
	Votes	0.017	4.8 pp	5.7 pp	555 / 294
	Seats	0.023	6.4 pp	8.1 pp	918 / 344
Block-vote districts	Candidates	0.011	3.1 pp	5.9 pp	1,525 / 948
	Votes	0.008	2.2 pp	3.2 pp	2,811 / 1,169
	Seats	0.015	4.2 pp	4.6 pp	2,003 / 1,057
Single-member (FPTP) districts	Candidates	0.009	2.5 pp	3.8 pp	1,233 / 402
	Votes	0.010	2.8 pp	6.8 pp	1,013 / 355
	Seats	0.011	3.1 pp	3.5 pp	2,707 / 858
Seats, by municipality type	Urban	0.042	11.8 pp	20.7 pp	134 / 80
	Rural	0.112	31.4 pp	48.5 pp	24 / 15
	Urban-rural	0.029	8.1 pp	10.1 pp	426 / 200
Five-seat districts (both sides)	Candidates	0.035	9.8 pp	11.7 pp	74 / 258
	Votes	0.033	9.2 pp	10.9 pp	87 / 306
	Seats	0.055	15.4 pp	19.9 pp	97 / 385

Notes: The minimum detectable effect (MDE) is computed at 80% power for a two-sided test at the 5% level, in percentage points (pp). “CI excludes >” is the largest absolute effect lying outside the 95% robust interval. Effective N is the kernel-weighted number of observations within the MSE-optimal bandwidth below / above the threshold.

6. Mechanisms

Our RD results show that a comparable share of women run and are elected in both types of electoral systems. Women also get a comparable share of votes. This finding is in line with the results by Gulczyński et al. (2025) who find no substantial difference between FPTP and OLPR (with gender quota) in the later years in the same Polish context. Even more, contrary to our expectations, women are less likely to run in elections under BV than under OLPR. Also, we find that in urban municipalities, where voters have more votes in BV, on average, fewer women are elected than in comparable urban municipalities with OLPR (and single vote).

To examine the mechanisms, we first dive deeper into women’s decision to run in elections. Then, we look at the results of political parties in both types of systems. In the end, we investigate to what extent voters favour men over women. To better understand why women do not get a larger share of votes under BV than under OLPR, we estimate OLS regression at the district and individual levels.

6.1. District magnitude and women's candidacy

The main results in the previous section are based on a comparison of plurality and proportional elections. We now ask how much of this can be attributed to district magnitude rather than to the number of votes available to each voter.

In line with our expectation, conditional on having a plurality system, more women are elected in larger districts. In single-member districts (FPTP), 20.2% of the seats were won by women, in two-member districts 22.2%, and in five-member districts, 24.8%. The literature suggests that larger districts should help women, even if each voter has only one vote (e.g., Engstrom, 1987). Thus, even if the district magnitude alone has any effect, it should augment the expected positive effects of the larger number of votes. As an additional piece of evidence, for the limited relevance of district magnitude, we check whether there is any discontinuity for districts that are equal in size, i.e., elect 5 members under BV or under OLPR. However, we do not find any discontinuity in women's electoral outcomes (Table 11).

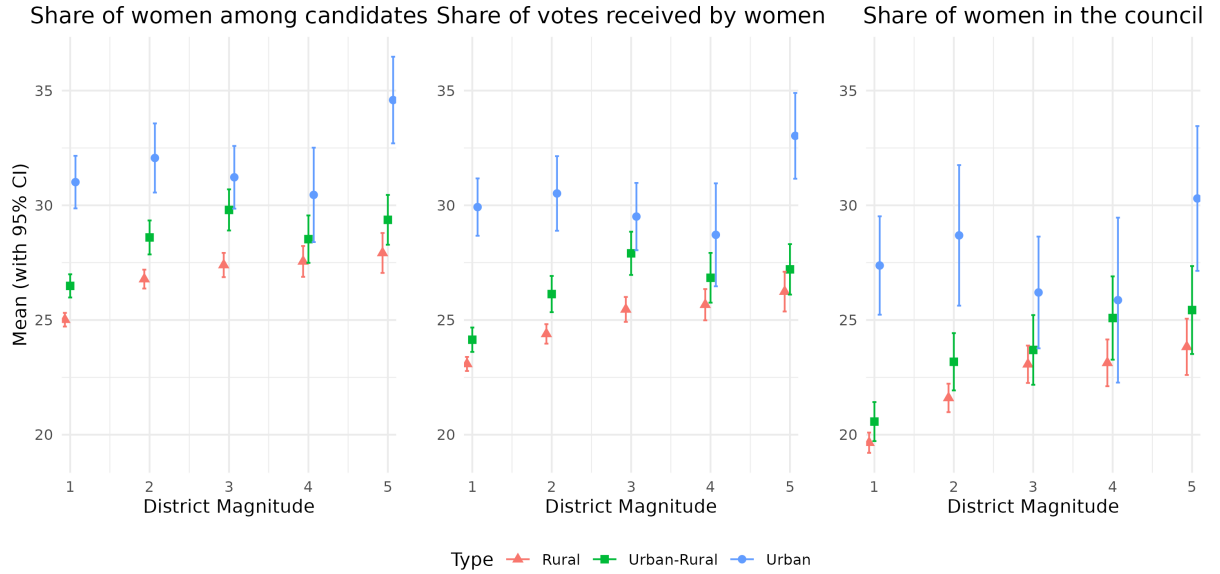
Table 11: Share of seats and votes won by women, share of women among candidates, district-level RD, only districts with 5 seats on both sides of the threshold, 2002-2010.

	Candidates		Votes		Seats	
Coefficient	0.040	0.038	-0.031	-0.030	-0.071	-0.069
	[-0.041,0.118]	[-0.044,0.117]	[-0.109,0.044]	[-0.109,0.046]	[-0.209,0.069]	[-0.199,0.059]
SE	0.035	0.035	0.033	0.033	0.060	0.055
p-value	0.347	0.370	0.401	0.424	0.322	0.287
Bandwidth	3454	3592	3977	4070	4794	4831
N obs left	1452	1452	1452	1452	1452	1452
N obs right	988	988	988	988	988	988
Effective N left	68	74	86	87	95	97
Effective N right	252	258	300	306	382	385
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (BV) in p.p. divided by 100.

Figure 4: Women's electoral outcomes by type of municipality and district magnitude



Regardless of the district magnitude, women run more often and get more votes and seats in urban municipalities than in the other two types of municipalities (Figure 4); this difference is statistically significant in almost all cases. There is no significant difference in women's electoral participation and outcomes between smaller and larger districts in urban areas (except for the 5-member districts), but district magnitude seems to correlate with women's participation and outcomes in rural and urban-rural municipalities. Women run less often and are less often elected in single-member districts (and to a lesser extent in two-member districts) in rural and urban-rural municipalities.

Within each category of districts, regardless of municipality types, the share of women among candidates is larger than their share of votes. The mean share of women on the council is the lowest of those three variables, which suggests that voters' decisions hinder women's descriptive representation. We investigate it further in Section 6.3.

The formal barriers to standing are the same in all districts with a plurality system. Regardless of district size, candidates were permitted to stand alone. Tickets could not exceed the number of seats allocated to the district. The proportion of women is similar for

tickets with one, non-maximum and maximum candidates. We find the largest difference in the largest districts, where women were less likely than men to run individually, relative to the proportions on the tickets of maximum length (Figure E.8). This shows that women did not use the opportunity to overcome parties by running independently.

How district magnitude relates to competitiveness is not unambiguous: in around 6.5% of single-member districts no election was held because there was only one candidate (Figure E.9), which did not happen in larger districts, whereas in a larger BV district one can get elected without any campaign effort if voters support a whole ticket.¹⁰

6.2. *The role of parties*

There are several factors that could influence women's success at the stage of candidate selection and ordering within parties. First, if a significant number of voters demands a diverse or equal representation of genders, parties can accommodate this preference and present more female candidates. In a single-member district, each voter has only one vote and, therefore, can choose only a man or a woman. In multiple-member districts, voters may express their full-hearted support for one party and vote for all the candidates of one party regardless of who they are. However, they can also express their preference for diversity by voting for a woman from another party if their preferred party offers a male-only ticket.

If this mechanism is true, parties in municipalities with larger districts should have a higher share of women on their lists. Thus, we run an OLS regression with the share of women among candidates of a committee as the dependent variable, and the share of seats in the municipality that are allocated in multiple-member districts as the independent variable. Although some parties (in particular, national parties) run in many municipalities,

¹⁰In our data, we include them in the variables measuring the share of candidates and councillors, but they are not included in the number of votes, because they do not get any. This does not substantially influence our RD results, because lack of competition usually occurs in the smallest municipalities (as shown in Figure E.9).

we treat each municipality-committee as one observation. As has been said, urban municipalities have larger districts on average, so we add dummy variables for the three types of municipalities (rural, urban and mixed) and for the election year. We also adjust for population density and number of inhabitants. We find that more women run if more seats are assigned to multiple-member districts (Table 12). Thus, we cannot exclude strategic party adjustment to district magnitude.

Table 12: Share of female candidates at the committee level, municipality-level OLS regression, 2006-2010.

	Multiple-member districts
Share of councilors elected in MMD	0.015* (0.006)
Log inhabitants	−0.024*** (0.004)
Population density	0.000 (0.000)
Rural municipality	−0.032** (0.010)
Urban-rural municipality	−0.023* (0.011)
Num.Obs.	33 693
R2	0.003
R2 Adj.	0.003

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The dependent variable is the share of women among candidates from a committee; only municipalities with a plurality system (smaller than 20,000 inhabitants) are included.

Kantorowicz and Köppl-Turyna (2019) show that national parties are more present and successful above the 20,000 population threshold. We confirm that national parties get around 24 p.p. more seats under OLPR than under plurality, which is a substantial difference (Table 13). This is driven mostly by urban municipalities, although it appears in urban-rural municipalities as well (Table E.21).

How does this matter for women? One might expect that national parties in our

Table 13: Discontinuity in the share of seats won by national parties and council fragmentation, RD, 2002-2010.

	National parties	Largest party	2 largest	ENP
Coefficient	0.242*** [0.115,0.421]	-0.024 [-0.093,0.056]	0.012 [-0.063,0.091]	-0.367 [-1.108,0.278]
SE	0.068	0.030	0.031	0.278
p-value	0.001	0.629	0.724	0.240
Bandwidth	3777	6257	6100	6079
N obs left	6402	6402	6402	6402
N obs right	639	639	639	639
Effective N left	307	626	590	585
Effective N right	204	304	297	297
Order of Regression	1	1	1	1
Order of Bias	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd
Clustered	Yes	Yes	Yes	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher share in larger municipalities (OLPR) than in smaller ones (plurality; BV and FPTP combined) in p.p. divided by 100 (and in number of parties for ENP).

context (before the introduction of gender quotas in any election) posed obstacles for female candidates. In contrast, women could easily run in plurality elections without the support of any political organization. We do not find any support for the hypothesis that national parties decreased women’s chances. They introduced a relatively large number of women. When we focus on municipalities with between 15,000 and 25,000 inhabitants where national parties had at least one councillor, the share of women on the councils below the threshold was 22.5% for national parties and 20.8% for other councillors. On the councils above the threshold, it was around 19.9% and 18.8%, respectively. Thus, the better performance of national parties under OLPR is positive rather than negative for women’s outcomes.

Furthermore, Gulczyński et al. (2025) hypothesize that parties are more likely to put up women when they expect to get more seats. However, we find no significant difference in various measures of council fragmentation at the threshold (Table 13), hence we disregard party size as a potential mechanism explaining the differences between systems.

6.3. Voters’ discrimination against women

After having established that parties may strategically increase the share of women in municipalities with more multi-member districts, we turn to the voters. As we have shown, for every type of municipality and district magnitude under BV, the share of votes and seats won by women is smaller than the share of women among candidates. So, do voters discriminate against women?

To answer this question, we run OLS regressions with the number of votes and having won the seat as dependent variables. Since we are primarily interested in the within-ticket variation, we add fixed effects for electoral tickets (defined by year, municipality, committee, and district). Furthermore, we adjust for individual features: age, age squared, position on the ticket, and incumbency status. Thanks to the availability of data on candidates’ previous electoral outcomes, for the individual-level analysis we focus on the elections in

2006 and 2010. Around 70% of incumbents in small municipalities run in the next election (making up 21% of all candidates) and 66% of them win a seat.

We show that voters did choose women less often (Table 14). Under BV, women get around 6.6 votes fewer than comparable men, while incumbents get 44.7 votes more than non-incumbents. Women’s chances to win a seat are lower by 3.3 p.p. than men’s, while incumbents’ probability of winning the seat is by 27.2 p.p. higher than that of non-incumbents. Thus, the coefficient for being a women is around 12% of the coefficient for incumbency in terms of winning probabilities and 15% in terms of vote number.

In Tables F.22-F.23, we show that without adjustment for covariates and fixed effects the coefficients for gender would be over twice as large for the probability of winning a seat and almost three times as large for the number of votes. The coefficients for incumbency status are also substantially reduced and, thus, the overall conclusions remain unchanged: women are chosen less often, but the effect of a candidate’s gender is unsurprisingly much smaller than the effect of incumbency.

The difference between women and men is also smaller than the gap between the first and the second position on the ticket, amounting to around half of it, even though the position should not be a key factor under BV.¹¹

The negative effect of being a woman is stronger in rural than in urban areas (Tables F.26 and F.28). The size of the gender effect relative to the incumbency effect decreases with district magnitude, both in terms of votes (Table F.27) and probability of election

¹¹Apparently, the candidates and parties did not always pay attention to it either. The order of candidates is alphabetical in 64% of tickets with more than one candidate in two-member districts and 34% in five-member districts, which is much above the random probability, and a regression with the likelihood of being on top of the ticket as the dependent variable shows that women were more likely than men to head the ticket, conditional on running. We do not estimate RD for ticket placement because the ticket placement has a substantially different meaning in BV and in OLPR. While candidates on one ticket compete with each other in OLPR, it is not necessary in BV. A voter can choose all candidates under BV and previous research shows that voters usually select candidates from top positions in OLPR (Jankowski and Marcinkiewicz, 2019; Millard, 2014).

Table 14: Votes and seats won by women under block vote and open-list proportional representation, individual-level OLS regression, 2006-2010.

	BV votes	BV seats	OLPR votes	OLPR seats
Female	−6.591*** (0.509)	−0.033*** (0.004)	−4.054*** (0.308)	−0.016*** (0.002)
Incumbent	44.744*** (0.809)	0.272*** (0.006)	78.566*** (1.181)	0.397*** (0.007)
Age	2.836*** (0.134)	0.012*** (0.001)	1.408*** (0.072)	0.004*** (0.000)
Age Sq.	−0.032*** (0.001)	0.000*** (0.000)	−0.016*** (0.001)	0.000*** (0.000)
Position 2	−13.800*** (0.380)	−0.072*** (0.003)	−48.743*** (1.056)	−0.214*** (0.006)
Position 3	−22.743*** (0.634)	−0.102*** (0.004)	−60.162*** (1.007)	−0.263*** (0.006)
Position 4	−29.165*** (1.048)	−0.118*** (0.006)	−67.305*** (0.992)	−0.279*** (0.006)
Position 5	−32.193*** (1.790)	−0.121*** (0.010)	−71.304*** (0.984)	−0.291*** (0.006)
Position 6			−75.754*** (0.998)	−0.306*** (0.006)
Position 7			−78.634*** (1.014)	−0.313*** (0.006)
Position 8			−80.919*** (1.032)	−0.320*** (0.006)
Num.Obs.	127 998	127 998	89 378	89 378
R2	0.835	0.616	0.573	0.388
R2 Adj.	0.691	0.280	0.524	0.317

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Dependent variables are the number of votes received (columns 1 and 3) and an indicator for winning a seat (columns 2 and 4). Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators. The models include fixed effects for electoral tickets defined by year, municipality, committee, and district.

(Table F.25). In larger districts, incumbents enjoy greater advantages, which—in the case under study—also favours men, who constituted a clear majority on the councils. This association continues to hold if we include the single-member districts (Table F.29).¹²

Finally, we find that the difference between women and men at the voting stage is larger under BV than under OLPR (Table 14). This contrasts with the expectation that voters would choose more women if they could support more than one candidate. Under OLPR, where voters have only one vote, the position on the ballot is more important. The difference in probability of election between the first and the second position is three times as large under OLPR as under BV. Perhaps surprisingly and contrary to expectations, the incumbency advantage is also larger under OLPR, even though we control for the position on the ballot and incumbents are surely more likely to be at the top of the ticket. In sum, incumbency and pre-campaign bargaining are more important in OLPR than under BV, but gender is more important under BV than in OLPR. This further strengthens our argument that multiple vote does not help women in our context.

7. Conclusions

This article answers the question of whether more women are elected under a plurality rule or proportional representation. We find little difference between a plurality system with single (first-past-the-post) or multiple (block) vote and open-list proportional representation in terms of women’s participation and performance in local elections. If anything, the BV system reduced women’s chances, as we demonstrate for urban municipalities. This result is in line with previous studies showing that the difference between plurality and proportional rules on women’s descriptive representation are either not large or are strongly dependent on specific features and context (Gulczyński et al., 2025).

¹²To extend the analysis to single-member districts, we adjust for municipality type and logarithmized number of inhabitants, instead of the ticket fixed effects.

In the context under study, women did not use the plurality system to overcome party selection processes: fewer women ran under BV than under OLPR. Although more women run in larger than in smaller BV districts, even after controlling for municipality features, they are not more likely than men to use the main advantage of plurality systems, i.e., to overcome parties by running as independent candidates. At the individual level of candidates, we find a non-negligible women’s disadvantage in terms of votes won in real elections, controlling for other factors like age, incumbency and list placement; it amounts to around 12-15% of the difference between incumbents and non-incumbents, and while incumbency and pre-campaign bargaining for positions on the ballot are more important in OLPR, gender is more important under BV. Our results contrast with the well-established findings from laboratory and survey experiments which show no bias or even positive bias toward female candidates (Schwarz and Coppock, 2022), and they support the earlier findings that voters do not necessarily elect more women if they dispose over several votes in real elections (Bieber and Wingerter, 2022): in our context, voters chose women less often even if they could have chosen all candidates from a ticket (under BV).

There are several reasons why the systems under study may produce more similar results than other pairs of plurality and proportional systems. On the one hand, the weak advantage of the proportional system is consistent with the finding that OLPR is less influential than CLPR, especially when it has no gender quota and zipper rule (Gonzalez-Eiras and Sanz, 2021; Nowacki, 2023). Also, BV has advantages over FPTP, such as longer lists and the possibility to choose more candidates than one. On the other hand, lack of any advantage of BV over OLPR (that we expected) may be explained by the voters’ preference for male candidates in Poland in the 2000s. Also, that system did not link the number of available votes to the gender of elected candidates, as the one in Italy studied by Baltrunaite et al. (2019). Finally, part of the divergence may be methodological. Much of the earlier literature relies on correlations; some of the estimated differences between

systems may therefore reflect characteristics correlated with the choice of institutions rather than the rules themselves. Our quasi-experimental approach removes this concern locally around the population threshold, at the cost of external validity.

Our article has three limitations. First, our methodology does not allow us to know with certainty that women are discriminated against, in the sense of voters preferring men directly because of their gender: differences in the campaign efforts of males and females, or in unobserved individual characteristics of the candidates, could also play a role. However, we focus on the within-ticket variation and adjust for the most important factors, such as incumbency status, position and age, and although we do not know candidates' education levels, women have higher levels of formal education than men in Poland (Gulczyński, 2023). We therefore argue that the negative effect of being a woman on the number of votes and the likelihood of election can be considered as voters' bias. Second, the advantage of OLPR over BV may be inflated by the discontinuity in the size of the council, although the placebo test for the election of 2014—when the council sizes still differed but the electoral system did not—shows no such effect. Third, as in any RD study, the analysis is based on observations close to the threshold: candidates, parties, and voters in much smaller municipalities could react differently to a change from a plurality to a proportional system, and we cannot exclude that in a society with no gender bias, or a positive bias towards female candidates, the effect of BV would be more positive.

We contribute to the discussion on how to design institutions that would help get more women elected to electoral bodies. At the very least, similarly to previous research on gender quota, our results point to the fact that even substantially different electoral systems without strong and deliberate measures are unlikely to change women's share among the elected politicians. This matters beyond the Polish case: while many countries use block voting, there are no causally identified studies of its effects.

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References

- Abadie, A. (2020). Statistical nonsignificance in empirical economics. *American Economic Review: Insights* 2(2), 193–208.
- Baltrunaite, A., A. Casarico, P. Profeta, and G. Savio (2019). Let the voters choose women. *Journal of Public Economics* 180, 104085.
- Bieber, I. and L. Wingerter (2022). Is it all a question of the electoral system? the effects of electoral system types on the representation of women in german municipal councils. *German Politics* 31(4), 532–557.
- Calonico, S., M. D. Cattaneo, and R. Titiunik (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica* 82(6), 2295–2326.
- Castles, F. G. (1981). Female legislative representation and the electoral system. *Politics* 1(2), 21–27.
- Cattaneo, M. D., N. Idrobo, and R. Titiunik (2019). *A practical introduction to regression discontinuity designs: Foundations*. Cambridge University Press.
- Cattaneo, M. D., M. Jansson, and X. Ma (2020). Simple local polynomial density estimators. *Journal of the American Statistical Association* 115(531), 1449–1455.
- Dhima, K., S. N. Golder, L. B. Stephenson, and K. Van der Straeten (2021). Permissive electoral systems and descriptive representation. *Electoral Studies* 73, 102381.
- Dudzińska, A. (2008). Non-party Lists in Local Election in Poland. In M. Reiser and E. Holtmann (Eds.), *Farewell to the Party Model? Independent Local Lists in East and West European Countries*, pp. 105–126. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Engstrom, R. L. (1987). District magnitudes and the election of women to the Irish Dáil. *Electoral Studies* 6(2), 123–132.
- Gendźwiłł, A. and T. Żółtak (2014). Why Do Non-partisans Challenge Parties in Local Politics? The (Extreme) Case of Poland. *EUROPE-ASIA STUDIES* 66(7), 1122–1145.

- Gendźwiłł, A. and T. Żółtak (2020). Do parties and voters counteract quota regulations? the impact of legislative gender quotas on ballot ranking and preference voting in Poland. *Politics & Gender* 16(1), 199–229.
- Golder, S. N., L. B. Stephenson, K. Van der Straeten, A. Blais, D. Bol, P. Harfst, and J.-F. Laslier (2017). Votes for women: Electoral systems and support for female candidates. *Politics & Gender* 13(1), 107–131.
- Gonzalez-Eiras, M. and C. Sanz (2021). Women’s representation in politics: The effect of electoral systems. *Journal of Public Economics* 198, 104399.
- Gulczyński, M. (2023, June). Dynamika nierówności płci na polskich uczelniach. Analiza stopni i tytułów nadawanych w latach 2004–2021 z podziałem na grupy kierunków i dziedziny nauki. *Kwartalnik NAUKA* (2). Number: 2.
- Gulczyński, M., M. Köppl-Turyna, and J. Kantorowicz (2025, January). Limited Impact of Introducing Proportional Representation on Women’s Representation: Insights from a Quasi-Experiment in Local Elections. *Political Studies*, 00323217241308098. Publisher: SAGE Publications Ltd.
- Hyytinen, A., J. Meriläinen, T. Saarimaa, O. Toivanen, and J. Tukiainen (2018). When does regression discontinuity design work? Evidence from random election outcomes. *Quantitative Economics* 9(2), 1019–1051.
- Imbens, G. and K. Kalyanaraman (2012). Optimal bandwidth choice for the regression discontinuity estimator. *The Review of economic studies* 79(3), 933–959.
- Jankowski, M. and K. Marcinkiewicz (2019). Ineffective and counterproductive? the impact of gender quotas in open-list proportional representation systems. *Politics & Gender* 15(1), 1–33.
- Kanthak, K. and J. Woon (2015). Women don’t run? election aversion and candidate entry. *American Journal of Political Science* 59(3), 595–612.
- Kantorowicz, J. (2017). Electoral systems and fiscal policy outcomes: Evidence from Poland. *European Journal of Political Economy* 47, 36–60.
- Kantorowicz, J. and M. Köppl-Turyna (2019). Disentangling the fiscal effects of local constitutions. *Journal of Economic Behavior & Organization* 163, 63–87.
- Kenworthy, L. and M. Malami (1999). Gender inequality in political representation: A worldwide comparative analysis. *Social Forces* 78(1), 235–268.
- King, J. D. (2002). Single-member districts and the representation of women in American state legislatures: the effects of electoral system change. *State Politics & Policy Quarterly* 2(2), 161–175.

- Kunovich, S. (2012). Unexpected winners: The significance of an open-list system on women’s representation in Poland. *Politics & Gender* 8(2), 153–177.
- Lassébie, J. (2020). Gender quotas and the selection of local politicians: Evidence from French municipal elections. *European Journal of Political Economy* 62, 101842.
- Lijphart, A. (1999). *Patterns of Democracy*. Yale University Press.
- Lippmann, Q. (2023). Persistence of incumbents and female access to political positions. *Journal of Economic Behavior & Organization* 206, 327–349.
- Matland, R. E. and D. T. Studlar (1996). The contagion of women candidates in single-member district and proportional representation electoral systems: Canada and Norway. *The journal of politics* 58(3), 707–733.
- Millard, F. (2014, March). Not much happened: The impact of gender quotas in Poland. *Communist and Post-Communist Studies* 47(1), 1–11.
- Niederle, M. and L. Vesterlund (2007). Do women shy away from competition? do men compete too much? *The quarterly journal of economics* 122(3), 1067–1101.
- Norris, P. (1985). Women’s legislative participation in Western Europe. *West European Politics* 8(4), 90–101.
- Norris, P. (2006). The impact of electoral reform on women’s representation. *Acta política* 41(2), 197–213.
- Nowacki, T. (2023). The gender gap in political careers under proportional representation. *Journal of Politics*.
- Pierzgalski, M., M. A. Górecki, and P. Stepień (2025). Magnitude matters: Voter turnout under different electoral systems. *Electoral Studies* 94, 102910.
- Profeta, P. and E. F. Woodhouse (2022). Electoral rules, women’s representation and the qualification of politicians. *Comparative Political Studies* 55(9), 1471–1500.
- Rule, W. (1981). Why women don’t run: The critical contextual factors in women’s legislative recruitment. *Western Political Quarterly* 34(1), 60–77.
- Schwarz, S. and A. Coppock (2022). What have we learned about gender from candidate choice experiments? a meta-analysis of sixty-seven factorial survey experiments. *The Journal of Politics* 84(2), 655–668.
- Schwindt-Bayer, L. A. (2005). The incumbency disadvantage and women’s election to legislative office. *Electoral Studies* 24(2), 227–244.
- Shugart, M. S. and J. M. Carey (1992). *Presidents and Assemblies. Constitutional Design and Electoral Dynamics*. Cambridge University Press.

- Stommes, D., P. M. Aronow, and F. Sävje (2023). On the reliability of published findings using the regression discontinuity design in political science. *Research & Politics* 10(2).
- Szczepankowska, M. (2010). Ewolucja prawa wyborczego do samorządu terytorialnego w latach 1990–2006 w perspektywie partii politycznych. *Studia Prawnoustrojowe* 11, 127–141.

Appendix A. RD assumptions

Appendix A.1. Continuity of covariates

Table A.15: Discontinuities in population composition, 2002-2010.

	Women	Young women	Old women	Young people	Old people	Density
Coefficient	-0.003 [-0.008,0.002]	0.001 [-0.007,0.010]	0.003 [-0.007,0.013]	0.003 [-0.015,0.021]	0.004 [-0.011,0.019]	-246.017+ [-556.573,25.949]
SE	0.002	0.004	0.005	0.008	0.007	143.219
p-value	0.302	0.735	0.599	0.723	0.560	0.074
Bandwidth	4956	5110	4030	5045	3962	1720
N obs left	6372	6372	6372	6372	6372	6402
N obs right	637	637	637	637	637	639
Effective N left	443	474	335	464	327	93
Effective N right	262	268	216	264	212	69
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	cerdd	cerdd	cerdd	cerdd	cerdd	cerdd
Clustered	Yes	Yes	Yes	Yes	Yes	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix A.2. Sorting

Table A.16: Density tests - p-values reported.

	2002	2006	2010	2014
P-value	0.3207	0.9626	0.2912	0.8373

Figure A.5: Histogram of the number of inhabitants, 2002-2010.

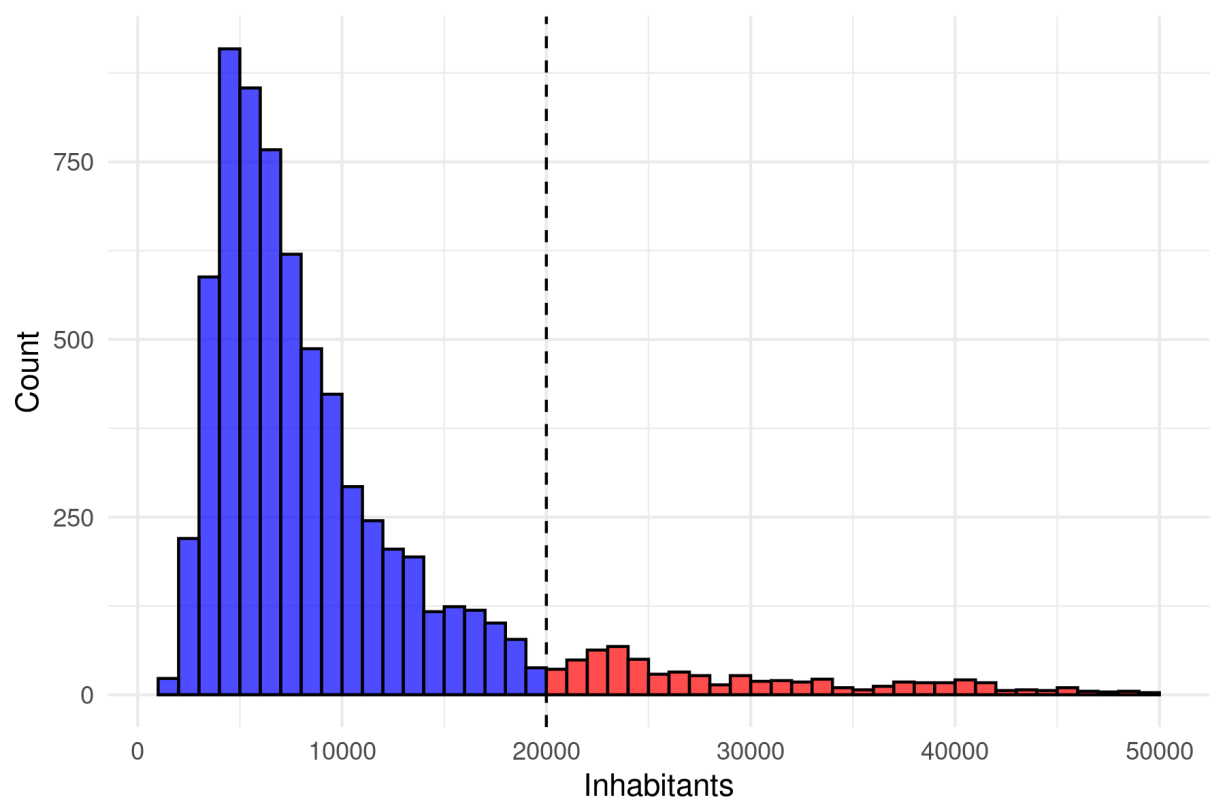
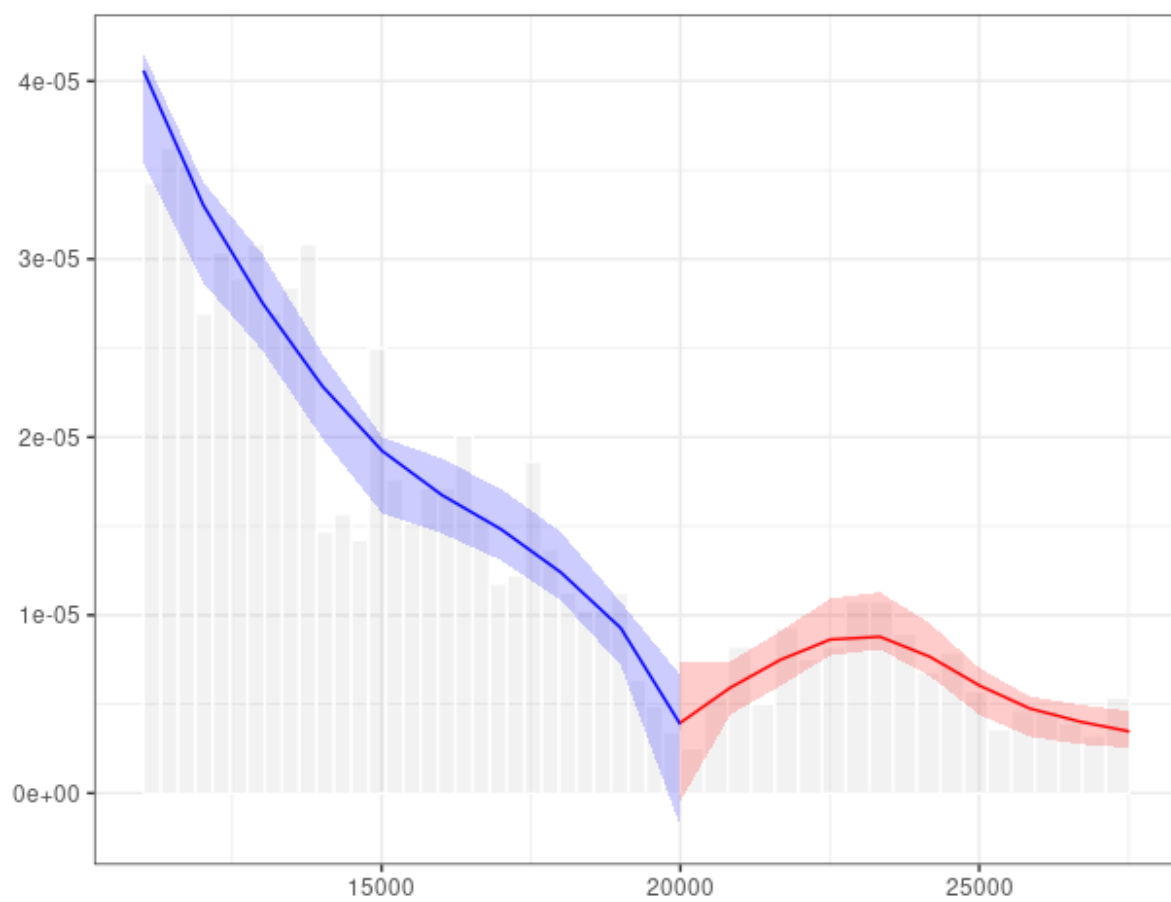


Figure A.6: Density of the number of inhabitants, 2002-2010.



Appendix A.3. Placebo, year 2014

Table A.17: Share of seats and votes won by women, share women among candidates, RD, 2014.

	Candidates	Votes	Seats
Coefficient	0.006	0.028	0.045
	[−0.043,0.061]	[−0.026,0.091]	[−0.041,0.141]
SE	0.022	0.024	0.037
p-value	0.736	0.278	0.283
Bandwidth	6582	5579	5853
N obs left	2127	2126	2127
N obs right	220	220	220
Effective N left	245	181	198
Effective N right	110	105	107
Order of Regression	1	1	1
Order of Bias	2	2	2
Kernel	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities than in smaller ones.

Appendix B. RD at the district level for BV urban districts only

Table B.18: Share of seats and votes won by women, share of women among candidates, RD, 2002-2010, district level, only multiple-member urban districts.

	Candidates		Votes		Seats	
Coefficient	0.117***	0.132***	0.077*	0.075**	0.119*	0.112**
	[0.056,0.204]	[0.098,0.195]	[0.012,0.165]	[0.028,0.146]	[0.001,0.280]	[0.037,0.220]
SE	0.034	0.023	0.034	0.026	0.062	0.042
p-value	0.001	0.000	0.024	0.004	0.048	0.006
Bandwidth	3681	2852	4312	3819	4658	3588
N obs left	1189	1189	1189	1189	1189	1189
N obs right	956	956	956	956	956	956
Effective N left	240	140	294	267	344	240
Effective N right	197	110	233	200	255	186
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

If indicated in the last row, errors are clustered for municipalities. We weight the districts according to the proportion of the councillors within the municipality. A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (BV) in p.p. divided by 100.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix C. RD for higher order polynomials

Table C.19: Share of seats and votes won by women, share of women among candidates, RD, 2002-2010, higher order polynomials.

	Candidates		Votes		Seats	
Coefficient	0.009	0.013	-0.019	-0.054+	-0.017	-0.050
	[-0.029,0.052]	[-0.032,0.065]	[-0.068,0.034]	[-0.134,0.002]	[-0.092,0.069]	[-0.185,0.041]
SE	0.017	0.021	0.022	0.031	0.034	0.050
p-value	0.578	0.507	0.509	0.059	0.784	0.214
Bandwidth	9829	12009	8363	8274	9027	8570
N obs left	6405	6405	6398	6398	6405	6405
N obs right	639	639	639	639	639	639
Effective N left	1460	2427	1063	1037	1229	1108
Effective N right	387	434	359	357	368	365
Order of Regression	2	3	2	3	2	3
Order of Bias	3	4	3	4	3	4
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd

Errors are clustered for municipalities. A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; FPTP and BV) in p.p. divided by 100.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix D. RD for urban municipalities only

Table D.20: Share of seats and votes won by women, share of women among candidates, RD, 2002-2010, only urban municipalities.

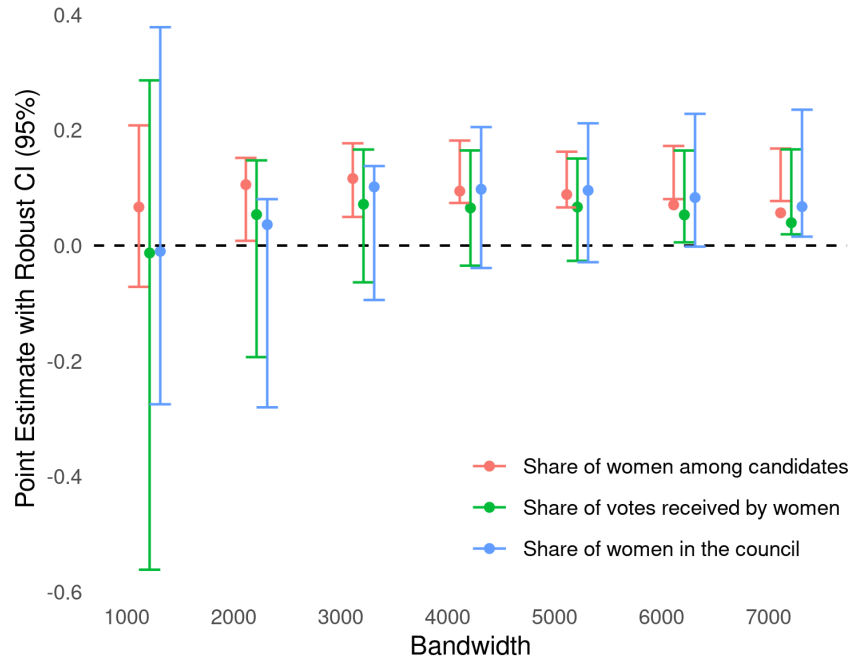
	Candidates		Votes		Seats	
Coefficient	0.097***	0.095***	0.067**	0.062*	0.095*	0.092*
	[0.060,0.158]	[0.063,0.151]	[0.022,0.132]	[0.015,0.133]	[0.026,0.203]	[0.017,0.207]
SE	0.022	0.019	0.025	0.026	0.040	0.042
p-value	0.000	0.000	0.006	0.014	0.012	0.021
Bandwidth	3703	3950	4969	5510	4876	5568
N obs left	344	344	344	344	344	344
N obs right	267	267	267	267	267	267
Effective N left	84	89	116	132	114	134
Effective N right	56	59	74	79	74	80
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; FPTP and BV) in p.p. divided by 100.

Appendix E. Competition in districts

Figure D.7: Discontinuity in main variables for different bandwidths, 2002-2010, only urban municipalities.



A positive coefficient means a higher women's share in larger municipalities (OLPR) than in smaller ones (plurality; FPTP and BV) in p.p. divided by 100.

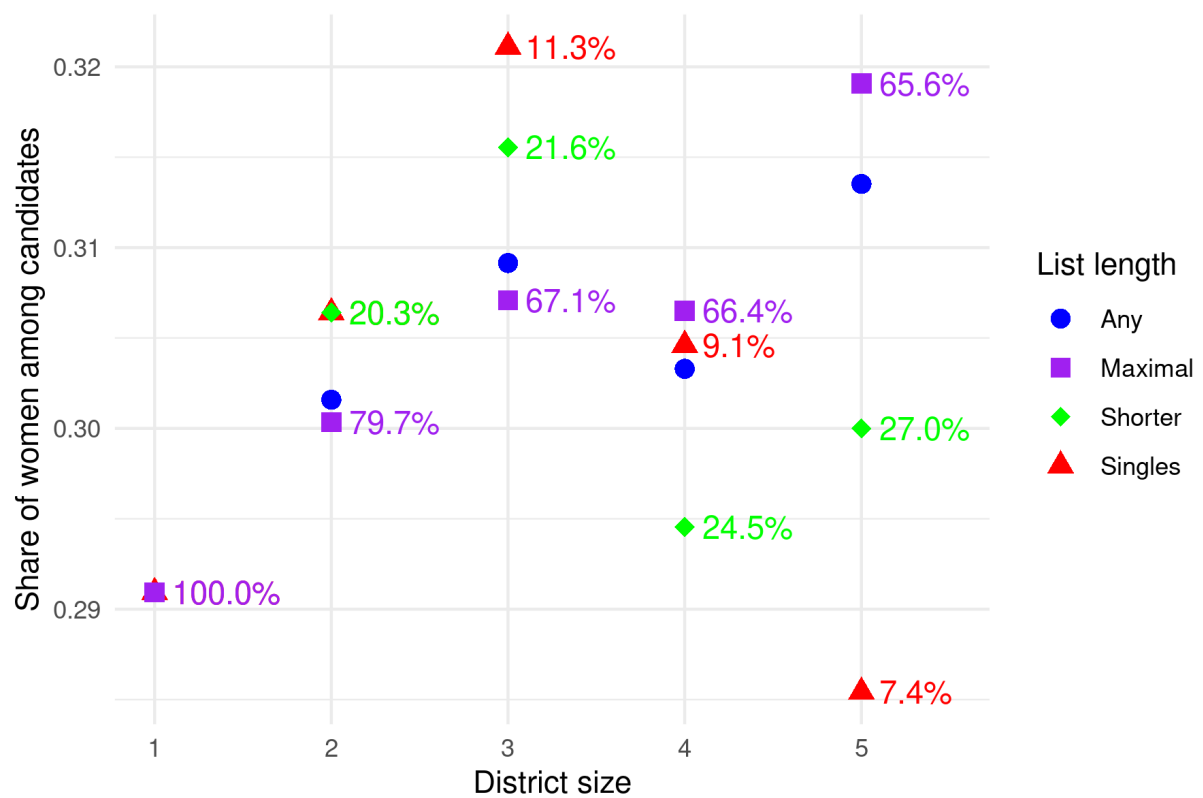
Table E.21: Discontinuity in the share of seats won by national parties by type of municipality, RD, 2002-2010.

	Urban		Rural		Urban-Rural	
Coefficient	0.529***	0.464***	0.114	0.118	0.204**	0.199*
	[0.432,0.704]	[0.344,0.676]	[-0.126,0.360]	[-0.165,0.365]	[0.087,0.364]	[0.030,0.414]
SE	0.062	0.072	0.109	0.129	0.061	0.082
p-value	0.000	0.000	0.346	0.458	0.001	0.023
Bandwidth	3340	3934	1724	2353	3937	4308
N obs left	344	344	4696	4696	1362	1362
N obs right	267	267	33	33	339	339
Effective N left	74	89	11	20	177	205
Effective N right	45	59	12	14	126	136
Order of Regression	1	1	1	1	1	1
Order of Bias	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth Selection	mserd	mserd	mserd	mserd	mserd	mserd
Clustered	No	Yes	No	Yes	No	Yes

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

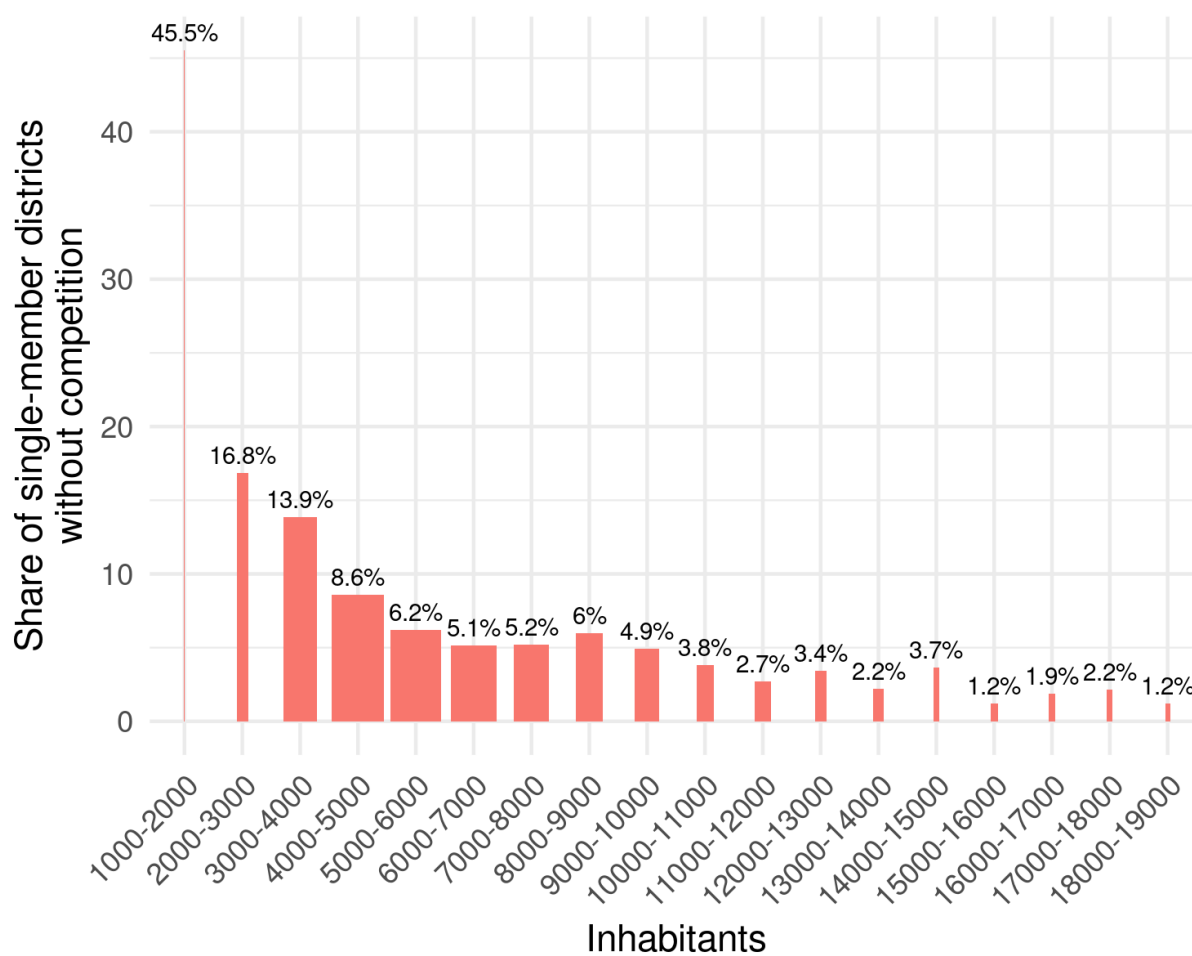
A positive coefficient means a higher share in larger municipalities (OLPR) than in smaller ones (plurality; FPTP and BV) in p.p. divided by 100.

Figure E.8: Share of women among candidates by district magnitude and length of the ticket, 2002-2010.



Note: For smaller district magnitudes, the categories overlap due to the electoral rules. In single-member districts, only one candidate could run on one ticket. In two-member districts, candidates could run individually or as a pair (maximum length).

Figure E.9: Share of single-member districts without competition, 2002-2010.



Note: The width of the bars represents the number of single-member districts in each population bin.

Appendix F. Individual-level OLS regressions

Table F.22: Individual-level OLS regression, 2006-2010, probability of winning a seat.

	Model 1	Model 2	Model 3	Model 4
Female	−0.075*** (0.003)	−0.036*** (0.002)	−0.042*** (0.002)	−0.033*** (0.004)
Incumbent		0.451*** (0.003)	0.440*** (0.003)	0.272*** (0.006)
Age			0.019*** (0.001)	0.012*** (0.001)
Age Sq.			0.000*** (0.000)	0.000*** (0.000)
Position 2			−0.045*** (0.003)	−0.072*** (0.003)
Position 3			−0.055*** (0.003)	−0.102*** (0.004)
Position 4			−0.054*** (0.005)	−0.118*** (0.006)
Position 5			−0.054*** (0.008)	−0.121*** (0.010)
Constant	0.308*** (0.002)	0.204*** (0.002)	−0.171*** (0.013)	
Num.Obs.	127 998	127 998	127 998	127 998
R2	0.006	0.166	0.175	0.616
R2 Adj.	0.006	0.166	0.174	0.280

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Model 4 is the same as in Table 14 and includes fixed effects for electoral tickets. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.23: Individual-level OLS regression, 2006-2010, number of votes.

	Model 1	Model 2	Model 3	Model 4
Female	-17.926*** (0.554)	-11.107*** (0.524)	-11.423*** (0.521)	-6.591*** (0.509)
Incumbent		78.857*** (0.775)	76.398*** (0.788)	44.744*** (0.809)
Age			3.815*** (0.131)	2.836*** (0.134)
Age Sq.			-0.038*** (0.001)	-0.032*** (0.001)
Position 2			-9.773*** (0.550)	-13.800*** (0.380)
Position 3			8.575*** (0.780)	-22.743*** (0.634)
Position 4			24.637*** (1.246)	-29.165*** (1.048)
Position 5			36.767*** (2.130)	-32.193*** (1.790)
Constant	124.759*** (0.329)	106.536*** (0.313)	16.908*** (2.821)	
Num.Obs.	127 998	127 998	127 998	127 998
R2	0.007	0.118	0.135	0.835
R2 Adj.	0.007	0.118	0.134	0.691

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Model 4 is the same as in Table 14 and includes fixed effects for electoral tickets. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.24: Individual-level OLS regression, 2006-2010, logarithmized number of votes.

	Model 1	Model 2	Model 3	Model 4
Female	−0.182*** (0.005)	−0.125*** (0.005)	−0.130*** (0.005)	−0.076*** (0.004)
Incumbent		0.661*** (0.005)	0.621*** (0.005)	0.281*** (0.005)
Age			0.047*** (0.001)	0.031*** (0.001)
Age Sq.			0.000*** (0.000)	0.000*** (0.000)
Position 2			−0.116*** (0.005)	−0.150*** (0.003)
Position 3			0.068*** (0.007)	−0.220*** (0.005)
Position 4			0.199*** (0.009)	−0.260*** (0.008)
Position 5			0.285*** (0.015)	−0.280*** (0.012)
Constant	4.536*** (0.003)	4.383*** (0.003)	3.271*** (0.030)	
Num.Obs.	127 947	127 947	127 947	127 947
R2	0.010	0.113	0.138	0.839
R2 Adj.	0.010	0.113	0.138	0.699

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Model 4 is the same as in Table 14 and includes fixed effects for electoral tickets. Candidates with 0 votes are excluded. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.25: Individual-level OLS regression, 2006-2010, probability of winning a seat, by district magnitude.

	2	3	4	5
Female	-0.036*** (0.007)	-0.040*** (0.006)	-0.029*** (0.007)	-0.023** (0.007)
Incumbent	0.177*** (0.011)	0.283*** (0.010)	0.319*** (0.011)	0.361*** (0.012)
Age	0.011*** (0.002)	0.016*** (0.002)	0.012*** (0.002)	0.009*** (0.002)
Age Sq.	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Position 2	-0.074*** (0.005)	-0.067*** (0.006)	-0.078*** (0.007)	-0.087*** (0.009)
Position 3		-0.089*** (0.006)	-0.109*** (0.008)	-0.114*** (0.009)
Position 4			-0.120*** (0.009)	-0.116*** (0.010)
Position 5				-0.119*** (0.010)
Num.Obs.	50 616	35 763	23 314	18 305
R2	0.695	0.589	0.550	0.533
R2 Adj.	0.233	0.269	0.305	0.337

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.26: Individual-level OLS regression, 2006-2010, probability of winning a seat, by type of municipality.

	Urban	Rural	Urban-Rural
Female	-0.020+	-0.037***	-0.027***
	(0.011)	(0.005)	(0.007)
Incumbent	0.382***	0.239***	0.334***
	(0.020)	(0.007)	(0.011)
Age	0.010***	0.014***	0.009***
	(0.003)	(0.001)	(0.002)
Age Sq.	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Position 2	-0.051***	-0.073***	-0.073***
	(0.009)	(0.004)	(0.005)
Position 3	-0.077***	-0.107***	-0.096***
	(0.013)	(0.006)	(0.008)
Position 4	-0.095***	-0.124***	-0.109***
	(0.020)	(0.008)	(0.011)
Position 5	-0.074*	-0.129***	-0.117***
	(0.030)	(0.013)	(0.017)
Num.Obs.	10 591	84 491	32 916
R2	0.604	0.615	0.616
R2 Adj.	0.288	0.270	0.289

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.27: Individual-level OLS regression, 2006-2010, number of votes, by district magnitude.

	2	3	4	5
Female	−5.471*** (0.711)	−6.140*** (0.802)	−7.104*** (1.126)	−8.277*** (1.325)
Incumbent	23.836*** (1.064)	43.169*** (1.282)	57.253*** (1.813)	68.024*** (2.231)
Age	2.107*** (0.184)	3.159*** (0.214)	3.175*** (0.301)	3.254*** (0.360)
Age Sq.	−0.024*** (0.002)	−0.035*** (0.002)	−0.036*** (0.003)	−0.035*** (0.004)
Position 2	−10.840*** (0.456)	−14.312*** (0.700)	−19.697*** (1.173)	−24.082*** (1.610)
Position 3		−19.553*** (0.782)	−26.000*** (1.273)	−32.753*** (1.697)
Position 4			−29.440*** (1.360)	−36.181*** (1.808)
Position 5				−36.945*** (1.889)
Num.Obs.	50 616	35 763	23 314	18 305
R2	0.878	0.830	0.807	0.787
R2 Adj.	0.694	0.697	0.702	0.698

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.28: Individual-level OLS regression, 2006-2010, number of votes, by type of municipality.

	Urban	Rural	Urban-Rural
Female	−5.219** (1.677)	−6.028*** (0.578)	−8.518*** (1.141)
Incumbent	68.092*** (3.262)	34.986*** (0.849)	65.615*** (2.026)
Age	2.688*** (0.441)	2.701*** (0.153)	3.235*** (0.303)
Age Sq.	−0.027*** (0.005)	−0.031*** (0.002)	−0.035*** (0.003)
Position 2	−13.949*** (1.402)	−12.250*** (0.420)	−17.494*** (0.898)
Position 3	−22.847*** (1.997)	−20.122*** (0.727)	−28.556*** (1.425)
Position 4	−31.463*** (3.262)	−25.253*** (1.219)	−36.611*** (2.276)
Position 5	−27.278*** (4.786)	−31.141*** (2.065)	−36.338*** (3.953)
Num.Obs.	10 591	84 491	32 916
R2	0.827	0.846	0.818
R2 Adj.	0.689	0.709	0.664

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with BV system (smaller than 20,000 inhabitants) are included. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.

Table F.29: Individual-level OLS regression, 2006-2010, probability of winning a seat, by district magnitude, without ticket fixed effects.

	1	2	3	4	5
Female	−0.062*** (0.003)	−0.046*** (0.004)	−0.040*** (0.005)	−0.036*** (0.006)	−0.031*** (0.006)
Incumbent	0.303*** (0.004)	0.376*** (0.005)	0.438*** (0.006)	0.467*** (0.008)	0.497*** (0.009)
Age	0.022*** (0.001)	0.021*** (0.001)	0.019*** (0.001)	0.018*** (0.001)	0.017*** (0.002)
Age Sq.	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Num.Obs.	87 464	50 616	35 763	23 314	18 305
R2	0.139	0.165	0.203	0.214	0.238
R2 Adj.	0.120	0.136	0.177	0.189	0.219

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Only municipalities with a plurality system (smaller than 20,000 inhabitants) are included. Reference categories: male candidates for female, non-incumbents for incumbent, and the first position on the ticket for the position indicators.