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Abstract
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Keywords
local politics, local policy, leadership, gender effects

Disciplines
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DOES GENDER MATTER FOR POLITICAL LEADERSHIP? THE CASE OF U.S. MAYORS

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ABSTRACT

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I. Introduction

Even though women remain underrepresented in many important economic and political positions, there has been an increase in women taking on leadership roles in both the public and private sectors of many countries.[1] This change has attracted the interest of economists and other social scientists who want to understand the implications of female leadership (or the lack thereof, as the case may be) for public policy outcomes. Chattopadhyay and Duflo (2004), for example, found that an increase in the female participation in politics in Indian villages resulted in a large increase in expenditures such as public investments to provide clean water.[2]

Local governments in the United States certainly have experienced an upsurge in female participation in politics. Figure 1 depicts the increase in female participation in mayoral elections from 1950 to 2005. A negligible number of women participated in local mayoral elections until 1970. Female participation then increased to about one-third of mayoral elections before plateauing around 1995. The same figure shows that the percentage of females who won mayoral elections increased from about 2% in 1970 to more than 15% in recent years. Figure 2 shows the raw probability of female victory over time, conditional on having a single female candidacy. Female candidates typically had less than a 50% probability of winning from 1965 until mid-1990s. After that, this unconditional probability lines up very closely to 50% line.

Was this dramatic shift in the gender composition of city leaders also followed by changes in local policy? According to the classic work of Downs (1957), the preferences of the politician should not impact policy outcomes. Male and female candidates, for example, would converge their policy platforms to cater to the preferences of the median voter. This view of the political process, however, was challenged by empirical papers that showed divergence in policy along partisan lines

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[1] For example, female representation in national parliaments increased from an average of 1%-2% in 1970 to just over 19% in 2000 (Worldwide Statistical Survey (1995) and Inter-Parliamentary Union (2010) web site (http://www.ipu.org/wmn-e/world.htm), but obviously remains well short of their share of the population. In the executive branch of national governments, women have reached the pinnacle in Argentina, Germany, India, Brazil, and the United Kingdom, among others. And, the U.S. saw its most competitive female candidate ever in Hilary Clinton in the Presidential primary campaign of 2008. On the private side, Wolfers' (2006) tracks the increase in women CEOs among publicly-traded European companies, but still finds that only 1.3% of CEO-years were worked by females over his 15-year sample period.

[2] Other papers such as Clots-Figueras (2009) and Funk and Gathmann (2008) also report significant gender effects in other policy settings. A separate branch of this literature investigates the impact of women's suffrage rights and the increase in their labor market participation on fiscal outcomes. See Miller (2008), Lott and Kenny (1999) and Cavalcanti and Tavares (2011) for recent examples.

(Besley and Case (2003); Lee, Moretti and Butler (2004)). Alesina (1988) and Besley and Coate (1997) developed the citizen-candidate model to account for this divergence. This framework suggests that if candidates or parties care about certain outcomes and they cannot credibly commit to moderate policies, there will be divergence in the policies implemented by elected officials. In this setting, female mayors would implement policies that are more correlated with their preferences for provision of public goods and size of government. And, the available evidence indicates there are meaningful gender differences in preferences for various goods, so the potential for gender to affect behavior and outcomes exists.[3] Moreover, if differences in the relevant preferences are extreme enough, the work by Glaeser, et. al. (2005) suggests that candidates' platforms might become even more divergent in the pursuit of strategic extremism.

In this paper we investigate the impact of female participation in the executive branch of U.S. cities. In doing so, our study differs from existing research in several ways. It is the first to focus on women in chief executive positions in the local public sector, not on legislative participation.[4] That mayors have executive power could facilitate the reallocation of resources in a city to serve one's political preferences. Legislators, on the other hand, have to negotiate with other representatives (and possibly the executive) to pass legislation, so the impact of an added female legislator may not be as effective, or it may be noticeable only when large participation shocks are observed.

Mayoral elections also provide us with significantly more observations than are available on female executives in the private sector because participation by women in the public sector is much greater.[5] This setting also allows us to study the impact of female leadership over time, including long run outcomes such as the political success of other women. By studying female political

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[3] The American National Election Studies reports a couple of questions related to preferences for local goods by gender. For example, that publication's thermometer index for policeman, which varies from 0 to 96, with larger numbers meaning the respondent has warmer feelings about the subject, shows a 3% higher feeling for females. The thermometer for "importance of local elections" is also 3% higher for females. For comparison purposes, the thermometer for welfare programs is 5% higher for females. In India, women cared 10% more about clean water and 6% more about road maintenance than men (according to Chattopadhyay and Duflo's (2004) measure of formal requests made by villagers). Other examples of different gender preferences can be found in Clots-Figueras (2009), Edlund and Pande (2002), Funk and Gathmann (2008), and Miller (2008).

[4] Rehavi (2007) examines the impact of female state legislators in the U.S., and reports that increases in women legislators are associated with increases in health-related spending and decreases in corrections expenditures.

[5] Research on the impact of women CEOs in the private sector generally does not find significant effects on stock prices or other measures of productivity, but very small sample sizes make those results hard to interpret, given the lack of statistical power. See Wolfers (2006) for more on that literature.

leaders in a more economically developed country such as the United States, we are able to add to a literature that includes important work on the influence of women political leadership in developing countries such as India (Chattopadhyay and Duflo (2004); Clots-Figeuras (2009), Beaman et. al (2009)). In doing so, we also are able to study the impact of female political leadership in the absence of quotas or reservations. This is useful because the consequences of electing women that did not benefit from dramatic public policy intervention may be different from those who did.

The underlying data source is an updated version of the mayoral election series used in Ferreira and Gyourko's (2009) study of local political partisanship. Information on more than 5,500 direct mayoral elections between 1950 and 2005 from cities with populations of at least 25,000 residents as of the year 2000 is used in the empirical analysis. Our data reveals large differences in female participation across the country: women participate and win more often in cities with higher income and higher education levels, and that tend to be located in the western part of the country. There are no large differences in the average party affiliation of a female candidate though.

The lack of randomized assignment of women to city offices represents an obvious empirical challenge to work on this topic. Differences in policy outcomes may be incorrectly attributed to the mayor's gender to the extent that cities in which women participate in local politics themselves have unique features that are correlated with certain types of policies. While some potential factors such as the fraction of highly educated people can be controlled for, there could be unobserved features of the community that both influence barriers to women's political advancement and are correlated with policy outcomes.

A regression discontinuity (RD) design is employed to mitigate this problem.[6] More specifically, we compare short and long run outcomes across elections in which a female candidate barely wins against a male candidate to those in which the woman barely loses to a male candidate. In contrast to most results reported in the literature, we find no impact of gender on a variety of local outcomes such as the composition of municipal expenditures and municipal employment, the size of city government as measured by total spending or employment, or local crime rates.

These results suggest that the settings in which women are politically empowered influence the relevance of gender to policy and political outcomes. For example, it may be harder to change policy when individual women slowly take leadership positions, without the benefit of political

[6] For recent overviews of RD, see Imbens and Lemieux (2008), and Lee and Lemieux (2010).

quotas or reservations. Also, the nature of the political and economic environment in which cities compete in the United States does not provide much scope for redistributive policies, and local politicians may be more responsive to the preferences of the median voter (Ferreira and Gyourko (2009)).

Electing female leaders still could be generating important political spillovers even in the absence of any impact on policy outcomes. For example, it could increase the odds of success of other women in the future. However, our analysis concludes that randomly electing a woman as mayor does not produce higher success rates for other women in the near or long-term. In the immediate future, the high re-election rates of incumbent females (see just below for more on this) naturally crowds out the participation of other women candidates. However, no additional effects are evident one or two decades following the initial election. We also test whether a female mayor affects female success rates in other elections, such as in local congressional districts, but find no evidence of such spillovers.

Finally, we investigate whether the incumbent effect differs by gender of the mayoral candidate. Even though city features are quite similar for close elections, voters still could have pre-determined (i.e., discriminatory) views about women that impair a female candidate's chances of winning the election. In that case, women who "randomly" take office according to the RD approach should have higher unobserved skills than the corresponding male. That in turn could translate into higher relative probabilities of election, since those female leaders would get a chance to demonstrate their superior political ability while holding the mayoral office.[7] Of course, discrimination still could be powerful while women are in office, undermining performance and potentially leading to lower re-election rates.[8] The results suggest that female mayors are unobservedly skillful politically compared to their male counterparts. This gender gap in the incumbent effect is sizable: about 6-7 percentage points on an average unconditional female re-election probability of 56 percent.[9]

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[7] In the legislative context, Anzia and Berry (2011) test for higher unobserved skills of Congresswomen by comparing how much they secure in Federal discretionary spending.

[8] Gagliarducci and Paserman (2011) find that municipalities in Italy that are headed by female mayors have a higher probability of early termination of the legislature.

[9] Beaman et. al (2009) argue that exposure to female leaders weakens stereotypes about gender roles and potentially eliminates the negative bias in how female leaders' effectiveness is perceived among voters. Our approach does not disentangle the positive perception of the current effective female mayor and the overall weakness of stereotypes.

The plan of the paper is as follows. Section II has a detailed description of our data set, and is followed in Section III by our empirical framework. Section IV then reports our estimates. Section V concludes.

II. Data Sets

II.A. Mayoral Elections Survey Data

The mayoral election data used in this paper are an updated version of the sample described in Ferreira and Gyourko (2009). Most information is based on the responses to a survey sent to all cities and townships in the United States with more than 25,000 inhabitants as of the year 2000.[10] Information was requested on the timing (year and month) of all mayoral elections since 1950, the name of the elected mayor and 2nd place candidate, aggregate vote totals and vote totals for each candidate, party affiliation, type of election, and some additional information pertaining to specific events such as runoffs and special elections.

We use information from more than 5,500 elections held in 575 cities between 1950 and 2005. Table 1 provides summary statistics on the representativeness of the sample. Naturally, the cities in our sample (column 1) are more populous than the typical jurisdiction in the country (column 2) given the 25,000 person cut-off of our survey. Bigger cities tend to have better educated households that earn more money and live in more expensive houses. They also have more minority households. Regionally, our sample is more heavily weighted towards the West and South; there are numerous small towns in the Midwest region that did not respond to the survey.

However, our sample is fairly representative of the universe of municipalities with more than 25,000 residents (column 3). The cities in our sample have larger populations on average, but are quite similar on many other dimensions. Our cities are even more representative—in demographic, economic, and geographic terms--of the group that directly elects a mayor (column 4).[11]

II.B. Gender of Mayoral Candidates

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[10] Our analysis focuses on "strong mayors" that are directly elected by the population since they have more power to propose, change and veto the budget. Cities with "weak mayors" such as those appointed by the city council or those that hire professional managers to run the city, are not part of this study. See Baqir (2002) for evidence on the importance of strong mayors in determining local government spending.

[11] See Ferreira and Gyourko (2009) for more detail and an enumeration of the strengths of this survey compared to other sources of local election data.

We use a two-step procedure to assign gender to the mayoral candidates in our sample. First, all given names are matched to a Census list of common first names.[12] If the given name was estimated by the Census to be of a specific gender more than 99% of the time, then the name was always assumed be of that gender. For example, the Census data show that more than 99% of all those with the name "Robert" were male. Hence, any candidate whose first name was "Robert" is assumed to be male. Approximately 80% of our candidates had a distinctly male or female name based on this criterion. For those candidates with ambiguous names (e.g., Casey, Pat, Leslie), we searched for evidence of the person's gender. This second step was done via internet searches, emails and phone calls. Internet searches typically were of local government websites and local newspaper archives of articles and photos. Similar searches were made in the cases where data on first names was missing.

Figure 3 shows the distribution of elections by gender of the 1st and 2nd place candidates over time, including the elections where we were unable to classify at least one candidate by gender. Overall, elections with 1st and/or 2nd place women candidates corresponded to less than 3% of all elections until mid 1970's. By 2000, elections with at least one female candidate made up one-third of all elections. Elections with a missing gender are more common in earlier decades, while they correspond to less than 5% of the sample by year 2000. It is the case that the characteristics of the cities with at least one missing piece of information about the gender of candidates are very similar to those that have two male candidates. However, the rest of analysis in this paper still does not use elections with missing gender information.

City characteristics of elections with and without female candidates are shown in Table 2. On average, elections with at least one female candidate are more likely to take place in the West census region, in places with a higher proportion of people with college degrees, higher family income and higher house prices. They are less likely to occur in the Northeast and in the South, and in places with a higher percentage of whites. Figure 4 documents the time series patterns in these local traits. Most years reveal a correlation between female participation and city characteristics that are similar to the cross-section descriptives from Table 2.

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[12] See the lists of male and female first names from 1990 on the U.S. Census Bureau Genealogy web page which can be accessed at http://www.census.gov/genealogy/www/data/1990surnames/names_files.html.

Finally, the party affiliation of women candidates over time is described in Figure 5. Prior to 1970, the very few women that ran for mayor were highly likely to be Democrats, although that sample is small. Since 1970, female candidates still are more likely to be Democrats on average, but the difference has narrowed over time.[13] And, according to the latest data from 2005, the fractions of Democratic and Republican women have converged. Beginning in the mid-1980s, about 10% of women candidates belong to independent parties. Clearly, it will be important to control for the party affiliation of male and female candidates in all specifications.

II.C. Local Public Finance Data

Information on a variety of local public finance variables is merged with the elections data. The public finance data span the fiscal years 1950-2005 and were obtained from two different sources: the *Historical Data Base of Individual Government Finances* (1970-2005), and the Census Bureau *City Finances Series* (1950-1969). These data are based on a *Census of Governments* conducted every five years, from *Annual Survey of Governments* collected at every non-census year, and are complemented with state data provided by the Census Bureau. The local public finance variables include measures of revenues and taxes, spending (on current operations and capital goods), employment (full and part time), as well as distributional data regarding shares of spending on labor, public safety, and parks and recreation. We also tabulate results for some selected employment categories, such as health, welfare, leisure (parks, library, etc.), and infrastructure (roads, transit, gas, etc.). Summary statistics on these variables are discussed below in the context of our empirical analysis.

II.D. Crime Data

The following crime indexes are merged with the elections data in order to estimate the potential effect of the mayor's gender on the efficiency of the provision of police enforcement: murder and robbery (violent crimes), and burglary and larceny (property crimes). The crime data is available at the police district level from the *Uniform Crime Reporting* reports issued by the FBI and the Department of Justice. We aggregated those measures to the city level and constrained the sample from 1950 to 2005 to match the available fiscal data.

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[13] Female voters also tend to vote more often for Democratic candidates. See Edlund and Pande (2002).

III. Modeling Strategy and Research Design

The inspiration for economic analysis of the actions of politicians dates back to Hotelling's (1929) famous model of spatial competition. While his framework of a 'city on a line' was intended to explain the central location of firms in physical space, Hotelling himself mentions its applicability for understanding the tendency of politicians to move toward similar policy positions (on tariffs at the time he wrote). Downs (1957) expanded upon Hotelling's conjecture, building a more formal and elaborate structure with rational voters and politicians. Importantly, the politicians cared only about winning elections, and the probability of winning was maximized if they moved to the center of policy space and captured the median voter. In Downs' framework, democracy and the median voter forced candidates and parties to offer similar platforms, so that the impact of identity or preferences of the politician on policy outcomes was nil. In the case of U.S. cities, this suggests that the gender (or the party affiliation) of the mayor would not matter, since politicians would cater to the preferences of the median voter. There would be no changes in policy once a woman takes office.

But if a candidate cares about policy outcomes, not just being elected, locating in the center of policy space may not maximize his or her utility. This type of citizen candidate model is exemplified in Alesina (1988).[14] He showed that incomplete policy convergence was about more than whether the party or the candidate cared about something other than being elected. In many contexts, complete convergence is not dynamically consistent because commitments to centrist policies are not credible. And, if candidates or parties cannot credibly commit to moderate policies, then they will diverge in policy space.

This is most easily understood in the context of a simple one-shot electoral game. In that situation, the only time consistent equilibrium is one in which the candidates follow their own policy preferences rather than converging on the preferences of the median voter. If candidates have an incentive to announce a moderate policy platform to raise the probability of election, rational, forward-looking voters will take that incentive into account, rendering the initial commitment non-credible and leading each candidate to announce it will implement its own policy preferences upon winning. While it is possible to get convergence in more complex settings, Alesina (1988) demonstrated that the ability to credibly commit is an essential underpinning of the traditional

[14] Also see Besley and Coate (1997).

Downs (1957) model of the median voter and political convergence. According to the Alesina model, female leaders may have an incentive to implement policies that cater to their preferences. If female leaders indeed have different preferences for policy, we would expect changes in policy outcomes.

So far we have discussed the potential impact of gender of the mayor in light of two political economy theories designed to understand the impact (or lack thereof) of political partisanship. A related discussion is whether the gender of the chief executive of a city influences policy differently from political partisanship. This is an empirical question that cannot be answered by theory. As discussed in the Introduction, the existing literature suggests that there are potentially important differences by gender in tastes for certain local public goods and services. There also is no reason to believe gender effects need be closely correlated with those of political partisanship. As shown above in Figure 5, there is a fairly even split of women across the two major political parties, especially in recent years. In addition, many cities in our sample (59% as of year 2000) are officially nonpartisan in the sense that candidates' party labels are not officially included on the ballot. And, many candidates from the same party - and sometimes different gender - may run for the same office. Hence, it is quite possible that gender differences could have a greater impact than political party differences. On the other hand, the Tiebout competition mechanism that Ferreira and Gyourko (2009) conclude limits the impact of partisanship at the local level could be relevant here in the same way.

One must turn to the data to see which of these competing factors dominates. The next section details the empirical strategy we use to estimate the potential impact of female leaders on policy outcomes.

III.A. Short-run Policy Outcomes

Suppose we observe the policy outcome in each city c associated with the winning candidate, whether that candidate is male or female. Suppressing time related considerations, we can write some economic outcome S – size of government or type of expenditures – as

(1) $S_c = \beta_0 + \pi_1 F_c + \eta_c$

where F is a dummy for female mayor. The residual η_c captures all other observed and unobserved determinants of the city outcome. The pure effect of electing a female is captured by the π_1 term.

Since econometricians do not observe all determinants of city outcomes, equation (1) cannot be estimated directly via OLS. For example, well-educated citizens could be more favorably disposed towards female executive leadership and higher levels of public spending. If so, an estimated gender effect that female mayors 'cause' larger government could be due, at least partially, to an unobserved (by the econometrician) third factor—namely, the preference of more educated people for public goods.

Our research design to deal with this issue follows Lee (2001, 2008). He notes that as long as there is some unpredictable random component of the vote, a narrowly-decided election approximates a randomized experiment. In other words, the correlation between the election outcome and unobserved city characteristics can be kept arbitrarily close to zero by focusing on sufficiently close elections. For our purposes, this means that one can identify the causal effect of electing a female mayor by comparing cities that barely elected a woman instead of a man (the "treatment group") with others where a female candidate barely lost to a male (the "control group").

We implement this RD strategy by retaining all elections in the sample where a female ran against a male, and absorbing variation coming from non-close elections using flexible controls for the vote share.[15] The short run effect of electing a female leader on any local policy outcome is estimated by the following equation:

$$(2)\quad S_{c,t} = \beta_0 + F_{c,t}\pi_1 + P(MV_{c,t}, \beta) + \eta'_{c,t},$$

where $S_{c,t}$ represents the policy outcome of interest in city c in the term immediately following election t (i.e., for the size of government variable, it is the scale of government in the subsequent mayoral term), $F_{c,t}$ is a dummy variable that takes on a value of one if a female won the mayoral race in election t in city c, P is a third order polynomial in the vote share, $MV_{c,t}$ refers to the margin of victory in election t in city c (defined as the difference between the percentage of votes received by the winner and the percentage of votes received by the second place candidate), β are the respective

[15] For a detailed comparison of this approach with an approach that uses data only from close elections, see Imbens and Lemieux (2008).

vote share coefficients, and $\eta'_{c,t}$ is the stochastic error term.[16] Thus, the pure gender effect, π_1, is consistently estimated controlling for the margin of victory in linear, quadratic, and cubic form. We also worked with different functional forms to verify that our conclusions are robust to such changes, and experimented with including predetermined control variables. Standard errors are clustered at the city-decade level.

In addition to controlling for omitted variable biases due to endogenous city characteristics, our RD framework may mitigate some (but not all) of the bias relative to differences in political skills between female and male candidates. It is likely that two candidates, independent of gender, with more similar margins of victory have a smaller difference in skills than two candidates with big differences in margins of victory. Below, we test this assumption by comparing the political experience of candidates by margin of victory. However, the existence of barriers to female participation in politics would likely induce only women of higher skills to obtain the same margin of victory of a man with relatively lower ability. Although those effects cannot be disentangled, below we also present a test for this potential difference between politicians that received similar margins of victory but that may have different skills.

III.B. Estimating Long-run Policy Outcomes

The long run effect of electing a female mayor is estimated using an augmented version of equation (2). We follow the strategy developed by Cellini, Ferreira, and Rothstein (2010) to estimate dynamic intent-to-treat effects of electing a female leader.[17] In our case, dynamics can arise from two sources: first, changes in policy outcomes may happen with a lag, since the policies implemented in one term may only have observable consequences in the following term. Second, there could be an indirect effect of electing a female leader on the probability of electing other female leaders in subsequent elections – such as in the case where females are more likely to be re-elected. This cumulative sequence of female leaders could result in changes in policy with even longer lags.

Consider again a city c that had an election in year t. We can write the city's outcome τ years later as

[16] Margin of victory is used in lieu of the vote share in order to facilitate comparison across elections, as some have more than two candidates because of write-in ballots or independent candidates. Non-partisan elections can also have more than one candidate from the same party.

[17] That is, these effects are a combination of electing a female leader, plus indirect effects given, for example, the higher probability of electing other females as mayor in the same city.

(3) $S_{c,t+\tau} = F_{c,t}\pi_\tau + P(MV_{c,p}\beta_\tau) + \eta_{c,t+\tau}$,

where $F_{c,t}$ indicates if the mayor in city c at time t is female. In practice, equation (3) is inefficient because the error term may have important components that vary at the city level, at the calendar year level, or at year relative to election level. Therefore, more precise estimates of the π_τ parameters can be obtained by pooling data from multiple τ (including $\tau < 0$, corresponding to periods preceding the focal election) and including fixed effects for the city, calendar year, and relative years. This is implemented by selecting observations from city c in years t-4 through t+24 relative to an election. Observations in the resulting data set are uniquely identified by the city, c, the date of the focal election, t, and the number of years elapsed between the focal election and the time at which the outcome was measured, τ. We use this sample to estimate the following regression:

(4) $S_{ct\tau} = F_{c,t}\pi_\tau + P(MV_{c,p}\beta_\tau) + a_\tau + \varkappa_t + \gamma_{ct} + \eta'_{ct\tau}$,

where a_τ, $\varkappa_t$, and γ_{ct} represent fixed effects for years relative to the election, for calendar years, and for mayoral elections, respectively. Both the γ_τ and π_τ coefficients are allowed to vary freely with τ for $\tau > 0$, but are constrained to zero for $\tau <= 0$. Standard errors are clustered by city to account for dependence created by the use of multiple (c, t) observations in the sample.

We also use equation (4) to test whether electing a female leader produces positive consequences for the political success of other women. Such spillover effects often are considered to be an additional benefit of electing a female (or minority candidate) to a political office.

III.C. Incumbent Effect by Gender

We are also interested in determining whether female mayors are more highly skilled than their male counterparts. This could result if there is bias against woman leaders. In that case, they may need to possess extra political skills in order to win an election. If so, they would win re-election more frequently than males, as long as those biases are mitigated once the female politician takes office. This test requires the estimation of an incumbent effect (γ), which reflects the increased probability of a woman winning the next election (presuming a woman won the previous one). We

estimate the incumbent effect using observations at the candidate level, which allow us to estimate an average incumbent effect, and to separate incumbent effects for male and female candidates. Equation (5) provides an example of the type of specification for which we report results below:

$$(5)\quad W_{i,t+1} = \lambda_0 + F_{i,t}\gamma_F + M_{i,t}\gamma_M + P_F(MV_{i,t}, \lambda) + P_M(MV_{i,t}, \lambda) + \upsilon_{i,t},$$

where $W_{i,t+1}$ is a dummy variable for whether the candidate in t was elected in t+1, F and M stand for the gender of the candidate, γ_F and γ_M are the incumbent effect estimates by gender, and P_F and P_M are the polynomials in the vote share of those candidates. This specification compares political outcomes of candidates that had similar margins of victory in election t, but only one candidate randomly takes office (i.e., with a close margin of victory) and therefore enjoys the benefit of incumbency, which may impact the odds of winning the next election.

We first estimate equation (5) using the whole sample, also including elections where a male ran against a male. This specification does not guarantee that city features are similar on average, but it guarantees that a female or male that barely won an election ran against a male candidate (since most female winners ran against a male candidate, and the majority of male winners also defeated a male opponent).

When restricting the sample to only elections where a female ran against a male, we guarantee that city features are similar, on average. But in this case, a female (male) winner always runs against a male (female) contestant. Therefore, the incumbent effect may be smaller for males for two reasons: female incumbents may be more politically savvy than male incumbents, and females that lost the first election may have a higher likelihood of winning the next election than males who lost the first election.

Finally, we also split the sample that we use to estimate equation (5) between candidates that won versus candidates that lost an election. In that way, we can separately estimate by gender the probability of re-election and the probability that a runner up candidate may win the next election.

III.D. Validity of the Research Design

We present several tests of the validity of the research design. First, in Figure 6 we plot the histogram of density of mayoral elections by female margin of victory. There is no indication of discontinuity, or endogenous sorting, around the margin of victory threshold. Second, Figures 7A

and 7B show a number of city characteristics in the year prior to the election by the female margin of victory. All dots represent unconditional means of the relevant variables by 2-point range of margin of victory, with the thick line reflecting a cubic polynomial fit, and the dashed lines the 95% confidence intervals. All sociodemographic features, population and geographic features show no sign of a discontinuity around the threshold.[18] Third, Figure 7C shows election characteristics, such as turnout, year of the election, percentage of 4-year term elections, and the percentage of Democratic candidates. In all cases we find no evidence that elections in which a female candidate won by a close margin of victory is different than elections in which female candidates were defeated by small margins. Finally, Figure 7D plots proxies for the political experience of mayoral candidates, based on the number of previous races of candidates, and number of the wins of those same candidates. Left panel figures focus on winners of elections, while right side panels focus on runner up candidates. In all cases the political experience of male and female candidates that won or lost an election are very similar for elections with close margins.

Overall, there seems to be little concern about the randomness of electing a female leader in close elections.

IV. Results

IV.A. Short-Run Policy Outcomes

We start by estimating the impact of gender of the mayor on short run policy outcomes, i.e., on local outcomes that are calculated as averages of the first term of the mayor in office. Table 3 reports estimates of gender effects based on specifications like equation (2), with the first column documenting means and standard deviations of each local policy outcome variable. The second column then reports results from our preferred specification, which includes a cubic polynomial, various city covariates (listed in the notes to the table), and a control for the relevant policy outcome in the year before the election. The latter control is helpful in reducing the estimated standard errors, but it does not affect the point estimates in any material way. These estimates indicate that the impact of having a female relative to a male mayor is negligible for the four groups of policy

[18] Point estimates are available upon request.

outcomes we consider: size of government, allocation of expenditures, selected employment categories, and crime rates.

For example, not all the size outcome measures reported in the top panel have the same sign. Moreover, each estimate is small in economic terms and none is statistically different from zero. The 0.003 coefficient for total revenues per capita implies that having a female mayor leads to those revenues being three-tenths of one percent higher. Total taxes per capita are smaller if the mayor is a woman, but only by 1.5%, and a null of zero cannot be rejected. Similar results apply to the allocation of resource outcomes reported in the second panel. For example, the fraction of spending on salaries and wages has an estimated coefficient of 1.2%, but this is also indistinguishable from zero. Selected employment categories (panel 3) have higher standard errors because fewer cities have such disaggregated data. Results for these variables do not present a pattern of gender-related impacts, as two categories - health and welfare - have a negative coefficient. This result is due more to the noisiness of the disaggregated employment data than to a pattern of change in policy, as will be evident in the pictures below. All the crime index variable coefficients reported in the bottom panel also are small and statistically insignificant.

Because a picture really can be worth a thousand words for regression discontinuity estimates, Figures 8A-8D plot unconditional means for each group of policy outcomes. They also plot a prediction line based on an RD model with a cubic polynomial and no covariates. Note that the size of government and allocation of resources and employment variables plotted in Figures 8A, 8B and 8C have a somewhat flat profile for any margin of victory or defeat. This indicates than even in cities where female candidates won or lost by large margins, different policies are not being implemented. Only Figure 8D has a negative slope, indicating that cities with high crime rates are slightly more likely to elect male mayors. However, there is no evidence of any discontinuity for close races, as implied by the underlying regression coefficients reported in the bottom panel of Table 3.

The fact that these results are not sensitive to functional form assumptions or other controls is confirmed in columns 3 and 4 of Table 3, which report findings from a cubic polynomial with city covariates (but not outcomes in period t-1) and from a simple linear vote share specification, respectively. The point estimates on size of government are highest in the linear model (column 3), but they still do not indicate large gender effects, and none approach statistical significance at standard confidence levels. Smaller effects are found for some of the allocation of

resource and crime outcomes from this specification, so there is no evidence that our choice of functional form is influencing the results in any systematic way.[19]

That gender effects on local public sector outcomes truly are close to nil is further suggested by the very small effects found even when running OLS (equation (2) without the margin of victory polynomial). These results are reported in the final column of Table 3. Even though OLS provides upwardly biased estimates of the true gender effect, there is no evidence from the size of government and allocation of resource specifications that having a female chief executive of a city is associated with materially different policy outcomes, particularly if one controls for city traits.[20] Some caution is in order here, as the standard errors tend to be larger, so one cannot always conclude that the impact is a tight band around zero.

Our findings are robust to a number of other specifications and tests. First, we estimated equation (2) separately for partisan and non-partisan election cities. Both sets of cities showed negligible estimated gender effects. Second, we experimented with a double RD specification (such as in Rehavi (2007)) that includes RD type controls for both gender and party affiliation. Point estimates were quite similar to the estimates presented in Table 3. The intuition is that our estimates are close to zero, so there is little room for a potential upward bias due to party affiliation. Finally, we estimated a version of equation (2) that substitutes F with interactions of F and dummies for party affiliation (Democrat, Republic, and Other). Interaction coefficients also showed small and statistically insignificant effects. All these results are available upon request.

IV.B. Long-run Policy Outcomes

The negligible estimated impact of gender effects in the short run could be explained by dynamics, since observable changes in policy outcomes may only be detected with some lag. Moreover, the treatment – electing a female leader – may be stronger in the long run, since incumbent mayors have a high probability of re-election as we document below. We examine the

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[19] We also estimated models with interaction terms that allowed the slopes to vary on the different sides of the discontinuity. In no RD specification do we ever find statistically or economically significant gender effects on any policy outcome.

[20] This is in stark contrast to what we found for the impact of political party in our 2009 paper. For example, the unconditional effect of having a Democrat as a mayor was a 17% larger public sector workforce (per capita). Controlling for various city traits narrowed that difference to 9%, but it remained statistically significant at standard confidence levels. It was only in the RD specification which controlled for potential endogeneity that the partisan impact narrowed to zero. For gender, the estimates suffering from possible endogeneity bias are themselves quite small.

importance of these types of dynamics by first estimating the probability that the same female candidate will win future elections. We use a version of equation (4) that does not include city fixed effects. Figure 9 plots the estimated effects - the probability that the same female that ran the focal election succeeds again in future mayoral run - for every two years[21], over twenty-four years. Results from two specifications are presented: one with cubic controls for vote share (RD specification in the right panel) and another without them (OLS specification in the left panel).

The estimate at relative year 0 is one, since the focal elections mechanically compare cities where a female won versus cities where a female lost an election. By the second year, the probability is approximately 60% in the OLS specification, and slightly smaller for the RD specification; these estimates decline to about 40% in year 4, 20% in years 6 and 8, and then it is not statistically different from zero by year 10, and through year 24. These results indicate a large effect, but only through year 8. Estimates remain small and not statistically significant in the remaining relative years, although confidence intervals are greater (especially for the RD specification) after two decades because of the small number of observations at those relative years.[22]

Figure 9 clearly showed a cumulative effect of female political leadership that lasts for almost a decade after the focal election. This raises the possibility that the one-term outcomes studied in Section IV.A. could be different over longer horizons. Figure 10 presents the π_τ point estimates (from equation (4)) and confidence intervals for four local outcomes: total revenues per capita, total employment per 1000 residents, percentage of current expenditures spent on police, and the murder rate per 1000 residents. All estimates corroborate the short-run results though, as there are not significant effects in any of the 24 years since the election of a female mayor.

IV.C. Political Spillovers

While there is a limited female effect on policy outcomes, the election of a female leader could serve as a role model to other female potential politicians. Wolbrecht and Campbell (2007), for example, find that in countries with more female members of parliament, adolescent girls are

[21] Most cities in our sample have two or four-year terms. When elections occur in odd years, we assign them to the subsequent relative year.
[22] Only elections prior to 1985 can have estimates for relative years over 20. As we described above, that period has fewer elections in our sample, and it also had fewer female candidates.

more likely to discuss politics with friends and intend to participate in politics as adults, and adult women are more likely to discuss politics. Role model effects may also be important in other settings.[23] In this subsection we empirically test two potential political spillover effects. First, do more women win mayoral elections in the same city after the exogenous election of a female mayor? Second, does electing a female mayor influence female success in other local elections?

Figure 11 provides the answer for the first question. It plots long run point estimates of the probability that any other woman (other than the female candidates that won and lost in the focal election) reaches the mayoral office. The left panel shows OLS estimates, while the right panel shows RD estimates. OLS estimates are more precise and show a negligible type of spillover effect, even 24 years after the election of a female leader. RD estimated coefficient hoover around the zero line, but confidence intervals are larger. These results suggest the absence of any spillover effect on the future success of female mayoral candidates in cities that randomly elected a female in the past.

Figure 12 shows the probability of women winning elections for mayoral offices and for the House of Representatives. The probabilities for the House of Representatives usually lag about 5 to 10 years compared to those observed in mayoral elections. This descriptive figure suggests that barriers to female participation are harder to overcome in higher offices. In addition, the timing of female participation in these different offices could be caused by positive spillovers generated at the local level. We test for this mechanism by estimating the impact of electing a female mayor on the probability that any female will win a future congressional election. We assign districts to cities based on geography.

Figure 13 presents point estimates based on equation (4). The left panel shows the probability that any other female wins the election (again, other than the females that contested the focal mayoral elections). Both OLS and RD estimates are close to zero and not statistically significant for a decade. Point estimates seem slightly higher between years 10 and 20, but standard errors are also large. Again, this suggests a very limited role model effect. Finally, the right panel shows estimates for the probability that the incumbent mayor wins a seat in the House of

[23] Blau et al. (2010) find that mentoring works - female junior faculty that received mentoring had, on average, 0.4 more NSF or NIH grants and 3 additional publications, and were 25 percentage points more likely to have a top-tier publication.

Representatives. There are no effects in the first ten years, in large part because a significant fraction of those successful females are still serving as mayors. But there only a small - and not statistically significant - effect of about 3 percentage points that the incumbent female will win a future congressional election.

IV.D. Incumbent Effect by Gender

Mayors are likely to be re-elected 51 percent of the time, an average that has been quite constant over the past 5 decades. These re-election rates are lower than the ones observed in the House of Representatives[24], due at least in part to the fact that many cities employ term limits of some kind. Interestingly, female mayors appear to be more likely to be re-elected than the average mayor: 56% versus 50%.

Because unconditional probabilities of re-election capture not only the incumbent effect but also specific city features – e.g., by how much voter preferences are aligned with the mayor – Figure 14 presents the probabilities of election by gender and by margin of victory or defeat. The difference between election rates of candidates that barely win an election and those that barely lose provide quasi-experimental evidence of the incumbent effect (Lee (2001, 2008)). Focusing first on the left panel which is based on the entire sample, the probability that a candidate gets elected in $t+1$ is positively correlated with the candidate's vote share in election t. Note that candidates who lost an election have similar probabilities of being elected in the next election, independent of their gender. However, women mayors are more likely to be re-elected than male mayors. The difference on the right side of the threshold in the left panel of Figure 14 is about 15 percentage points.

The right panel of Figure 14 constrains the sample to elections where a female ran against a male. Interestingly, male candidates that lost an election to a female are less likely to win the next election than a female candidate that lost an election to a male. The right hand side of the discontinuity still presents a similar result to that for the full sample, with female mayors more likely to be re-elected than male mayors. Albeit noisier, the difference is still about 10 percentage points.

Table 4 presents estimates and standard errors of the incumbent effect by gender for several specifications that follow equation (5). The first column of Table 4 reports the unconditional incumbent effect, which is larger than estimates presented in the other columns that use a regression

[24] Lee (2008) reports re-election rates of approximately 90%.

discontinuity specification. The first panel estimates the incumbent effect by gender over the whole sample. Females have an incumbent effect of 49-52% depending on the RD specification, while males have a 43-45% effect. This difference of 6-7 percentage points is statistically significant in the linear and cubic case, but not when allowing for different slopes in either side of the threshold.

The next two panels investigate whether these results vary over time. Female and male candidates have approximately 5 percentage point higher estimates of the incumbent effect after 1980. But the difference in the incumbent effect by gender does not seem to vary by those two time periods. The bottom panel of Table 4 restricts the sample to elections where a female ran against a male. This guarantees that differences in the incumbent effect estimated above do not come from differential effects by city. Although these estimates are noisier because of the smaller number of observations, the incumbent effect for females is still 6-7 percentage points larger than it is for males. It is worth noting that this incumbent effect differential is likely downward biased, because females that lost a close election are more likely to win the next election, as observed in Figure 14.[25]

Overall, these estimates indicate that women perform better in the ultimate political test once they assume office—namely, whether they will get re-elected. This result is consistent with our conception of female participation in local elections. Since women still face barriers to entry in politics, the highest skilled women are the ones more likely to be candidates and to win an election. Once in office, they prove their skills by getting re-elected more often than their male counterparts.

That said, a threat to this interpretation is that men may have more options to climb the ladder in politics, by running for congress, for example. If that is the case, they are less likely to win re-election because they are less likely to run again for the mayoral office in the first place. Women may not have such options if discriminatory views are stronger at the congressional level, leading them to run more often for re-election at the city level. However, the data shows that only a small percentage of men – 2% of the total male mayors in our sample – run for congress, senate or state governor after becoming a mayor. This percentage is similar for females (1.6%), indicating that such mechanism is not relevant to our analysis.

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[25] We also estimated empirical models separately for winners and runner ups of the focal elections based on the sample from the right panel of Figure 14.. For winners, our estimated effect would represent the differences in probability of re-election for female and male mayors. For runner ups, the estimated effect would indicate differences in the probability of winning the next election by gender (after losing the focal election). Precision is reduced in these specifications, but we find approximately the same magnitude of differences by gender observed in Figure 14.

V. Conclusion

This paper investigated the impact of gender on policy outcomes at the local level of government in cities and towns across the United States. In doing so, we looked at women in the executive branch of government, mayors to be specific. No impact of having a female chief executive was found on the size of local government, the composition of its expenditures, or local crime rates. The gender of the political leader does not seem to affect the short or long run policy choices of U.S. cities. These results corroborate the median voter view of the political process described by Downs (1957).

Many features of local cities can explain the importance of the median voter theorem. Tiebout sorting and intense competition among local governments may prevent gender from influencing policy outcomes, as it prevented political parties from implementing divergent policies, as shown in Ferreira and Gyourko (2009). Also, the types of policies relevant to local government also could play a role in mitigating the potential policy changes that come from electing a female leader. Economic responsibilities such as local taxation and the provision of basic services are the province of city government, while social issues such as abortion and gun control are not. If the gender divide is not wide on the issues central to local government, catering to gender differences is less useful as an electoral strategy.

While the precise causal mechanisms remain an open question, our findings indicate that the context in which female leadership is undertaken is important, so that one cannot simply extrapolate from studies finding strong gender effects in very different institutional and market settings.

We also investigated whether having a woman attain the top executive position in a local government leads to greater participation in future races, both for mayor and for congress. Somewhat surprisingly (given our priors), having a woman win the mayor's office has virtually no positive impact on the probability of other females winning political office. Almost all of the future increase in female success is due to the woman who won in the first place. Finally, our results suggest that female victors have superior political skills compared to otherwise equivalent males, as indicated by the fact that they are more likely to win elections once they are able to face the hurdle of winning the first election.

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Table 1. Sample representativeness

	final sample	all US cities	cities with >25000 population	cities with >25000, and elected mayor
	(1)	(2)	(3)	(4)
number of cities	575	34,574	1,893	877
population	135,505	7,666	86,245	112,392
	(409,059)	(62,732)	(255,000)	(346,409)
% west	0.20	0.12	0.24	0.18
	(0.40)	(0.33)	(0.42)	(0.39)
% south	0.29	0.24	0.24	0.25
	(0.45)	(0.43)	(0.43)	(0.44)
% northeast	0.21	0.23	0.25	0.23
	(0.41)	(0.42)	(0.43)	(0.42)
% white	0.67	0.88	0.75	0.69
	(0.23)	(0.20)	(0.19)	(0.23)
% black	0.11	0.05	0.11	0.13
	(0.15)	(0.14)	(0.16)	(0.17)
% college degree	0.26	0.17	0.28	0.26
	(0.12)	(0.13)	(0.15)	(0.13)
median family income	52,526	$46,916	$57,927	$53,334
	(16,299)	(19,262)	(19,566)	(16,687)
median house value	131,510	$100,526	$156,718	$133,838
	(71,786)	(86,412)	(100,769)	(70,988)

Notes: All variables are based on the 2000 Census. Column 1 has descriptives for the mayoral election sample. Column 2 reports descriptives for all cities in the US. Column 3 restricts the sample to cities with more than 25,000 people as of year 2000. Column 4 additionally constrains the sample to cities that directly elect a mayor.

Table 2. City characteristics by gender participation

	elections with female participation		elections without female participation		difference in means	
	avg	std	avg	std	diff	(se)
	(1)	(2)	(3)	(4)	(5)	(6)
population	119,624	426,705	120,056	417,418	-432	(15263)
% west	0.288	0.440	0.187	0.430	0.101	(0.015)
% south	0.239	0.520	0.300	0.470	-0.061	(0.016)
% northeast	0.169	0.440	0.208	0.410	-0.039	(0.014)
% white	0.718	0.700	0.759	0.420	-0.041	(0.008)
% black	0.087	0.160	0.097	0.150	-0.009	(0.005)
% college degree	0.255	0.210	0.206	0.170	0.050	(0.004)
median family income	53,963	46,279	49,617	30,511	4,346	(573)
median house value	147,045	129,337	119,979	103,528	27,066	(2716)

Notes: All variables are based on the 1970, 1980, 1990 and 2000 Census.

Table 3. Short Run Policy Outcomes, RD and OLS

	Average (std)	RD			OLS
	(1)	(2)	(3)	(4)	(5)
size of government					
total revenues per capita	1,177	0.003	-0.021	-0.020	-0.024
	(777)	(0.017)	(0.054)	(0.064)	(0.032)
total taxes per capita	913	-0.015	-0.005	0.005	-0.038
	(898)	(0.020)	(0.056)	(0.067)	(0.034)
total expenditures per capita	1,163	0.015	-0.003	0.005	-0.017
	(796)	(0.022)	(0.053)	(0.063)	(0.033)
total employment per 1000 residents	13.42	0.026	0.020	0.029	-0.014
	(9.91)	(0.046)	(0.099)	(0.116)	(0.055)
allocation of resources					
% spent with salaries and wages	0.57	0.012	0.004	0.006	0.008
	(0.12)	(0.018)	(0.015)	(0.017)	(0.009)
% spent with police department	0.22	0.005	0.004	0.004	0.008
	(0.09)	(0.010)	(0.009)	(0.011)	(0.006)
% spent with fire department	0.13	0.013	0.002	0.005	-0.000
	(0.06)	(0.007)	(0.007)	(0.008)	(0.004)
% spent with parks and recreation	0.11	0.006	0.006	0.006	-0.001
	(0.08)	(0.011)	(0.009)	(0.011)	(0.006)
selected employment categories					
health empl. per 1000 residents	0.88	-0.228	-0.388	-0.360	-0.363
	(1.96)	(0.139)	(0.411)	(0.457)	(0.278)
welfare empl. per 1000 residents	0.19	-0.058	0.535	0.261	-0.128
	(0.45)	(0.266)	(0.378)	(0.510)	(0.223)
leisure empl. per 1000 residents	0.91	0.006	-0.226	-0.098	-0.199
	(0.59)	(0.050)	(0.121)	(0.145)	(0.081)
infrastructure empl. per 1000 residents	3.68	0.075	0.027	-0.002	0.184
	(24.06)	(0.193)	(0.169)	(0.210)	(0.116)
crime indexes					
murder per 1000 residents	0.07	-0.006	-0.011	-0.014	-0.012
	(0.11)	(0.011)	(0.011)	(0.013)	(0.007)
robbery per 1000 residents	1.91	0.405	0.066	0.327	-0.042
	(2.72)	(0.274)	(0.279)	(0.309)	(0.181)
burglary per 1000 residents	13.28	-0.016	-0.369	0.348	-0.780
	(12.65)	(1.157)	(1.257)	(1.467)	(0.863)
larceny per 1000 residents	38.53	-0.970	-0.638	-0.247	-2.525
	(28.49)	(2.511)	(2.853)	(3.320)	(2.055)
covariates		Y	Y	Y	Y
linear margin of victory		Y	Y	Y	N
quadratic and cubic margin of victory		Y	N	Y	N
outcome at t-1		Y	N	N	N

Notes: Column (1) presents averages and standard deviations for all dependent variables, while Columns (2) to (5) report coefficients from RD and OLS regressions of each dependent variable indicated in the table on an indicator variable for whether the mayor is a woman and other controls. The RD specifications control for female margin of victory as described in equation (1) in the text. Size of government and employment category variables were transformed to logs. The set of covariates include population, median income, percentage of white households, percentage of households with a college degree, homeownership rate, the median house value, and whether the mayor is a Democrat. Year and region fixed effects also are included. Column (2) also includes a control for the respective dependent variable the year prior to the election. The number of observations for size of government and allocation of resources is 697. Crime variables have 725 observations. Selected employed categories have 171, 99, 339 and 323 respectively. Reported standard errors are clustered by city and decade.

Table 4. Incumbent effect by gender

	OLS	RD		
	(1)	(2)	(3)	(4)
all elections				
female candidates	0.562	0.511	0.494	0.520
	(0.023)	(0.027)	(0.032)	(0.064)
male candidates	0.501	0.449	0.430	0.425
	(0.009)	(0.015)	(0.019)	(0.027)
year <=1980				
female candidates	0.504	0.469	0.459	0.723
	(0.066)	(0.081)	(0.093)	(0.171)
male candidates	0.471	0.421	0.391	0.377
	(0.014)	(0.027)	(0.032)	(0.045)
year >1980				
female candidates	0.572	0.515	0.503	0.502
	(0.024)	(0.029)	(0.034)	(0.067)
male candidates	0.530	0.461	0.450	0.456
	(0.011)	(0.018)	(0.022)	(0.033)
Only male vs female elections				
female candidates	0.569	0.543	0.487	0.543
	(0.027)	(0.036)	(0.044)	(0.076)
male candidates	0.509	0.472	0.403	0.477
	(0.028)	(0.044)	(0.053)	(0.089)
covariates	N	Y	Y	Y
linear vote share	N	Y	Y	Y
quadractic and cubic vote share	N	N	Y	Y
vote shares interacted with win	N	N	N	Y

Notes: This table reports coefficients from regressions of a dummy variable for whether a candidate won election at time t+1 on the dummies for the gender of winning candidate in election t. The RD specification controls for female margin of victory as described in equation (7) in the text. The set of covariates used in columns (2),(3),(4) and (6) are city population, median income, percentage of white households, percentage of households with college degree, homeownership rate and the median house value. Year and region fixed effects also are included. Panels (1), (2) and (3) include all elections for the relevant years noted, while panel (4) constrains the sample to female versus male elections only. Reported standard errors are clustered by city and decade.

Figure 1. Proportion of elections with at least one female candidate and proportion of female wins

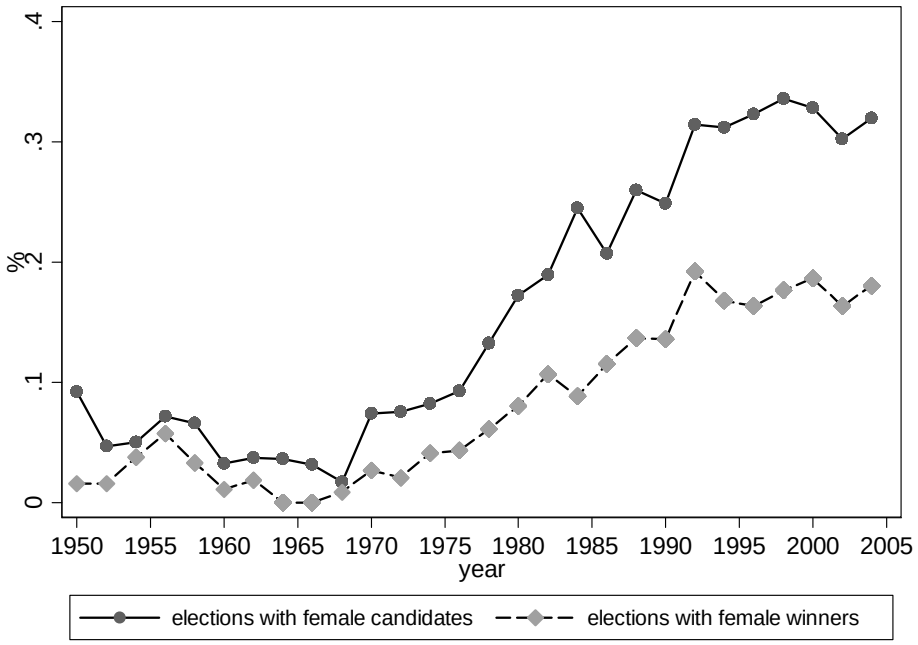


Figure 2. Fraction of female victories when running against a male, by year

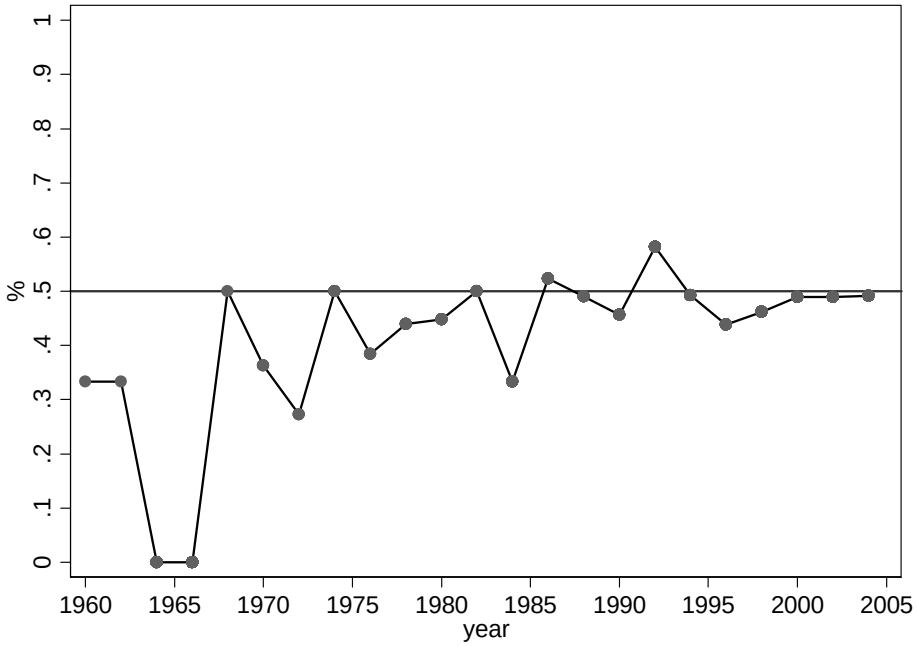


Figure 3. Type of election by gender of candidates, by year

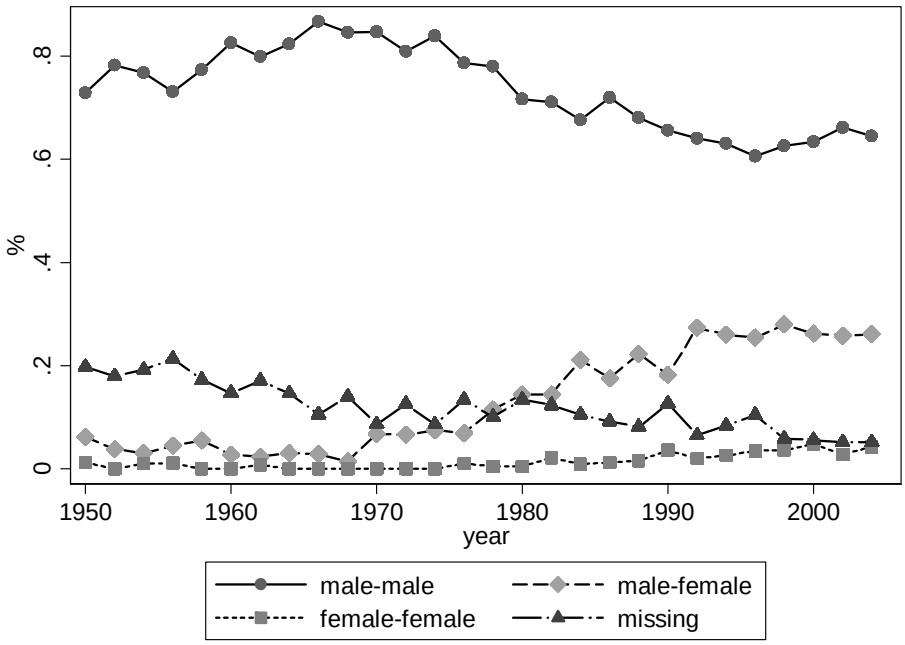
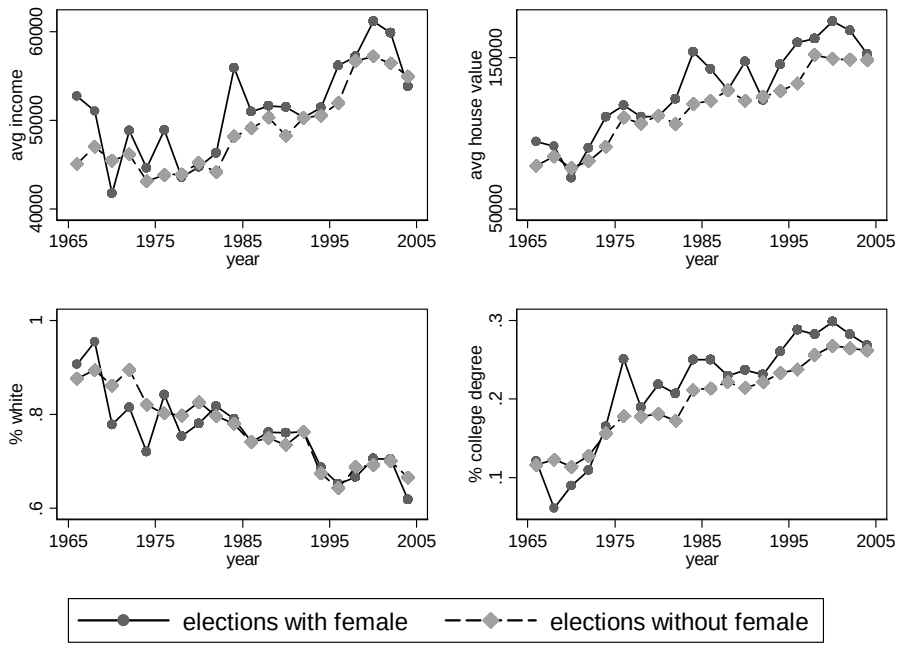


Figure 4. Average city characteristics by elections with and without female participation, by year

A. Income, House Values, Race and Education



B. Population, northeast, west, and south

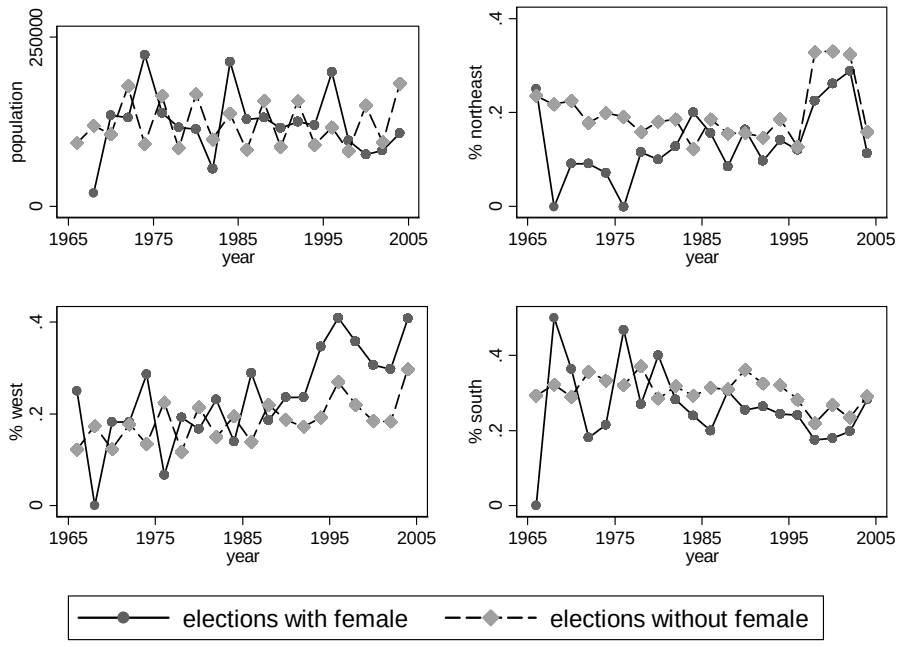


Figure 5. Proportion Democratic and Republican Party female candidates

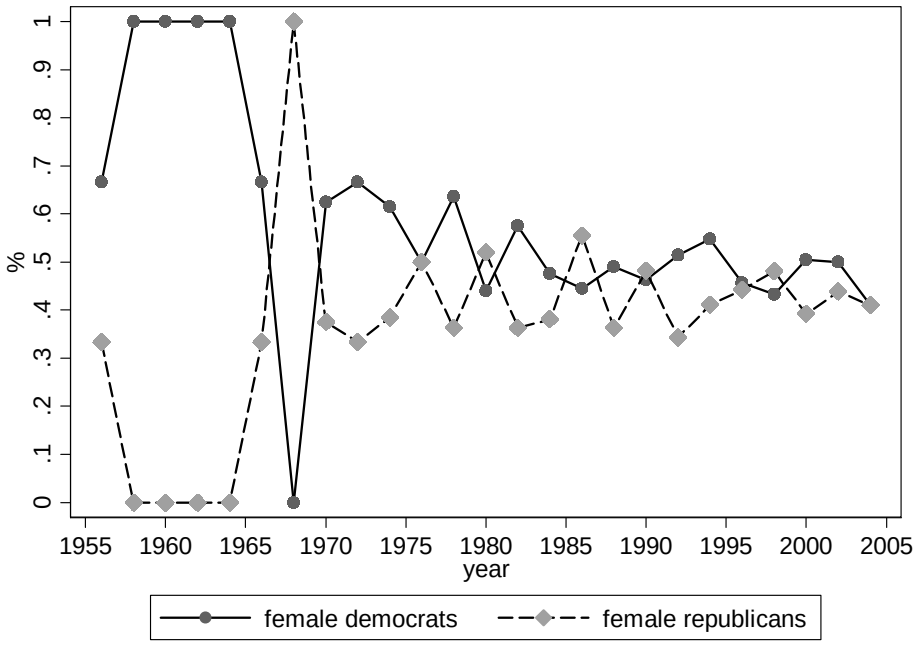


Figure 6. Density of elections with female participation

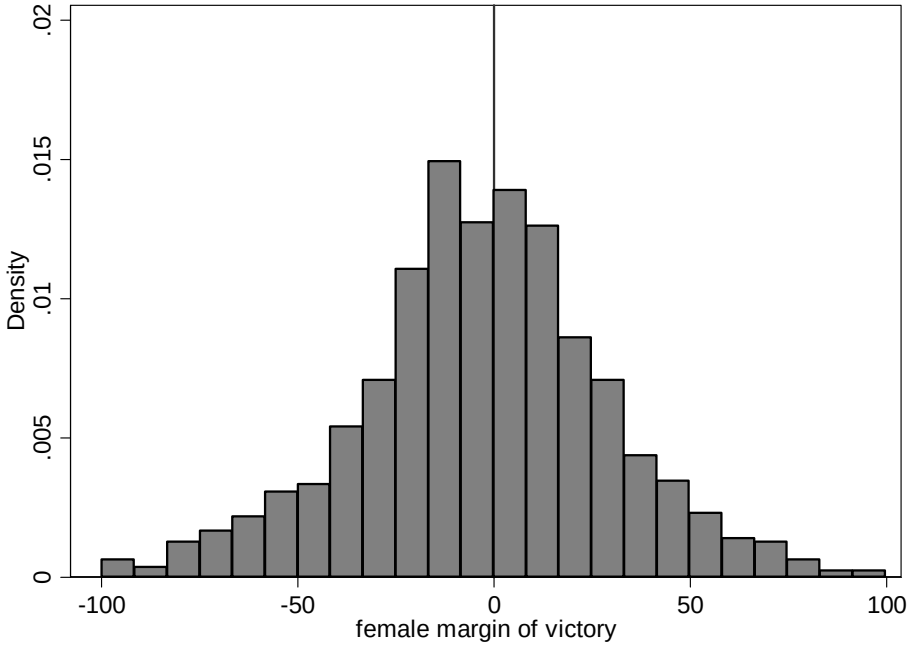
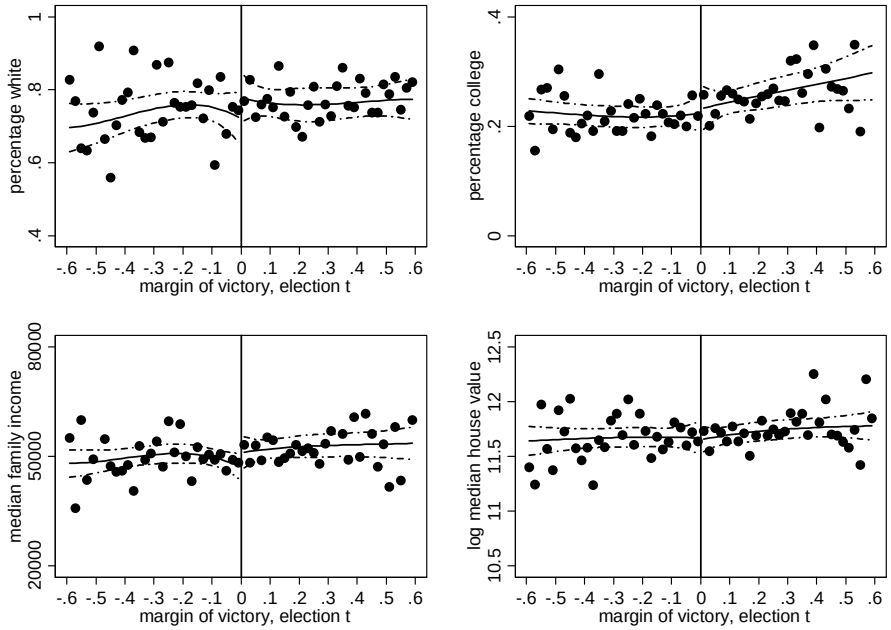
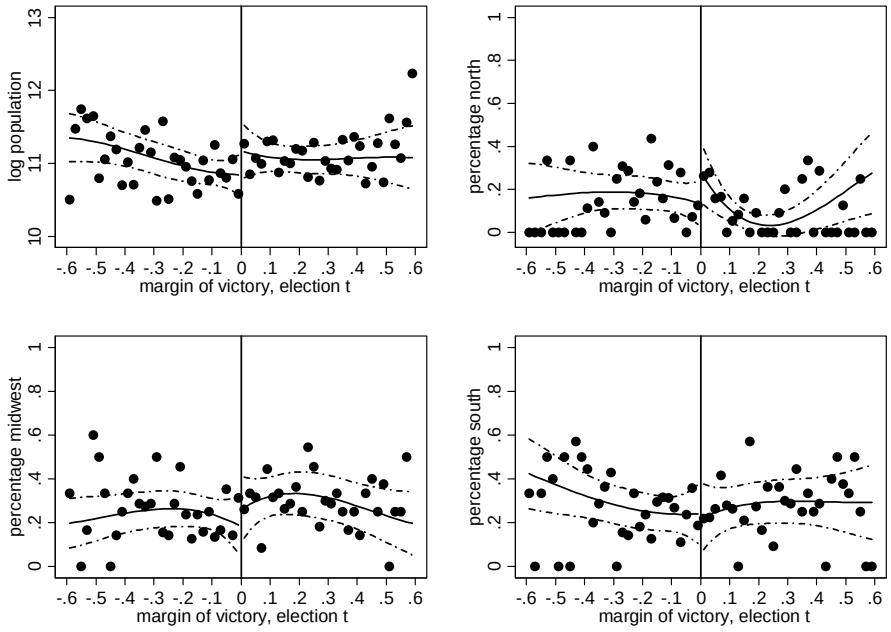


Figure 7. City, election, and candidate characteristics prior to female candidacy

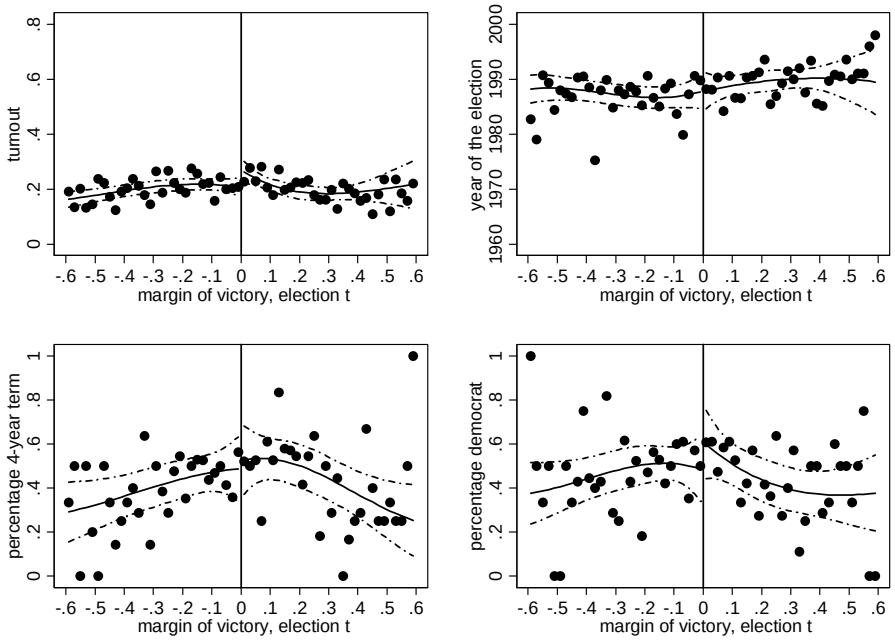
A. City sociodemographics



B. City population and geography



C. Election characteristics



D. Candidate political experience

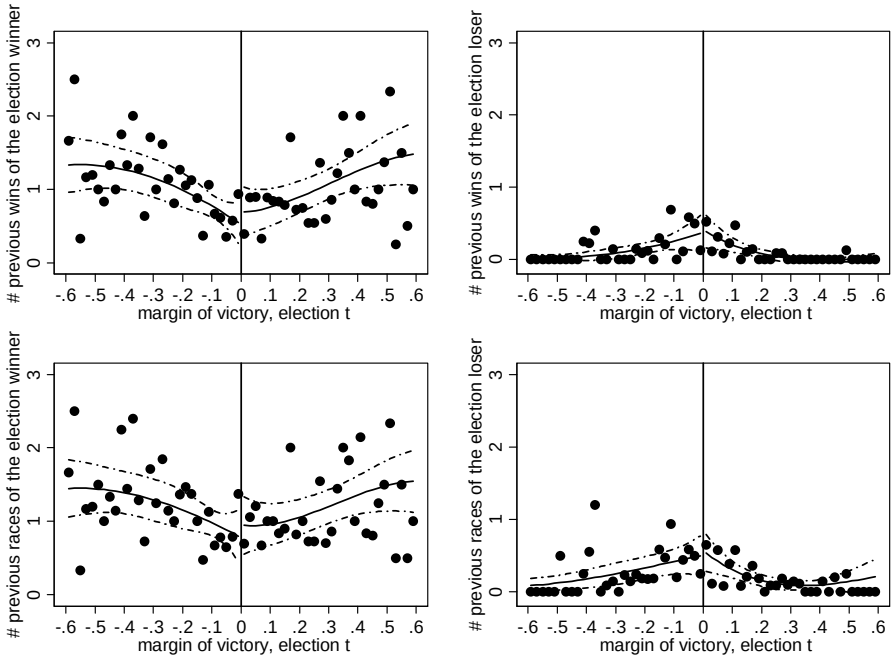


Figure 8a. Size of government variables by female margin of victory

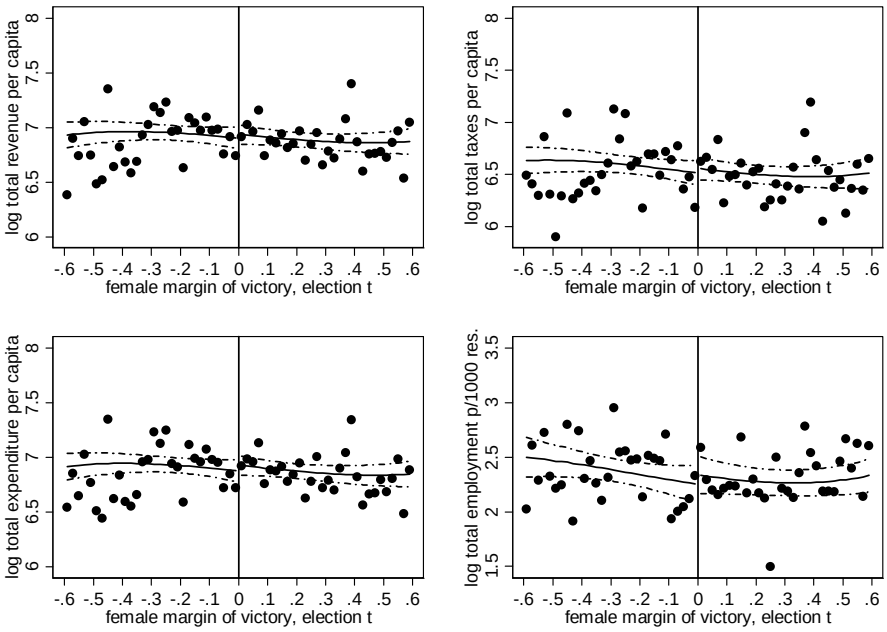


Figure 8b. Composition of expenditures by female margin of victory

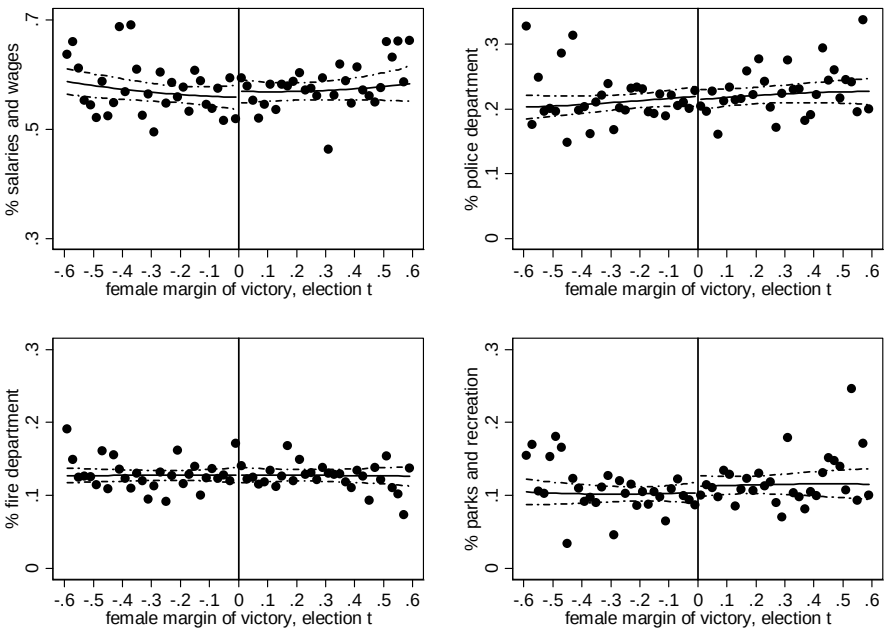


Figure 8c. Selected employment categories by female margin of victory

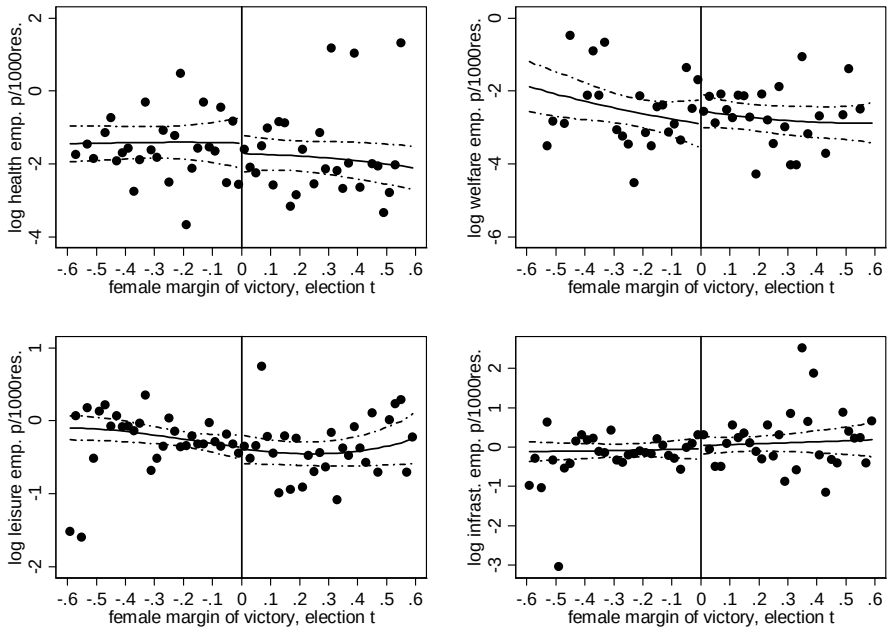


Figure 8d. Crime rates by female margin of victory

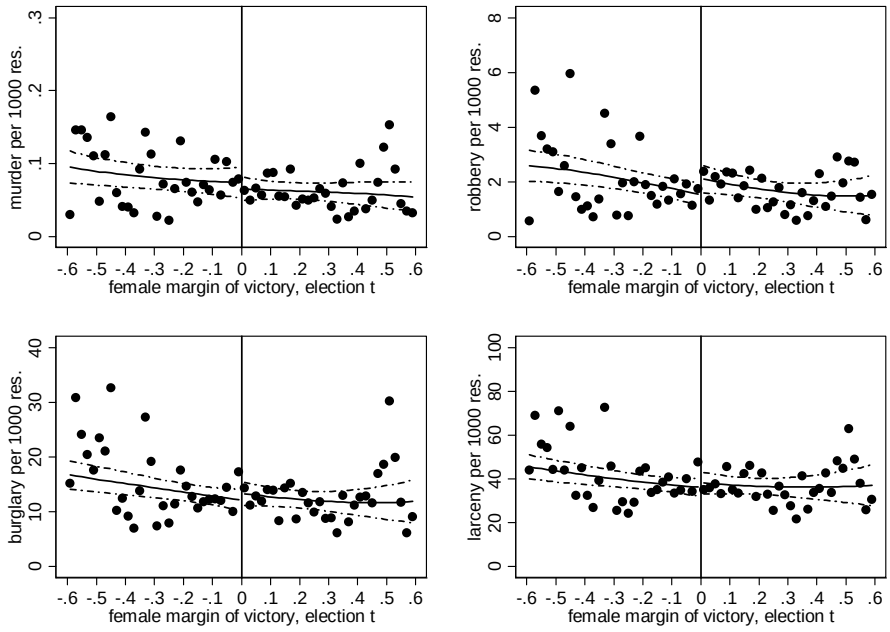


Figure 9. Long-run Probability of Re-election

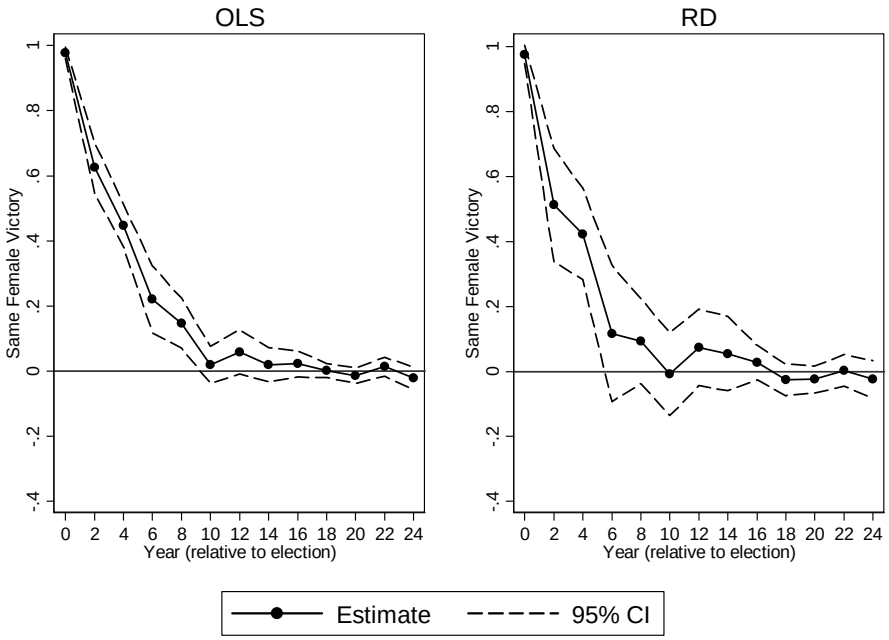


Figure 10. Impact of electing a female mayor on long run policy outcomes

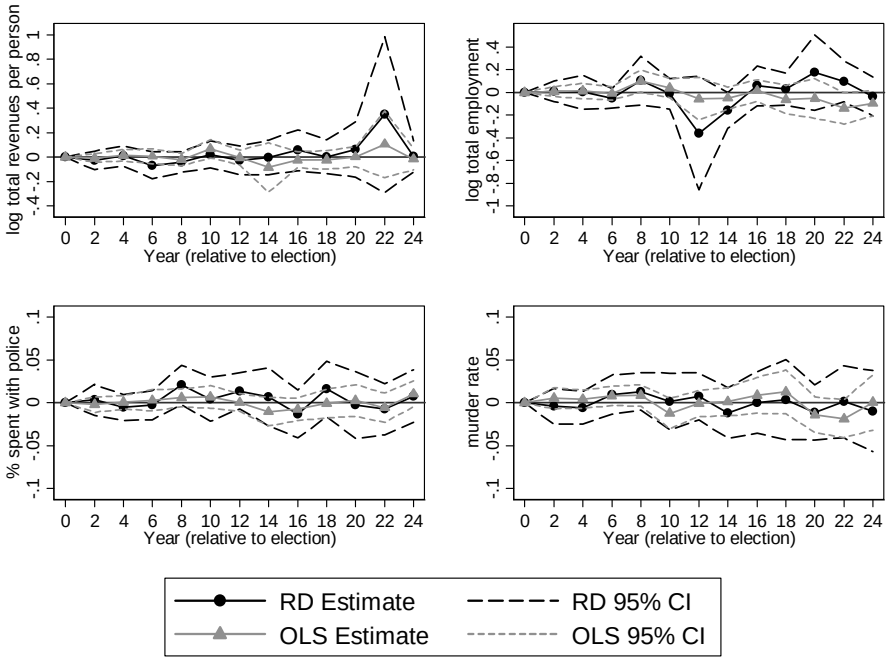


Figure 11. Long-run Impact of Electing a Female Leader on the Probability that Any Other Female Wins Office

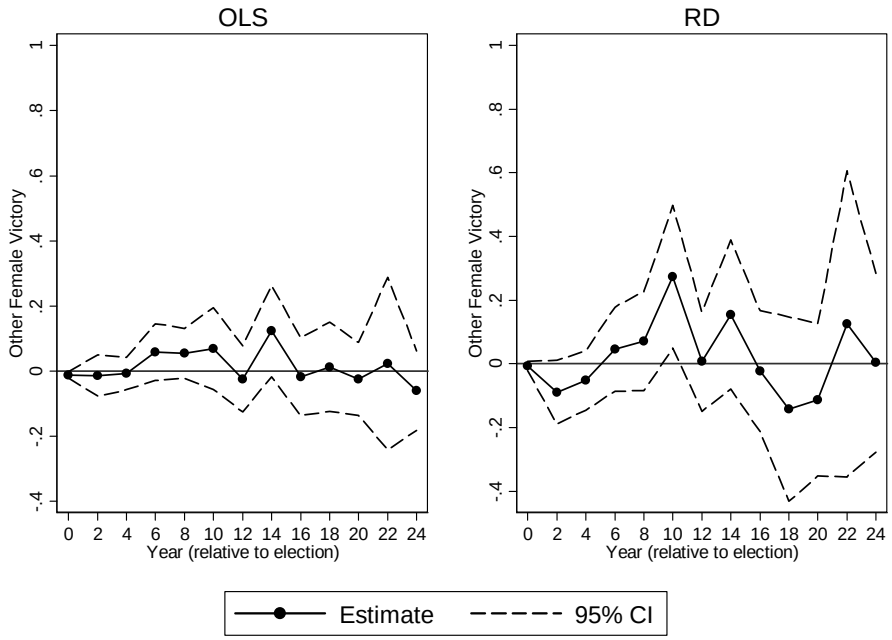


Figure 12. Female probability of victory by type of election

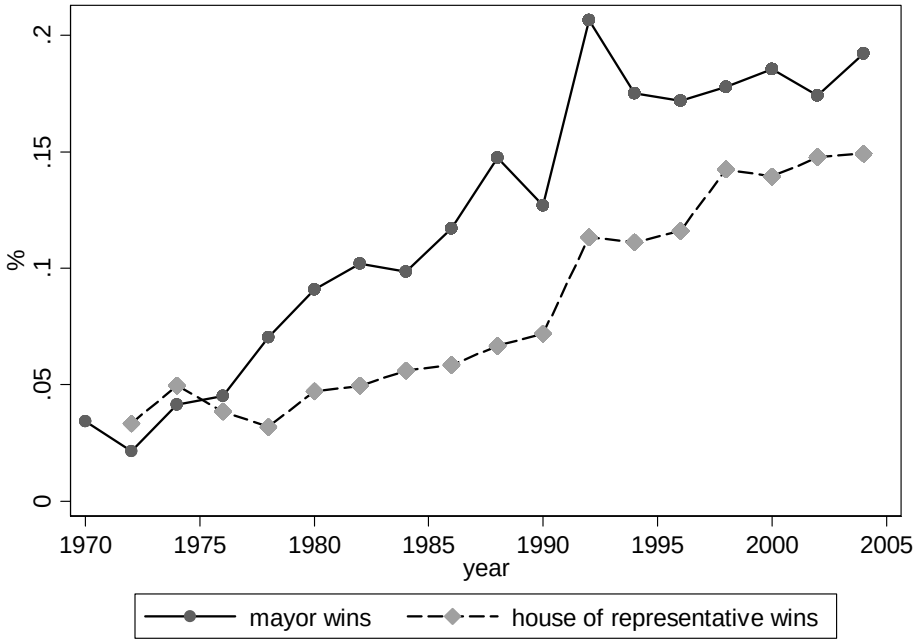


Figure 13. Impact of electing a female mayor on female participation in local congressional elections

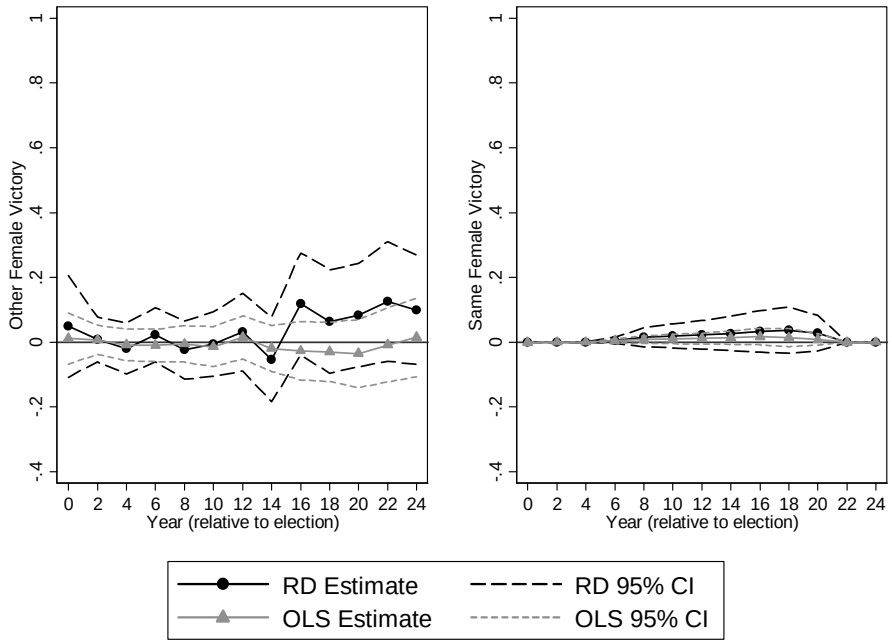


Figure 14. Male and female candidate probability of winning next election, by margin of victory