

## Research paper

Gender differences in political career progression<sup>☆</sup>Ryan Brown<sup>a,\*</sup>, Hani Mansour<sup>a,b</sup>, Stephen D. O'Connell<sup>c,b</sup>, James Reeves<sup>d</sup><sup>a</sup> University of Colorado Denver, United States of America<sup>b</sup> IZA, Germany<sup>c</sup> Emory University, United States of America<sup>d</sup> University of Michigan, United States of America

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## ABSTRACT

This paper quantifies the gender gap in the returns to electoral success on the career progression of novice U.S. state legislators. Using a regression discontinuity design, we find that narrowly winning a state legislature election doubles the probability that a female politician will later compete for a higher-level legislative seat compared to narrowly elected male politicians. While the gender gap in the effect of local political experience on winning a higher-level election also favors women, it is not precisely estimated. The gender difference in the effect of winning a state legislature seat is larger when serving in positions that closely resemble the responsibilities and workload of higher-level positions. We conclude that the pathway from local to higher-level political offices functions at least as effectively for women as for men. Therefore, supporting the recruitment, funding, and campaigning of women in local elections can be an effective strategy to increase their representation at the highest levels of government.

## 1. Introduction

The underrepresentation of women in high-status occupations persists worldwide, even in countries that have made significant progress towards gender equality (Bertrand et al., 2019). This is particularly true in politics where the share of women at the highest levels of government is well below their share of the population in nearly all countries (CAWP, 2017).<sup>1</sup> The underrepresentation of female politicians persists despite the fact that, on average, female and male politicians have different policy preferences, and that increasing the share of female politicians can increase overall welfare.<sup>2</sup>

The low share of women at the top of political and corporate hierarchies has been shown to be related to their lower rate of entry and career progression as compared to men with similar productivity and initial career profiles (Mariani, 2008; Palmer and Simon, 2008; Folke and Rickne, 2016; Thomsen and King, 2020; Bernhard et al., 2021). Many reasons have been proposed to explain gender

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<sup>1</sup> In 2018, women comprised 21 percent of the U.S. senate and 19 percent of the U.S. House of Representatives (CAWP, 2017). This is not only an American phenomenon: women comprised 32 percent of the U.K. House of Commons in 2018, and 12 percent of the Indian Parliament (Bhalotra et al., 2018).

<sup>2</sup> For instance, studies have found that increasing the share of female politicians affects the types of public goods provided by local governments, improves the health and education outcomes of children, reduces crimes against women, and increases trust in government (Chattopadhyay and Duflo, 2004; Miller, 2008; Iyer et al., 2012; Kalsi, 2017; Clots-Figueras, 2012; Bhalotra and Clots-Figueras, 2014; Brollo and Troiano, 2016). In the U.S., Ferreira and Gyourko (2014) found no evidence that female mayors make different policy choices compared to male mayors.

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differences in the propensity to climb the career ladder. These include work-life balance and career interruptions due to having children (Fulton et al., 2006; Silbermann, 2015; Antecol et al., 2018; Kleven et al., 2019; Fiva and King, 2023), higher thresholds for promotion (Lazear and Rosen, 1990; Pekkarinen and Vartiainen, 2006; Addison et al., 2014; Gobillon et al., 2015; Cassidy et al., 2016), gender differences in preferences (Fox and Lawless, 2004), differential responses to electoral defeats (Wasserman, 2021a), and bias by voters or party elites (Fulton, 2012; Maestas et al., 2006; Sanbonmatsu, 2006; Crowder-Meyer, 2013).<sup>3</sup>

Existing studies have found mixed evidence that increasing the share of women in leadership positions (via quotas or other methods) affects the careers of female professionals (Bagues and Esteve-Volart, 2010; Kunze and Miller, 2017; Bertrand et al., 2019; Brown et al., 2022; Langan, 2019; O'Connell, 2020).<sup>4</sup> In politics, Broockman (2009) found no evidence that narrowly electing a woman for a state legislature seat in the U.S. mobilizes women to vote or inspires other female candidates from nearby districts to run for office. Similarly, Bhalotra et al. (2018) found that electing Indian female state legislators does not change the number of new female candidates who choose to compete in subsequent elections. In contrast, Gilardi (2015) provides evidence that electing female mayors in Switzerland increases the number of female candidates in neighboring municipalities, with the effect fading as more women are elected.<sup>5</sup>

We contribute to this growing literature on the impact of policies aimed at increasing the representation of women in high-status positions by quantifying the effect of winning a state legislature election on the likelihood of running for or winning higher office among novice male and female politicians in the United States. Scholarly work on this topic has largely focused on gender differences in the likelihood of persisting in politics in similar roles and at the same level of the political system (Wasserman, 2021a,b; Bernhard and de Benedictis-Kessner, 2021), while the focus of this paper is the relationship between holding lower office and climbing the career ladder to roles in higher levels of politics. At the same time, most literature has sought to quantify the spillover effects of minority-group representation on other citizens or politicians, while our study focuses on estimating and explaining the sources behind the gender gap in the career progression of the same individual politicians over time.

Another contribution of our paper is with regard to causally identifying gender differences in returns to promotions. Existing studies have documented that conditional on productivity and job assignments, women face higher promotion standards compared to men (Lazear and Rosen, 1990; Pekkarinen and Vartiainen, 2006; Addison et al., 2014; Gobillon et al., 2015; Cassidy et al., 2016). Investigating gender differences in the returns to climbing the career ladder, however, is inherently difficult because labor supply decisions are endogenous to workers' unobserved characteristics and because employers' job assignment decisions are nonrandom. In contrast to existing literature, our identification strategy circumvents these concerns by following the careers of novice politicians who were quasi-randomly assigned to their position in the hierarchy.

A third novel feature of our analysis is that we examine whether electoral wins in particular environments help to increase the pipeline of female politicians and facilitate their career progression in politics (Carroll and Sanbonmatsu, 2013; Bhalotra et al., 2018). In particular, we study whether experience in positions requiring long and unpredictable hours can promote the decision of candidates to compete for higher level positions, and change the perceptions of party elites or voters about the ability of female politicians to perform in leadership positions.

We define political career progression in our context as the probability that a state legislature candidate ever competes in or wins a Congressional or a gubernatorial election. We focus on these outcomes for state legislature candidates because the position they are competing for is a typical stepping stone for politicians who aspire to advance their political careers. Between 1976 and 2016, an average of 46.5 percent of members of the U.S. House of Representatives and just under 50 percent of governors had previously served in a state legislature.<sup>6</sup> It is unclear, however, whether the importance of this pipeline in generating Congressional candidates differs by gender. To quantify the effect of winning a state legislature election on subsequent outcomes, we follow the career trajectories of all first-time candidates for single-member district U.S. state legislature positions in forty-nine of fifty states since 1976. By construction, our strategy ensures that, within gender, winners and losers are otherwise comparable, and that candidates in our sample are drawn from state legislative and congressional districts with similar constituency characteristics (Duerst-Lahti, 1998; Fulton et al., 2006; Maestas et al., 2006; Sanbonmatsu, 2006; Mariani, 2008; Palmer and Simon, 2008; Carroll and Sanbonmatsu, 2013; Bernhard and de Benedictis-Kessner, 2021).

We find that winning a state legislature election increases the likelihood of competing in a higher level election (HLE) by statistically significant 3.80 and 6.34 percentage points for men and women, respectively. While the nominal difference is economically large – being almost twice the magnitude for women relative to men – it is not statistically significant at conventional levels ( $p = 0.136$ ). Women and men face different structural barriers when advancing in their political careers, however, which is reflected in the lower propensity to participate in a HLE among losing women compared to losing men. To put effect sizes on

<sup>3</sup> In a 2002 survey conducted among state legislators, female representatives reported more interest in continuing to serve in their current capacity and less interest in running for higher offices (Fox and Lawless, 2004; Carey et al., 2008). See also Schlesinger (1966), Black (1972), Duerst-Lahti (1998), and Maestas et al. (2005).

<sup>4</sup> Kunze and Miller (2017) found that having more female bosses decreases gender gaps in promotions. In contrast, Bertrand et al. (2019) found no evidence that mandating a higher share of women in boards of Norwegian companies benefited women working in these companies. Langan (2019) shows that appointing female department chairs in academia reduces gender gaps in publications and increases the tenure probability for female assistant professors.

<sup>5</sup> Ladam et al. (2018) show that narrowly electing female governors is associated with an increase in the number of female candidates running for the state legislature, and Baskaran and Hessami (2018) found that electing a female mayor in Germany led to an increase in the vote share received by female council candidates.

<sup>6</sup> Over half of the 115th U.S. Congress began their political careers in the state legislature (NCSL, 2018). In addition to increasing their wage and influence, Congressional experience has also been shown to have high wage returns in the private sector among politicians who leave, and to increase the chances of incumbency among those who choose to remain in Congress (Diermeier et al., 2005; Mattozzi and Merlo, 2008).

a comparable basis, we scale the coefficients by the respective averages of losing candidates to interpret effects sizes relative to counterfactual mean outcomes. Narrowly winning a state legislature race has an impact among women that is twice as large, in relative terms, to that of men (309 vs. 155 percent). This difference of 154 percentage points is marginally statistically significant at the 10% level based on confidence intervals derived from a Bayesian bootstrapping procedure that takes into account sample variability in the estimated coefficients and sample averages of losing candidates (Rubin, 1981). The chances of winning a higher-level election relative to losers of state legislature elections is about 50% higher, in relative terms, for women compared to men but this difference is not precisely estimated. Thus, we cannot reject at conventional levels the hypothesis that the effect of winning a state legislature seat on higher level representation is similar for men and women. Therefore, our first conclusion is that the pathway from local to higher-level political offices functions at least as effectively for women as for men.

Using a similar close election design, Wasserman (2021a) reports that the gap in the probability of remaining in local California politics is larger for female winners versus female losers than it is for male winners versus male losers, arguing that this gender gap in persistence at the same career level is the result of greater female attrition from local politics after losing an election. In contrast, Wasserman (2021b) and Bernhard and de Benedictis-Kessner (2021) find no gender difference in persistence in state legislative elections, mayoral elections, or local California city and county races. Consistent with this second group of results, we also find no evidence that the gender difference in the return to winning a state legislature seat on climbing the political ladder is due to lower persistence among losing candidates. Instead, our analysis suggests that career success at the state legislature level has a greater impact on the candidacy of women to higher level positions because it provides a platform through which they can promote their professional advancement.

While our empirical strategy identifies an unbiased estimate of the effect of winning a state legislature seat on political career progression separately for women and men, interpreting the gender gap in this effect requires care (Anzia and Berry, 2011; Fulton, 2012). This is because it is likely that female and male state candidates have systematically different observed and unobserved characteristics. It is unclear, however, whether these differences represent bias-inducing unobserved heterogeneity or if they are the mechanisms through which societal gender norms influence the empirical relationship we have uncovered. To investigate this, we provide evidence that the gender gap in winning a state legislature election does not simply reflect differences in election, state legislative district, or candidate characteristics among female and male candidates. The gender gap in the effect of winning a state legislature seat is not specific to either the Democratic or Republican party either. As a result, we can rule out explanations that hinge on party differences in the type of candidates that can win the party's support, or the differential role played by party elites in recruiting and screening female candidates (Niven, 1998; Caul, 1999; Sanbonmatsu, 2002; Box-Steffensmeier et al., 2004; Sanbonmatsu, 2006, 2010; Elder, 2012; Thomsen, 2015).

Considering the demanding nature of political careers, characterized by long and unpredictable hours, the costs of work-life balance in politics are likely to be larger for women than men, or to be perceived as such by party elites and voters (Bertrand et al., 2010; Goldin, 2014; Silberman, 2015; Kleven et al., 2019; Bernhard et al., 2021; Fiva and King, 2023). We hypothesize that winning a seat in the state legislature may lead female politicians to reassess their own perceptions about the challenges of higher office, and to demonstrate their capability for more demanding roles to both party elites and voters. We test this hypothesis by leveraging cross-state heterogeneity in the characteristics of the elected positions. First, we examine whether the probability of running for a higher-level office varies across full- or part-time state legislatures. Consistent with our hypothesis, we find that the difference in the relative effect of winning a full- versus part-time legislature for women is substantially larger than the same difference for men. Second, we explore differential returns to state legislative service by the size of the state legislature seat's constituency. The effects of winning a state legislative election on political career progression may be greater in seats that serve larger constituencies regardless of gender because, among other things, they provide politicians with wider visibility and campaign experience. However, expectations around the demands of a more powerful position may disproportionately impact women due to existing beliefs about their ability and capacity to serve in higher-level positions (Folke and Rickne, 2016; Fiva and King, 2023). Although the magnitude of the gender difference indicate that winning a more powerful seat is more advantageous to the political career advancement of women as compared to men, we cannot reject the hypothesis that men and women gain similar returns to serving in a more powerful seat.

The remainder of the paper is organized as follows. Section 2 describes the data sources, provides background on U.S. national and state legislative elections, and describes the sample used in the analysis. Section 3 details the empirical strategy. Sections 4.1 and 4.2 present results on the effects of winning a state legislature seat on progression to national politics and how it differs by gender. Section 5 discusses potential mechanisms, and Section 6 concludes.

## 2. Context and data sources

There are more than 7000 state legislative seats in the United States, with each position having a two- or four-year term length. Our data represents all candidates who ran for a single-member district U.S. state legislature position since 1968 in forty-nine of fifty states.<sup>7</sup> The primary source for state legislature elections data comes from the State Legislative Election Returns (SLER) data set, hosted by the Inter-University Consortium for Political and Social Research (ICPSR 34297) and constructed by Klamer et al. (2013). The SLER provides candidate-level election returns including information on the name of the candidate, the state, state legislative district, and chamber they are running in, as well as total vote counts and the candidate's party. Additional election-level

<sup>7</sup> Due to data limitations, Louisiana state legislature elections are not included.

data provides information on the term length, type of election (e.g., general, special), and the number of candidates who contested the seat.

Congress is comprised of 435 seats in the (lower) House of Representatives and 100 seats in the (upper) Senate.<sup>8</sup> Prior service in a state legislature is a common, around 50 percent as of 2019, and increasingly likely trait among Congressional representatives. Conditional on ever running for a higher-level office, the average state legislator spends about seven years in the state legislature before running for higher-level office. We thus limit our sample to state legislature elections up to and including 2008 (and observe their outcomes through 2016), as the inclusion of more recent state legislature elections would increase the frequency and intensity of measurement error (due to right-censoring) in the dependent variable.

To create the data for our analysis, we merge information on state legislature candidates to records from the U.S. House of Representatives, the Senate, and gubernatorial primary and general election returns from 1968–2016. We match candidates across levels within state using a fuzzy matching algorithm based on first and last name fields. This method is similar in practice to the matching procedures used in [Anagol and Fujiwara \(2016\)](#) and [Brown et al. \(2022\)](#).<sup>9</sup> Although we are only able to track primary participation for Democrat and Republican candidates (or third-party candidates who participate in these elections), candidates of all parties can be observed in general elections.<sup>10</sup>

To determine a candidate's gender, we compare candidates' first names to historical records from the U.S. Census Bureau and the Social Security Administration (SSA).<sup>11</sup> We code a candidate as male or female if both the Census and SSA records agree on the candidate's gender. We then hand-code the remainder of candidates (about five percent) whose names are not unambiguously indicative of their gender. We drop a small number of elections (3.6 percent of total) where we do not know the gender of either of the top two candidates.

An important sample restriction used in our analysis is to limit the estimation sample to first-time candidates. This decision is motivated by the fact that the number of times an individual runs for a state legislative seat before their first victory may be endogenous, and because, on average, male politicians start their career earlier than female politicians and have more legislative experience than female candidates.<sup>12</sup> Thus, the focus on novice state legislators ensures that accumulated legislative experience does not vary by gender. The main sample includes 11,580 first-time candidates in narrowly decided elections, defined as elections within the optimal bandwidth, from the broader sample of 53,916 first-time candidates competing in state legislative elections between 1976–2016.<sup>13</sup> We use state legislative elections from 1976 onward to ensure we are able to more accurately determine first-time status for candidates as well as compute historical district characteristics. Column 1 of [Table 1](#) reports sample means for a set of election characteristics (Panel A), historical state legislative district characteristics (Panel B), and candidate characteristics (Panel C) using our close election sample.<sup>14</sup> There are 2.14 candidates per election and the average term length is approximately 2.3 years (Panel A). Democrats make up 47 percent of the candidates, while the remaining 53 percent are Republicans or third-party affiliated, and 23 percent are female. These statistics are similar to the sample means of all first-time candidates which we report in Column 2. Almost 5 percent of state legislature candidates ever run in a subsequent Congressional or a gubernatorial election and about 3 percent of the sample ever win such elections (Panel D).

### 3. Estimating the career effects of state legislative experience

#### 3.1. Empirical model

A state legislature candidate's decision to compete for a higher-level political office is endogenous to observed and unobserved characteristics of the candidate, the Congressional district or state, and the current and future local and national elections. To mitigate these potential confounds, we estimate a reduced form effect of winning a state legislature seat on the likelihood of competing for, or winning, a Congressional or gubernatorial office using a regression discontinuity design (RDD) on first-time candidates. The advantage of using the RDD is that it effectively generates quasi-random assignment of legislative service across otherwise-similar candidates who run for state legislative office in comparable locales.

Formally, we estimate the effect of winning a state legislature seat on the likelihood of competing for, or winning, any higher level election (HLE) using our sample of candidates in narrowly decided state legislature elections via the following regression:

$$Y_{ist} = \alpha \text{Won election}_{ist} + \beta f(x_{ist}) + \gamma [\text{Won election}_{ist} \times f(x_{ist})] + X'_{ist} \delta + \pi_s + \phi_t + \epsilon_{ist} \quad (1)$$

<sup>8</sup> Within state, there are an average of about 20 legislative seats per Congressional seat. With the exception of Nebraska, each state has a bicameral legislature comprising of a House and a Senate.

<sup>9</sup> To help prevent spurious matches, we only search for Congressional and gubernatorial candidates in the same state in which they appear in the state legislature elections data.

<sup>10</sup> In practice, however, there are relatively few third-party candidates, and candidates who pursue Congressional office tend to not switch parties across levels of government.

<sup>11</sup> We first cross-reference all first names with lists of common first names. We classify candidates as male or female if their name only appears in one of the lists, that is, their name is unambiguously male or female, and then compare the remaining names to Census and SSA records.

<sup>12</sup> Since years of experience is a direct outcome of the election result it would not be econometrically appropriate to control for this characteristic in our analyses.

<sup>13</sup> Specifically, we focus on candidates who are competing for the first-time in a single-member district, the most common type of legislative position. We calculate the optimal bandwidth following [Calónico et al. \(2020\)](#) and flexibly allow for unique bandwidths for both men and women on either side of the discontinuity.

<sup>14</sup> Historical district characteristics are measured as the mean value of that factor over the 10 years prior to the focal state legislative election.

**Table 1**  
Descriptive statistics.

	RD Sample Mean	All First-Time Sample Mean
	(1)	(2)
<i>Panel A: Election Characteristics</i>		
Number of Candidates	2.142	2.152
Term Length	2.341	2.319
Senate Election	0.245	0.236
Special Election	0.005	0.004
<i>Panel B: District Characteristics</i>		
Share Incumbent Ran	0.655	0.660
Share Unopposed Elections	0.186	0.214
Margin of Victory	0.237	0.301
Share Female Candidates	0.157	0.163
Number of Candidates	1.886	1.881
<i>Panel C: Candidate Characteristics</i>		
Democrat	0.472	0.443
Female	0.210	0.211
<i>Panel D: Electoral Outcomes</i>		
Run in Any Cong. or Gov. Election	4.542	3.507
Run in Any Cong. Election	3.860	3.075
Run in Any Gov. Election	0.881	0.605
Run in Any House Primary	3.446	2.697
Run in Any House General	2.150	1.682
Win Any Cong. or Gov. Election	2.772	2.055
Observations	11,580	53,916

Notes: This table reports sample means. Column 1 reports sample means from the estimation sample of first-time candidates within the optimal bandwidth which is allowed to vary on either side of the discontinuity and by candidate gender. Column 2 reports sample means using all first-time candidates. Panel A reports mean election characteristics, Panel B reports mean historical district characteristics, calculated using elections within the ten years prior to the focal election, Panel C reports mean candidate characteristics, and Panel D reports mean probabilities of appearing in different Congressional or gubernatorial elections. Outcomes in Panel D are on a 0 to 100 scale.

Where  $Y_{ist}$  is a dependent variable that measures the candidacy or success of first-time state legislature candidate  $i$  from state legislature election year  $t$  in an election for a higher-level position such as the U.S. House of Representatives, the Senate, or governor in state  $s$ . The variable of interest,  $Won\ election_{ist}$ , is an indicator variable equal to 1 if candidate  $i$  won their state legislature election in state  $s$  in election year  $t$ . We also include a linear measure of the candidate's victory margin in that state legislature election,  $f(x_{ist})$ , and allow the effect of the victory margin to vary for winners and losers,  $[Won\ election_{ist} \times f(x_{ist})]$ .  $X_{ist}$  represents a vector of individual and election-level controls including the candidate's party affiliation, the length of the contested seat's term, the number of candidates in the election, and whether it was a general or special election. To control for time- and state-invariant unobservable characteristics and to improve precision, we include state fixed effects,  $\pi_s$ , and state legislature election year fixed effects  $\phi_t$ .  $\epsilon_{ist}$  represents the error term and standard errors are clustered by state. Throughout the analyses we use a data-driven optimal bandwidth that flexibly varies by both candidate gender and each side of the discontinuity. We also provide evidence that our results are robust to a number of alternative bandwidths.

Our coefficient of interest is  $\alpha$ , which captures the effect of winning a first-time state legislature election on political career progression. To examine gender differences in political career progression, we estimate Eq. (1) separately for male and female candidates. To shed light on the mechanisms through which winning a state legislature seat affects the likelihood of running or winning a higher-level election, we estimate Eq. (1) for different types of legislative positions. Across these exercises, we use the optimal bandwidth generated in the main analysis to ensure these mechanism and decomposition estimates reflect true variation in candidate outcomes rather than differences in sample selection.

### 3.2. Investigating the validity of the research design

Our empirical approach compares just-winning candidates to just-losing candidates in order to estimate the impact of winning a state legislature seat on subsequent career progression. The assumption underlying this approach is that candidates who narrowly win over a competitor are comparable, on average, to candidates who narrowly lose to a competitor. Similarly, the assumption underlying an equivalent analysis that is stratified by gender is that women (men) who narrowly win are comparable, on average, to women (men) who narrowly lose.

We first test for manipulation of the running variable following Cattaneo et al. (2018) by plotting the distributional density of a candidate's margin of victory in first-time state legislature candidates. In Fig. 1, we plot these distributions for all candidates in Panel A, for male candidates in Panel B and for female candidates in Panel C. These plots provide no evidence of discontinuous bunching of elections around a vote margin of zero.

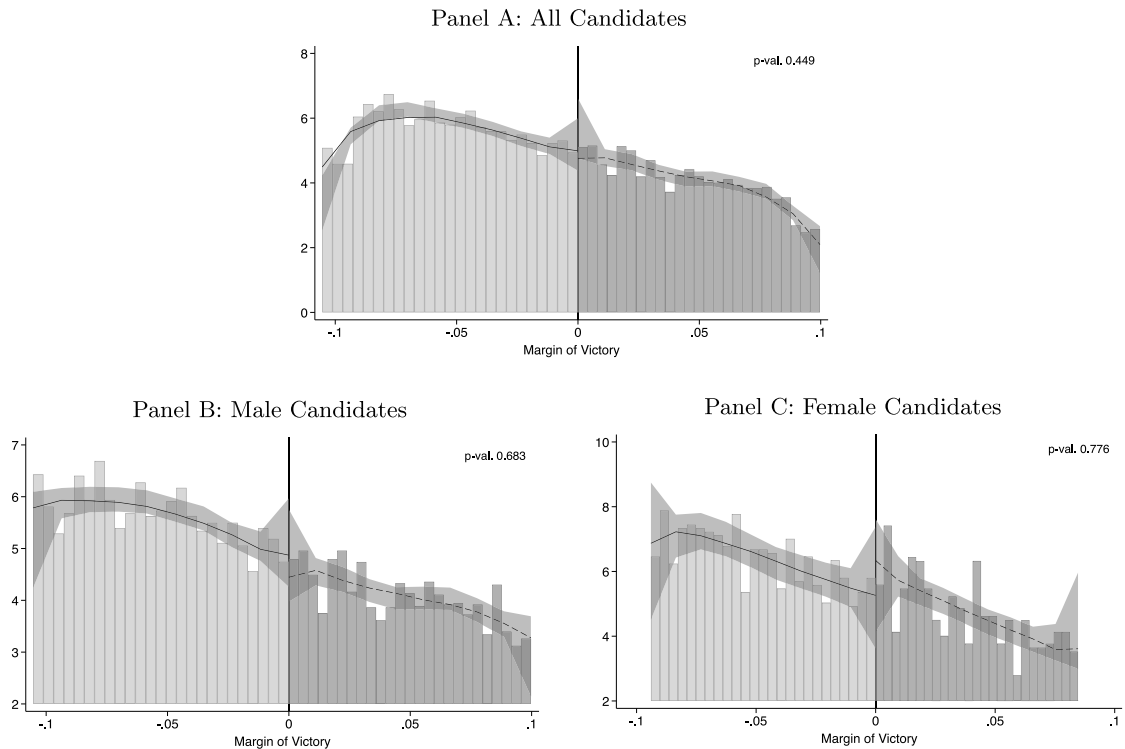


Fig. 1. Density tests for manipulation of electoral outcomes.

Notes: This figure reports density tests for manipulation of electoral outcomes among different subsamples. Panel A reports results for all candidates, Panel B reports results for male candidates, and Panel C reports results for female candidates using candidates within the optimal bandwidth which is allowed to vary on either side of the discontinuity and by candidate gender. Histograms denote the distribution of margin of victory. Local polynomial estimates, 95 percent confidence intervals, and reported p-values are calculated following Cattaneo et al. (2018).

We next test whether individual, election, or historical district characteristics exhibit any discontinuous jump at the identifying threshold. Column 1 of Table 2 shows the average election, district, and candidate characteristics (described in the row header) among losing candidates (the control group). Column 2 of Table 2 shows the difference in the focal characteristic for the election winner relative to the election loser.<sup>15</sup> These results indicate that winning a state legislature seat in a close election is not associated with any non-linear difference in election or district characteristics, such as the term length of the contested seat, the number of contesting candidates, historical average margin of victory in that district's previous elections, the historical share of previous elections contested by incumbents in that district, and the historical share of female state legislative candidates in that district.<sup>16</sup> In addition, winning a state legislature seat is not associated with the gender of the candidate or with their party affiliation.

Columns 1 and 2 of Table 3 show that these focal characteristics also do not vary for winners and losers of close elections when separating candidates by gender. This supports the identifying assumption that would allow our gender-specific estimates to be internally valid. However, the identifying assumption when comparing the effect of winning a state legislature seat *within* gender is not equivalent to the one needed for across-gender comparisons (Anzia and Berry, 2011; Fulton, 2012). Since comparisons of the size of this relationship for women versus men will rely on the difference between two within-gender discontinuities, the appropriate balance test is to check that the difference in personal attributes, election characteristics, and district types of narrowly elected female winners as compared to female losers of state legislature elections is comparable to the equivalent difference in these variables for male winners and losers (Arvate et al., 2021).

To examine this assumption, Column 3 of Table 3, calculates the difference between Columns 1 and 2. This test compares the difference in the election, district, and candidate characteristics of novice female winners and losers to the difference in these characteristics for novice male winners versus losers. The results in Panels A and B indicate that novice female and male winners do not differ in a systematic way with losers of the same gender in terms of political affiliation or election and district type. These results provide support for interpreting across gender differences in the effect of within gender election result discontinuities as causal estimates of the relative impact of winning a state legislature election on higher level election candidacy and representation by gender.

<sup>15</sup> To test these differences, we pool male and female candidates together and estimate a fully-interacted version of Eq. (1).

<sup>16</sup> We provide graphical evidence of balance of candidate and electoral characteristics in Appendix Figure 1. A joint F-test of all the characteristics tested in Column 2 of Table 2 is not significant at the 10 percent level.

**Table 2**  
Balance tests.

	Losing Candidate Mean	Won Election
	(1)	(2)
<i>Panel A: Election Characteristics</i>		
Number of Candidates	2.140	−0.000 (0.009)
Term Length	2.340	−0.013 (0.016)
Senate Election	0.247	−0.011 (0.011)
Special Election	0.005	0.001 (0.001)
<i>Panel B: District Characteristics</i>		
Share Incumbent Ran	0.653	−0.006 (0.005)
Share Unopposed Elections	0.181	−0.001 (0.005)
Margin of Victory	0.233	0.003 (0.004)
Share Female Candidates	0.158	0.004 (0.006)
Number of Candidates	1.897	−0.006 (0.009)
<i>Panel C: Candidate Characteristics</i>		
Democrat	0.471	0.038 (0.023)
Female	0.212	0.026 (0.020)
Observations	6905	11,580

Notes: This table reports control means and balance tests for the estimation sample. Column 1 reports means for losing candidates within the optimal bandwidth which is allowed to vary on either side of the discontinuity and by candidate gender and Column 2 reports results from regressions testing for balance of observable characteristics across the victory margin threshold. Each row represents a separate mean and regression. All regressions include state and year fixed effects and no other controls. Standard errors clustered at state-level are reported in parentheses. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

## 4. Main results

### 4.1. Career progression

We start by presenting a graphical analysis of the relationship between competing in a state legislature election and career progression using the outcomes of first-time candidates in close state legislature elections. Panel A of Fig. 2 plots five equally-sized margin of victory bins against the probability of ever running in a U.S. House of Representatives, Senate, or gubernatorial election (primary or general) on the left and ever winning one of these elections, on the right.<sup>17</sup> Over these binned means, we also plot a linear regression and the associated confidence intervals, estimated separately for winners and losers. It is clear from Fig. 2 that winning a state legislature seat generates a large and non-linear increase in the probability that the state legislature candidate ever runs in or wins a higher-level election.

Analogous to the information provided in Panel A of Fig. 2, Table 4 provides coefficients from the estimation of Eq. (1). The results in Column 1 of Panels A and B indicate that winning a state legislature seat increases the probability of running or winning any higher level election by about 4 and 3 percentage points, respectively. The coefficients are statistically significant at the 1 percent level, and controlling for candidate and election characteristics (Column 2) does not affect these results. These findings are consistent with the results of [McCrain and O'Connell \(2022\)](#) and, taken together, represent unambiguous confirmation that winning a lower level elected position plays an important role in political career progression. The economic magnitude of these estimates is large. Relative to the average probability among losing candidates, winning a state legislature seat increases the chance of running in any HLE by about 181 percent  $((4.281/2.361)*100)$  and winning any HLE by about 224 percent  $((3.215/1.434)*100)$ . Appendix Figure 2 illustrates that these empirical patterns are robust to a wide range of alternative bandwidth choices.

<sup>17</sup> The exact bin size varies across figures due to allowing the optimal bandwidth to vary on either side of the cutoff and by gender.

**Table 3**  
Balance tests by gender.

	Candidate gender		Female–Male
	Men	Women	Difference
	(1)	(2)	(3)
<i>Panel A: Election Characteristics</i>			
Number of Candidates	–0.001 (0.011)	–0.000 (0.032)	0.001 (0.037)
Term Length	–0.010 (0.019)	–0.031 (0.049)	–0.021 (0.058)
Senate Election	–0.007 (0.012)	–0.030 (0.032)	–0.022 (0.035)
Special Election	–0.002 (0.001)	0.007 (0.006)	0.009 (0.007)
<i>Panel B: District Characteristics</i>			
Share Incumbent Ran	–0.003 (0.006)	–0.019 (0.016)	–0.017 (0.018)
Share Unopposed Elections	0.002 (0.007)	–0.020 (0.013)	–0.022 (0.015)
Margin of Victory	0.001 (0.005)	0.010 (0.013)	0.009 (0.014)
Share Female Candidates	0.003 (0.006)	0.002 (0.021)	–0.001 (0.023)
Number of Candidates	–0.007 (0.011)	0.007 (0.018)	0.014 (0.023)
<i>Panel C: Candidate Characteristics</i>			
Democrat	0.030 (0.027)	0.057 (0.042)	0.028 (0.051)
Observations	9151	2429	11,580

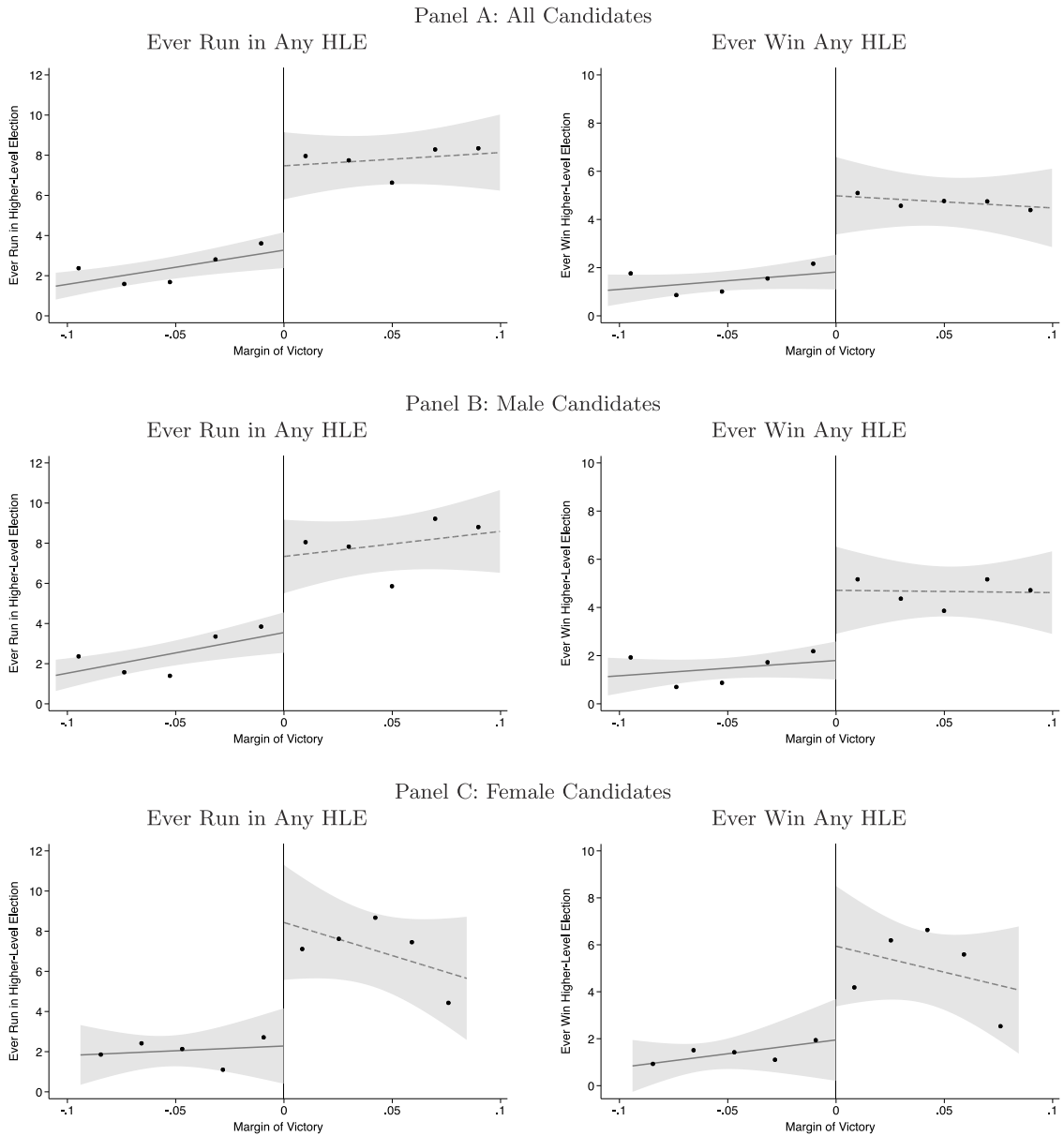
Notes: This table reports balance tests for different estimation subsamples. Columns 1 and 2 reports results from regressions testing balance of observable characteristics across the victory margin threshold in subsamples based on candidate gender. Columns 1 and 2 report results from regressions testing balance of observable characteristics across the victory margin threshold for men and women, respectively. Column 3 reports the difference in the gender-specific discontinuity estimates. The outcome is listed in each row and each estimate represents a separate regression. All regressions include state fixed effects and year fixed effects and no other controls. All regressions use the optimal bandwidth calculated using the running in any HLE outcome which is allowed to vary on either side of the discontinuity and by candidate gender. Standard errors clustered at state-level are reported in parentheses. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

#### 4.2. Career progression by gender

The primary motivation for this research is to examine whether the relationship between winning a state legislature seat and climbing the political ladder varies for women and men as this will provide insight into a potential pathway for narrowing the gender gap in political representation in higher level positions. Panels B and C of Fig. 2 provide a graphical analysis of the relationship between winning a state legislature election and political career progression separately by gender. These figures show that for both male and female first time state legislature candidates winning a state legislature seat generates a non-trivial, discontinuous boost to their probability of competing for and winning higher level elections. This effect appears to be more pronounced for women.

To more formally examine these relationships, Table 5 provides estimates from Eq. (1) separately for men and women. For example, the results in Columns 1 and 4 of Panel A indicate that male state legislature winners increase their likelihood of running in or winning a higher-level election by a statistically significant 3.80 and 2.93 percentage points, respectively. The equivalent estimates for women are provided in Columns (2) and (5) and show that winning a close state legislature elections for female candidates increases their probability of running in or winning an HLE by a statistically significant 6.34 and 4.24 percentage points, respectively.

The gender difference in the effect on candidacy is 2.54 percentage points is not significant at conventional levels ( $p = 0.136$ , Column 3 in Table 5). However, women and men face different structural barriers to pursuing political careers, complicating the interpretation of the simple difference in the estimated coefficients. In our sample of first-time losing candidates, the baseline probability of competing in a higher-level election (HLE) is 20% higher for men than for women. Therefore, an equivalent marginal increase in the probability of higher-level candidacy has a larger relative effect for women than for men. We report the gender difference in the probability of running in a HLE relative to counterfactual outcome averages in Column 3 of Table 5 and depict it



**Fig. 2.** Graphical evidence of the effect of winning a state legislative election on future political service and career advancement.  
 Notes: This figure plots graphical evidence of the effect of winning a state legislative election on future state legislature and higher-level outcomes. Panel A reports results for ever running in a higher-level (Congressional or gubernatorial) election, including primaries and general elections for all candidates in the left column and for ever winning a higher-level election in the right column. Panels B and C report results for male and female candidates. Each panel uses five equally sized bins using candidates within the optimal bandwidth which is allowed to vary on either side of the discontinuity and by candidate gender. The vertical line denotes the zero margin of victory threshold. Each dot reports the within-bin mean and bin midpoint. Outcomes are on a 0 to 100 scale. Solid and dashed black lines denote the lines of best fit with associated 95 percent confidence intervals indicated by gray shaded areas.

in Fig. 3 along with 90% and 95% confidence intervals. To calculate confidence intervals, we use a bootstrapping procedure which takes account of sample variability in the estimated coefficients and sample averages of losing candidates.<sup>18</sup>

<sup>18</sup> Specifically, we use a Bayesian bootstrap (Rubin, 1981) with 499 replications. We calculate the corresponding 90% and 95% confidence intervals by taking the appropriate quantiles from the resulting bootstrap distribution.

**Table 4**  
State legislative service and higher-level candidacy and representation.

<i>Panel A: Candidacy</i>	(1)	(2)
Run in Any HLE	4.187*** (0.834)	4.281*** (0.834)
Losing Candidate Mean	2.361	2.361
Won Election Effect/ Losing Candidate Mean	177%	181%
<i>Panel B: Representation</i>		
Win Any HLE	3.176*** (0.860)	3.215*** (0.869)
Losing Candidate Mean	1.434	1.434
Won Election Effect/ Losing Candidate Mean	221%	224%
Observations	11,580	11,580
Controls	No	Yes

Notes: This table reports regression discontinuity estimates of winning a candidate's first election on the probability of running in any future higher-level election. Panel A reports estimates of winning a candidate's first election on the probability they ever run in a higher-level (Congressional or gubernatorial) election, including primaries and general elections. Panel B reports estimates of winning a candidate's first election on the probability they ever win a higher-level (Congressional or gubernatorial) election, including primaries and general elections. All regressions include state and year fixed effects. Column 2 adds candidate and election characteristics as controls. All regressions use the optimal bandwidth calculated using the running in any HLE outcome which is allowed to vary on either side of the discontinuity and by candidate gender. The losing candidate means are calculated using losing candidates within the optimal bandwidth. Relative effects are calculated as the coefficient estimate divided by the losing candidate mean. All outcomes are on a 0 to 100 scale. Standard errors clustered at state-level are reported in parentheses. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

Winning a state legislative seat increases the likelihood of men running in any HLE by 155% relative to the average among losing male candidates, while it increases the likelihood for women by 309%. This difference of 154% is statistically significant at the 10% level (indicated in blue circles in Fig. 3).<sup>19</sup> In Panels B and C of Table 5 we disaggregate the dependent variables into separate measures for Congressional and gubernatorial elections.<sup>20</sup> Qualitatively, the within and across gender impact of winning a state legislature seat for these two types of elections mirror the overall result in Panel A. The difference in the relative effect of running in a Congressional election between men and women is 163 percentage points and, as shown in Fig. 3, is statistically significant at the 10% level. Although the gender difference for gubernatorial elections is less precise, the results suggest that the female advantage in returns to this type of experience on political career progression is not specific to one type of HLE.<sup>21</sup>

The gender difference in winning a HLE is 1.31 percentage points and is not statistically significant at conventional levels (Column 6, Table 5). In relative terms, these coefficients imply that winning a state legislative seat increases the likelihood of winning a HLE by 202% for men and by 311% for women. As we show in Fig. 3 (indicated in gray diamonds), however, the relative difference of 109 percentage points in winning a HLE is also not statistically significant at conventional levels. This pattern of results is similar when we examine effects on winning a Congressional or gubernatorial election. Thus, we do not reject that hypothesis that the effect of winning a state legislative seat on representation in higher-level office does not vary by gender.

While the gender gap in the returns to winning a state legislature seat could theoretically reflect the impact of other district or party characteristics that are correlated with the gender of the winner, we showed in Table 3 that this is not the case. Specifically, we find that the difference between female winners and losers is not different than the difference between male winners and losers on election and district characteristics or party affiliation, and the focus on novice politicians ensures that they do not have prior differential experience in the state legislature.<sup>22</sup>

<sup>19</sup> Note that conclusions based on differences in estimated coefficients will not lead to equivalent inference as the difference in relative effects unless the baseline means between the two groups are identical.

<sup>20</sup> A Congressional election includes running in or winning House and Senate primary elections, and any general elections for the House or Senate.

<sup>21</sup> Appendix Figure 3 illustrates that these empirical patterns are robust to a wide range of alternative bandwidth choices. Moreover, as we show in Appendix Table 1, the results are robust to using a triangular kernel (Panel B) and an Epanechnikov kernel (Panel C).

<sup>22</sup> To provide additional evidence that our estimated gender gap in career progression is not driven by differences in candidate political affiliation, we show in Columns 1–2 of Appendix Table 2 that the effects on running in or winning a HLE are similar or larger for Non-Democratic candidates. Since there is a higher proportion of Democrats among female winners of close state legislative elections, the differential effects we find by gender cannot be a product of party affiliation.

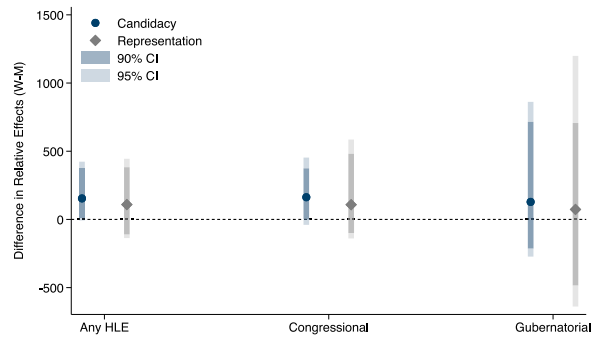


Fig. 3. Difference in relative effects of winning state legislative election on higher-level outcomes.

Notes: This figure reports estimates of the difference in relative effects for women and men candidates from Table 5. Relative effects are calculated as the RD coefficient divided by the losing candidate mean. Blue circles correspond to differences in candidacy and gray diamonds correspond to differences in representation. The type of outcome is listed on the x-axis. Darker and lighter shaded regions represent 90 and 95 percent confidence intervals based on the percentiles of a bootstrap distribution which additionally accounts for sampling variability in the control means. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Another potential concern with comparing the results across men and women in Table 5 is that female candidates are significantly more likely to compete in mixed-gender elections than men.<sup>23</sup> As suggested in Marshall (2024), this could present an issue for identification if unobserved quality/ability differences between winners and losers is greater in close mixed-gender elections as compared to close same-gender elections. For example, it is possible that, due to cultural norms or discriminatory beliefs, female candidates need to be of higher quality compared to their male opponents in order to win a close election. In contrast, male candidates in close-won elections are more likely to be of similar ability. If this is indeed the case, the higher share of mixed-gender elections in which female candidates participate may create an imbalance in inherent ability across female and male winners. In order to test the sensitivity of our results to this potential issue, we re-estimate the results in Table 5 using only same-gender elections. The results from this exercise can be found in Appendix Table 3. Reassuringly, these results do not indicate that the higher ratio of mixed-gender elections in the female sample is driving the results as same-gender elections produce the same patterns with even larger magnitudes.

Finally, it is possible that the gender gap in career progression reflects differences in persistence between men and women after an electoral loss. This is the conclusion drawn in Wasserman (2021a) who examined gender differences in the persistence of candidates for local positions in California (e.g. school board, city council, county supervisor, mayor) after they win or lose elections. In our context, however, we find no evidence of a similar behavioral response among losers. Specifically, the average probability of running for a higher level position and the slope of the relationship between margin of election loss and probability of running for a higher level position are not economically or statistically significantly different for male and female losers. This is consistent with Wasserman (2021b)'s and Bernhard and de Benedictis-Kessner (2021)'s results which find no gender difference in the response to electoral defeats for losing state legislature candidates.

The takeaway from these results is that while the likelihood of competing in a HLE in our sample is positively impacted by a quasi-random promotion to the state legislature, the benefit from this win is nominally larger for women, if imprecisely estimated. Although the results do not indicate that winning a state legislative seat increases female representation, political parties and advocacy groups interested in reducing gender inequality in candidacy for high level political positions would benefit from allocating resources to support the recruitment, funding, and campaigning of women in elections for local positions. With this goal in mind, we next seek to identify whether certain seats may provide higher leverage opportunities for the advancement of female politicians.

## 5. Mechanisms

### 5.1. Time commitment and career-family tradeoffs

Pursuing a career in politics requires working long and unpredictable hours and imposes large costs on family life, especially as individuals climb the political career ladder (Fiva and King, 2023). Given prevailing gender norms, the costs of work-life balance are likely to be larger for female candidates, or to be perceived as such by party elites and voters, impacting the supply of female candidates (Silbermann, 2015; Bernhard et al., 2021; Goldin, 2021; Fiva and King, 2023). We hypothesize that election to the state legislature may provide female politicians more information about the tradeoffs that they may be expected to make as they progress in their career, which could have either positive or negative effects on women's political career progression depending

<sup>23</sup> In our close-elections sample, 78 percent of women compete in mixed-gender elections, compared to just 19 percent for men.

**Table 5**  
State legislative service and higher-level candidacy and representation across varying definitions of higher-level positions by gender.

	Candidacy			Representation		
	Men	Women	Difference	Men	Women	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Any HLE</i>						
Won Election	3.797*** (0.963)	6.336*** (1.368)	2.540 (1.676)	2.928*** (1.018)	4.242*** (1.361)	1.314 (1.668)
Losing Candidate Mean	2.445	2.048		1.452	1.365	
Won Election/ Losing Candidate Mean	155%	309%	154	202%	311%	109
<i>Panel B: Congressional Election</i>						
Won Election	3.418*** (0.978)	5.736*** (1.266)	2.319 (1.583)	2.657*** (0.923)	4.007*** (1.292)	1.349 (1.558)
Losing Candidate Mean	2.132	1.775		1.324	1.297	
Won Election/ Losing Candidate Mean	160%	323%	163	201%	309%	108
<i>Panel C: Gubernatorial Election</i>						
Won Election	0.663 (0.449)	0.998* (0.544)	0.335 (0.745)	0.347 (0.351)	0.358 (0.258)	0.011 (0.425)
Losing Candidate Mean	0.404	0.341		0.184	0.137	
Won Election/ Losing Candidate Mean	164%	292%	129	189%	262%	73
Observations	9151	2429		9151	2429	

Notes: This table reports regression discontinuity estimates of winning a candidate's first election on the probability of running in or winning a higher-level election (Congressional or gubernatorial) under different definitions of higher-level office, separately by candidate gender. Columns 1–3 report estimates for running in a higher-level election and Columns 4–6 report estimates for winning. Panel A reports results for the probability of running in or winning any higher-level election (Congressional or gubernatorial), including primaries and general elections. Panel B reports results for Congressional elections and Panel C reports results for gubernatorial elections. Columns 1 and 4 report estimates for male candidates, Columns 2 and 5 report estimates for female candidates, and Columns 3 and 6 test for differences between male and female candidates. All regressions include state and year fixed effects as well as candidate and election controls. All regressions use the optimal bandwidth calculated using the running in any HLE outcome which is allowed to vary on either side of the discontinuity and by candidate gender. The losing candidate means are calculated using losing candidates within the optimal bandwidth. Relative effects are calculated as the coefficient estimate divided by the losing candidate mean. All outcomes are on a 0 to 100 scale. Standard errors clustered at state-level are reported in parentheses. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

on individual preferences and the information learned. In addition, being elected and gaining political experience may also have the potential to change the beliefs of party elites and voters about the performance of female candidates in higher-level and more demanding positions.

We examine this hypothesis by leveraging different sources of heterogeneity across state legislatures. We start by using cross-state variation in the time commitment expected of state legislators. State legislative positions can be full-time, hybrid, or part-time, with the seat-holders being required to devote between 60 to 85 percent of an equivalent full-time job's hours to their legislative duties.<sup>24</sup> Slightly more than half of state legislatures are comprised of hybrid positions, and the rest are almost equally split between full- and part-time. Intuitively, serving in full-time state legislatures more closely resembles the responsibilities and workload associated with serving in Congress than does serving in part-time legislatures.

Table 6 provides estimates of the effect of winning a part-time state legislature election on HLE candidacy in Columns (1)–(3) of Panel A, while Panel B presents the estimates for winning a seat in a full-time legislature.<sup>25</sup> For both part-time and full-time state legislature positions across genders, victory in the initial election has a significant positive effect on the likelihood of HLE candidacy. Despite this consistent relationship, there is a significant gender difference in the impact of being elected to a full-time legislature on future candidacy for higher level offices. Specifically, women are 6.55 percentage points (5.49 vs. 11.84) more likely to contest a HLE after serving in a full-time legislature compared to men but this difference is not statistically significant. As discussed above, however, comparing the estimated coefficients between men and women is complicated by the fact that losing men are more than twice likely to compete in a HLE compared to losing women (4.11 vs. 1.85). For a more appropriate comparison, we scale the estimated coefficients by the average rate that candidates compete in a HLE after losing an election and depict the resulting relative differences in Fig. 4, along with 90% and 95% confidence intervals. In relative terms, we find that the effect of competing in a HLE is 511 percentage points higher for women compared to men after winning a full-time state legislature, a difference that is statistically significant at the 5% level (indicated in blue triangles). In contrast, the gender difference in the likelihood of competing in HLE is small (75 percentage points) and statistically insignificant when serving in a part-time legislature (Fig. 4, indicated in blue circles).

<sup>24</sup> These classifications are based on surveys of state legislators from NCSL (2017).

<sup>25</sup> The results in Columns 1–2 of Appendix Table 4 provide evidence that the characteristics of winning and losing candidates are balanced within the sub-samples of part-time and full-time legislatures.

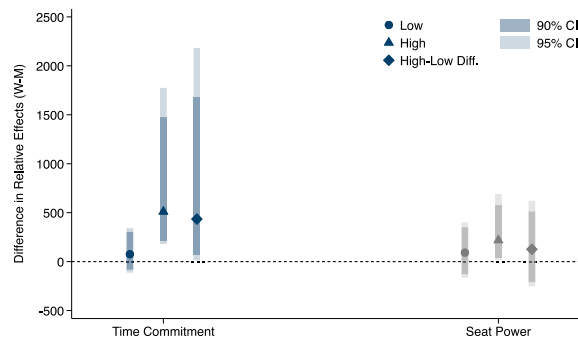


Fig. 4. Difference in relative effects of winning state legislative election on higher-level outcomes by type of experience.

Notes: This figure reports estimates of the difference in relative effects for women and men candidates from Table 6. Relative effects are calculated as the RD coefficient divided by the losing candidate mean. The outcome in all differences is the probability of running in any higher-level election. Circles correspond to low or below median subsamples, triangles correspond to high or above median subsamples, and diamonds represent the difference between the two. Blue markers splits based on time commitment and gray markers denote splits based on seat power. Darker and lighter shaded regions represent 90 and 95 percent confidence intervals based on the percentiles of a bootstrap distribution which additionally accounts for sampling variability in the control means. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

The difference in the effects across part- and full-time legislatures and between men and women, presented in the last row of Columns 1–3 (Panel B-Panel A), nets out any differences in the effects of serving across different types of legislatures that are common to both genders. The results indicate that the effect of winning a full-time legislature is 4.78 percentage points higher for women than men but this effect is not statistically significant at conventional levels. In relative terms, the gender difference between part-time and full-time legislatures is 435 percentage points (511%–75%) which, as we show in Fig. 4, is significant at the 5% level (indicated in blue diamonds).<sup>26</sup> The gender difference in the relative importance of winning a part- versus full-time legislature position on representation in a higher level position are provided in Columns 1–3 of Appendix Table 5. The results of this analysis display a pattern consistent with Columns (1)–(3) of Table 6 where there is a substantially larger advantage for women to winning full-time positions, but the gender difference of 195 percentage points is not statistically significant.

Next, we examine whether the effects of winning a state legislature election vary by the size of the constituency that a state legislator represents. Variation in the size of the constituency comes from differences in the population size of the state and the number of seats in the legislature. We expect seats representing larger constituencies (i.e., “powerful seats”) to provide legislators with wider visibility and with more relevant campaign experience for Congressional and gubernatorial elections. While these benefits are bestowed on legislators of both genders, it is possible that there is greater tension between the responsibilities of higher-level elected office and societal norms around work for women than there is for men (Fiva and King, 2023). If that is the case then holding a more powerful position may have a larger impact on the propensity of women to compete in a HLE. Columns (4)–(6) in Panel A of Table 6 present estimates of the impact of winning a state legislature seat that serves a below the median sized constituency (“low power”) on the likelihood of running in a HLE, and the same columns in Panel B represent the equivalent analysis for the impact of winning a state legislature seat that serves an above the median sized constituency (“high power”).<sup>27</sup>

Comparing the results across Panels A and B of Columns 4 and 5, it is clear that, for both men and women, winning a more powerful state legislature seat has a larger effect on the probability of running in a HLE as compared to winning a low power position.<sup>28</sup> It is also the case that women elected to a more powerful seat are, in relative terms, significantly more likely to compete in a HLE compared to men elected to a similar position (424% vs. 206%, respectively). As depicted in Fig. 4, the additional advantage of 218 percentage points that women gain by serving in a high power seat is statistically significant at the 5 percent level (depicted in gray triangles). In contrast, the gender difference in the magnitude of the effect when winning a low-power seat is smaller (92 percentage points) and not statistically significant (Fig. 4, depicted in gray circles). With that being said, the difference of 126 percentage points in the relative effects across low- and high-power seats and between men and women is not precisely estimated (Fig. 4, depicted in gray diamonds).<sup>29</sup> Thus, we cannot reject the hypothesis that men and women gain the same advantage from serving in a high-power seat compared to serving in a low-power seat.

<sup>26</sup> It is worth noting that calculating the confidence interval of the difference in the relative effects across types of legislatures and between men and women is likely to inflate any estimation error since it accounts for sampling variability of four estimated coefficients and four sample averages of losing candidates.

<sup>27</sup> The results in Columns 3–4 of Appendix Table 4 provide evidence that the characteristics of winning and losing candidates are balanced within the sub-samples of seats representing smaller and larger constituencies.

<sup>28</sup> Men and women elected to a high power seat have a 6.16 and 8.32 percentage points higher likelihood of competing in a HLE compared to winning a low power seat, respectively. These effects are all significant at the 1 percent level.

<sup>29</sup> Analogous estimates on the impact of state legislature constituency size on the probability of winning a HLE are provided in Columns 4–6 of Appendix Table 5 and display a similar pattern as found in Columns (4)–(6) of Table 6.

**Table 6**  
State legislative service and higher-level candidacy by type of experience and gender.

	Time commitment			Seat power		
	Men	Women	Difference	Men	Women	Difference
<i>Panel A: Low</i>	(1)	(2)	(3)	(4)	(5)	(6)
Won Election	3.516*** (1.022)	5.281*** (1.581)	1.765 (1.855)	1.558* (0.888)	3.093* (1.631)	1.535 (1.746)
Losing Candidate Mean	2.001	2.103		1.636	1.652	
Observations	7279	1907		5,697	1503	
Won Election Effect/ Losing Candidate Mean	176%	251%	75	95%	187%	92
<i>Panel B: High</i>						
Won Election	5.286** (2.599)	11.836** (4.588)	6.550 (5.204)	7.718*** (1.896)	11.411*** (2.378)	3.693 (3.250)
Losing Candidate Mean	4.112	1.852		3.754	2.693	
Observations	1872	522		3454	926	
Won Election Effect/ Losing Candidate Mean	129%	639%	511	206%	424%	218
<i>Panel B - Panel A</i>						
Difference in Direct Effects	1.771 (2.745)	6.555** (2.773)	4.784 (3.952)	6.160*** (2.108)	8.318*** (2.858)	2.158 (3.561)
Difference in Relative Effects	-47	388	435	110	237	126

Notes: This table reports regression discontinuity estimates of winning a candidate's first election on the probability of running in a higher-level election (Congressional or gubernatorial) by heterogeneous sample split defined by part- and full-time legislatures (Columns 1–3) and below- and above-median seat power (Columns 4–6), separately by candidate gender. The outcome is running in any higher-level election. Panel A reports results for part-time legislative positions and below-median seat power constituencies and Panel B reports results for full-time legislative positions and above-median seat power constituencies. Columns 1 and 4 report estimates for male candidates, Columns 2 and 5 report estimates for female candidates, and Columns 3 and 6 test for differences between male and female candidates. All regressions include state and year fixed effects as well as candidate and election controls. All regressions use the optimal bandwidth calculated using the running in any HLE outcome which is allowed to vary on either side of the discontinuity and by candidate gender. The losing candidate means are calculated using losing candidates within the optimal bandwidth. Relative effects are calculated as the coefficient estimate divided by the losing candidate mean. All outcomes are on a 0 to 100 scale. The bottom panel reports the difference in direct and relative effects across Panels B and A. Standard errors clustered at state-level are reported in parentheses. Robust standard errors are reported in Panel B, Columns 1–3 due to few clusters. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

## 5.2. Legislature and district characteristics

We provide evidence for two additional mechanisms that could differentially impact the size of the effect of winning a state legislature seat on political career progression for women and men. First, we estimate whether the effects of winning varies by gender based on the share of men in the state legislature.<sup>30</sup>

The share of men in the legislature can impact career progression in several ways. For example, the control a state legislator has with regard to setting an agenda and enacting policy is strongly linked to their ability to secure influential committee assignments and high-ranking positions in the party leadership. A study examining how these responsibilities are allotted concluded that female state legislators are much more likely to be placed at the bottom of this hierarchy when their counterparts in the state legislature are made up of a higher share of men (Fouirnaies et al., 2018). Thus, we would expect the effect of winning a state legislature seat to be larger for women in chambers with a lower share of male legislators because securing a leadership role at the state level is easier.

The results in Columns 1–3 of Table 7 provide support for this hypothesis. As shown in Column 3 of Panel A, women who are elected to serve in legislatures with a below median share of men are 4.55 percentage points more likely to compete in a HLE, a difference that is statistically significant at the 5% level. Relative to the average among losing candidates, this difference implies a gender difference of 317 percentage points which, as shown in Fig. 5, is also statistically significant at the 5 percent level. In contrast, the gender difference in the relative effects of winning a state legislature elections with above median share of men is small and statistically insignificant. The 5.98 percentage points gender difference in the estimated coefficients across legislatures with above and below median share of men (Panel B-Panel A, presented in the last row of Column 3) is not precisely estimated. In relative terms, the estimates imply a gender difference of 362 percentage points larger for women in legislatures with a low share of men which is not significant at conventional levels (Fig. 5).<sup>31</sup>

<sup>30</sup> The share of men in the state legislature is calculated as the fraction of male winners in the state-chamber-year in which the candidate won their state legislature election.

<sup>31</sup> It is possible that female legislators are more likely to participate in a HLE when they compete with a smaller pool of female legislators. This could be the case either because candidates update their likelihood of success or because it is easier to stand out and be noticed by party elites when there are fewer overall women in the pipeline. In such a case, we would expect the effects of winning a state legislature election to be larger in legislatures with a high share of men

**Table 7**  
State legislative service and higher-level candidacy by historical district characteristics and gender.

	Male share of legislature			Historical share female candidates		
	Men	Women	Difference	Men	Women	Difference
<i>Panel A: Low</i>	(1)	(2)	(3)	(4)	(5)	(6)
Won Election	3.430** (1.373)	7.982*** (1.813)	4.552** (2.048)	4.429*** (1.469)	7.255** (2.775)	2.826 (2.942)
Losing Candidate Mean	1.963	1.623		2.753	1.858	
Observations	4873	1697		4418	982	
Won Election Effect/ Losing Candidate Mean	175%	492%	317	161%	390%	230
<i>Panel B: High</i>						
Won Election	4.199** (1.585)	2.772 (3.128)	-1.427 (3.605)	3.344** (1.391)	5.904*** (1.803)	2.559 (2.222)
Losing Candidate Mean	2.997	2.923		2.030	2.270	
Observations	4278	732		4435	1383	
Won Election Effect/ Losing Candidate Mean	140%	95%	-45	165%	260%	95
<i>Panel B - Panel A</i>						
Difference in Direct Effects	0.769 (2.231)	-5.210 (3.976)	-5.979 (4.424)	-1.084 (2.164)	-1.351 (3.684)	-0.267 (4.035)
Difference in Relative Effects	-35	-397	-362	4	-130	-134

Notes: This table reports regression discontinuity estimates of winning a candidate's first election on the probability of running in a higher-level election (Congressional or gubernatorial) by heterogeneous sample split defined by below- and above-median share of male legislators in a cohort (Columns 1–3) and below- and above-median historical share of female candidates in a constituency (Columns 4–6), separately by candidate gender. The outcome is running in any higher-level election. Panel A reports results for below-median elections and Panel B reports results for above-median elections defined by the sample split. Columns 1 and 4 report estimates for male candidates, Columns 2 and 5 report estimates for female candidates, and Columns 3 and 6 test for differences between male and female candidates. All regressions include state and year fixed effects as well as candidate and election controls. All regressions use the optimal bandwidth calculated using the running in any HLE outcome which is allowed to vary on either side of the discontinuity and by candidate gender. The losing candidate means are calculated using losing candidates within the optimal bandwidth. Relative effects are calculated as the coefficient estimate divided by the losing candidate mean. All outcomes are on a 0 to 100 scale. The total sample is smaller in Columns 4–6 due to missing data. The bottom panel reports the difference in direct and relative effects across Panels B and A. Standard errors clustered at state-level are reported in parentheses. \*\*\* = significant at 1 percent level, \*\* = significant at 5 percent level, \* = significant at 10 percent level.

Lastly, we estimate returns to winning a state legislature election across districts with different historical exposure to female candidates. If the career advancement of female politicians is significantly influenced by changes in voter preferences, we would expect the effect of winning to be larger in districts that had little experience electing women in the past.<sup>32</sup> The results in Panel A, Column 5 of Table 7 suggest that female winners in districts with a historically low share of female candidates increase their chances of participating in a HLE by 7.26 percentage points, an increase of about 390 percent relative to the mean. In comparison male winners in the same type of districts are 4.43 percentage points more likely to compete in a HLE, an increase of about 161% relative to the average among losing men in these districts. Nonetheless, the estimated gender difference of 2.83 percentage points and the 230 percentage points difference in the relative effects are not estimated with precision (Fig. 5). In comparison, the gender difference of winning in districts with a historically high share of female candidates is smaller and not precisely estimated. The 134 percentage point difference across these two types of districts and between men and women (last row of Column 6) cannot be distinguished from zero (Fig. 5). Taken together, we conclude that voter perceptions are unlikely to be the main mechanism through which winning a seat for the state legislature affects career progression.<sup>33</sup>

## 6. Conclusion

Contemporary discourse frequently points to gender imbalances in high-status occupations, but effective solutions for increasing the representation of women in leadership positions remain elusive. One potential alternative to the strategy of placing women into these types of roles through, for example, quota systems, is a bottom up approach which focuses on supporting women's early stage career progression. In this paper, we investigate whether the returns to winning a state legislature seat in the U.S. on the likelihood of competing and winning a higher level political position vary by gender. Since experience and promotion in this context are

which is contrary to the pattern of results in Table 7.

<sup>32</sup> As before, historical variables are measured as the mean value of the district characteristic over the 10 years that preceded the focal state legislative election.

<sup>33</sup> The heterogeneous results of winning a state legislature seat by the share of men in the legislature and by the historical share of female candidates are presented in Appendix Table 6. The results and patterns of these estimates are qualitatively similar to the effects on candidacy but are not statistically significant at conventional levels.

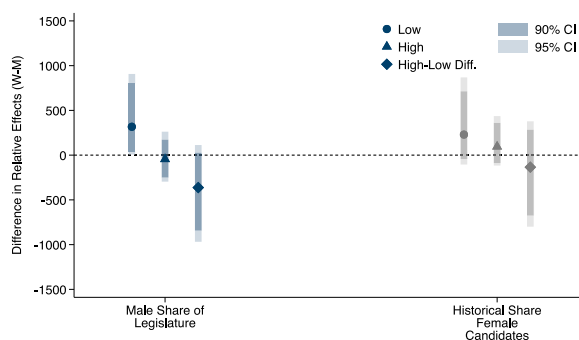


Fig. 5. Difference in relative effects of winning state legislative election on higher-level outcomes by historical district characteristics.

Notes: This figure reports estimates of the difference in relative effects for women and men candidates from Table 7. Relative effects are calculated as the RD coefficient divided by the losing candidate mean. The outcome in all differences is the probability of running in any higher-level election. Circles correspond to below median subsamples, triangles correspond to above median subsamples, and diamonds represent the difference between the two. Blue markers splits based on male share of the legislative cohort and gray markers denote splits based on the historical share of female candidates. Darker and lighter shaded regions represent 90 and 95 percent confidence intervals based on the percentiles of a bootstrap distribution which additionally accounts for sampling variability in the control means. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

acquired through the election process, focusing on the careers of politicians provides unique identification advantages with regard to the study of the advancement of women across institutional hierarchies.

Using data that track nearly all novice U.S. state legislature candidates since 1976 paired with a regression discontinuity design, we find that the effect of winning a state legislature seat on candidacy for a higher level position, though imprecisely estimated, is substantially larger for women than men. We show that neither the overall effect nor the gender difference in returns to winning a state legislature seat is an artifact of party affiliation nor is it explained by the candidate's, the election's, or the legislative district's observed characteristics. Importantly, we provide suggestive evidence that this gender difference is particularly large in positions that require a significant time commitment. These findings are consistent with candidates, party elites, or voters updating their beliefs about the career-life tradeoffs expected of female politicians in higher-level positions.

We therefore conclude that the pathway from local to higher-level political offices functions at least as effectively for women as for men. Efforts to reduce aggregate gender disparities in representation among powerful positions should therefore focus on fostering early-career or entry-level opportunities for women in stepping-stone positions.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A. Supplementary data

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.jebo.2024.106806>.

### Data availability

The authors do not have permission to share data.

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