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Ryan Brown
University of Colorado Denver

James Reeves
University of Michigan

Hani Mansour
University of Colorado Denver and IZA

Stephen D. O'Connell
Emory University and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Gender Differences in Political Career Progression: Evidence from U.S. Elections*

This paper establishes the presence of a substantial gender gap in the relationship between state legislature service and the subsequent pursuit of a Congressional career. The empirical approach uses a sample of mixed-gender elections to compare the differential political career progression of women who closely win versus closely lose a state legislature election relative to an analogous impact for men who closely win or lose a state legislature election. We find that the effect of serving a state legislative term on the likelihood of running for a Congressional seat is twice as large for men as women, and its effect on winning a Congressional race is five times larger for men than women. These gaps emerge early in legislators' careers, widen over time, and are seen alongside a higher propensity for female state legislators to recontest state legislature seats. This gender gap in advancing to Congress among state legislators is not generated by gender differences in previously accumulated political experience, political party affiliation, or constituency characteristics. After investigating several explanations, we conclude that the gender gap in political career progression is consistent with the existence of a glass ceiling in politics.

JEL Classification: J16, J24, D72, J71

Keywords: gender gap, politicians, discrimination, elections

Corresponding author:
Hani Mansour
Department of Economics
University of Colorado Denver
Campus Box 181
Denver, CO 80217
USA

E-mail: hani.mansour@ucdenver.edu

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I. Introduction

The underrepresentation of women in high-status occupations continues to persist around the globe, even in countries which have made significant progress towards gender equality (Bertrand et al. 2018). This is particularly true in the political sphere, where the representation of female politicians at the highest level of government is well below their share of the population (CAWP 2017).[1] This persistent gender gap in political representation has been linked to a shortage of female candidates, rather than to a lower likelihood of winning conditional on candidacy (Lawless and Fox 2008). In fact, several papers have documented that conditional on candidacy for the U.S. Congress, the gender of the candidate has little impact on the amount of campaign funds raised, the vote share won by the candidate, or a candidate's probability of winning (Anastasopoulos 2006; Barber et al. 2016). Thus, to better design policies aimed at increasing the representation of women in politics, it is essential to examine gender differences in political career trajectories and the factors that differentially influence the career paths of female and male politicians (Myerson 2011; Finan et al. 2015; Folke and Rickne 2016).[2]

The relative scarcity of women in leadership positions is partly related to their lower probability of promotion compared to men with similar productivity and initial career profiles (Lazear and Rosen 1990; Pekkarinen and Vartiainen 2006; Smith et al. 2013; Antecol et al. 2018; Hospido et al. 2019). Many reasons have been proposed to explain this phenomenon, such as a higher probability of quitting (Lazear and Rosen 1990), career interruptions due to having children (Antecol et al. 2018), and higher thresholds for promotion (Pekkarinen and Vartiainen 2006). In this paper, we examine whether gender differences in the likelihood of pursuing a Congressional career among politicians who start their career at the local level contribute to the under-representation of women in Congress. This is motivated by the fact that state legislatures have historically functioned as

[1] See Figure 1 for trends in female representation in the U.S. since 1970. 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 Paliament (Bhalotra et al. 2018).

[2] Numerous studies have shown that female and male politicians have different policy preferences, and that increasing the share of female politicians can improve the outcomes of women and children, while also increasing trust in government more generally (Chattopadhyay and Duflo 2004; Miller 2008; Iyer, Mani, Mishra and Topalova 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.

an important stepping stone for generating Congressional representatives. Between 1976 and 2016, an average of 46.5 percent of the U.S. House of Representatives was comprised of members who had served as state legislators. In the 2016 elections, 20 percent of female candidates for the House and 23 percent of male candidates for the House had prior state legislative experience.[3] It is perhaps unsurprising that service at the state level is a common precursor to a Congressional career, because this service provides candidates with campaigning and legislative experience while also allowing voters and parties to update their beliefs about a candidate's policy preferences and overall ability.

Differences in the probability of moving up the political "career ladder" between two candidates who only differ by gender may arise because discriminatory practices by voters or party elites perpetuate a "glass ceiling" for women (Folke and Rickne 2016; Fouirnaies et al. 2018; Gagliarducci and Paserman 2011).[4] The existence of a glass ceiling may, in turn, lead female state legislators to underestimate their own ability and chances of electability compared to male legislators, or shape their preferences about serving in Congress (Seltzer et al. 1997; Fox and Lawless 2011; Folke and Rickne 2016; Bordalo et al. 2019).[5] Alternatively, the effect of state legislature service on Congressional candidacy or representation may differ between men and women for reasons other than discrimination. For example, female politicians may face higher costs borne of career-family tradeoffs due to prevailing gender norms, especially since Congressional service is not considered a family-friendly job (Bertrand et al. 2010; Goldin 2014; Goldin and Katz 2016; Kleven et al. Forthcoming; Kuziemko et al. 2018). Heterogeneous effects between men and women could also arise because men are more likely to have accumulated more legislative experience, or because of party-specific differences in the career profiles of politicians (Sanbonmatsu 2002).[6]

[3]These figures are based on the authors' calculations using data from the Biographical Characteristics of Members of the United States Congress (ICPSR 7803) and the VoteSmart Biographical database. The latter figures include only candidates who held a single-member district seat, which is most similar to a U.S. House position. Currently, over half of the 115th U.S. Congress began their political careers in the state legislature (NCSL 2018).

[4]Fouirnaies et al. (2018) provide evidence that female state legislators are given less prestigious committee assignments and are less likely to be put in leadership positions. Gagliarducci and Paserman (2011) show that female Italian mayors are less likely to stay in office when they interact with an all-male council, suggesting that group dynamics influence performance.

[5]In recent work, Bordalo et al. (2019) experimentally show that both men and women overestimate their own ability. However, men overestimate their own ability in traditionally male-dominated tasks, and vice versa for women.

[6]These explanations are consistent with existing descriptive evidence of gender differences in "progressive ambition" of sitting politicians and other potential candidates (Fox and Lawless 2004; Carey et al. 2008). For instance, 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, including for Congress (Carey et al. 2008).

To quantify gender differences in the likelihood of pursuing a Congressional career among state legislators, we estimate the effect of winning a state legislative seat on the probability of competing in (or winning) a Congressional race for the near-universe of candidates for U.S. state legislatures since 1967. We link individuals across historical data on state and national legislature elections, allowing us to accurately observe whether a given candidate for a state legislature seat subsequently competes in future elections for state legislatures or the U.S. Congress, including participation in Congressional primary and general elections.

We motivate our methodological approach through an application of a regression discontinuity design (RDD) based on close-won state legislature elections between men and women. This approach effectively compares the future Congressional candidacy and representation of women who closely won a state legislature election over a man to women who closely lost a similar election. We then estimate a similar quantity for men, in which we compare the career paths of men who closely won over a woman to those who closely lost to a female candidate. In support of this strategy, we find little evidence of differences in the characteristics of female and male politicians who won their seat in a mixed-gender election or that such candidates compete in congressional districts with systematically different constituency characteristics (Duerst-Lahti 1998; Fulton et al. 2006; Maestas et al. 2006; Sanbonmatsu 2006; Palmer and Simon 2008; Carroll and Sanbonmatsu 2013; Mariani 2008).

The analysis provides several novel insights. First, we provide evidence that male state legislators are about twice as likely than their female counterparts to leave their state legislature positions to compete for a Congressional seat in subsequent elections. This gender disparity is driven by primary and general elections for the House of Representatives, but not the Senate. Second, we find that, unconditional on candidacy, the probability of winning a Congressional seat is five times larger for male state legislators compared to female state legislators. Third, we show that the gender gap is not a function of differences in the timing at which female and male politicians decide to pursue a Congressional office. In fact, the disparity begins with the first opportunity that state legislators can compete in a Congressional election, widens over the next few opportunities, and never closes.

Moreover, Fox and Lawless (2004) provide evidence that among a pool of potential candidates, women express lower levels of political ambition compared to men with similar professional credentials. See also Schlesinger (1966); Black (1972); Duerst-Lahti (1998); Fulton et al. (2006); Maestas et al. (2006); Sanbonmatsu (2006); Palmer and Simon (2008), and Carroll and Sanbonmatsu (2013).

Fourth, we find that female state legislators have a higher probability of re-running for the same seat in the subsequent election compared to male politicians, generating higher female incumbency rates in state legislatures.[7] Overall, our findings confirm that the transition from local to national politics is less assured for women relative to men.

Our results cannot be explained by several factors highlighted in previous studies. For example, Lawless and Pearson (2008) show using data from 1958 to 2004 that women face more competition in primary elections compared to men. In contrast, our mixed-gender election sample provides no evidence that the number of candidates in primary or general elections varies by gender. Moreover, we do not find gender differences in a host of other incumbent or election characteristics that determine differential opportunity structures proposed as explanations for the gender difference in representation, such as whether the incumbent in the election is female, or whether an incumbent is running (Darcy and Choike 1986; Carroll 1994; Darcy et al. 1994). Our results are also not specific to either the Democratic or Republican party. 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).

Although we cannot distinguish whether the estimated gender difference in political career progression is due to discrimination against women or is a result of differential responses by female state politicians, we assess the importance of several mechanisms that have been highlighted in previous literature. First, we show that the gender difference in pursuing a Congressional career is driven by the 20 percent of state legislators who serve in full-time legislatures and by state legislators in states located close to Washington, DC. These findings suggest that gender differences in the value of time available for home production are unlikely to be the prominent mechanism behind our results, as the additional cost of moving from the state legislature to the national legislature along these dimensions is higher for women in part-time (versus full-time) positions, and for women located further away from DC (Bertrand et al. 2010; Goldin 2014; Goldin and Katz 2016; Mas and

[7] A similar incumbency effect has also been documented among female state legislators in India (Bhalotra et al. 2018). Brown, Mansour and O'Connell (2018) show that electing more female state legislators in India subsequently increases the number of female candidates for the national parliament, but their effect is driven by the entry of new politicians and not by incumbents.

Pallais 2017). Second, the gender difference in the probability of running in a Congressional election is driven by male and female candidates who won their state legislature election, rather than by the differential attrition of men or women who lose their state legislature election. This is in contrast to recent findings by Wasserman (2018), who shows that novice female candidates who lose in local office elections in California are less likely to run again compared to male candidates who faced similar losses. Our results thus suggest that the lower likelihood of female state legislators who win against a man to run for higher office is not consistent with behavioral models which show that women are less likely to enter competitive environments against men (Niederle and Vesterlund 2007; Buser and Yuan Forthcoming; Ellison and Swanson 2018). However, we find that the gender gap is driven by female politicians serving in legislatures with a high share of male representatives, suggesting that working in male-dominated environments may deter women from pursing a political career in Congress (Gagliarducci and Paserman 2011).

The paper makes two primary contributions. First, we contribute to the extensive literature on gender inequality in the labor market, particularly to studies focusing on the lower probability of women to climb the job ladder (Lazear and Rosen 1990; Pekkarinen and Vartiainen 2006), and studies on the role of occupational choices and discrimination in explaining gender gaps (Altonji and Blank 1999; Bertrand et al. 2010; Olivetti and Petrongolo 2016; Blau and Kahn 2017; Kleven et al. Forthcoming; Angelov et al. 2016). Studying gender differences in career promotions or occupational choices in the labor market is inherently difficult because job assignments are endogenously determined by firms (demand-side), and labor supply decisions are endogenous to unobserved workers' characteristics. In contrast, we observe female and male politicians who were "randomly" elected and were thus both assigned experience in the same position in the career hierarchy, and estimate its effect on their pursuit of higher-status positions in the career ladder.

Second, we contribute to a growing literature on the impact of different policies aimed at increasing the representation of women in high-status positions. Existing studies have found mixed evidence that increasing the share of women in leadership positions (via quotas or other methods) impacts the career of female professionals (Bagues and Esteve-Volart 2010; Kunze and Miller 2017; Bertrand et al. 2018; Langan 2019).[8] In politics, Broockman (2009) finds no evidence that narrowly

[8]For instance, Kunze and Miller (2017) found that having more female bosses decreases gender gaps in promotions. In contrast, Bertrand et al. (2018) found no evidence that mandating a higher share of women in boards

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, while Gilardi (2015) provides evidence that electing Swiss female mayors increases the number of female candidates in neighboring municipalities, but he shows that the effect fades as more women are elected.[9] In contrast, this study takes a different approach by focusing on gender differences in the likelihood of pursuing a Congressional career among state legislatures to better understand the continued under-representation of women in politics.

The remainder of the paper is organized as follows. Section II describes the data sources, provides background on U.S. state and national legislature elections, motivates our empirical approach, and describes the sample analysis. Section III details the empirical strategy. We present results on moving from state to national politics in Section IV. Section V investigates and discusses potential mechanisms, and Section VI concludes.

II. Context and Data Sources

A. Data Sources

Our data start with the near-universe of candidates for elected positions in U.S. state legislatures since 1967. The primary data source for state legislature elections 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 Klarner et al. (2013). The SLER provides candidate-level election returns for all state legislative elections from 1967 to 2008. These data contain information on the name of the candidate, the state, district, and chamber they are running in, as well as total vote counts and the candidate's party. Other election-level data includes information on the term length, type of election (e.g., general, special), and the number of candidates who contested the seat.[10]

We merge information from state legislature candidates to records from Congressional primary

of Norwegian companies benefited women working in these companies, while Langan (2019) shows that appointing female department chairs in academia reduces gender gaps in publications and increases the tenure probability for female assistant professors.

[9] Ladam, Harden and Windett (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) find that electing a female mayor in Germany led to an increase in the vote share received by female council candidates.

[10] Appendix B provides additional detail on the data sources and the procedure to clean and code variables.

and general election returns from 1968-2016 for both the U.S. House of Representatives and the Senate. We match candidates across levels within state using a fuzzy matching algorithm based on first and last name fields that is similar in practice to Anagol and Fujiwara (2016) and Brown et al. (2018).[11] Although we are only able to track primary participation for Democrat and Republican candidates (or third-party candidates who participate in these elections), we observe candidates of all parties in general elections.[12]

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).[13] We code a candidate as male or female if both the Census and SSA records agree on the candidate's gender. We 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 (2.8 percent of total) where we do not know the gender of either of the top two candidates.

B. Context

Historically, women have comprised a minority of state and Congressional legislators. Figure 1 plots the female share of state and national legislators since 1970. While women have recently made gains in representation, they still lag far behind men: as of 2016, women comprise about 25 percent of state legislators and 19 percent of the Congress. While the share of female representatives in state legislatures started to grow in the early 1970s, the share of women in Congress did not start to increase substantially until the early 1990s. Notably, the difference in the share of women in state legislatures and in Congress has widened significantly since the early 1970s. Given the importance of state legislature service as a pathway to national office, the objective of this paper is to understand the effect of state legislature experience on career transitions from local to national politics, and its role in generating gender disparities in Congressional representation.

There are more than 7,000 state legislative seats in the United States, with each position

[11] To help prevent spurious matches, we only search for Congressional candidates in the same state in which they appear in the state legislature elections data. Because male candidates may be more prone to move across states, our estimates of the gender gap might represent a lower bound.

[12] 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.

[13] 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.

having a two- or four-year term length. Congress is comprised of 435 seats in the (lower) House of Representatives and 100 seats in the (upper) Senate.[14] Experience in state legislatures has become increasingly common among Congressional representatives. For example, in the 115th Congress (serving from 2017 to 2019), approximately half of all members served in a state legislature at some point prior to being elected to their current office. The share of sitting Congressional representatives who had previous state legislature experience grew steadily between the mid-1970s until the early 1990's, from below 40 percent to just under 50 percent – where it still hovers today.

C. Motivating the Empirical Strategy and Analysis Sample

Gender differences in the likelihood of state legislators to pursue a Congressional career may reflect differences in their observed or unobserved characteristics. In addition, the endogenous decision to run for a given seat is likely related to the characteristics of the area as well as expected characteristics of the current local election, or future national elections.

To address these concerns, we implement a regression discontinuity design to achieve quasi-random assignment of legislative experience across otherwise-similar candidates who run for local office in comparable locales. Specifically, we estimate differences in career outcomes of narrowly elected female and male state legislators who competed in mixed-gender elections, defined as those elections in which the top two vote-earning candidates were a man and a woman.[15] This sample allows us to isolate the effect of a quasi-experimentally-assigned additional term in the state legislature across gender in constituencies that could have plausibly elected either a man or a woman.

For ease of interpretation, we focus only on single-member seats that result in the winner holding a position in the state legislature. We exclude any primary elections or elections in multi-member districts where there is more than one winner for a given constituency.[16] Finally, in order not to overrepresent the likelihood of running for a Congressional seat by candidates who compete in multiple mixed-gender state legislature elections, each candidate is represented only once by the first such election observed in the sample (henceforth, "first-time mixed-gender elections").[17]

[14] 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.

[15] Such comparisons based on close-won elections have recently been applied to other contexts by Folke and Rickne (Forthcoming), among others.

[16] Ten states have at least one multi-member district.

[17] The number of times a candidate runs for a state legislative seat before their first mixed-gender race may be

Conditional on ever running for the national legislature, the average state legislator spends about eight years in the state legislature before running for higher-level office. We thus limit our sample to state legislature elections for years up to and including 2008 (and observe outcomes through 2016), as the inclusion of more recent state legislature elections will increase the sample frequency and intensity of measurement error (due to right-censoring) in the outcome variable. Our first-time mixed-gender elections sample contains 25,389 candidates from 16,293 elections from which we draw our estimation sample of narrowly won elections.

D. Descriptive Statistics

Table 1 reports sample means for a set of election characteristics (Panel A), historical state legislative district characteristics (Panel B), and Congressional outcomes for state legislative candidates (Panel C). The sample means for our estimation sample of first-time mixed-gender elections within an optimal bandwidth are reported in Column 1 of Panels A and B and Columns 1-2 of Panel C. Given our sample restrictions, a natural concern is that mixed-gender elections are inherently different from the average state legislature election. Column 1 of Panels A and B show that our analysis sample is broadly similar to all contested state legislature elections (Columns 2) with respect to both characteristics of the focal state legislature election and historical legislative district characteristics. In both samples, there are 2.15 candidates per election, and the average term length is approximately 2.3 years. Historical rates of female participation and the competitiveness of elections at the state district level are also comparable: in the analysis sample, mixed-gender elections comprised 19.6 percent of all prior elections, which is comparable to 17.0 percent for the full sample. The incumbent ran for re-election in 54.0 percent and 52.5 percent of prior elections in the analysis and full samples, respectively.

Moreover, candidates from first-time mixed-gender elections (Columns 1 and 2 of Panel C) exhibit remarkably similar rates of future political candidacy when compared to candidates in other contested legislative elections (Columns 3 and 4 of Panel C).[18] For instance, between 4.4 and

endogenous. We provide two tests that suggest this endogeneity problem does not bias our estimates. In robustness checks below, we show that our estimates are qualitatively similar when we focus on mixed-gender elections where both candidates are competing in a state legislative election for the first time. We also allow candidates to compete in mixed-gender elections multiple times in Appendix Table A1 and again find that our results are similar to our preferred estimates in Section IV.

[18]The means in columns 3 and 4 are calculated using the top-two candidates from all contested legislative elections.

4.8 percent of male candidates in either sample ever run in any Congressional election, and 3.2 percent of female candidates run from mixed-gender elections, compared to 3.7 percent of female candidates from all elections. In Appendix Figure A1, we also show that the analysis sample is drawn from a roughly proportionate sample by state.

Using the full sample of first-time mixed-gender elections, Figure 2 plots the mean rate at which male and female state legislature candidates are ever observed contesting for higher office by election year. The differential between male and female candidates in their propensity to ever contest for higher office is on the order of two to four percentages points through the 1970s and 1980s. This difference then stabilizes to around two percentage points in the early 1990s and persists, with only one exception, through 2010.[19]

III. State Legislative Experience, Congressional Candidacy, and Representation

A. Empirical Model

We estimate the relationship between winning a state legislature seat and the probability of future national political candidacy via the following OLS regression:

$$Ever\ ran\ national_{ict} = \alpha Won\ election_{ict} + \beta f(x_{ict}) + \gamma[Won\ election_{ict} \times f(x_{ict})] + X_{ict}\delta + \tau_c + \phi_t + \epsilon_{ict} \quad (1)$$

Where $Ever\ ran\ national_{ict}$ is an indicator variable equal to 1 if state legislature candidate i in election at time t in constituency c is ever observed contesting for a primary or general election for the national legislature in the future, and zero otherwise. The variable of interest, $Won\ election_{ict}$, is an indicator variable equal to 1 if candidate i won their state legislature election in constituency c in year t. We also include a linear measure of the candidate's victory margin, $f(x_{ict})$, and allow the effect of the victory margin to vary for winners and losers. X_{ict} represents a vector of individual controls including the candidate's cumulative legislative experience, their party affiliation, length of term for the contested seat, and number of candidates in the election, as well as for the type of election (general or special). To control for time- and constituency- invariant unobservables and to

[19]This pattern could be a result of higher rates of electoral success by men, although conditional on candidacy, there is no male advantage in terms of vote share won or the probability of winning (Anastasopoulos 2006; Barber et al. 2016).

improve precision, we include state legislature constituency fixed effects, τ_c, and state legislature election year fixed effects ϕ_t. ϵ_{ict} is the error term, and we cluster standard errors by state. Our coefficient of interest is α, which captures the effect of winning an additional term in the state legislature on future career outcomes in national politics.

We first estimate equation (1) with a simple local linear specification consisting only of narrowly won first-time mixed-gender elections based on an optimal bandwidth selector (Imbens and Kalyanaraman 2012). We then show that this RDD estimator is closely approximated by a global RDD specification applied to the full sample of first-time mixed-gender state legislature elections. We also estimate equation (1) by replacing the dependent variable with any of four indicator variables that take a value of one if the state legislator ever runs in a House primary, a Senate primary, a House general election or any general election, respectively, and zero otherwise, as well as the unconditional probability of winning a seat in the national legislature.

B. Investigating the Validity of the Research Design

Our empirical approach compares just-winning women (men) to just-losing women (men) in order to estimate the impact of winning a state legislature seat on future political candidacy for the national legislature. The assumption underlying this approach is that women who narrowly win over a male competitor are comparable, on average, to women who narrowly lose to a male competitor (and similarly for men winning over/losing to female candidates).

We first test for manipulation of the running variable following McCrary (2008) by plotting the distributional density of a candidate's margin of victory in first-time mixed-gender state legislature elections for both male and female candidates. In Figure 3, we plot these distributions for female candidates in Panel A and male candidates in Panel B. Both panels provide no evidence of a discontinuity around the zero vote margin of victory in the sample of first-time mixed gender state legislature elections, which is the same sample we use to estimate the effect of winning a state race on future candidacy.

We next test whether individual, election, or district characteristics exhibit any differential discontinuous jump at the identifying threshold. Columns 2 and 3 of Table 2 show the difference in the focal characteristic (indicated in rows) for the election winner relative to the election loser

for the sample of female and male candidates, respectively, and Column 4 tests the equivalence of these estimates across gender. As can be seen in Column 4 of Table 2, 10 of the 11 individual, election, and district characteristics tested show no difference across men and women. These results indicate that the winner's gender is not associated with the candidate being a Democrat, part of a third party, as well as with the contested seat's term length or the number of candidates in the election. Importantly, we also find no evidence that the winner's gender is differentially related to the historical characteristics of the districts in which these elections occur, such as average margin of victory, the historical mixed-gender share of elections, and the share of previous elections contested by incumbents.[20]

IV. Results

A. Effects of State Legislature Experience on Congressional Candidacy

We start by graphically presenting results from estimating equation (1). The estimates are based on a local linear specification using a sample of close first-time mixed-gender elections excluding any candidate-level or election-level controls. Panels A and B of Figure 4 plot the probability of ever running for any Congressional seat (House or Senate) in any type of election (primary or general) within each margin of victory bin for female and male state legislature candidates, respectively. Although both female and male winners are more likely to compete in future Congressional elections, the effect of winning a state legislature election is significantly larger for men than women. Specifically, the estimates in Column 1 of Table 3 indicate that when a man wins a state legislature election (Panel B) they are 7.4 percentage points more likely to ever run for a Congressional seat than if they had lost (p-value: <.001). In comparison, winning a state legislative seat for women (Panel A) increases the likelihood of ever running for a Congressional seat by only 2.6 percentage points, and the estimate is not significant at conventional levels. Successively adding controls for cumulative legislative experience, party affiliation, election type, term length, or number of candi-

[20] Columns 2 and 3 of Appendix Table A2 test whether these candidate and election characteristics are balanced across gender in the full sample. In the full sample of mixed-gender elections, women are less likely to be the incumbent and are more likely to be first-time candidates. Although female candidates are as likely to be Democrats in the sample, they are slightly less likely to be a third-party candidate. There is little evidence that the election or district characteristics are different by gender.

dates in the race (Columns 2-6) has little impact on the estimates.[21] This gender difference of 4.8 percentage points in the gains from state legislature experiences on the likelihood of ever running in a Congressional race is significant at the 10 percent level (p-value: 0.07). This result implies that, relative to the means, the boost in the probability that a man ever run for the national legislature if they win a state legislature seat is twice as big as the increase in the equivalent probability for female state legislature winners.[22] In Column 7, we report results from estimating equation (1) on the sample of all mixed-gender elections, including all the controls. The gender differential is smaller in this sample, but is significant at the 5 percent level.

In Table 4, we disaggregate the dependent variable into separate measures for ever running in a House primary election, Senate primary election, House general elections, and any general elections. The differences between the effect on female and male state legislators' careers is found in both general and primary elections.[23] Specifically, in Column 5 we estimate that male state legislators have a 5.6 percentage point higher probability of ever running in a general election than men who lost a comparable election, and the gender differential of 4.6 percentage points (5.6 - 1.0 = 4.6) is significant at the 5 percent level. The results also indicate that the difference between men and women is observed in primary and general races for the House of Representatives, but not the Senate.[24]

It is possible that these gender differences in pursuing a Congressional career might simply be the result of dissimilarities in the types of national elections that our female and male state legislator winners have the opportunity to contest. In particular, if there are systematic differences across gender in the competitiveness of subsequent national elections, our results may erroneously be driven by those unobserved factors. For example, suppose that female state legislators were more likely than their male counterparts to face Congressional incumbents in the subsequent national elections in their state. Such a systematic difference might arise due to endogenous responses to more women winning lower-level seats, which could thus generate the estimated gender differentials above. To investigate this, we estimate the relationship between the gender of the elected state

[21] The choice of polynomial order also has virtually no effect on the estimates.

[22] Specifically, winning a state legislature seat increases the probability of running for Congress by 165 percent (0.073/0.044) for men and 78 percent (0.025/0.032) for women, which implies that male state legislators are about twice as likely (165/78=2.11) to ever run for a Congressional seat.

[23] Note that some candidates do not contest a primary prior to a general election.

[24] Results using the sample of all mixed-gender elections are presented in Appendix Table A3.

legislator and characteristics of the first Congressional election in the state in which that candidate could run. We report the results in Table 5. Columns 1-2 include primary elections for Democratic and Republican candidates while Columns 3-4 contain general elections, regardless of party affiliation.

Table 5 provides little evidence that, in our sample, men and women face differential competition in subsequent Congressional elections. For example, the gender of the state legislator is not associated with the preponderance of incumbents contesting in the subsequent Congressional elections in their state, the average number of candidates competing, whether Congressional seats are held by the candidate's party, the share of non-freshman incumbents, the share of sitting incumbents female, nor the share of third-party candidates running. We thus conclude that our estimates of the gender gap in the political return to winning a state legislature race are not a result of differential opportunity to contest for national office.[25]

B. Effects of State Legislature Experience on Winning a Congressional Election

Given men's higher propensity to contest for a Congressional seat in response to an additional term in the state legislature, we next explore if this benefit leads to a gender gap in obtaining a seat in the national legislature. We estimate versions of equation (1) that replace the outcome variable with either an indicator for ever winning any Congressional election (House or Senate) in any type of race (primary or general), an indicator for winning a primary election for the House of Representatives, an indicator for winning a general election for the House of Representatives, or an indicator for winning any Congressional general election. Panels A and B of Figure 5 plot the results for ever winning any Congressional election separately for female and male state legislature candidates within each margin of victory bin. The corresponding estimates in Column 1 of Table 6 show that there is a large gender difference in the effect of an additional state legislature term

[25] We calculate Congressional outcomes at the state-level for two reasons. First, while some state legislatures may require their legislators to live in the district they represent, the Constitution makes no such restriction for Congressional House members. Second, computing outcomes at the Congressional district level requires several assumptions due to data constraints. Specifically, in order to execute this analysis at the district level we would need to: 1) assume district boundaries at both levels are held fixed over time, 2) assign the Congressional district with the largest population share of state district population in the intersection for state districts that lie in multiple Congressional districts, 3) exclude those districts in which there are naming differences across the data sets and in crosswalk that, due to changing boundaries and district names over time, may preclude any match. With these caveats in mind, we present results using Congressional district outcomes in Appendix Table A4 and find results that are broadly similar to Table 5.

on the unconditional probability of winning a Congressional election – favoring men on the order of five percentage points (p-value=0.079). This is largely due to wins in House primary elections (column 2), although there is a smaller and imprecisely estimated effect on winning House general elections as well (column 3). These finding suggests men are statistically more likely to have their state legislature service increase their odds of winning a Congressional election, relative to women. This effect is large relative to the mean rate at which state legislature candidates ever win a Congressional primary or general election: for men, an additional state legislature term increases the likelihood of ever winning a Congressional election by nearly double the average rate at which this occurs in the sample.

C. Importance of the Gender Gap in Congressional Candidacy

While we have established that the effect of winning a state legislature election on the probability that they compete for (win) a Congressional race is twice (five times) larger for men than women, it is also instructive to assess its importance relative to the overall gender gap in Congressional candidacy. To calculate such a figure, we first observe the gender gap in candidacy in the 2016 national elections: there were 1,820 men and 360 women who ran in either a primary or general election, resulting in the 2016 gender gap of 1,460 more men than women.[26] If we apply our point estimates to the number of women (6,264) and men (6,003) who won mixed-gender state legislature elections from 1988 to 2008, this results in an estimated 438.2 and 162.8 additional male and female Congressional candidates, respectively, arising from the set of state legislature elections to which our estimates apply. Thus, this predicted difference of 275.3 explains about 19 percent of the 2016 gender gap in Congressional candidacy.[27]

D. Timing of Running for Congressional Seats

An important consideration is that our main finding of gender differences in the probability of running for a Congressional seat could mask differential timing at which state legislators decide (or are chosen by parties) to contest up. To explore this hypothesis, we estimate the probability of

[26] See Kamarack et al. (2017) for more details.

[27] We chose the 20 year time horizon based on the fact that the experience effect dissipates after ten opportunities or 20 years, see Figure 6. If instead this window were shortened to only consider state legislators in the prior ten years, from 1998 to 2008, our effects explain 10 percent of the gap. When considering a 30 year window, we explain 27 percent of the 2016 gap.

ever running for a higher-level seat at each potential opportunity that a state legislature candidate (or current state legislator) could possibly compete for a Congressional seat. Specifically, we code every two years as representing one opportunity to run for higher office, as the House of Representatives exhibits complete turnover every two years. Importantly, we allow sitting legislators to run for higher-level offices before their term is completed. Formally, the number of opportunities for candidate i in constituency c to run for a Congressional seat is defined as:

$$Opportunities_{ict} = \frac{1}{2}\left[Year\ of\ Congressional\ Election_{ict'} - Year\ of\ State\ Election_{ict}\right] \qquad (2)$$

We estimate equation (1) using an indicator equal to one if the state legislator runs for a Congressional seat in the first τ opportunities conditional on having had up to τ opportunities as the outcome variable.[28,29] Across values of τ, this analysis captures political career outcomes of candidates who continue to serve in their same seat, run for a different state legislature office, or exit politics for a period of time and then re-enter politics to contest for a higher-level position. Because it is a cumulative measure, this variable eventually converges to the "ever run" outcome used in Tables 3 and 4. These estimates allow us to flexibly explore how quickly after being elected to the state legislature male and female candidates run for Congressional seats.

Figure 6 plots the estimates of running for a Congressional seat by the number of cumulative opportunities in which the candidate can do so. Panels A and B plot the likelihood of ever running for any higher-level elections and the likelihood of ever running in any general elections, respectively. Although some of the individual estimates are imprecise, the overall picture presented in the plots provide strong evidence that, relative to the candidate's first close-won election, the gender gap in running for a higher office starts small, gradually increases over time, and never closes.

[28] For example, the first opportunity for a candidate who was elected to a state legislature in 2004 (with a term beginning in early 2005) to run for a Congressional seat would be in 2006, and the second opportunity would occur in 2008. In cases where state legislature elections are held in odd-numbered years (off-year elections, *e.g.* Virginia, New Jersey), we count the first opportunity as occurring in the year in which the state legislator takes office. For example, the first opportunity for a candidate who was elected to the state legislature in 2003 to run for a Congressional seat would be in 2004, the second opportunity occurs in 2006 and the third opportunity would occur in 2008. The first opportunity for legislators from such states to run for higher office thus occurs one year earlier relative to their election year.

[29] This implies that if a candidate runs for Congress during their second potential opportunity, the indicator variables takes a value of one $\forall \tau \geq 2$.

V. Explaining the Gap

A. State Legislative Experience and Persistence in the State Legislature

In order to investigate the possible determinants of the gender gap we find it is important to start by exploring the decisions that state legislature candidates are making with regard to re-running at that same level. We estimate the relationship between winning a state legislature seat and the probability of recontesting for the same seat in subsequent elections relative to election losers of the same gender using the following OLS regression:

$$incumbent_{ict+k} = \alpha Won\ election_{ict} + \beta f(x_{ict}) + \gamma[Won\ election_{ict} \times f(x_{ict})] + X_{ict}\delta + \tau_c + \phi_t + \theta_{t+k} + \epsilon_{ict} \quad (3)$$

Where $incumbent_{ict+k}$ is an indicator variable equal to one if state legislature candidate i in the election at time t in state constituency c contests for the same seat in subsequent election cycle $t+k$, and zero otherwise. Other regressors are defined similarly to Equation 1, with an additional vector of fixed effects for the year of the subsequent state legislature election θ_{t+k}. We again estimate equation (3) with local and global samples using a sample of first-time mixed-gender elections. We apply the specification to two outcomes measures: whether the candidate ran for the exact same seat in the same chamber in the subsequent election, and whether the candidate ran for any state legislature election in the same state (inclusive of other chambers).

Estimating equation (3) allows us to quantify differences across just-winning versus just-losing candidates in the likelihood of competing in subsequent state legislature elections. We begin with the sample of narrowly won elections in Column 1 of Table 7, and successively add controls for individual and election characteristics in Columns 2-5 using a simple local linear specification on a sample determined by an optimal bandwidth selection algorithm. The estimates in Panel A suggest that a female candidate closely winning a state legislature seat over a male competitor increases her probability of running for the same seat in subsequent elections by nearly 84 percentage points relative to a female candidate who narrowly lost to a male competitor. In contrast, when a male candidate narrowly wins a state legislature seat, his likelihood of running for the same seat in subsequent elections is about 70 percentage points higher than a narrowly-losing male candidate.

The difference by gender of 13.7 percentage points is statistically significant at conventional levels, as shown by the p-value of the test for coefficient equality in a pooled and fully interacted model provided below Panel B. When we alternatively use the full sample of mixed-gender elections in Column 6, the gender differential is a smaller (11 percentage points) and remains statistically significant. Panels C and D of Table 7 show similar results when we broaden the definition of the outcome to include any state legislature seat in the subsequent election. Overall, the results in Table 7 indicate that male state legislators have a lower likelihood of competing for the same seat in the following election cycle compared to female state legislators. In the context of a politician's decision to continue contesting or run for higher office, this finding is consistent with a similar pattern in India established by Bhalotra et al. (2018), who show that female state legislators have a higher incumbency rate compared to male legislators.

B. Testing for Heterogeneous Treatment Effects in Previous Legislative Experience

The gender gap in the effect of local legislative experience on future Congressional candidacy might reflect systematic differences in the characteristics of marginal female versus marginal male candidates. For example, in a situation in which women had never before participated in state legislature elections, we would expect large differences in previously accumulated state legislative experience across marginal male and female candidates (as all women would, by construction, have no previous state legislative experience). Any differential effect of winning an election on the careers of men relative to women could then potentially be confounded with heterogeneous effects of winning an additional term across candidate who have different levels of previously accumulated experience.

Female candidates to state legislatures have, on average, lower levels of previous state legislative experience compared to men (measured as being the incumbent, being a first-time candidate, or in the number of previous terms served). To examine whether our results simply reflect this systematic difference in accumulated legislative experience across gender, we limit the sample to those close mixed-gender elections in which both the male and female candidates were contesting for the first time. Results from this exercise are presented in Table 8. Despite the substantially smaller sample, these estimates maintain the magnitude of the differential found in our main results and strongly

implies that preexisting experience is not the cause of the patterns of differences across men and women.

To further validate this finding, we estimate a specification analogous to that in Table 4 on a pooled sample of mixed-gender elections and add an interaction term between winning and the candidate's years of previous state legislative experience. We present these results in Appendix Table A5. Column 1 serves as a reference point by replicating the specification and magnitude of the differential seen in Column 1 of Table 4. The inclusion of the interaction term in Column 2 does not affect the estimated gender differential and its coefficient is small and indistinguishable from zero. Thus, we conclude that the gender gap is not an artifact of the naturally arising differences in previous experience across male and female candidates. The lack of heterogeneity by accumulated experience indicates the gender gap in pursuing a Congressional career is driven by differential returns to marginal experience, rather than heterogeneous effects based on systematic differences in accumulated experience among male and female state legislature candidates.

C. Gender versus Party

Although there is no discontinuous jump in the party of the winning female candidate in mixed gender elections and we control directly for party affiliation in our main analysis, it is worth examining whether gender differences in the likelihood of running for higher office reflect differences between Democrat versus Republican candidates.[30] Table 9 reports results from estimating the relationship between the candidate's party affiliation and the likelihood of ever running for a Congressional seat. The results do not provide evidence that the likelihood of a Democrat that won a close election in the state legislature competing for a Congressional seat is significantly different from the likelihood that a non-Democrat winner competes for Congress. These results suggest that the gender gap in the return to political experience is not an artifact of party-specific effects. Thus, the estimated gender gap is unlikely to be related to explanations that hinge on party differences in the type of candidates that can win the party's support, or the role that party elites play in the recruitment and screening of female and male candidates (Niven 1998; Caul 1999; Sanbonmatsu 2002; Box-Steffensmeier et al. 2004; Sanbonmatsu 2006; 2010; Elder 2012; Thomsen 2015).

[30]This analysis relates to "party moderacy" hypotheses and their differential effects by gender, as discussed in Thomsen (2015).

D. Gender Differences in Career-Family Tradeoffs

According to the National Conference of State Legislatures, the average state legislator was 56 years old in 2015. In this same sample, female legislators were about two years older than male legislators (Kurtz 2015).[31] Given these ages, it is reasonable to assume that most female politicians compete in state legislative races after completing their fertility. However, although a first-child "penalty" is unlikely to explain gender differences in climbing the political ladder, it is possible that female state legislators face different career-family tradeoffs compared to male legislators when deciding whether to pursue a Congressional career.

We conduct two heterogeneity analyses to evaluate whether gender differences in career-family tradeoffs is an important explanation behind our results. First, the time commitment demands on state legislators varies across states. In general, legislators are required to devote between 60 to 85 percent of an equivalent full-time job's hours to their legislative duties (legislative positions can be full-time, hybrid, or part-time, depending on the state).[32] Slightly more than half of state legislatures are comprised of hybrid positions, and the rest are almost equally split between full- and part-time duties. This heterogeneity presents an opportunity to provide some suggestive evidence on the importance of differential barriers to entry and/or the potential for career-family tradeoffs as mechanisms generating our results. Intuitively, a move from a part-time state legislature seat to Congressional office will represent a larger change in these dimensions than a move from a full-time state legislature position to a Congressional seat. For example, if female politicians do not compete in Congressional elections because electoral success would lead to an increase in their time commitment to work, a part-time state legislator will be more affected by this shift than a full-time state legislator. Thus, if gender differences in these types of factors are important determinants of our results then we would expect our estimates to be driven by states with part-time, rather than full-time, positions.

Table 10 shows that, in fact, the opposite is the case: effects from part-time-commitment states (Panel A) are far smaller than those in full-time-commitment states (Panel B). These results provide

[31] We are able to collect age information for candidates in our estimation sample from 1996-2008. Consistent with Kurtz (2015), we find that female candidates in this subsample are about two years older than their male counterparts, at 50 and 48 years old, respectively.

[32] These classifications are based on surveys of state legislators from NCSL (2017).

strong evidence that the effects found in our main analysis are driven by full-time legislators, despite the fact that they comprise only about 20 percent of the sample. Specifically, the estimated gender differential in ever running for a Congressional seat is 14.2 percentage points (p-value=0.027); this is relative to the lower commitment states which have a smaller and statistically insignificant difference. The fact that the gender gap in moving to Congress is far smaller for part-time legislators compared to full-time legislators suggests gender differences in opportunity costs via career-family tradeoffs or preferences for part-time or flexible work are unlikely to be the mechanisms behind our primary findings. As expected, the effects on winning a higher level election also follow this pattern, with a large and statistically significant gender differential for those that ran in full-time state legislature elections, shown in Appendix Table A6.

To further examine the role of career-family tradeoffs, we estimate the results by above/below median distance to the District of Columbia.[33] Intuitively, we would expect the household's cost of serving in Congress (e.g. relocation, childcare) to be smaller for candidates in states that are close to DC, and the gender gap in candidacy to be larger in states located further away from DC. Table 11, however, shows that the opposite is the case. The gender gap in Congressional candidacy is about 11 percentage points in states located closer to DC, while it is small and statistically insignificant in states located further away from DC. Although distance to DC could simply reflect differences in gender attitudes across locations, taken together, our results suggest that household constraints are not the primary explanation for gender differences in the careers of state legislators.

E. Who Generates the Differential: Winners or Losers?

The gender difference in the career effect of local political experience may result from differential behavior of election winners or losers, as pointed out by Wasserman (2018), who studies persistence in local elections in California. To test for this type of behavior in our context, Appendix Table A7 uses the sample of mixed-gender election losers, recodes the running variable to be positive if the election was lost by the female candidate, and uses an indicator for female as the independent variable of interest. This specification tests whether there is a statistically significant differences in the likelihood of contesting up across men and women who were marginally not elected, and

[33] Distance is calculated from the state centroid to the District of Columbia centroid.

finds no evidence to support this relationship. We obtain analogous results when testing for this relationship in terms of the election winning outcome as well. Overall, these results are inconsistent with a behavioral interpretation that female state legislators are less likely to run for higher office because they are less likely to enter competitive environments against men (Niederle and Vesterlund 2007; Buser and Yuan Forthcoming; Ellison and Swanson 2018).

F. Is There a Glass Ceiling in Politics?

The results above indicate that heterogeneous responses to winning a state legislature seat by female and male candidates (for example due to career-family tradeoffs or political persistence) are unlikely to fully account for the estimated gender gap in political career progression. Although we cannot directly test whether female state legislators face discriminatory barriers preventing them from climbing the career ladder, there is evidence that such barriers play an important role in the persistence of female legislators in politics.

In a related study, Folke and Rickne (2016) examine the career trajectories of municipal female politicians in Sweden across three hierarchical levels. Their results indicate that equally qualified women are less likely to hold positions at all levels of the hierarchy, and that gender inequality is more pronounced in top posts. Importantly, they also find that women have a substantially lower probability of advancing from one level to the next, and that the lower probability of advancement increases at the top of the hierarchy. These gender differences are present even among politicians who did not have young children during their time as elected representatives. They conclude that the totality of the results provide sufficient evidence for the existence of a glass ceiling in politics, even in a country like Sweden which has a long history of improving women's political representation.

There is also evidence that working in a predominately male environment can influence the performance of female leaders. In a study of Italian female mayors, Gagliarducci and Paserman (2011) find that female mayors are less likely to survive their tenure when working with an all-male council, in areas with less favorable attitudes towards women, and in locations where they were the first elected female mayor. Similarly, Sarsons (2019a) finds that female economists are less likely to receive tenure the more they co-author while male economists face no such penalty. This suggests

that women are less likely to be equally credited in group-work environments.

To examine the role of this mechanism, we estimate our main results by the share of the male members in the state's legislature. We calculate the share of men in the state legislature as the fraction of male winners in a state-chamber-year cohort. The results in Table 12 indicate that the gender gap in state legislatures with below the median male representatives (Panel A) is small and statistically insignificant. In contrast, the gender gap in state legislatures with above the median male representatives is large (about 10 percentage points), and is statistically significant at the 5 percent level. These results lend support to the hypothesis that working in male-dominated environment may negatively impact the career progression of female politicians.

Finally, the previous results are also consistent with the possibility that voters and party elites evaluate the performance or ability of female state legislators differently than men. For instance, Fouirnaies et al. (2018) find that female state legislators are less likely to serve on committees most valued by donors, and are more likely to sponsor legislation related to women's issues compared to legislation on more general issues. Importantly, their results indicate that these patterns are not driven by self-selection of women into activities, but instead are driven by the type of opportunities offered to women by the legislature's leadership. There is also evidence from academia and the medical profession that gender influences the way information about ability is interpreted, suggesting that women in high-status positions face different assessment standards (Mengel et al. 2018; Sarsons 2019b).

VI. Conclusion

Contemporary discourse frequently points to gender imbalances in high-status occupations, but often fails to clearly identify specific causes of how these imbalances arise. In many countries, women are underrepresented in the upper echelon of the political sphere, and these disparities are both large and persistent. In the U.S., state legislatures serve as a primary channel supplying politicians to the national legislature. We test whether the most common career pipeline position to national politics works equally well for men and women.

Using novel data that track the political careers for the universe of U.S. state legislature candidates since 1967, we estimate the effect of winning a state legislative election on individuals'

political career progression to national politics. We use a quasi-experimental empirical design and quantify a substantial gender gap in the effect of winning an additional state legislature term on the likelihood of competing and winning a Congressional seat. Specifically, winning an additional legislature term increases the rate at which men eventually contest up by two times the rate at which it does for women, and also increases the rate at which male state legislators ever win a Congressional election compared to female state legislators.

Our results are not explained by the candidates' observable characteristics, the congressional districts in which they run, or by the amount of legislative experience they have acquired. Moreover, the fact that the gender gap in the career effect of state legislative service are found among states with full-time legislatures who face a smaller additional opportunity cost to serving in Congress suggests this gap is not purely a function of differential career-family tradeoff decisions. Instead, the evidence supports the notion that female politicians face a glass ceiling which prevents them from climbing the political career ladder. Overall, the gendered effect of state legislature experience on national candidacy is large, and our estimates suggest that it explains between 10 and 30 percent percent of the observed gender gap in Congressional candidacy in recent years.

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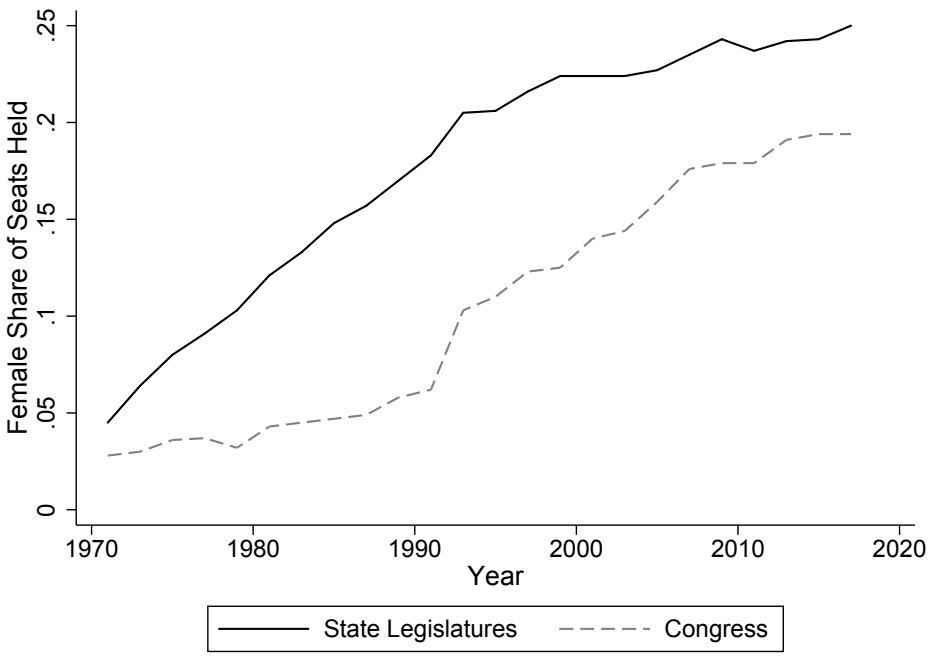
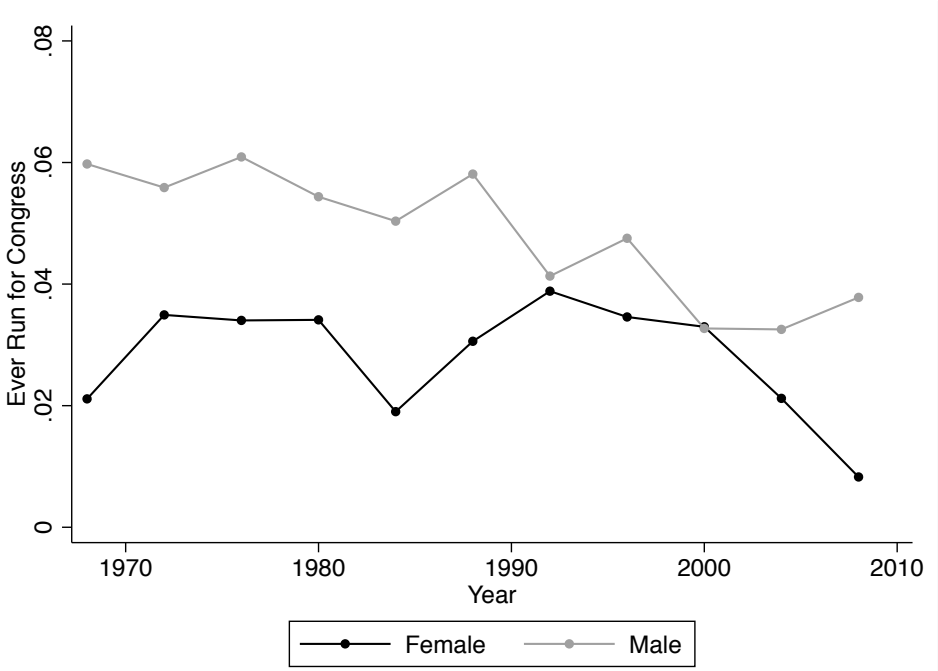
Figure 1: Female Representation in Politics



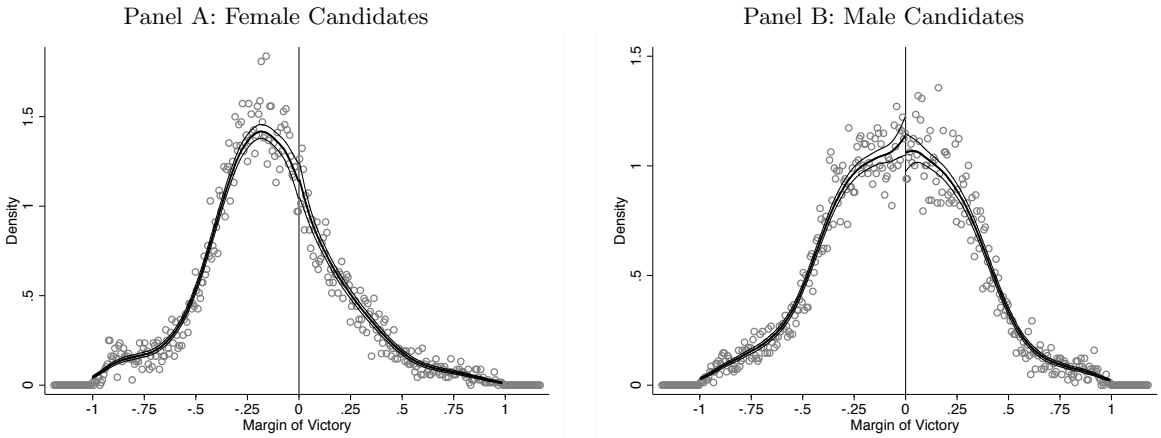
Note: This figure reports the share of seats held by female politicians over the period 1971-2016 in both Congress and the state legislatures. Data come from authors' calculations and the Center for American Women in Politics.

Figure 2: Share of State Legislative Candidates Who Ever Run for Congress



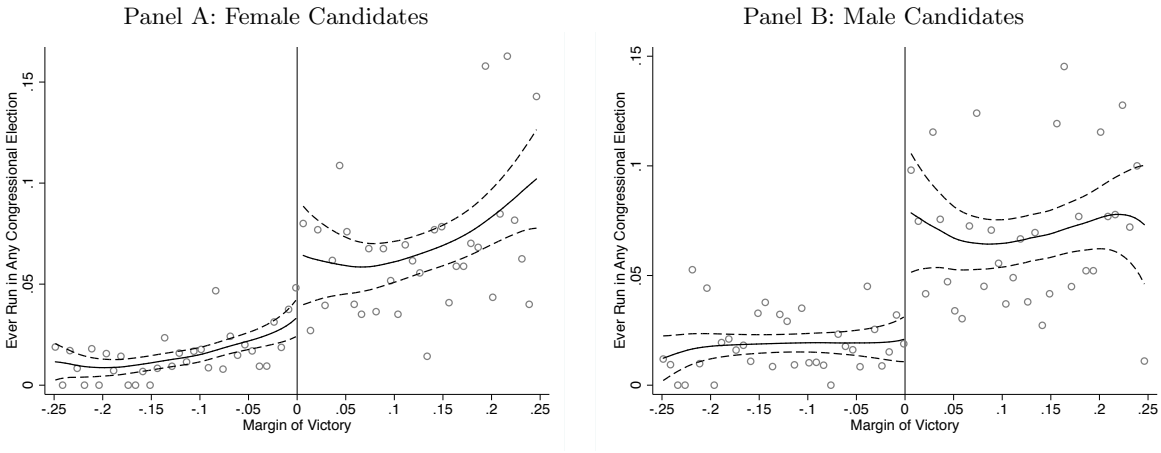
Note: This figure reports the share of state legislative candidates that ever run for Congress separately by gender in four-year bins of state legislative election year. The sample includes all 25,389 candidates from first-time mixed-gender elections.

Figure 3: McCrary Test



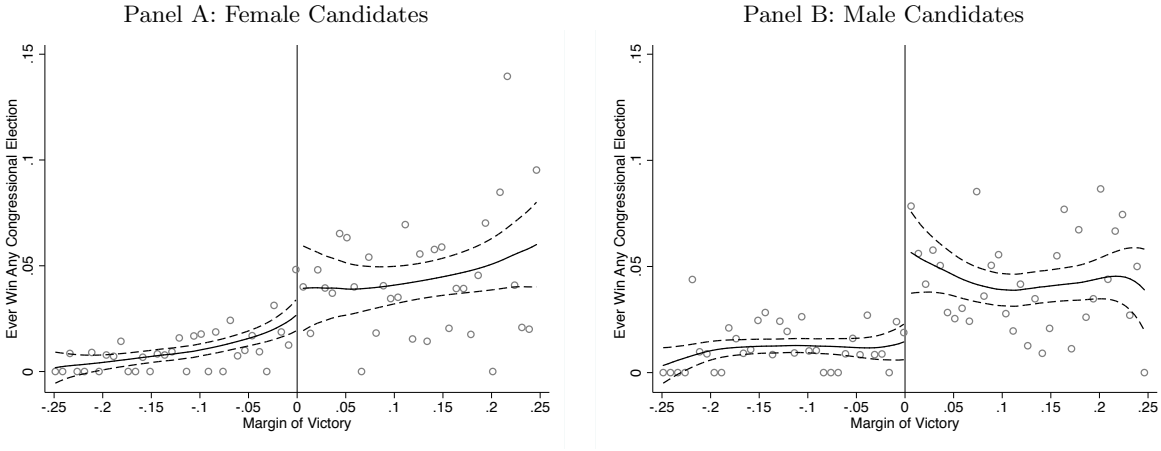
Note: These figures report results from a McCrary (2008) test for a discontinuity in the density of the margin of victory. Panel A plots the victory margin density for female candidates and Panel B plots the victory margin density for male candidates. The sample includes all first-time mixed gender elections. Thin black lines represent 95 percent confidence intervals.

Figure 4: Gender Gap in Congressional Candidacy



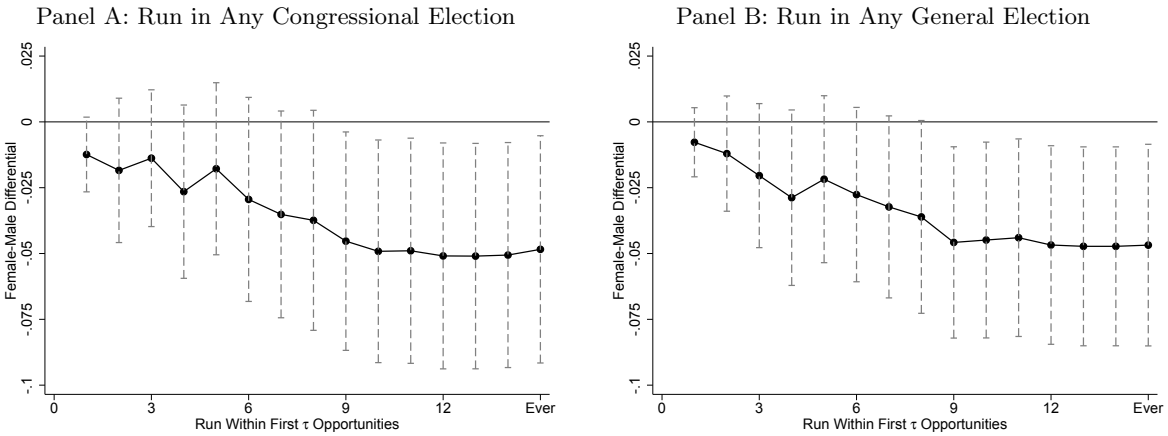
Note: These figures report regression discontinuity estimates of the effect of winning a state legislature election on future Congressional candidacy separately by gender. Panel A reports estimates for female candidates and Panel B reports estimates for male candidates. The sample contains all first-time mixed-gender elections. Each point plots the dependent variable mean within each margin of victory bin. Solid lines represent a local linear regression, estimated separately for winning and losing candidates. Dashed lines represent 90 percent confidence intervals.

Figure 5: Gender Gap in Congressional Representation



Note: These figures report regression discontinuity estimates of the effect of winning a state legislature election on future Congressional representation separately by gender. Panel A reports estimates for female candidates and Panel B reports estimates for male candidates. The sample contains all first-time mixed gender elections. Each point plots the dependent variable mean within each margin of victory bin. Solid lines represent a local linear regression, estimated separately for winning and losing candidates. Dashed lines represent 90 percent confidence intervals.

Figure 6: Congressional Timing Results



Note: These figures report estimates of the gender gap in Congressional candidacy across varying time horizons. All regressions include constituency and year fixed effects, the full set of candidate and election controls, and use the optimal bandwidth from Imbens and Kalyanaraman (2012). Vertical dashed gray lines indicate 90 percent confidence intervals, with standard errors clustered at the state level. See the notes to Table 4 for additional details on the sample and estimation.

Table 1: Summary Statistics

	Estimation Sample		All Elections	
Panel A: Election Characteristics	(1)		(2)	
Term Length	2.296		2.312	
Number of Candidates	2.153		2.156	
Margin of Victory (Abs.)	0.112		0.276	
Panel B: District Characteristics				
Share Incumbent Ran	0.540		0.525	
Share Unopposed Elections	0.208		0.208	
Margin of Victory	0.217		0.258	
Share Mixed-Gender	0.196		0.170	
Number of Candidates	1.895		1.926	
	Female	Male	Female	Male
Panel C: Congressional Outcomes	(1)	(2)	(3)	(4)
Run in Any Primary or General	0.032	0.044	0.037	0.048
Run in House General	0.017	0.023	0.020	0.026
Run in Any General	0.021	0.026	0.024	0.029
Win Any Primary or General	0.021	0.028	0.024	0.029
Win House General	0.005	0.008	0.009	0.011
Win Any General	0.006	0.008	0.010	0.012
Observations	5,734	6,471	22,893	108,336

Note: This table reports summary statistics for our estimation sample (after applying the Imbens and Kalyanaraman (2012) bandwidth) and all contested state legislative elections. In Panels A and B, Column 1 reports means for our estimation sample and Column 2 reports means for all contested state legislative elections. Means in Panels A and B are calculated across gender. Means in Panel B are calculated using all previous state legislative elections. Margin of victory includes only contested elections. In Panel C, Columns 1 and 2 report Congressional outcomes for candidates in our estimation sample and Columns 3 and 4 report Congressional outcomes for candidates in all contested state legislative elections. All candidate-level outcomes are calculated using the top-two candidates. See Section II for additional detailed on sample construction.

Table 2: Balance Tests

	Sample Mean	Woman Won	Man Won	Difference
Panel A: Election Characteristics	(1)	(2)	(3)	(4)
Term Length	2.282	0.000	–0.001	0.001
	(0.699)	(0.014)	(0.015)	(0.026)
Number of Candidates	2.163	0.025	–0.002	0.027
	(0.418)	(0.035)	(0.023)	(0.049)
Panel B: District Characteristics				
Share Incumbent Ran	0.545	0.004	0.002	0.002
	(0.219)	(0.011)	(0.006)	(0.015)
Share Unopposed Elections	0.218	0.004	–0.002	0.006
	(0.263)	(0.010)	(0.009)	(0.018)
Margin of Victory	0.262	–0.008	0.000	–0.008
	(0.141)	(0.007)	(0.004)	(0.009)
Share Mixed-Gender	0.197	–0.003	0.017	–0.020
	(0.213)	(0.017)	(0.011)	(0.023)
Number of Candidates	1.912	0.003	0.008	–0.005
	(0.402)	(0.014)	(0.012)	(0.024)
Panel C: Candidate Characteristics				
First-Time Candidate	0.744	0.001	0.083	–0.081
	(0.437)	(0.025)	(0.052)	(0.054)
Sitting Incumbent	0.161	0.002	–0.060*	0.062*
	(0.367)	(0.015)	(0.033)	(0.037)
Democrat	0.456	0.055	0.010	0.046
	(0.498)	(0.054)	(0.030)	(0.036)
Third-Party	0.066	–0.001	0.002	–0.002
	(0.248)	(0.006)	(0.010)	(0.012)
Candidates	25,389	–	–	–
Elections	16,293	–	–	–

Note: This table reports sample means and balance tests for state legislative candidate, election, and district characteristics. The dependent variable is listed in each row. The outcomes in Panel C are calculated as the mean of all previous elections in that district. Column 1 reports means and standard deviations for the entire first-time mixed-gender sample. Columns 2 and 3 report coefficients from a regression discontinuity of the dependent variable on an indicator for if the male or female candidate won the election. Column 4 reports the difference in coefficients from a fully interacted model that pools the regression samples from columns 2 and 3. All specifications are weighted using a triangular kernel, use the optimal bandwidth from Imbens and Kalyanaraman (2012), and include constituency and election year fixed effects, as well as controls for the type of election, a candidate's previous legislative experience, and separate winner and runner-up measures of the margin of victory. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 3: Gender Gap in Congressional Candidacy Under Different Specifications

	Dependent Variable: Ever Run in Congressional Election or Primary						
	Base Model	Add Legis. Experience	Add Party	Add Election Type	Add Term Length	Add Total Candidates	Global RD
Panel A: Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Won	0.026	0.025	0.024	0.024	0.024	0.025	0.033***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.010)
Dep. Var. Mean	0.032	0.032	0.032	0.032	0.032	0.032	0.030
Observations	5,734	5,734	5,734	5,734	5,734	5,734	11,317
Panel B: Men							
Won	0.074***	0.073***	0.073***	0.073***	0.073***	0.073***	0.059***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.011)
Dep. Var. Mean	0.044	0.044	0.044	0.044	0.044	0.044	0.046
Observations	6,471	6,471	6,471	6,471	6,471	6,471	14,072
p-value $Won_W = Won_M$	0.073	0.072	0.070	0.070	0.070	0.071	0.043

Note: This table reports estimates of the gender gap in Congressional candidacy under different specifications. The dependent variable is equal to one if the candidate ever runs in any Congressional election or primary, and is zero otherwise. The sample includes all first-time mixed-gender state legislative elections in our estimation sample. Column 1 presents results using our baseline specification, with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. Columns 2-6 iteratively add candidate- and election-level controls and include all previously added controls. Column 7 uses all first-time mixed gender elections. All specifications are weighted using a triangular kernel, include constituency and election year fixed effects, and control for the margin of victory separately for winning and losing candidates. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 4: Gender Gap in Congressional Candidacy

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Panel A: Women	(1)	(2)	(3)	(4)	(5)
Won	0.025	0.023	−0.001	0.018	0.010
	(0.017)	(0.015)	(0.007)	(0.014)	(0.014)
Dep. Var. Mean	0.032	0.026	0.006	0.016	0.019
Observations	5,734	6,645	4,977	6,524	7,182
Panel B: Men					
Won	0.073***	0.066***	0.011	0.049***	0.056***
	(0.020)	(0.020)	(0.007)	(0.014)	(0.016)
Dep. Var. Mean	0.044	0.038	0.006	0.022	0.026
Observations	6,471	6,159	7,444	5,718	4,922
p-value $Won_W = Won_M$	0.071	0.108	0.212	0.142	0.050

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. The sample contains all first-time mixed-gender state legislative elections with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 5: State Congressional Characteristics Of Winning Candidates

	Primary Elections		General Elections	
	Sample Mean	Female-Male Differential	Sample Mean	Female-Male Differential
	(1)	(2)	(3)	(4)
Share with Female Incumbent	0.050	0.009	0.095	0.005
	(0.119)	(0.009)	(0.156)	(0.008)
Share with Incumbent	0.491	0.004	0.859	0.012
	(0.271)	(0.024)	(0.203)	(0.013)
Share Opposed Races	0.397	–0.009	0.921	0.006
	(0.294)	(0.024)	(0.141)	(0.005)
Candidates per Race	1.792	–0.040	1.959	0.006
	(0.849)	(0.060)	(0.231)	(0.008)
Share Held by Own Party	0.552	–0.003	0.519	–0.030
	(0.274)	(0.025)	(0.275)	(0.024)
Share Non-Freshman Incumbents	0.813	–0.018	–	–
	(0.213)	(0.017)	–	–
Share Third-Party Candidates	–	–	0.018	0.000
	–	–	(0.072)	(0.002)
Observations	9,522	–	10,045	–

Note: This table reports state-level characteristics of House Congressional races in the first opportunity a winning candidate has to run. The sample contains all first-time mixed-gender election winning candidates. Primary elections include only Democrat and Republican winners and general elections include all winning candidates. Columns 1 and 3 report sample means and standard deviations for all winners of first-time mixed gender elections. Columns 2 and 4 test differences between male and female winners using a regression discontinuity design, with the running variable re-defined to be positive for female winners and negative for male winners. All regressions use the optimal bandwidth from Imbens and Kalyanaraman (2012) and include year and state fixed effects. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 6: Gender Gap in Congressional Representation

	Dependent Variable: Ever Win			
	Any HLE	House Primary	House General	Any General
Panel A: Women	(1)	(2)	(3)	(4)
Won	0.007	0.016	0.004	0.004
	(0.015)	(0.015)	(0.007)	(0.009)
Dep. Var. Mean	0.020	0.017	0.005	0.006
Observations	7,093	6,486	5,525	5,667
Panel B: Men				
Won	0.053***	0.048***	0.011**	0.011*
	(0.017)	(0.015)	(0.005)	(0.006)
Dep. Var. Mean	0.028	0.028	0.009	0.008
Observations	4,967	5,417	6,752	6,234
p-value $Won_W = Won_M$	0.079	0.170	0.458	0.539

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions. The dependent variable is equal to one if the candidate ever wins the election listed in the column header and is zero otherwise. The sample contains all first-time mixed-gender state legislative elections with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 7: Gender Gap in Subsequent State Legislature Candidacy Under Different Specifications

	Dependent Variable: Incumbent Runs In Next Election					
	Base Model	Add Legis. Experience	Add Party	Add Term Length	Add Total Candidates	Global RD
Same Seat	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Women						
Won	0.837***	0.835***	0.835***	0.835***	0.835***	0.807***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.015)
Dep. Var. Mean	0.280	0.280	0.280	0.280	0.280	0.247
Observations	6,295	6,295	6,295	6,295	6,295	11,060
Panel B: Men						
Won	0.700***	0.697***	0.698***	0.698***	0.698***	0.709***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.021)
Dep. Var. Mean	0.356	0.356	0.356	0.356	0.356	0.342
Observations	7,159	7,159	7,159	7,159	7,159	13,749
p-val W Win = M Win	0.000	0.000	0.000	0.000	0.000	0.000
Same State						
Panel C: Women						
Won	0.931***	0.929***	0.928***	0.928***	0.929***	0.904***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)	(0.015)
Dep. Var. Mean	0.321	0.321	0.321	0.321	0.321	0.271
Observations	5,338	5,338	5,338	5,338	5,338	11,060
Panel D: Men						
Won	0.792***	0.790***	0.791***	0.790***	0.790***	0.805***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Dep. Var. Mean	0.397	0.397	0.397	0.397	0.397	0.381
Observations	7,499	7,499	7,499	7,499	7,499	13,749
p-val W Win = M Win	0.000	0.000	0.000	0.000	0.000	0.000

Note: This table reports estimates of the gender gap in state legislature incumbent candidacy under different regression specifications. The dependent variable is equal to one if the incumbent candidate runs for the same seat or in the same state in the next election cycle and is zero otherwise. The sample includes state legislature first-time mixed-gender general elections with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. Columns 2-5 iteratively add candidate- and election-level controls and include all previously added controls. Column 6 uses all first-time mixed-gender general elections. All regressions are weighted using a triangular kernel, include constituency, election year, and outcome year fixed effects, and control for margin of victory separately for winning and losing candidates. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 8: Gender Gap in Congressional Candidacy for First-Time Candidates

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Panel A: Women	(1)	(2)	(3)	(4)	(5)
Won	0.028	0.031	0.011	0.000	0.008
	(0.027)	(0.027)	(0.012)	(0.018)	(0.020)
Dep. Var. Mean	0.035	0.029	0.007	0.018	0.025
Observations	1,992	1,892	1,631	1,893	1,908
Panel B: Men					
Won	0.082*	0.072*	0.007	0.059*	0.047
	(0.044)	(0.039)	(0.015)	(0.033)	(0.035)
Dep. Var. Mean	0.040	0.033	0.009	0.021	0.027
Observations	1,712	1,554	2,308	1,693	1,649
p-value $Won_W = Won_M$	0.228	0.285	0.857	0.122	0.353

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions in the sample where both candidates are contesting for the first time. We consider a candidate a first-time candidate when we first observe them in a single-district election. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. All regressions include constituency and election year fixed effects, the full set of candidate and election controls, and use the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 9: Party Gap in Congressional Candidacy

	Dep. Var.: Ever Run in		
	Any HLE	House General	Any General
Panel A: Democrat	(1)	(2)	(3)
Won	0.058***	0.043***	0.047***
	(0.014)	(0.015)	(0.015)
Dep. Var. Mean	0.036	0.019	0.022
Observations	5,889	6,536	6,648
Panel B: Non-Democrat			
Won	0.078***	0.043***	0.057***
	(0.018)	(0.013)	(0.016)
Dep. Var. Mean	0.040	0.020	0.023
Observations	5,797	5,813	5,639
p-value $Won_D = Won_{ND}$	0.333	0.976	0.646

Note: This table reports placebo estimates of the gender gap in Congressional candidacy for different positions. We use the same first-time mixed gender sample as in our main analysis and redefine the win-election indicator and running variable to be relative to Democrats and non-Democrats, with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately across party. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls, less party and gender. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 10: Gender Gap in Congressional Candidacy - Time Commitment

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Less than Full-Time	(1)	(2)	(3)	(4)	(5)
Panel A: Women					
Won	0.024	0.026	−0.001	0.016	0.011
	(0.020)	(0.017)	(0.008)	(0.012)	(0.013)
Dep. Var. Mean	0.030	0.024	0.006	0.013	0.017
Observations	4,448	5,098	3,885	5,015	5,453
Panel B: Men					
Won	0.057***	0.047***	0.008	0.043***	0.046***
	(0.017)	(0.016)	(0.007)	(0.013)	(0.016)
Dep. Var. Mean	0.039	0.034	0.006	0.019	0.022
Observations	5,160	4,918	5,868	4,587	3,951
p-value $Won_W = Won_M$	0.197	0.333	0.373	0.133	0.082
Full Time					
Panel C: Women					
Won	0.020	0.009	0.000	0.018	0.003
	(0.041)	(0.037)	(0.012)	(0.034)	(0.032)
Dep. Var. Mean	0.041	0.036	0.007	0.027	0.025
Observations	1,286	1,547	1,092	1,509	1,729
Panel D: Men					
Won	0.162***	0.166***	0.024	0.087**	0.104**
	(0.045)	(0.045)	(0.017)	(0.036)	(0.041)
Dep. Var. Mean	0.065	0.056	0.010	0.034	0.041
Observations	1,311	1,241	1,576	1,131	971
p-value $Won_W = Won_M$	0.027	0.011	0.267	0.163	0.055

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions by expected time commitment. We classify states based on expected time commitments from NCSL surveys of state legislators. Full-time states are on average 84 percent of a full-time job, and all other states are less on average. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. All regressions use the estimation sample of first-time mixed gender elections with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls. Standard errors clustered at the constituency level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Table 11: Gender Gap in Congressional Candidacy - Heterogeneity by Distance to DC

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Low Distance	(1)	(2)	(3)	(4)	(5)
Panel A: Women					
Won	−0.005	0.000	−0.001	0.017	−0.001
	(0.024)	(0.020)	(0.014)	(0.015)	(0.016)
Dep. Var. Mean	0.031	0.025	0.007	0.016	0.018
Observations	3,456	3,843	2,293	3,325	3,906
Panel B: Men					
Won	0.115***	0.084***	0.026**	0.072***	0.090***
	(0.027)	(0.023)	(0.012)	(0.020)	(0.023)
Dep. Var. Mean	0.043	0.042	0.005	0.021	0.024
Observations	3,336	3,731	3,375	3,221	2,920
p-value $Won_W = Won_M$	0.001	0.006	0.158	0.024	0.001
High Distance					
Panel C: Women					
Won	0.045*	0.047*	0.003	0.030	0.032
	(0.024)	(0.025)	(0.008)	(0.023)	(0.024)
Dep. Var. Mean	0.032	0.030	0.005	0.018	0.023
Observations	2,783	2,539	2,068	2,335	2,348
Panel D: Men					
Won	0.039**	0.035*	0.003	0.028**	0.025
	(0.018)	(0.019)	(0.007)	(0.013)	(0.016)
Dep. Var. Mean	0.045	0.035	0.009	0.024	0.028
Observations	3,070	2,666	3,475	3,271	2,757
p-value $Won_W = Won_M$	0.852	0.709	0.985	0.932	0.809

Note: This table reports estimates of the gender gap for any Congressional candidacy by distance to Washington DC. Low distance is defined as below median distance in the sample and high distance is above median distance in the estimation sample. Distance is calculated from the state centroid to the District of Columbia centroid. See the notes to Table 4 for additional details on the sample and estimation. Standard errors clustered at the constituency level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

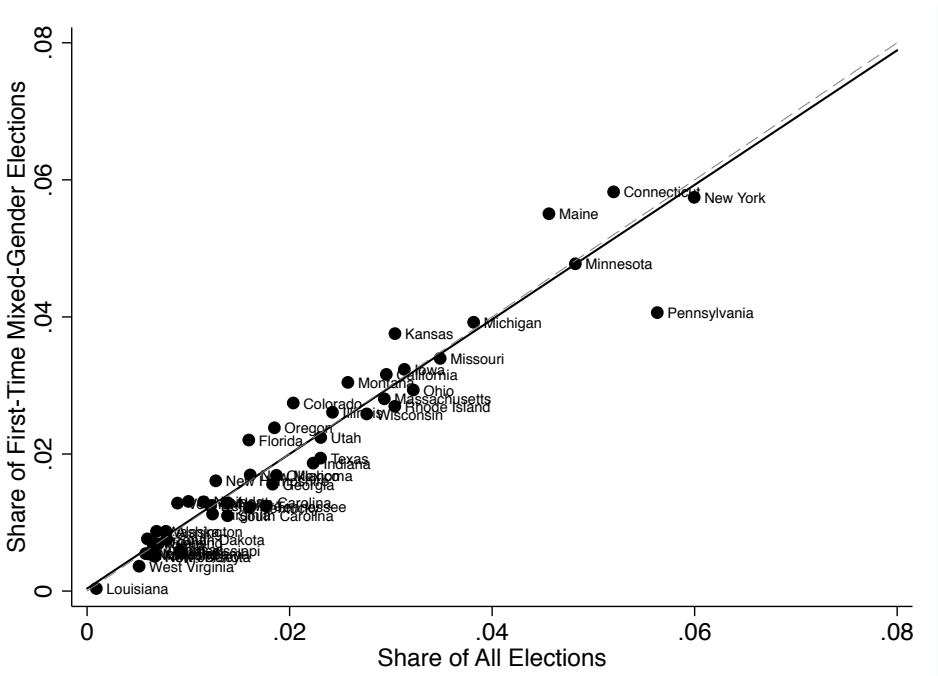
Table 12: Gender Gap in Congressional Candidacy - Heterogeneity by Male Share of Legislature

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Low Male Share	(1)	(2)	(3)	(4)	(5)
Panel A: Women					
Won	0.051*	0.049*	−0.002	0.017	0.022
	(0.028)	(0.027)	(0.006)	(0.024)	(0.026)
Dep. Var. Mean	0.032	0.029	0.004	0.018	0.021
Observations	2,958	3,163	2,573	3,634	3,177
Panel B: Men					
Won	0.044**	0.047**	−0.005	0.043***	0.041**
	(0.020)	(0.021)	(0.003)	(0.016)	(0.016)
Dep. Var. Mean	0.039	0.033	0.006	0.020	0.022
Observations	3,307	3,057	3,507	2,741	2,661
p-value $Won_W = Won_M$	0.814	0.954	0.551	0.378	0.544
High Male Share					
Panel C: Women					
Won	−0.011	−0.039	0.029*	0.012	0.023
	(0.031)	(0.027)	(0.017)	(0.020)	(0.021)
Dep. Var. Mean	0.032	0.024	0.009	0.015	0.019
Observations	2,897	3,298	2,409	2,641	2,962
Panel D: Men					
Won	0.099***	0.074***	0.039**	0.043**	0.094***
	(0.023)	(0.021)	(0.015)	(0.018)	(0.023)
Dep. Var. Mean	0.050	0.043	0.008	0.027	0.030
Observations	3,484	3,394	3,849	4,129	3,021
p-value $Won_W = Won_M$	0.009	0.004	0.674	0.304	0.031

Note: This table reports estimates of the gender gap for any Congressional candidacy by the male share of the legislature. Male share of the legislature is defined as the fraction of winners in a state x chamber x year cohort that are male. Low male share is below median and high male share is above median. See the notes to Table 4 for additional details on the sample and estimation. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix A: Additional Results

Appendix Figure A1: Share of All Elections Versus Share of Mixed-Gender Elections by State



Note: This figure plots the share of first-time mixed-gender single-member district elections against the share of all single-member district elections by state. The dashed line is the 45-degree line. The solid line plots the OLS line of best fit, the slope of which is statistically indistinguishable from 1 ($\beta = 0.981$ (se $= 0.040$)).

Appendix Table A1: Gender Gap in Congressional Candidacy - Stacked Sample

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Panel A: Women	(1)	(2)	(3)	(4)	(5)
Won	0.020***	0.020***	−0.001	0.013*	0.012
	(0.007)	(0.007)	(0.003)	(0.007)	(0.007)
Dep. Var. Mean	0.033	0.028	0.007	0.018	0.022
Observations	9,974	10,805	8,353	9,741	9,065
Panel B: Men					
Won	0.048***	0.043***	0.006	0.032***	0.037***
	(0.012)	(0.011)	(0.004)	(0.009)	(0.009)
Dep. Var. Mean	0.044	0.039	0.007	0.023	0.025
Observations	11,362	11,312	11,274	8,338	7,145
p-value $Won_W = Won_M$	0.024	0.052	0.105	0.063	0.031

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. The sample contains all mixed-gender state legislative elections, allowing for multiple observations per candidate. All regressions include constituency and election year fixed effects, the full set of candidate and election controls, and use the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A2: Balance Tests - Full Sample

	Sample Mean	Woman Won	Man Won	Difference
Panel A: Election Characteristics	(1)	(2)	(3)	(4)
Term Length	2.282	−0.009	0.002	−0.011
	(0.699)	(0.006)	(0.008)	(0.011)
Number of Candidates	2.163	0.017	−0.015	0.031
	(0.418)	(0.014)	(0.012)	(0.023)
Panel B: District Characteristics				
Share Incumbent Ran	0.545	0.010	−0.005	0.015*
	(0.219)	(0.006)	(0.004)	(0.009)
Share Unopposed Elections	0.218	0.002	−0.006	0.008
	(0.263)	(0.006)	(0.005)	(0.010)
Margin of Victory	0.262	−0.004	0.002	−0.006
	(0.141)	(0.003)	(0.002)	(0.005)
Share Mixed-Gender	0.197	−0.011	0.009	−0.020
	(0.213)	(0.008)	(0.006)	(0.012)
Number of Candidates	1.912	0.001	0.005	−0.004
	(0.402)	(0.009)	(0.007)	(0.015)
Panel C: Candidate Characteristics				
First-Time Candidate	0.744	−0.038***	−0.102***	0.065***
	(0.437)	(0.011)	(0.016)	(0.019)
Sitting Incumbent	0.161	0.001	0.095***	−0.094***
	(0.367)	(0.007)	(0.016)	(0.018)
Democrat	0.456	−0.084***	−0.112***	0.028*
	(0.498)	(0.027)	(0.023)	(0.015)
Third-Party	0.066	0.039***	0.052***	−0.014
	(0.248)	(0.009)	(0.015)	(0.018)
Candidates	25,389	25,389	25,389	25,389
Elections	16,293	16,293	16,293	16,293

Note: This table reports sample means and balance tests for state legislative candidate, election, and district characteristics using the entire sample of first-time mixed-gender elections. The dependent variable is listed in each row. Column 1 reports means and standard deviations. Columns 2 and 3 report coefficients from a regression of the dependent variable on an indicator for if the male or female candidate won the election. Column 4 reports the difference in coefficients from a fully interacted model that pools the regression samples from columns 2 and 3. The outcomes in Panel C are calculated as the mean of all previous elections in that district. All specifications are weighted using a triangular kernel, and include constituency and election year fixed effects, as well as controls for the type of election, a candidate's previous legislative experience, and separate winner and runner-up measures of the margin of victory. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A3: Gender Gap in Congressional Candidacy - Global RD

	Dependent Variable: Ever Run in				
	Any HLE	House Primary	Senate Primary	House General	Any General
Panel A: Women	(1)	(2)	(3)	(4)	(5)
Won	0.033***	0.031***	0.003	0.019**	0.021**
	(0.010)	(0.009)	(0.003)	(0.008)	(0.008)
Dep. Var. Mean	0.030	0.025	0.006	0.016	0.019
Observations	11,317	11,317	11,317	11,317	11,317
Panel B: Men					
Won	0.059***	0.052***	0.006	0.034***	0.037***
	(0.011)	(0.010)	(0.004)	(0.008)	(0.008)
Dep. Var. Mean	0.046	0.040	0.008	0.025	0.028
Observations	14,072	14,072	14,072	14,072	14,072
p-value $Won_W = Won_M$	0.043	0.081	0.621	0.170	0.142

Note: This table reports estimates of the gender gap in Congressional candidacy for different positions. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. The sample contains all first-time mixed-gender state legislative elections. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls. See the notes to Table 3 for additional details. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A4: Congressional District Characteristics Of Winning Candidates

	Primary Elections		General Elections	
	Sample Mean	Female-Male Differential	Sample Mean	Female-Male Differential
	(1)	(2)	(3)	(4)
Female Incumbent	0.064	−0.010	0.095	−0.007
	(0.245)	(0.017)	(0.294)	(0.013)
Incumbent Runs	0.572	0.058*	0.869	−0.005
	(0.495)	(0.034)	(0.338)	(0.027)
Opposed Election	0.404	−0.021	0.917	0.011
	(0.491)	(0.036)	(0.275)	(0.015)
Number of Candidates	1.815	−0.012	1.955	0.006
	(1.495)	(0.106)	(0.344)	(0.015)
Own Party Holds Seat	0.635	0.073**	0.603	0.061*
	(0.482)	(0.030)	(0.489)	(0.033)
Non-Freshman Incumbent	0.815	0.011	–	–
	(0.388)	(0.030)	–	–
Third-Party Candidate Runs	–	–	0.041	0.006
	–	–	(0.198)	(0.008)
Observations	7,706	–	8,651	–

Note: This table reports characteristics of House Congressional districts in the first opportunity a winning candidate has to run. The sample contains all first-time mixed-gender election winning candidates who we are able to match to a Congressional district. Primary elections include only Democrat and Republican winners and general elections include all winning candidates. Columns 1 and 3 report sample means and standard deviations for all winners of first-time mixed gender elections. Columns 2 and 4 test differences between male and female winners using a regression discontinuity design, with the running variable re-defined to be positive for female winners and negative for male winners. All regressions use the optimal bandwidth from Imbens and Kalyanaraman (2012) and include year and Congressional district fixed effects. Standard errors clustered at the Congressional district level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A5: Controlling for Heterogeneous Treatment Effects by Previously Accumulated State Legislative Experience

	Dependent Variable: Ever Run in					
	Any HLE	Any HLE	House Primary	Senate Primary	House General	Any General
	(1)	(2)	(3)	(4)	(5)	(6)
Female-Male Differential	−0.048*	−0.049*	−0.041	−0.014	−0.031	−0.046**
	(0.026)	(0.026)	(0.026)	(0.010)	(0.021)	(0.023)
Win x Experience		−0.001	0.002	−0.004	0.000	0.001
		(0.006)	(0.005)	(0.003)	(0.006)	(0.007)
Dep. Var. Mean	0.039	0.039	0.032	0.006	0.019	0.022
Observations	12,205	12,205	12,804	12,421	12,242	12,104

Note: This table reports estimates of the gender gap in Congressional candidacy, allowing for heterogeneous effects by previous state legislative experience. Female-Male Differential represents the gender gap in winning a state legislative election on future Congressional candidacy. Column 1 of Panel A replicates the result from Column 1 from Table 4. We also include an interaction of win x previous experience in all regressions that is set to be equal across gender. All regressions include constituency and election year fixed effects, the full set of candidate and election controls, and use the optimal bandwidth from Imbens and Kalyanaraman (2012) that is calculated separately across gender. Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A6: Gender Gap in Congressional Representation - Time Commitment

	Dependent Variable: Ever Win			
	Any HLE	House Primary	House General	Any General
Less than Full-Time	(1)	(2)	(3)	(4)
Panel A: Women				
Won	0.008	0.013	0.004	0.005
	(0.013)	(0.013)	(0.007)	(0.008)
Dep. Var. Mean	0.018	0.014	0.004	0.006
Observations	5,403	4,990	4,295	4,402
Panel B: Men				
Won	0.036**	0.036**	0.007	0.007
	(0.016)	(0.014)	(0.007)	(0.007)
Dep. Var. Mean	0.024	0.021	0.006	0.006
Observations	3,990	4,336	5,365	4,976
p-value $Won_W = Won_M$	0.164	0.224	0.739	0.839
Full Time				
Panel C: Women				
Won	0.003	0.019	0.003	0.003
	(0.032)	(0.034)	(0.005)	(0.005)
Dep. Var. Mean	0.026	0.027	0.008	0.008
Observations	1,690	1,496	1,230	1,265
Panel D: Men				
Won	0.134***	0.118***	0.026	0.027
	(0.045)	(0.040)	(0.019)	(0.020)
Dep. Var. Mean	0.043	0.038	0.018	0.016
Observations	977	1,081	1,387	1,258
p-value $Won_W = Won_M$	0.019	0.060	0.245	0.224

Note: This table reports estimates of the gender gap in Congressional representation for different positions by expected time commitment. We classify states based on expected time commitments from NCSL surveys of state legislators. Full-time states are on average 84 percent of a full-time job, and all other states are less on average. The dependent variable is equal to one if the candidate ever runs in the election listed in the column header and is zero otherwise. All regressions use the estimation sample of first-time mixed gender elections with the optimal bandwidth from Imbens and Kalyanaraman (2012) calculated separately by gender. All regressions include constituency and election year fixed effects, and the full set of candidate and election controls. Standard errors clustered at the constituency level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix Table A7: Testing Loser vs. Winner Hypotheses - Election Losers Single RD

	Dep. Var.: Ever Run in		
	Any HLE	House General	Any General
	(1)	(2)	(3)
Female	0.012	0.005	0.006
	(0.009)	(0.008)	(0.008)
Dep. Var. Mean	0.015	0.008	0.009
Observations	8,781	7,890	7,585

Note: This table reports estimates of the gender gap for any Congressional candidacy for losing candidates. The sample includes losing candidates of first-time mixed-gender elections. We re-define the running variable to be positive for women and negative for men. All regressions include year and constituency fixed effects, the full set of candidate and election controls, and use the optimal bandwidth from Imbens and Kalyanaraman (2012). Standard errors clustered at the state level are reported in parentheses. *** = significant at 1 percent level, ** = significant at 5 percent level, * = significant at 10 percent level.

Appendix B: Data Appendix

This appendix describes all relevant information on the cleaning and coding of the variables used in our analysis, as well as the process we use to match state legislative candidates to Congressional elections and construct our estimation sample.

A. Data Sources

State Legislative Elections: Our primary data source comes from Inter-university Consortium for Political and Social Research No. 34297. This dataset contains the near-universe of state legislative elections for 1967-2010. Importantly, the data are organized at the candidate-by-year level, and include information on the seat contested (district and chamber), victory margin, winning status, party, number of votes received, candidate name, and number of other candidates in the race, among other relevant details.

Congressional Elections: We procure data on Congressional elections from two sources. We first source House of Representatives primary data for 1968-2010 from Pettigrew, Owens, and Wanless (2014). We supplement these data with extracts from the CQ Elections database, covering 2012-2016. We also combine the House primary data with information on Senate primary races, as well as both House and Senate general elections from 1968-2016, all from CQ Elections. Similar to the state legislative data, these data are organized at the candidate-by-year level and include information on the seat contested, victory margin, winning status, party, and number of votes received. Importantly, these data also include candidate names, which allow for linking across levels of government.

Congressional Biographical Data: Our data on the backgrounds of Congressional legislators come from two sources. First, we use the digitized records (ICPSR 7803) of the United States Congressional Biographical Data Series from 1789-1996. These data provide demographic information on all sitting Congressional members in both the House and the Senate. We supplement these records with contemporary data from the VoteSmart Biographical database, which provides demographic information for both Congressional and state legislative candidates post-1996.

B. Data Assembly

We implement the following procedure to create our estimation sample and main outcomes of interest.

1. We begin by determining the gender of each candidate in the state legislative data. We cross-reference each candidate's first name against records from the Census Bureau and the Social Security Administration (SSA) to obtain the probability that a candidate is male or female. We code a candidate as female if *both* the Census Bureau and SSA records return a probability of greater than 70 percent and follow a similar process for male names. We can

successfully determine a candidate's gender for over 95 percent of all candidates in the raw data. We hand code the remaining five percent where gender is ambiguous based on first name.

2. Next, we restrict the sample of state legislative elections to elections where the winner was awarded a seat in the next legislative session (e.g., we drop primary races). We then drop a handful of duplicate candidate observations. To improve the interpretability of our estimates, we further restrict the sample to single-member districts. That is, district-chamber combinations that elect a single member to the legislative assembly. Ten states have at least one multi-member district.

3. We then rank candidates based on their vote share within each state legislative election, where the winning candidate receives the largest vote share, the runner-up receives the second largest, and so on. Formally, an election is defined as the unique state-year-chamber-district-election-type combination. During this step, we also drop any races where we do not know the gender of one of the top two candidates. For example, an election may be dropped if only the candidate's first initial is listed as a first name and we are unable to determine the candidate's gender during the hand-coding process. We define a mixed-gender election as one where the top two candidates contained both a male and a female candidate.

4. We now turn to matching candidates across levels of government. We perform these processes separately for the House of Representatives and the Senate, and separately for primary and general elections. Specifically, we match candidates using first and last name, and the first letter of the last name. To decrease the probability of spurious matches, we match candidates within-state and place greater weight on the last name and require that the first letter of the last name matches across datasets. We keep all perfect matches (i.e., where the first and last names both match perfectly) and manually review less-than-perfect matches.

5. Having merged state and Congressional records at the candidate level, we now turn to constructing our outcomes of interest. Specifically, we define a candidate as having "ever" run in a Congressional election if we match them across datasets and their candidacy occurs after the election of interest (e.g., they run for a Congressional seat in 1972 after having participated in a state legislative election in 1968). We zero-out any matches that occur before a state legislative election, although in practice this affects only a small handful of observations. We then construct dynamic measures of Congressional candidacy using the procedure outlined in the main text, that is based on the difference in years between when the candidate runs for a Congressional seat and the year they participate in a state legislative election. We also construct similar measures for winning a Congressional election or primary. Because our measures of Congressional general and primary election candidacy come from two sources, there may be differences in name quality across the two datasets, which can manifest themselves

during the matching process. To ensure that we are accurately tracking a candidate's election history throughout all stages of the career, we assume that the primary is a stepping stone for the general election for Democrat and Republican candidates. Specifically, for candidates from these parties, we assume that if they appear in the general election, that they must also have run in (and won) the corresponding primary election. Note that this allows for independent and third-party candidates to run in the general election without participating (or being observed) in the primary process. This last step only affects a handful of observations, primarily in states where primaries were closed and we only observe the party's nominee.

6. Finally, we perform the following restrictions to construct our estimation sample. First, we construct indicators for mixed-gender elections using the gender composition of the top-two vote-earning candidates. We then identify the first time a candidate participates in a mixed gender election, which yields the "first-time mixed-gender" sample. Note that because mixed-gender elections can occur at different points in a candidate's career, the number of candidates will not be exactly equal to twice the number of elections in the estimation sample. Second, we use only state-level elections through 2008, since we are unlikely to correctly link candidates across levels in this later time period given the short time horizon for the outcomes of interest.