Shattering the Marble Ceiling: A Research Note on Women-Friendly State Legislative Districts*

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Objective. Palmer and Simon's (2008) "women-friendly" district index has proven a useful theoretical and empirical construct for researchers studying congressional elections. In one parsimonious measure, the authors capture 12 factors predicting women's election to the House of Representatives. The construct's utility in other political contexts, however, has not yet been tested. *Methods.* We test the women-friendliness index using a new data set on state legislative elections. *Results.* We find that the women-friendly district index is useful for predicting the election of women in state legislatures. The index's predictive power is robust to institutional variations and surpasses other contextual indicators, such as political culture. *Conclusions.* Our analysis suggests that "women friendliness" is a useful empirical concept with application in multiple political contexts.

A substantial body of research has aimed to identify the factors that predict female candidates' election to political office (e.g., Arceneaux, 2001; Bernstein, 1986; Darcy and Choike, 1986; Darcy, Welch, and Clark, 1985; Herrnson, Lay, and Stokes, 2003; Hogan, 2001; King, 2002; Matland and Brown, 1992; Moncrief and Thompson, 1992; Palmer and Simon, 2008; Rule, 1990; Sanbonmatsu, 2002; Scola, 2013, 2014). These studies have posited many explanations—institutional, political, and demographic—for women's representation and underrepresentation in legislatures.

Palmer and Simon (2008) make a notable attempt to unify the factors that predict the emergence and election of women in the U.S. House of Representatives into a single indicator. Using data on political, geographic, socioeconomic, and ethnic variables, they construct a "women-friendliness" index (Palmer and Simon, 2008:179). This index has subsequently been used as a parsimonious way to reflect political context in studies examining gender in the House of Representatives (e.g., Ondercin and Welch, 2009; Setzler, 2014).

Scholars, however, have not yet considered whether this empirical construct can effectively measure factors predicting women's election in varied political and institutional contexts. In this analysis, we follow Simon and Palmer's (2005) and Palmer and Simon's (2008) methodology to create a women-friendliness index for state legislative districts. We then test this measure's efficacy using data on state legislative elections from 2000 to 2010. We find that even after controlling for political culture and institutional characteristics, the women-friendliness index is a significant predictor of women's emergence as candidates and election to state legislatures. These results suggest that the women-friendliness

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index is a parsimonious contextual indicator with utility for scholars studying gender and representation at multiple levels of the political system.

Previous Research

Previous researchers have demonstrated that women are more likely to run for office and be elected in areas that share certain political and demographic characteristics (e.g., Darcy, Welch, and Clark, 1985; Hogan, 2001; King, 2002; Matland and Studlar, 1996; Paxton, Hughes, and Painter, 2011; Nechemias, 1985; Setzler, 2014). In an attempt to unify the discipline's findings, Palmer and Simon (2008) combine 12 variables shown to predict women's election to the U.S. House—including liberalism, district size, urban population, workforce composition, income, education, and diversity—into a single "women-friendliness" index. This measure has both theoretically advanced scholars' understandings of gender and representation in the national legislature and improved the parsimony of scholars' empirical models. Researchers interested in predicting female candidates' electoral success, for example, have used this indicator as a concise measure of political context (e.g., Ondercin and Welch, 2009; Setzler, 2014).

To date, scholars have not examined whether a similar index can be constructed and used to control for the factors that predict women's election in other political institutions. The ability to use such a measure—particularly if it outperformed traditional sociocultural indicators such as political culture (Elazar, 1984)—would represent a significant advancement in model parsimony. We cannot, however, assume that such an index has application in other contexts without first examining its distribution and predictive power. On one hand, it seems intuitive that a women-friendliness measure would be predictive for other institutions because there is a strong association between areas that elect female House members and areas that elect women to other offices (Palmer and Simon, 2001). On the other hand, substantial institutional variations in state and local governments may mitigate or alter the index's predictive power.

This article explores using a women-friendliness index in another political context. We specifically examine state legislative districts because they have many functional similarities to the national legislature. Members represent fixed populations, and have similar law-making responsibilities as their counterparts in the House. Many congressional candidates—and particularly female congressional candidates—also serve in the state legislature before running for Congress (Palmer and Simon, 2001).

Institutional and electoral variations, however, suggest that the relationship between political geography, candidate entry, and electoral success may vary in state legislatures (e.g., Darcy, Welch, and Clark, 1985; Hogan, 2001; Nechemias, 1985; Scola, 2013, 2014). First, state legislatures' institutional design often differs dramatically from the national legislature. This may take the form of a unicameral legislature (Nebraska), term limits (e.g., Florida), districts with very low population (e.g., New Hampshire), multimember districts for some seats (e.g., Maryland), or multimember districts for all seats (e.g., South Dakota), just to name a few. There is also great variation in state legislatures' professionalization (Squire, 2007). Some state legislatures operate in nearly continuous sessions and offer substantial salaries and opportunities for advancement (e.g., New York, California, Pennsylvania). Other states meet only occasionally and have low pay and little staff (e.g., Montana, North Dakota, Utah).

State legislatures also operate in a different electoral environment than the U.S. House. Most state legislative contests are lower salience and less competitive than their national

counterparts. Lower salience contests may both increase and decrease a female candidate's probability of running for and winning election. On one hand, media coverage and fundraising, which have historically been obstacles for many female candidates, are less important in state legislative races; this may incentivize women to run for office, even in less women-friendly districts (e.g., Dunaway et al., 2013; Lawless and Fox, 2010). On the other hand, state party elites may have greater control over nominees' selection, exacerbating obstacles to the entry of female candidates. Previous research has demonstrated that the political parties are traditionally male dominated and that gender biases exist in party organizations' recruitment tactics (Crowder-Meyer, 2011; Lawless and Fox, 2010; Niven, 1998).

Therefore, while it is possible that geography affects political behavior and success in state legislative elections in a similar way to the House of Representatives, it is important to test the portability of the concept. If the measure is shown to be highly predictive, then it could (and, perhaps, should) be used in future analyses aiming to understand female representation in various political contexts. However, if the measure is not a strong predictor, it suggests that women friendliness is a much more narrow theoretical concept than existing studies would lead us to believe.

Data and Methods

We follow Simon and Palmer's (2005) and Palmer and Simon's (2008) methodology to create an index of state legislative districts' women friendliness. The index includes political (partisanship, ideology), geographic (district size, percent urban, southern), racial and ethnic (percent African American, Hispanic, and foreign born), and socioeconomic (median income, percent college educated, school age, and blue collar) indicators.

Table 1 illustrates the characteristics of the variables used to construct this index.[1] We present these characteristics for core Democratic districts, core Republican districts, and swing districts. Consistent with Simon and Palmer (2005) and Palmer and Simon (2008), a core partisan district is one that was represented by a Democrat (Republican) more than 80 percent of the time, or more than 8 of 10 years in our analysis. Comparing the districts electing only men and those electing women, statistically and substantively significant differences emerge on almost every variable. In almost every case, districts that elected a female representative are both more Democratic and more liberal than those that did not. Geographically, these districts are also more compact, more urban, and less likely to be southern. While these districts are no different in terms of their African-American populations, districts electing women have higher Hispanic and foreign-born populations. Socioeconomically, districts electing women are wealthier, more educated, and less blue collar than districts that only elected men. These differences are consistent with Simon and Palmer's (2005) and Palmer and Simon's (2008) findings on the House of Representatives and provide preliminary evidence that similar patterns of female representation may be present in state legislatures.

We use these findings to construct a 13-point index, ranging from 0 to 12. Districts are assigned points for women friendliness based on a comparison of the district's values to the median values. These variables are both positive and negative in orientation. For the positive variables (urban, African American, Hispanic, foreign born, median income,

[1]This table shows values for all districts. Models analyzing upper and lower houses separately have been estimated and are substantively identical. Those models are available from the authors by request.

TABLE 1

Characteristics of State Legislative Districts, 2000–2010

Measure	All Districts (4,639)	All Districts Electing Only Men (2,943)	All Districts Electing Women (1,696)	Diff.	Dem. Districts Electing Only Men (1,093)	Dem. Districts Electing Women (832)	Diff.	Rep. Districts Electing Only Men (1,532)	Rep. Districts Electing Women (582)	Diff.	Swing Districts Electing Only Men (318)	Swing Districts Electing Women (282)	Diff.	Do Districts Electing F Dems. Differ from Those Electing F Reps.?
Political														
Republican share of pres. vote	49.74%	53.01%	44.24%	*	36.54%	31.40%	*	59.85%	55.87%	*	52.99%	46.89%	*	Yes*
District ideology	0.08	0.13	−0.01	*	−0.06	−0.2	*	0.21	0.15	*	0.15	0.06	*	Yes*
Geography														
District size in square miles	196.41	321.74	85.48	*	132.72	39.12	*	434.72	229.3	*	447.72	110.02	*	Yes*
Urban	73.36%	65.23%	84.72%	*	85.76%	94.29%	*	58.17%	69.16%	*	58.98%	72.39%	*	Yes*
South	33.47%	38.53%	24.68%	*	38.33%	26.56%	*	39.49%	26.12%	*	34.59%	16.07%	*	No
Ethnicity														
African American	4.94%	4.98%	4.91%		10.04%	11.63%		3.44%	3.16%		3.82%	2.20%	*	Yes*
Hispanic	4.71%	4.29%	5.57%	*	5.09%	7.64%	*	4.04%	4.40%		3.35%	3.58%		Yes*
Foreign born	5.16%	4.48%	6.74%	*	5.30%	9.33%	*	4.26%	5.26%	*	3.80%	4.25%		Yes*
Socioeconomic														
Relative median income	92.12%	90.38%	95.49%	*	80.00%	86.55%	*	98.60%	108.73%	*	87.25%	100.24%	*	Yes*
College degree	22.40%	21.10%	24.80%	*	18.50%	23.05%	*	23.30%	26.80%	*	20.85%	25.55%	*	Yes*
School-age population	24.27%	24.31%	24.22%		24.13%	24.05%		24.47%	24.64%		23.95%	23.80%		Yes*
Blue collar	9.90%	10.10%	9.20%	*	10.00%	8.80%	*	10.20%	9.60%	*	10.40%	9.45%	*	Yes*

NOTES: *$p < 0.05$, two-tailed tests. Statistical significance is tested using the Mann-Whitney test for unequal populations. The unit of analysis is the legislative district. A district is defined as partisan if it elected a member of that political party in upwards of 80 percent of years during this time period. With the exception of South (proportion) the cells report a median value. Diff. = difference; Dem. = Democratic; Rep. = Republican; F Dems. = female Democrats; F Reps. = female Republicans; Pres. = presidential.

college degree) values higher than the median receive a point on the women-friendliness index. For negative variables (Republican presidential vote share, district ideology, district size, southern, school age, blue collar), values lower than the median receive a point. Approximately 33 percent of all districts score 0–3 points on this index, 39 percent score 4–7 points, and 28 percent score 8 or more points.[2]

Dependent Variables

We use data from 2000 to 2010 to examine whether our index's predictive power is robust to cultural and institutional variations. We consider the index's ability to predict both whether a female candidate sought office and won election in a legislative district in a given year. Relevant women were identified using the Center for American Women and Politics' Fact Sheets (Center for American Women and Politics, 2014).

Control Variables

Our multivariate models also incorporate controls that may affect female candidates' emergence or victory in a particular district. These fall into two major categories: state and district characteristics and institutional factors. Like Hogan (2001), we expect that a state's political culture (Elazar, 1984) will have an influence on the frequency of female candidacies and the success of female candidates. Along those lines, we include dummy variables that reflect whether the state has a *Moralistic Culture* or a *Traditionalistic Culture*; states with an individualistic culture are the baseline for these analyses. Based on Hogan's work, we expect states with open, moralistic cultures will be the most positive for female candidates, states with hierarchical, traditionalistic cultures will be the most negative, and states with individualistic cultures will fall somewhere in between. We also include a count of the district's *Female Population*, as we expect more candidacies to emerge from districts with more women (Palmer and Simon, 2008). Finally, as a control for the idiosyncratic elements inherent in each state, variations of each model will be computed using state effects.

We also consider several institutional controls. These include a dummy variable for whether a state uses *Multimember Districts* and a count of the *Number of Candidates* in the general election (Klarner et al., 2013). Previous research has shown that women may be more likely to run and win election in multimember systems and districts that encourage large numbers of candidates, rather than a single party nominee (e.g., Darcy, Welch, and Clark, 1985; King, 2002; Matland and Studlar, 1996; Paxton, Hughes, and Painter, 2011). Further, following Hogan (2001), we also include a dummy variable for whether the state legislature has *Term Limits* and count variables measuring the *Legislature Size* in number of members and the *District Population*. Data for each of these variables were obtained from the National Council of State Legislatures and measure the political opportunity structure within a state. Term-limited legislatures and legislatures with higher numbers of smaller districts may present a greater number of opportunities for female candidates to run for

[2]Additional detail on the construction of the index can be found in Simon and Palmer (2005) and Palmer and Simon (2008). All data for the index come from the U.S. Census Bureau's American Fact Finder database except for presidential vote, which comes from Tavsanovitch and Warshaw (2013). The compression of the index from 12 to 3 points is done for ease of presentation and does not affect the substance of the results presented.

office. Term-limited legislatures, by their very nature, create more open-seat contests—where women are more likely to run—than non-term-limited legislatures. Similarly, larger legislatures and smaller districts increase the number of available seats within a state and may make the task of representation and running for office less daunting to many otherwise reluctant female candidates. We also include the state's *Legislative Professionalism* score based on Squire (2007); prior studies have revealed a negative relationship between legislative professionalism and female representation (Squire, 1992; Scola, 2013). Finally, we consider a dummy variable for the *Upper House* to capture any institutional variation that may result from bicameralism.[3] Our expectation is that, based on observed representational patterns and the work of Sanbonmatsu (2006), women will be less likely to run and win office in upper houses than lower houses.

Findings

Each of the models presented in Table 2 is a logistic regression with standard errors clustered on the legislative district.[4] Examining the results of our multivariate analysis, we see the institutional controls generally behave as expected. Multimember districts increase both the frequency of female candidacies and their success. Races with more candidates see more female candidates and winners. Term limits for state legislators are also beneficial for female candidates, presumably due to increasing the number of open seats. Conversely, more professionalized legislatures have both fewer female candidates and fewer female winners.

In terms of the state and district characteristics, we observe clear effects in both models for states with a moralistic political culture. This result is consistent with Hogan (2001) and provides further evidence for these states being the most positive to female representation. Unlike Hogan, we do not find a negative effect in traditionalistic states; in each model the effect is nonsignificant.

Most importantly, even after controlling for these substantial institutional and cultural variations, our state legislative women-friendliness index remains a significant and powerful predictor of women's candidacies and elections. To give the reader a clearer sense of women friendliness' impact on a woman's likelihood of running or winning in a given district in a given year, we computed a series of predicted probabilities. Specifically, we consider the effect of moving from the minimum value on women friendliness (0–3 attributes) to the maximum value (8–12 attributes) on women friendliness with all other variables held at their means. The initial probability of a woman running for office in a district with a low score on the women-friendliness index is 24.4 percent. In contrast, the probability of a woman running in a district with a high score on women friendliness is 44.2 percent. To put it differently, the effect of moving from the minimum to the maximum on women friendliness increases the likelihood of a woman running by 19.8 percentage points or 81.1 percent.

We observe a greater increase in the probability of a female victory. The probability of a woman winning a given seat in a given year with all variables held to their means and the women-friendliness index at its lowest value is 13.7 percent. However, in the

[3] Alternative models have been estimated with time variables included. The inclusion of these variables does not alter any of the substantive conclusions presented here. Those models are available from the authors by request.

[4] An alternative modeling approach was also attempted that modeled each legislative district as a panel. These models lead to substantively identical conclusions and are available in Table A1.

TABLE 2

The Effect of Women Friendliness on Female Candidacies and Election Outcomes: State Legislatives Offices, 2000–2010

	Model Ia Female Candidate		Model Ib Female Candidate		Model IIa Female Winner		Model IIa Female Winner	
Women-friendly district	0.48 (0.04)	*	0.41 (0.04)	*	0.62 (0.04)	*	0.56 (0.05)	*
State and district characteristics								
Moralistic culture	0.41 (0.06)	*	0.63 (0.35)	*	0.40 (0.08)	*	0.48 (0.46)	
Traditionalistic culture	−0.02 (0.07)		−0.30 (0.30)		0.06 (0.09)		−0.35 (0.41)	
Female population	−0.00 (0.02)		0.02 (0.02)		−0.00 (0.02)		0.02 (0.02)	
State effects	No		Yes		No		Yes	
Institutional factors								
Multimember district	0.26 (0.13)	*	0.08 (0.17)		0.67 (0.14)	*	0.61 (0.20)	*
Leg. professionalism	−0.77 (0.30)	*	−1.16 (0.91)		−1.01 (0.38)	*	−0.76 (1.08)	
Upper house	−0.14 (0.07)	*	−0.26 (0.10)	*	−0.16 (0.09)	*	−0.24 (0.12)	*
Number of candidates	0.49 (0.03)	*	0.50 (0.03)	*	0.12 (0.02)	*	0.10 (0.02)	*
Legislature size	−0.00 (0.00)		−0.00 (0.00)		0.00 (0.00)		0.00 (0.00)	
District population	0.00 (0.00)		0.00 (0.00)		0.00 (0.00)		0.00 (0.00)	
Term limits	0.12 (0.06)	*	−0.29 (0.32)		0.01 (0.07)		−0.55 (0.38)	
Constant	−1.75 (0.80)	*	−2.79 (0.88)	*	−1.79 (0.96)	*	−2.81 (1.07)	*
N	19818		19818		19818		19818	
r^2	0.08		0.09		0.06		0.07	
Percentage of correctly predicted	68.2		68.6		76.87		77.1	
F	0.00		0.00		0.00		0.00	

NOTES: *$p < 0.05$, one-tailed tests where a clear directional hypothesis exists. Equations were estimated using logit analysis with standard errors clustered on the legislative district. The unit of analysis is the district in a given year.

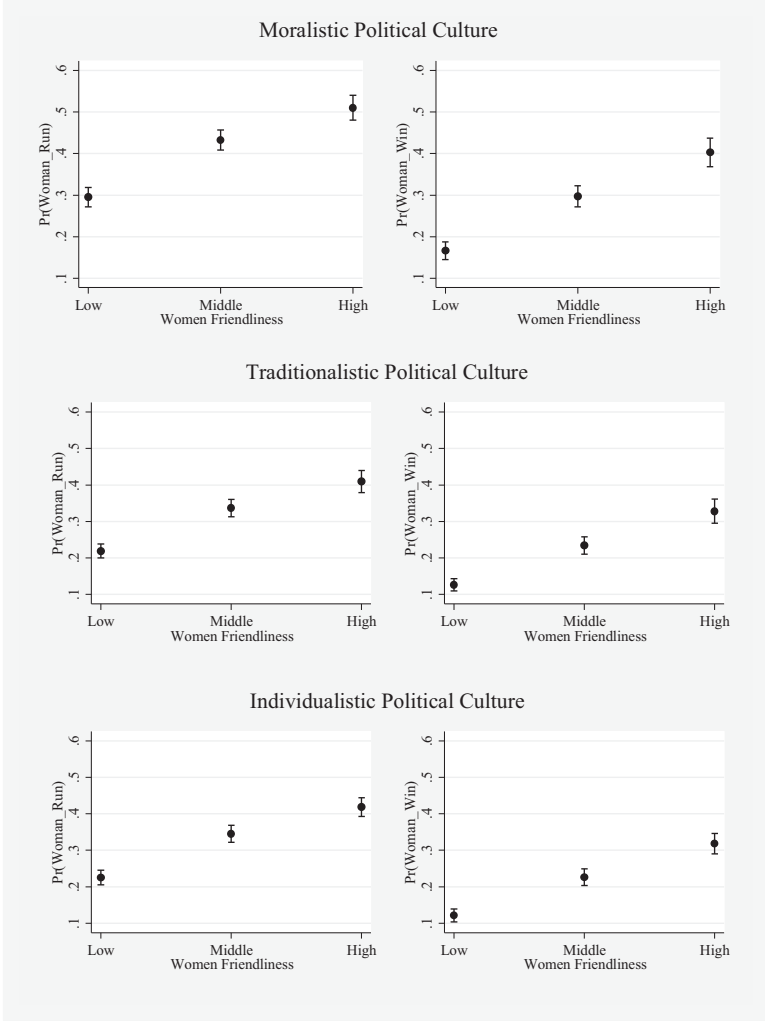
most women-friendly districts, the predicted probability of female victory increases to 34.6 percent. This is an increase of 20.9 percentage points or 252.6 percent. Furthermore, it is worth noting that the index has one of the largest effects in each model, clearly indicating political geography's substantively significant impact on female candidacies and success at the state legislative level.[5] These effects remain consistent even when controls for each state are included.

Given Hogan's (2001) finding that female representation varied dramatically with a state's political culture, we also examined women-friendly districts' effect in each political culture. We present the results from Model Ia and IIa in Figure 1. The figures show a clear difference between states with a moralistic culture and states with traditionalistic or individualistic cultures, although in our analysis there appears to be little difference between the latter two categories. Importantly for our results, we find women-friendly districts' effect to be common to all three political cultures. In other words, while the initial probabilities vary by political culture, in all three categories, more women-friendly districts are also more likely to see female candidates and representatives. Thus, we feel confident that the results are robust and not limited by political culture or region.

[5]An alternative version of this model was estimated that limited the universe of cases to only those districts where there was at least one female candidate. The results from those models are substantively identical and are available from the authors by request.

FIGURE 1

The Probability of a Woman Running or Winning in a Given District Based on Women Friendliness and Political Culture



NOTE: The numbers presented are predicted probabilities obtained from Model Ia (left-hand column) and Model IIa (right-hand column). All other variables are held to their means.

Discussion and Conclusions

This note's primary goal was to examine whether Palmer and Simon's (2008) women-friendliness index could be used as an empirical construct to measure the probability of women's candidacies and elections outside the U.S. House of Representatives. Our results provide strong support for the approach's durability. Despite substantial cultural and institutional variations, district characteristics remain important predictors of where women run for state legislature and of when women are successful candidates.

These findings provide empirical evidence that a women-friendliness index can and should be used as a contextual control in studies examining gender's influence in state legislative politics. This index is advantageous for several reasons. First, it is easy to obtain the data for each component of the index; most measures come directly from the U.S. Census Bureau and can be downloaded at the state legislative district level *en masse*. Second, because the index is principally a count, it is simple to calculate and interpret. Third, unlike previous measures of state context, such as political culture (Elazar, 1984), the women-friendliness index can be revised and updated to reflect contextual changes as a result of migration, redistricting, or other factors. Finally, the measure represents a significant improvement in model parsimony over individual indicators measuring each of the 12 concepts included in the index. What is more, if scholars are particularly interested in one component's individual effects—for example, district ideology—it can be easily removed and modeled separately. Scholars can then simply recalculate the index to capture the remaining indicators (see, e.g., Setzler, 2014).

This construct's efficacy at predicting women's candidacy and election in state legislatures does not guarantee that it would translate similarly well to studies examining local political institutions, such as county commissions, city councils, or school boards. However, it provides strong suggestive evidence that women-friendly indices may also be useful indicators in these analyses; we encourage other researchers to explore these applications in more detail. Future scholars should also consider ways to refine, improve, and more deeply understand the implications of the women-friendliness index in state legislatures. Substantial variation in states' sociodemographic indicators raises at least the possibility that basing a district's women friendliness on a national standard may obscure substantial interstate variation. Thus, what is women friendly in Montana may not be women friendly in California. Alternately, it may be that some district characteristics must meet a national threshold in order to sufficiently predict the candidacy and election of women.

Appendix

TABLE A1

The Effect of Women Friendliness on Female Candidacies and Election Outcomes

	Model I Female Candidate		Model II Female Winner	
Women-friendly district	0.61 (0.04)	*	0.89 (0.06)	*
State and district characteristics				
Moralistic culture	0.62 (0.09)	*	0.83 (0.14)	*
Traditionalistic culture	−0.17 (0.10)	*	−0.14 (0.15)	
Female population	0.01 (0.02)		0.05 (0.02)	*
Institutional factors				
Multimember district	0.29 (0.16)	*	1.18 (0.18)	*
Leg. professionalism	−1.24 (0.39)	*	−2.14 (0.56)	*
Upper house	−0.26 (0.08)	*	−0.29 (0.10)	*
Number of candidates	0.68 (0.03)	*	0.11 (0.03)	*
Legislature size	−0.00 (0.00)		0.00 (0.00)	
District population	0.00 (0.00)		0.00 (0.00)	*
Term limits	0.17 (0.09)	*	0.10 (0.13)	

Continued

TABLE A1

Continued

	Model I Female Candidate	Model II Female Winner
Constant	−3.31 (0.90)	−6.15 (1.22) *
Number of cases	1,9708	1,9708
Number of groups	3,313	3,313
χ^2	0.00	0.00

NOTES: *$p < 0.05$, one-tailed tests. All of the models presented are panel data logistic regressions with random effects. The data are grouped by legislative district. The unit of analysis is the district in a given year.

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