



Commonwealth Review of Political Science

“Women’s Representation in State Legislatures and Women-Friendly Policy Outcomes”

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Abstract

This paper adds to the literature on the relationship between women's representation and policy outcomes. The literature argues that female legislators are more likely than male colleagues to support policies that benefit women, children, and families. Therefore, increasing women's representation in legislative bodies will likely result in more policy outcomes that reflect women's interests. This paper employs data from 50 U.S. state legislatures in three years: 2010, 2015, and 2020 to examine the relationship between female legislators and women-friendly policies. The analysis indicates that female legislators play an important role in introducing, discussing, and debating women-friendly bills but have yet to be in their passage. In addition, the results show that the impact of gender on policy outcomes is conditioned by party control of legislatures and the proportion of women in legislatures. Specifically, female legislators have a greater impact on policy outcomes under Democratic-controlled legislatures and when they account for over 30 percent of state legislators.

Introduction

As representation is a main principle of democracy, getting more women into decision-making has been a central concern of American politics for decades. Although the U.S. Congress and state legislatures are still dominated by men, the number of female lawmakers has increased steadily over time. According to the National Conference of State Legislatures (NCSL 2022), women made up 30.7% of all state legislators in the nation for the first time in history after the 2020 elections (see figure 1A and 1B in the Appendix for a chart of the change in women’s representation over time). Women’s gains at state legislatures are mirrored in the

117th Congress, where women account for 27 percent of Congress members. How does the gender composition of legislatures affect the proposal and enactment of women-friendly policies?

Studies show that male and female legislators have different policy preferences (Fredriksson and Wang 2011; Poggione 2004; Thomas and Welch 1991). Female legislators are more likely to sponsor and introduce policies for women, children, and families (Swers 2002; Swers 2013; Saint-Germaine 1989; Thomas 1991; Bratton and Haynie 1999, and Courtemanche and Green 2017). These studies broaden our understanding of gender differences regarding policy preferences and

priorities. Despite this proliferation, there are still many questions about the effect of women in state legislatures, particularly concerning policy outcomes. Whether women in legislative offices change substantive policy outcomes is still a question that needs to be adequately answered by generalizable empirical evidence. This study aims to fill this gap by estimating the effect of female state legislators on the introduction and passing of women-friendly policies using a novel dataset containing data from 50 state legislatures. The term "women-friendly policies" refers to policies that address traditional women's issues, including those affecting women and children, as well as contemporary concerns, such as contraceptive coverage and tax exemptions on feminine hygiene products.

This paper aims to examine whether gender affects policy outcomes in U.S. state legislatures based on representation theories and the relationship between descriptive representation and substantive representation of women. These theories provide a belief that having women in policy-making bodies will lead to policies that are inclusive of the women population. It is reasonable to expect that female lawmakers use their discretion in a manner that benefits the female population. Although female and male legislators may have some shared experiences in life, this paper argues that they have different policy preferences and priorities. Female legislators are more likely than their male colleagues to support policies that benefit women and children. As a result, increasing women in decision-making bodies can produce more women-friendly policy outcomes.

Using Generalized Linear Models and logit models, I find evidence that the positive impact of female legislators on women-friendly policies is stronger under Democratic-controlled legislatures than in

Republican-controlled and divided state legislatures. I also find that the effect of female legislators on women-friendly bills only occurs when the share of women in legislatures exceeds the threshold percentage suggested by the critical mass theory (Kanter 1977; Dahlerup 1988). In addition, it is not guaranteed that policies reflecting women's interests will be adopted due to efforts to bring these issues to the legislative agenda. The analysis shows that the presence of women in legislatures does not significantly affect the passage of women-friendly bills. Intention to present women's interests will not translate into actions if a bill is introduced a hundred times but never becomes law. Translating descriptive representations of women into substantive representations is still in the early stages.

Overall, this study makes several contributions to the literature on the impact of gender in policy-making bodies. First, the study uses a novel dataset covering all 50 U.S. state legislatures, expanding the scope of previous research primarily focused on a few select states. Second, it examines the moderating effect of two factors, party control of the legislature and the percentage of female legislators, on the relationship between women's representation and policy outcomes. The findings indicate that more than a simple increase in the number of women in the legislature is needed to alter policy outcomes. Finally, the study sheds light on the relationship between descriptive representation and substantive representation of women in elected offices. When we consider the success of bills, an increase in descriptive representation of women in policy-making bodies is not a guarantee of substantive representation.

Literature Review

Gender differences in policy preferences

Gender differences have been a prominent feature of American politics. Since the 1980 presidential election of Democratic candidate Jimmy Carter, a “gender gap” has been observed in voting preferences, with women tending to vote for Democratic candidates (Chaney and Nagler 1998; Barnes and Cassese 2017). In addition to voting preferences, gender differences can also be seen in policy preferences. Several studies have demonstrated that women are more likely than men to support policies that assist marginalized groups such as the poor, the unemployed, and the sick (Page and Shapiro, 2010, 295-296), as well as policies that protect the environment, equal rights for men and women, and assist individuals with disabilities (Funk and Gathmann 2015, 145).

Gender gaps in policy preferences exist not only among constituents but also among public officials. A study of U.S. federal executives by Dolan (2002) highlights that male and female officials have different management styles and policy expertise. The theory of representative bureaucracy can explain these differences. This theory suggests that the interests of their social groups influence bureaucrats' decisions. Dolan (2002) found that women in executive offices are more likely to prefer higher welfare and environmental protection budgets, reflecting females' general preferences. Similarly, Bradbury and Kellough (2011) found evidence at the local government level to support representative bureaucracy theory, specifically among African American administrators. The theory proposes that individual bureaucrats' political attitudes and behaviors are influenced by their lifetime experiences, resulting in decisions that reflect the opinions of those with similar demographic backgrounds, such as race, ethnicity, and gender.

As well as being seen in bureaucrats, gender differences in policy preferences can also be found in elected officials. Several studies have shown that female legislators are more likely than their male colleagues to prioritize women, children, and family policies (Thomas and Welch 1991, 446-447), to prefer liberal positions on welfare policies (Poggione 2004, 305), to support stricter environmental policies (Fredriksson and Wang 2011, 228), and to focus on poverty reduction, healthcare, and women's rights issues (Clayton et al. 2019, 69). Poggione (2004) reviewed the literature and identified two potential explanations for these differences between male and female legislators' attitudes. One widely accepted explanation is the influence of women's experiences and responsibilities in the private sphere on their attitudes and behavior in the offices, as noted by Mandel and Dodson (1993), Mezey (1994), Tamerius (1995), and Thomas (1994). According to this view, women legislators prioritize issues such as healthcare, education, and poverty reduction, which are perceived to have a greater impact on women and children. Such priorities reflect their experiences as women and caregivers, including caring for children and family members, managing household budgets, and experiencing discrimination and inequality based on gender in their personal lives. The other explanation, proposed by Burrell (1996), suggests that women legislators' liberalism may result from constituency bases rather than their gender. This view suggests that female legislators may be more likely to be elected from districts with a more liberal set of values, supporting the idea that their voting records align with the ideologies of their constituencies instead of their gender.

Differences in policy preferences between men and women are closely linked to party identification. The Democratic Party is more

likely to attract women (Norrande 1999; Patterson 2009) because both women and Democrats are stereotypically perceived as "caring," "compassionate," and "liberal" (Ondercin and Fulton 2020, 715). Additionally, Republican voters have lower levels of support for women candidates (Thomsen 2019, 300), which may further attract women to the Democratic party. As a result, female legislators with ties to the Democratic Party outnumber those with ties to the Republican Party. Thomsen (2015) noted that in the U.S. Congress, women are over three times more likely to identify as Democrats.

Additionally, Sanbonmatsu (2020) examined women's representation in the U.S. Congress and found that while women are a growing share of Democratic officeholders, they are declining among Republican lawmakers. This partisan gender gap can be explained by the theory of partisan sorting, which proposes that individuals tend to align themselves with political parties that share their values and beliefs (Barnes and Cassese 2017, 128-129). The theory suggests that female legislators may be more likely to affiliate with progressive or liberal political parties, which can also influence their policy preferences. Several studies have demonstrated how political parties are implicated in the connection between gender and policy preferences. For example, Poggione (2004) found that gender differences in policy preferences are greater among Republican and conservative legislators than Democratic and liberal legislators. Barnes and Cassese (2017) found that a gender gap in policy support exists within parties. Particularly among Republicans, women are generally more moderate than their male counterparts on several issues. In contrast, women and men within the Democratic party have similar views on all issues except gun control, healthcare, and defense spending.

In sum, the literature confirms the existence of gender gaps in policy preferences in state legislatures and Congress. Women legislators generally prefer liberal positions in various policy areas than their male counterparts. Female policymakers emphasize traditional women's concerns (such as education, health, and welfare). They are more likely to prioritize policies that benefit women, children, and vulnerable groups, such as people with low incomes and older persons. Moreover, female legislators are more likely to identify as Democrats because they share similar values.

The impact of female legislators on policy outcomes

Although women remain underrepresented in political offices, there has been a global trend toward the growing presence of women in policy-making bodies, across countries and regions in recent decades¹. This increase in female representation has led to discussions concerning the relationship between female legislators and policy outcomes. While various factors shape policy outcomes, evidence suggests that female legislators play a significant role in advancing women's interests. This can be achieved in various ways, from changing the agenda setting to incorporate more women's issues (Devlin and Elgie 2008, 237 & 241) to raising women's issues during parliamentary debates (Yoon 2011, 83 & 95), as well as sponsoring more women's bills (Swers 2002, 32-57) and voting more in favor of them (Swers 1998, 436). Several cross-national and comparative studies have indicated that the presence of women in parliaments has a significant impact on women-friendly policies, including the initiation of bills dealing with women, children, and family issues (Schwindt-Bayer

¹ Women in Parliament: 1995-2020. Inter-Parliamentary Union.

2006, 583), the adoption and expansion of maternity and childcare leave policies (Kittilson 2008, 332), and the improvement of policies supporting mothers who work outside the home (Weeks, 2022). The descriptive representation of women plays a significant role in policy outputs, according to Kittilson (2008), as it facilitates coalition building and framing strategies, thereby increasing the chances of women's policies being successful. By providing a broader coalition of support, female legislators' voices are more likely to be heard during the debate.

In the United States, prior research also showed that women's presence makes a difference in legislatures regarding policy priorities and policy outcomes. At the national level, a study by Swers (1998) focusing on the voting behavior of members of the House of Representatives found that female representatives are more likely to vote for women-related issue bills than their male colleagues. The gender differences in voting behavior are more salient among Republican representatives. To further examine the impact of women in the lower house, Swers (2002) broadened her investigation to encompass more aspects of the legislative process, including bill sponsorship, introduction, committee consideration, floor debate, and final vote. Her findings indicated that women make a difference in each stage of the policy-making process. In particular, female representatives advocate more actively for women, children, and family policies than their male colleagues. However, she also observed that various factors, including access to committees and party affiliation, condition their capacity to legislate on behalf of women. Swers (2013) continued to examine the influences of electing women on policy outcomes by considering the Senate. It is shown in this study that gender is highlighted as an identity that impacts

senators' perspectives on policy questions, how issues are prioritized, and how they come up with solutions. The study indicated that female senators can influence policy debates on social welfare, women's rights, and education by leveraging their gender.

At the state level, a number of studies have demonstrated how female legislators influence policy outcomes. Saint-Germaine (1989) examines the impact of women on public policy using data from the Arizona state legislature between 1969 and 1986. She found that female legislators sponsor more bills that deal with traditional women's issues and feminist issues than their male colleagues. Female-sponsored bills in these two areas are more likely to pass than male-sponsored ones. Similarly, Thomas (1991) found that female legislators prioritize bills dealing with issues of women, children, and the family more than men do. Moreover, the most female-represented legislatures introduce and pass more bills related to these issues than low female-represented legislatures. This study used survey data consisting of 12 state legislatures, asking lower house members about their policy priorities. Bratton and Haynie (1999) analyzed data on bill introduction and bill passage in the lower house of six state legislatures. They found that women are more likely to introduce bills related to women's interests, such as those that aim to reduce gender discrimination or improve the socioeconomic status of women. They also found that Democrats introduce more women's interest bills than Republicans. However, they found no significant independent impact of gender on bill passage. Courtemanche and Green (2017) use data on state healthcare spending from 50 states to evaluate the impact of women legislators on policy outcomes. They found that states with a larger proportion of female legislators are more likely to spend on healthcare programs

that benefit poor children, people with disabilities, and elders.

While several studies found a significant effect of women legislators on policy outcomes, several studies have noted that this effect is conditioned by the size of the share of women in legislatures, with some suggesting that a certain threshold of women is needed to influence policy outcomes. This threshold is commonly referred to as the "critical mass," which is based on the idea that women in small minorities in an organization are more likely to challenge the status quo when their numbers increase enough for them to form supportive networks (Kanter 1977, 986-987). Dahlerup (1988) applied the concept of critical mass to women's political representation. She defined the threshold for female legislators to make a difference in policy outcomes as at least 30 percent. She argues that when women reach this threshold in policy-making bodies, they are more likely to form alliances and push for policies that benefit women and other marginalized groups. It has been shown in some studies that critical mass theory plays a role in explaining the relationship between women's representation in legislatures and policy outcomes. For example, Thomas and Welch (1991) compared the policy preferences between women of the 1990s and women of the 1940s. They found that women legislators pay more attention to women's issues than they did five decades ago due to the increasing number of women in office, meaning that they have a more extensive support network to push issues of importance to them.

In sum, a considerable body of research has attempted to assess the impact of female legislators on policy outcomes. Female legislators tend to prioritize policies that align with women's interests. Female legislators sponsor and introduce more women's issue

bills compared to their male counterparts. Despite this, the relationship between the number of female legislators and the passage of bills remains unclear. It is also important to note that the impact of female legislators on policy outcomes is likely to be shaped by other political and institutional factors, such as party affiliation and the proportion of women in legislatures.

Additionally, it is worth noting that the existing literature has not comprehensively examined policy outcomes across 50 states in the U.S. Instead, studies have relied on small samples or survey data to conclude the impact of female legislators on policy outcomes. As a result, conducting a study that examines the relationship between women's representation in state legislatures and policy outcomes across all 50 states can significantly contribute to closing this gap and enabling a more comprehensive understanding of the impact of female legislators on state policy.

Hypothesis Development

Advocates for the election of more women to policy-making bodies are motivated not only by a concern for fairness, given that women account for half of the population and should therefore hold an equal share of seats, but also by the belief that women can shape policy outcomes by bringing their gendered experiences and perspectives into political offices (O'Brien and Piscopo 2018, 53). Pitkin (1967) described this belief as the relationship between descriptive and substantive representation. Descriptive representation is the idea that elected representatives should reflect the constituency's demographics, which means women should be represented proportionally in policy-making bodies. Substantive representation refers to the actions elected representatives take to represent their constituents' interests, which means women legislators are expected to advocate for issues

that matter to women broadly. A fundamental question about this relationship is whether increasing descriptive representation results in substantive representation. Does an increase in the presence of women in legislatures lead to more policies representing the interests of women? Research has shown that the presence of women in decision-making bodies makes differences in policies that reflect women's interests (Swers 1998, 2002, 2013, Saint-Germaine 1989; Thomas 1991; Bratton and Haynie 1999, and Courtemanche and Green 2017). However, Dodson (2006) argues that the relationship between descriptive representation and substantive representation is "probabilistic rather than deterministic" (p. 8). In other words, a higher descriptive representation of women in legislatures increases the possibility of achieving or improving the substantive representation of women, but it is not a guarantee. Drawing from these research bodies, increasing the proportion of women in state legislatures will likely result in more women-friendly policies. Nevertheless, the magnitude of this effect is determined by two factors: party-controlled legislatures and the proportion of women in legislatures.

Political parties, as "gatekeepers," play a key role in determining the representation of women in legislatures (Dittmar 2018, 443 & 458). Since the Democratic Party and women share similar core values (Ondercin and Fulton 2020, 715), I predict that state legislatures with Democratic majorities will care more about women's issues, producing more women-friendly policies. In addition, the Democratic Party tends to support women candidates, thereby increasing the likelihood of women's representation in legislatures (Thomsen 2015; Thomsen 2019; Sanbonmatsu 2020). Therefore, it is reasonable to expect that a Democratic Party-controlled legislature will have more female legislators, leading to the introduction

and passage of more women-friendly policy outcomes. My first hypothesis is, therefore, as follows:

H1a: *Female legislators in legislatures controlled by the Democratic Party are more likely to produce more women-friendly bills than those controlled by the Republican Party.*

H1b: *Female legislators in legislatures controlled by the Democratic Party are more likely to pass more women-friendly bills than those controlled by the Republican Party.*

Since female legislators are more likely to prioritize women's issues, we expect to see more women-friendly policies being introduced and passed as the number of women in state legislatures increases. However, the critical mass theory (Kanter 1977; Dahlerup 1988) suggests that a threshold percentage of women is necessary before women exert influence. Thus, I anticipate that women legislators' effect on women-friendly policy outcomes is conditioned by the proportion of women in legislatures. Female legislators are less likely to influence policy outcomes when their numbers are under the threshold. Once their numbers cross the threshold, they are more likely to impact women-friendly policies positively. Using a threshold of 30 percent defined by Dahlerup (1988), my second hypothesis is as follows:

H2a: *Legislatures will produce more women-friendly bills as the proportion of its members who are women cross 30 percent.*

H2b: *Legislatures will pass more women-friendly bills as the proportion of its members who are women cross 30 percent.*

As female legislators are likely to present the interests of women as a whole (Swers 1998,

2002, 2013, Saint-Germaine 1989; Thomas 1991; Bratton and Haynie 1999, and Courtemanche and Green 2017), it is reasonable to expect that female legislators are not only concerned with traditional women's issues (such as child care, equal pay, gender-based discrimination) but also pay attention on contemporary issues that are salient to women in the modern era. Therefore, more women in state legislatures will increase the likelihood of new women's issues being brought to the legislative table. Contraceptive coverage and tax exemptions on feminine hygiene products are among those contemporary issues that have attracted much public attention. Thus, my third and fourth hypotheses are, therefore, as follows:

H3: The share of women in state legislatures positively impacts the likelihood of tax exemptions on feminine hygiene product bills being introduced.

H4: The share of women in state legislatures positively impacts the likelihood of contraceptive coverage bills being introduced.

Research Design

State legislatures are the unit of analysis of this study, including 50 U.S. state legislatures. The first two hypotheses are tested using Generalized Linear Models with panel data including three years: 2010, 2015, and 2020. These three years are chosen based on the availability of reliable and consistent data on the variables of interest. These three years span a decade and witnessed a substantial change in the share of women in state legislatures. The third and fourth hypotheses are tested using logit models with data for 2020. Tax exemptions on feminine hygiene products and contraceptive coverage had drawn significant public attention in the years leading up to 2020 since they are issues

that modern women care about and have been featured in the media. In light of this, 2020 provides a relevant and timely snapshot of the legislative activity related to these issues.

Outcome variables

The first dependent variable is women-friendly bills, measured by the percentage of bills that deal with women and children issues compared to the total number of bills being considered in each legislative session. The measure includes all bill statuses: introduced, engrossed, enrolled, passed, vetoed, and failed. The second variable is passed bills, measured by the percentage of passed bills out of the total women-friendly bills. I use LegiScan, a legislative tracking database, to create these variables. First, I counted the number of bills dealing with women's and children's issues in each state legislative session. Then I calculated the percentage of women-friendly bills and passed bills compared to the total number of and total women-children bills, respectively.

The third and fourth dependent variables are binary indicators showing whether a state introduces bills dealing with contraceptive coverage and tax exemptions on feminine hygiene products. These variables are coded "0" as absence of the bill, and "1" as presence of the bill. I rely on the LegiScan database to create these variables.

Independent and control variables

The main independent variable is women's representation, measured by the percentage of female legislators in each state legislature. Data for this variable is taken from the National Conference of State Legislature (NCSL) database.

The second key variable is party control state legislature, a categorical variable coded as "1" for Democratic Party, "2" for Republican Party, and "3" for Divided. Data for this variable is obtained from the National Conference of State Legislatures (NCSL) database.

Several factors influence the likelihood of a women-friendly bill being introduced or passed, so I will include some factors in my analyses. The first two factors account for state economic characteristics, including economic growth and per capita personal income. Economic growth is measured by state GDP in current dollars. Data for these variables are taken from the Bureau of Economic Analysis. Since the legislative agenda faces time constraints, I expect states with economic instability will likely fill its legislative agenda with priority issues like economic development, leaving no room for other issues.

Three factors related to women are also included: political participation, population, and education attainment. Political participation is determined by the percentage of women who voted in the nearest presidential election. The percentage of the female population in each state measures population. Education attainment is measured by the percentage of women aged 25 and older who have completed a bachelor's degree or higher. Data for these variables is obtained from the U.S. Census Bureau. I expect that female legislators in states with a high proportion of the female population and high political participation care more about women's issues. Since female legislators represent the will of women, women citizens' concerns affect their behavior. Women who are actively involved in politics and are highly educated are more likely to contribute to policy development by communicating with their representatives or expressing their

concerns in mass media because they better acknowledge their rights and other women's issues and know how to raise their voices.

The percentage of women-friendly bills and the probability of these bills being introduced and passed are likely driven by the characteristics of a state or unobservable factors that differ across states but are constant over time. Since I cannot control for every potential factor, I will include time and state fixed effects in the multivariate models (using panel data).

Research and Findings

Table 1 reports the descriptive statistics for the main variables for the year 2020. The percentage of women-friendly bills varies from state to state, with an average of 2 percent of total bills. About 29 percent of these women-friendly bills were passed and enacted. Twenty-seven states introduced bills considering tax exemptions on feminine hygiene products, while many states (42/50) introduced bills dealing with contraceptive coverage. There is also much variation in the share of women in state legislatures, with an average of 29.2 percent. Nevada has the highest percentage of women in the state legislature (52.4 percent), while West Virginia has the lowest (14.2 percent). About 60 percent of state legislatures are controlled by the Republican party. Minnesota and Nebraska have divided legislatures, where Democratic and Republican parties have equal control.

Table 1: Descriptive Statistics for 2020 data.

Variable	Definition	N	Min	Max	Mean	Std. Deviation
Women-friendly bills	<i>Percentage of bills dealing with women and children's issues</i>	50	0.284	5.150	2.0028	0.983
Passed bills	<i>Percentage of passed bills</i>	50	0	100	29.17	21.83
Contraceptive coverage	<i>0: absence of the bill 1: presence of the bill</i>	50	0	1		
Tax exemptions	<i>0: absence of the bill 1: presence of the bill</i>	50	0	1		
Women representation	<i>Percentage of female legislators in each state legislature</i>	50	14.2	52.4	29.23	8.46
Economic growth	<i>GDP (millions of current dollars)</i>	50	34018.6	3020174	415610.3	533769.9
Income	<i>Real per capita personal income (in dollars)</i>	50	42716	78463	57458.7	8259.074
Political participation	<i>Percentage of females who voted in the nearest presidential election.</i>	50	54.1	75.5	64.602	5.615
Female population	<i>Percentage of female population</i>	50	48.7	51.9	50.6	0.8
Party	<i>Party control state legislature 1: Democratic 2: Republican 3: Divided</i>	50	1	3	1.66	0.56
Education	<i>Percentage of female population with bachelor's or higher degrees</i>	50	24.12	46.62	34.1	5.4

Table 2 reports regression results from three generalized linear models with interaction terms. The first model, which does not

include an interaction term, is the baseline model. The first hypothesis is tested through Model 2 and Model 3, whereas the second

hypothesis is examined by Model 4 and Model 5.

Model 2 uses the percentage of women-friendly bills as the dependent variable. The interaction term between women's representation and party control state legislatures is statistically significant at 0.05. It is shown in Table 2 that the coefficient for women's representation is positive, while the coefficient for the interaction term is negative, which indicates that the impact of women's representation on women-friendly bills is less pronounced when the party control of legislature shifts from one category to another. Specifically, since the

Democratic-controlled legislature is the reference category, the findings suggest that the positive effect of female legislators on women-friendly bills is relatively weaker when the legislature is Republican-controlled. The interaction plot (figure 1) shows that the relationship between female legislators and the percentage of women-friendly bills depends on the value of party control legislatures. In particular, Democratic-controlled legislatures consistently exhibit a high mean percentage of women-friendly bills when the proportion of female legislators falls between 30% and 50%. These results provide support for the hypothesis H1a.

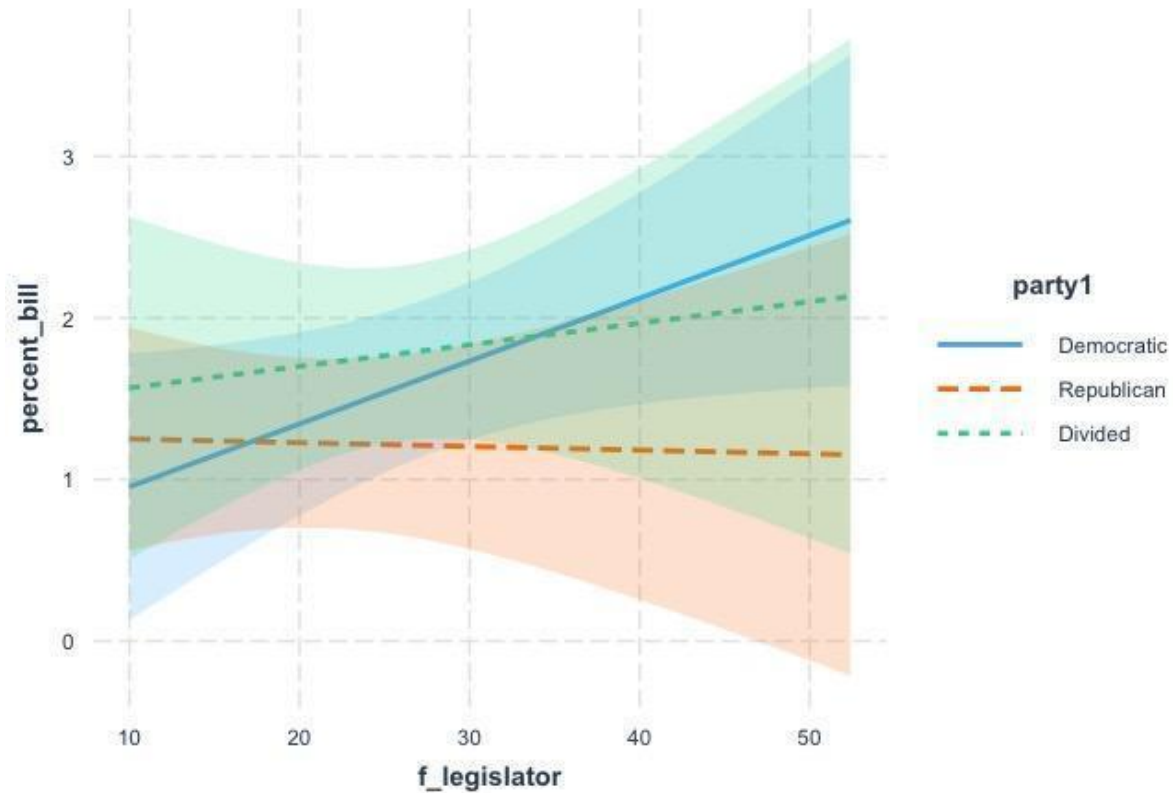
Table 2: Coefficients for Generalized Linear Models.

Parameter Estimates (Standard Errors in Parentheses)					
Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
Women's representation	0.024 (0.017)	0.0618* (0.0243)	-1.57* (0.67)	-0.178* (0.048)	-0.896 (1.46)
Economic growth	0.00049 (0.0019)	0.0011 (0.0019)	-0.161* (0.05)	0.002 (0.001)	-0.148* (0.056)
Income	-0.0009 (0.0078)	-0.001 (0.007)	0.107 (0.21)	0.0004 (0.0072)	0.106 (0.21)
Political participation	0.018 (0.0335)	0.024 (0.033)	-1.69 (0.92)	0.050 (0.031)	-1.59 (0.95)
Female population	0.0405 (0.035)	0.026 (0.034)	-1.04 (0.97)	0.07* (0.032)	-1.306 (0.98)
Education	-0.075 (0.094)	-0.103 (0.093)	8.73* (2.61)	-0.127 (0.087)	8.20 (2.64)
Party	0.073 (0.104)	0.715* (0.310)	-16.9 (8.6)	0.071 (0.45)	-4.89 (2.89)
Women representation x party		-0.024* (0.01)	0.444 (0.30)		
Women representation squared				0.0033* (0.0007)	0.0004 (0.022)
Observations	150	150	150	150	150
Fixed Effects	Yes	Yes	Yes	Yes	Yes
Log-likelihood	-86.42	-82.76	-582.1	-72.48	-583.8
<p>*Significant at $p < .05$ Dependent variable of model 1,2,4 = percentage of women-friendly bills Dependent variable of model 3, 5 = percentage of passed bills.</p>					

When comparing Model 2 to the baseline model (Model 1), where the coefficient of women's representation is not statistically significant at the 0.05 level, it indicates that the party control of the legislature moderates the impact of female legislators on women-friendly bills. In other words, the impact of female legislators on women-friendly bills varies depending on

whether the legislature is controlled by Democrats, Republicans, or divided. This finding is consistent with the findings of Swers (2002), which found that the influence of female legislators on policy outcomes is conditioned by their party's majority/minority status in the legislatures. Model 2 has a higher log-likelihood value (-82.76) than the baseline model (-86.42), which means Model 2 offers a better fit to the data.

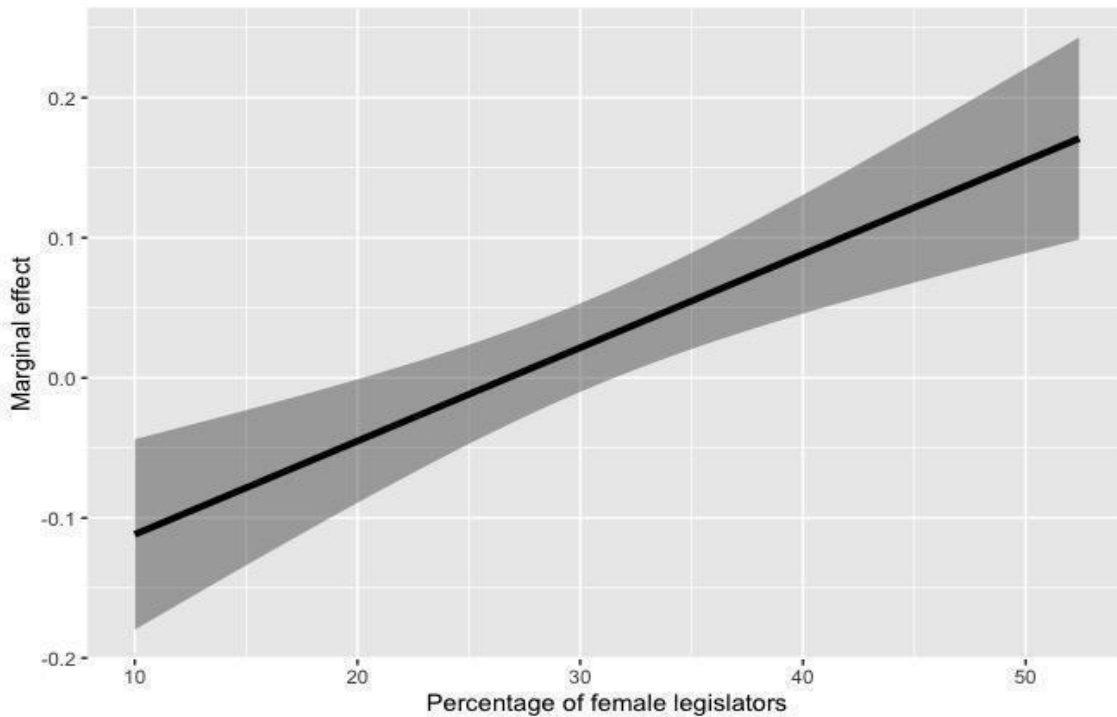
Figure 1: Interaction plot



Model 4, with the percentage of women-friendly bills as the dependent variable, includes women's representation squared (percentage of female legislators interacts with itself) to test whether the effect of women's representation on women-friendly bills changes as the percentage of female legislators changes. The results show that women's representation

positively impacts women-friendly bills, but this effect is stronger as the percentage of female legislators increases. The marginal effect (figure 2) is statistically significant when the percentage of female legislators is below 20.4 and above 31.3. The most significant marginal effect is 0.17 at the highest percentage of female legislators (52.4%).

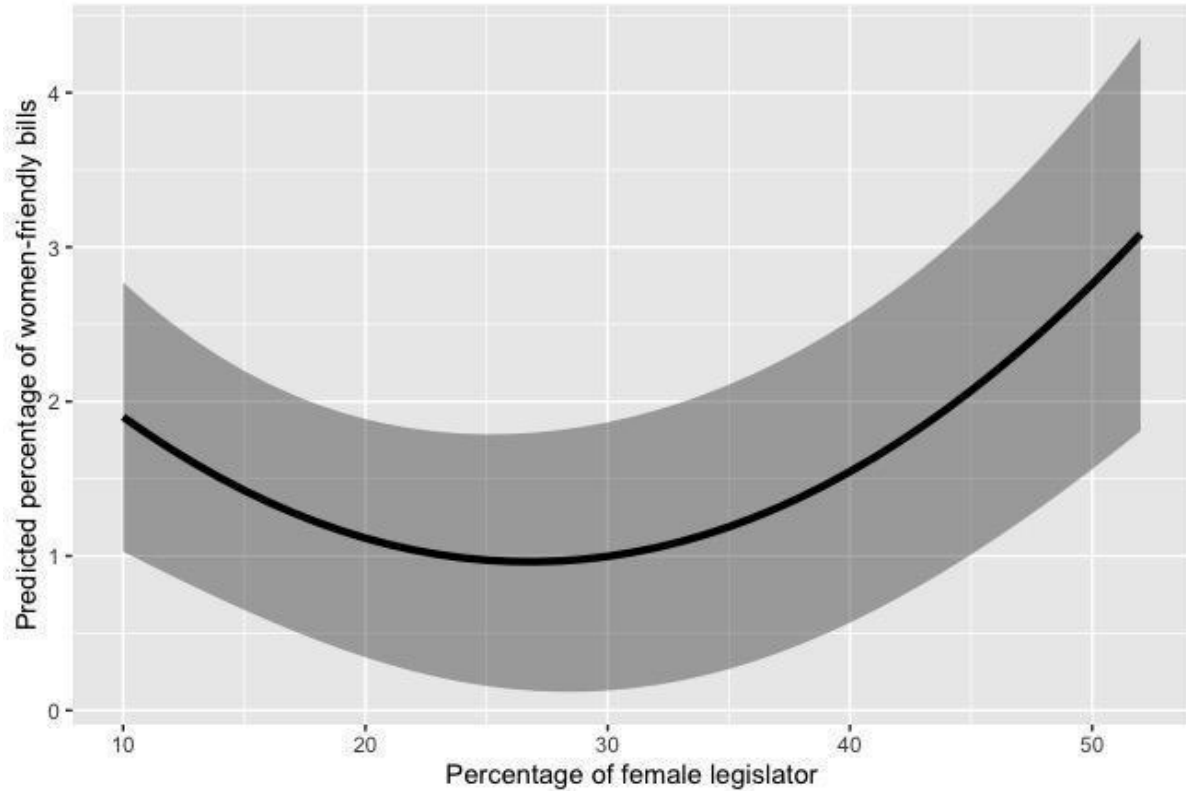
Figure 2: The marginal effects of female legislators across its range.



Looking at the predicted number of bills by female legislators (figure 3), the predicted percentage of bills slightly decreases at low percentages of female legislators (from 10% to 28%). However, it increases across the higher percentage of female legislators (from 29% to 52%). Legislatures with 52 percent of women are predicted to generate the highest percentage of women-friendly policies, with estimated 3.08 percent of women-friendly bills being introduced, discussed, and debated during legislative sessions. These results provide some support for hypothesis H2a. To test the robustness of these results, I recode the women's presentation variable into a

categorical variable. A low percentage of women legislators (under 30 percent) is coded as Low, and a high percentage of women legislators (over 30 percent) is coded as High. Then, I ran the same regression as Model 4 but replaced the women's representation squared variable with an interaction term between women's representation and the categorical variable. The results are consistent with the results of Model 4. The interaction plot (see Figure 2A in the Appendix) shows that female legislators in legislatures with over 30 percent women are more likely to have a stronger impact on the percentage of women-friendly bills.

Figure 3: Predicted percentage of women-friendly bills across the range of female legislators.



Model 3 and Model 5 estimate the impact of women's representation on passed bills (testing hypotheses H1b and H2b). The interaction term between women's representation and party control state legislatures and women's representation squared is not statistically significant at 0.05. I find no support for both hypotheses H1b and H2b. By combining the results from Model 2 and 3 with the findings from this analysis, it can be concluded that bringing more women into policy-making bodies may increase the percentage of women-friendly bills being introduced, discussed, and debated during legislative sessions but may not necessarily increase the percentage of bills being passed. These findings are in line with Bratton and Haynie (1999), which found that female legislators in six U.S. state legislatures had a significant effect on the introduction of bills reflecting women's interests. However, their

impact on the passage of these bills was insignificant. This highlights the importance of examining the introduction and the success of bills, as the intention to represent women's interests may not translate into actions if bills are repeatedly introduced but never passed into law. It seems like translating descriptive representation of women into substantive representation is still a developing process.

Most control variables in the three models do not significantly impact the percentage of women-friendly bills being introduced, discussed, and debated during legislative sessions. The female population and women's education attainment play some role in the estimation of women-friendly bills. As I anticipated, states with a high share of the female population and a high share of educated women are more likely to discuss, debate, and pass more women-friendly bills during legislative sessions.

Table 3 presents regression results from two logit models estimating the probability of tax exemptions on feminine products (Model 6) and contraceptive coverage (Model 7) bills being introduced in state legislatures. There is no significant effect of female legislators on the likelihood of tax exemption bills being introduced, indicating a lack of support for hypothesis H3. However, the probability of introducing contraceptive coverage bills is significantly influenced by women's representation, supporting hypothesis H4. The

positive coefficient of women's representation indicates that the probability of introducing contraceptive coverage bills increases as the percentage of female legislators increases. In particular, the likelihood of contraceptive coverage bills being introduced in states with the lowest percentages of female legislators (14.2%) is only 0.38. The probability increases to 0.99 as the percentage of female legislators reaches 35.42%. Figure 4 shows that contraceptive coverage bills will likely be introduced in states with 35 percent or more female legislators.

Table 3: Coefficients for logit models.

Parameter Estimates (Standard Errors in Parentheses)		
Independent variables	Model 6 (Tax exemptions)	Model 7 (Contraceptive coverage)
Women's representation	-0.025 (0.053)	0.215* (0.103)
Economic growth	-0.0004 (0.0009)	0.003 (0.003)
Income	-0.186* (0.09)	0.022 (0.103)
Political participation	-0.004 (0.070)	0.089 (0.097)
Female population	0.053 (0.536)	0.024 (0.698)
Education	0.063 (0.121)	-0.177 (0.18)
Party	-0.487 (0.866)	-0.211 (1.418)
Intercept	7.97 (30.05)	-6.500 (40.33)
Observations	50	50
Log-likelihood	-27.19	-15.7
*Significant at $p < .05$		

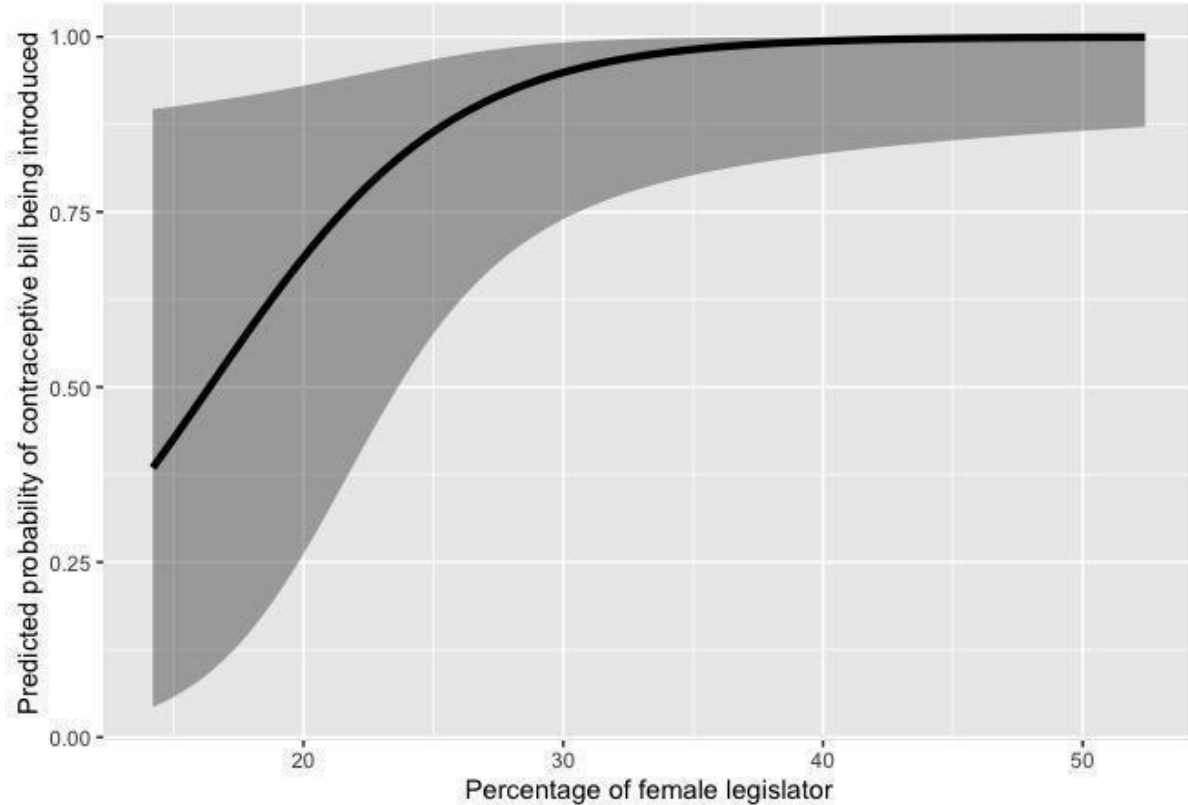
All control variables do not significantly affect the likelihood of women-friendly bills being introduced, except income. Results

from Model 6 show that as income increases the likelihood of bills addressing tax exemptions on feminine hygiene products

decreases. From an economic perspective, this is logical since high-income people are

less likely to care about sales tax because they can afford to pay.

Figure 4: Female legislators and contraceptive coverage bills.



Discussion and Conclusions

This study makes the first attempt to assess the effect of women's representation in state legislatures on policy outcomes by using a dataset of women-friendly policies from 50 state legislatures; the subsequent analyses in this paper offer answers to the following question: Does increasing female legislators lead to more women-friendly policy outcomes? Overall, the empirical analyses show that female legislators significantly influence the percentage of women's friendly bills (including failure and success bills). However, this impact is conditioned by the party controlling state legislatures and the proportion of female legislators. The positive impact of female legislators on women-friendly bills is stronger under

Democratic-controlled legislatures than in Republican-controlled legislatures. This finding is consistent with previous studies (Swers 2002; Bratton and Haynie 1999) that suggest that political parties play an important role in shaping policy outcomes. In addition, as the critical mass theory predicted, female legislators are more likely to positively impact women-friendly policies only when their numbers exceed the threshold of 30 percent, which means that simply increasing the number of female legislators is not enough. The proportion of female legislators also plays a crucial role in determining the impact of women's representation on policy outcomes.

The impact of female legislators on the passage of women-friendly bills is

insignificant, suggesting that the intention to represent women's interests may translate into something other than law. Since we consider adopting women-friendly bills (not the introduction of bills) as the substantive representation of women, the results imply that translating descriptive representations of women into substantive representations is still a work in progress. Additionally, it was found that female legislators significantly impact the likelihood of introducing contraceptive coverage bills but not tax exemption bills. This finding highlights the importance of women's representation in shaping policy outcomes related to reproductive rights and health.

Examining the relationship between descriptive and substantive representation of women by looking at actual legislative outcomes is a complex task due to the dynamics of the legislative process. Although the study used a novel dataset of 50 state legislatures in the U.S., several limitations should be noted. First, the study only focused on two types of bills: those dealing with women and children. This narrow focus may only partially capture the broader range of policy areas that reflect women's interests. It would be beneficial to expand the scope of policy areas analyzed in future studies to understand better how female legislators impact a broader range of issues affecting women's lives. Second, the study only examined the impact of female legislators on the introduction and passage of bills without investigating the factors that might influence their success or failure. Future research could explore the role of interest groups, public opinion, and other political and institutional factors in shaping the success of women-friendly bills. Third, the study considered the moderating effects of two factors: party control of legislatures and the size of the share of women in legislatures. While these are important factors, the

literature suggests, other variables may also play a role in shaping the relationship between women's representation and policy outcomes. It would be interesting to explore additional moderating variables in future research, such as the ideological orientation of female legislators, gender diversity in state leadership positions, legislative committees, and the overall political context. By incorporating these variables, we can gain a more comprehensive understanding of the impact of gender in the legislative process. Overall, the study provides valuable insights into the relationship between female legislators and women-friendly policies. Nevertheless, more research is needed to understand better the complex dynamics involved and to identify strategies for promoting women's interests in legislative settings.

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Appendix

Figure 1A: The percentage of female legislators in 50 U.S. States in 2020 (Source: The National Conference of State Legislature (NCSL))

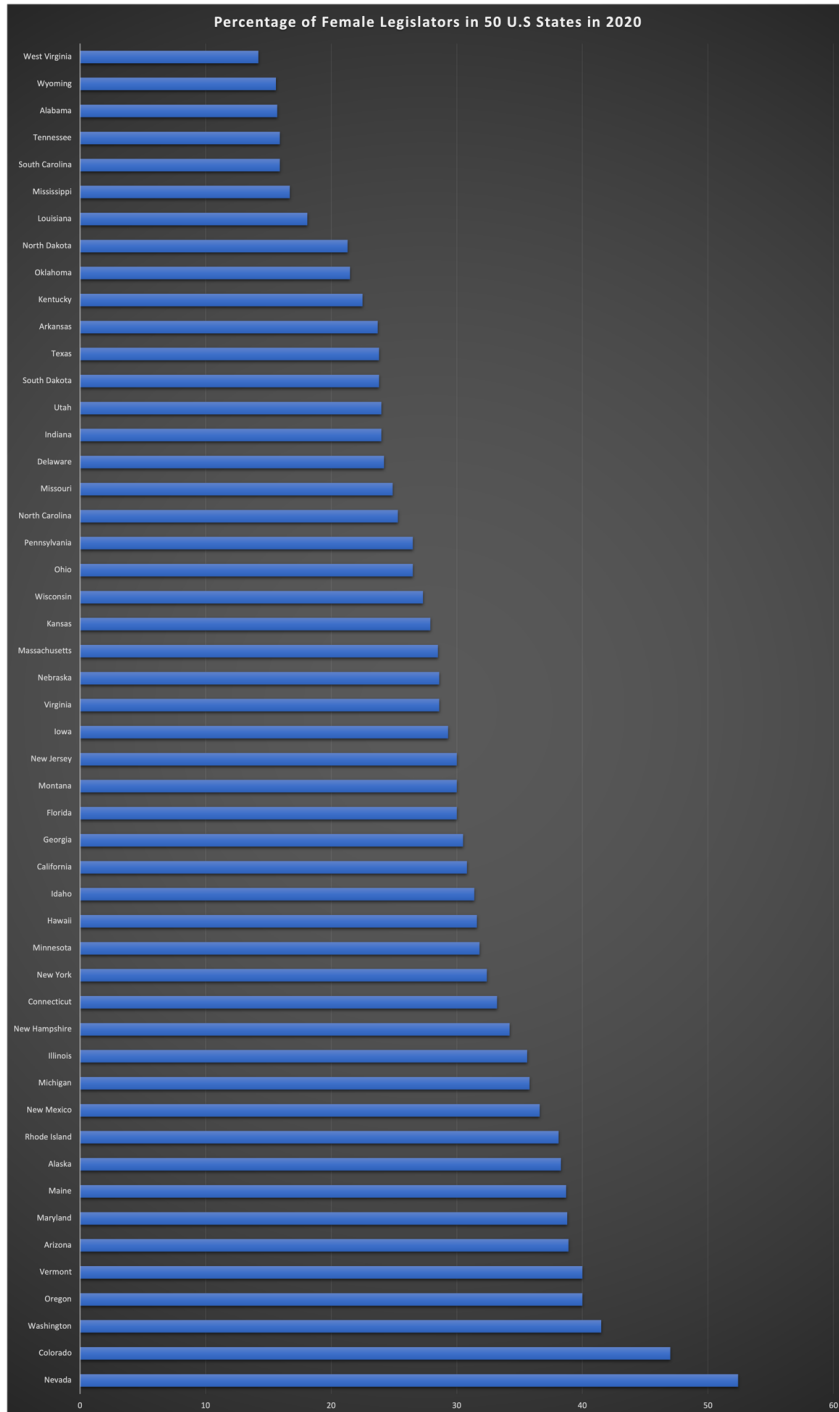
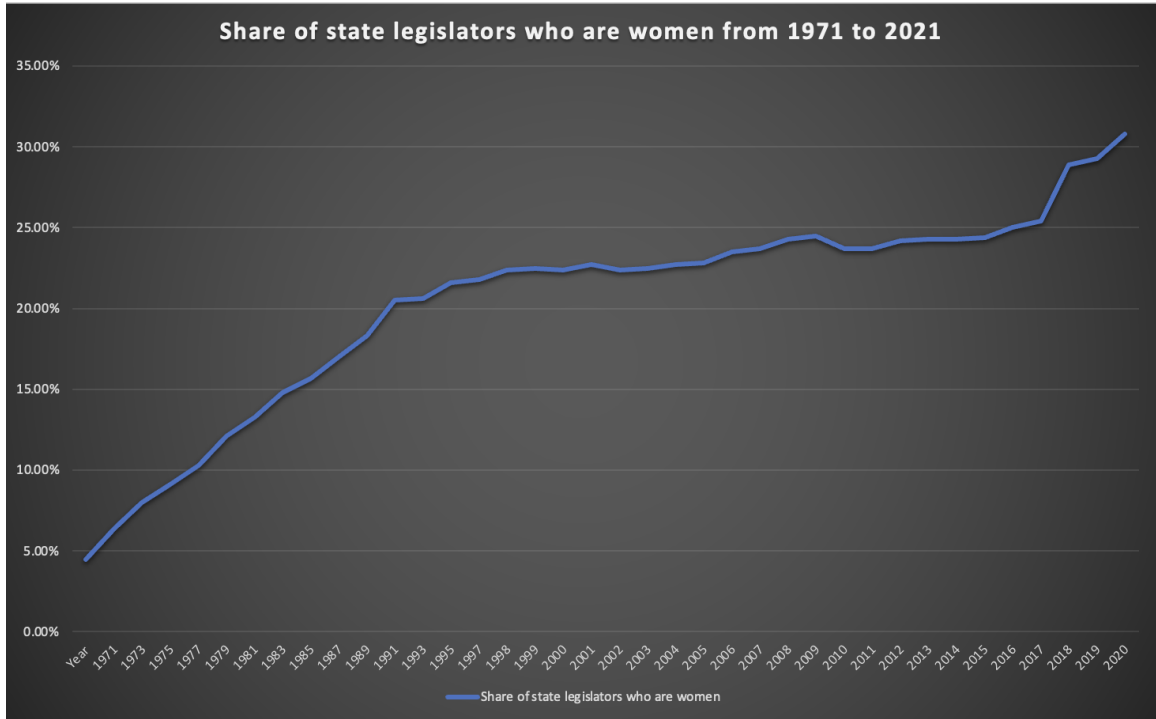


Figure 1B: Trend in Proportion of Female State Legislators in the U.S., 1971-2021.



(Data source: Center for American Women and Politics, Rutgers University)

Figure 2A: Interaction plot from the robustness check model.

