High Hurdles: Legislative Professionalism and the Effectiveness of Women State Legislators

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Abstract

For numerical gains in American state legislatures to translate into substantive representation, women legislators need the ability to advocate for their constituents. We examine the determinants of legislative effectiveness in state legislatures, theorizing that women in more professional legislatures will be subject to electoral selection mechanisms that make them more successful lawmakers. To rule out institutional factors that might produce differences in effectiveness across the sexes, we examine resource allocations within legislatures, focusing on standing committees. Using novel over-time data on committee assignments in state legislatures, our results show that women receive less valuable committee seats than men. Despite this, women in professional legislatures are more effective than men, indicating that the high barriers to entry in these states produce skilled women legislators who act substantively for their constituents.

American state legislatures are empowered to produce policy on critical issues such as health care, voting rights, education, housing, and crime (Moncrief and Squire 2013). As Madison notes in *Federalist 45*, the powers reserved to the states concern "the lives, liberties, and properties of the people, and the internal order, improvement, and prosperity of the State" (Madison 1961*b*). State legislators aim to translate their own and their constituents' preferences into public policy while pursuing electoral and career advancement goals (Mayhew 1974; Dodd 1977; Fenno 1978; Maestas 2003). Their effectiveness depends on personal characteristics and institutional structures that shape policymaking.

A growing literature on "legislative effectiveness" highlights differences by legislator sex at the congressional and state levels, with contrasting outcomes. Women in Congress are often more effective than men in legislating and securing district funding (Anzia and Berry 2011; Volden, Wiseman and Wittmer 2013), whereas women in state legislatures are less effective than men on average (Bucchianeri, Volden and Wiseman 2024). This discrepancy raises critical questions: Are women less effective in state legislatures due to personal traits, or do institutional resources disadvantage them? How do these factors vary across legislative contexts? These questions address broader concerns about representation quality, especially for marginalized groups.

Representation encompasses descriptive ("standing/speaking for") and substantive ("acting for") dimensions (Pitkin 1967). Despite gains in descriptive representation in American legislatures,[1] systematic exclusion or marginalization within legislatures can hinder women's substantive contributions (Schwindt-Bayer and Squire 2014; Celis, Childs, Kantola and Krook 2008; Osborn 2014). We theorize that *state legislative professionalism*— conditions women's legislative effectiveness. Professionalism is the ability of the legislative body and individual legislators to process information when making policy, and it increases as associated resources and obligations increase (i.e., staff, salary, and time commitments) (Squire 2007*b*; Rosenthal 1996). Increased professionalism incentivizes careerism, and attracts higher quality candidates, which we expect will produce stronger selection effects at the election stage. As a result of these selection effects, in less professional legislatures— where barriers to entry are lower—women are more likely to hold office but are less effective than men. In contrast,

[1]See http://www.cawp.rutgers.edu/current-numbers for the current proportions of women serving in different American legislatures.

professionalized legislatures impose higher entry barriers, resulting in fewer but more effective women legislators (Lawless and Fox 2010).[2] These dynamics reflect sex-based electoral selection, where higher entry thresholds mean that women who run and win have higher quality, on average, than men (Anzia and Berry 2011).

Directly identifying such electoral-based selection *a priori* requires observing individual-level characteristics of women who run and do not run for office, a difficult task especially at the state legislative level. So, to strengthen our indirect evidence for the sex-based electoral selection theory, we 1) account for institutional resources that may be associated with sex-based selection, and 2) empirically control for the possibility that descriptive representation translates directly into substantive representation according to the expectations of critical mass- and critical actor-based theories. In particular, we approach individual access to representational resources in a novel way, measuring the value of legislative committee portfolios for individual state legislators.

Using new legislative effectiveness data (Bucchianeri, Volden and Wiseman 2024), we show that professionalism moderates women's effectiveness. Women are actually *more* effective than men in professional legislatures, and this occurs despite having *less valuable* institutional resources than men (women receive lower-value committees compared to their male counterparts, even accounting for district- and state-level characteristics and possible differences in committee preferences). Conversely, women in less professional legislatures are not similarly able to overcome institutional disadvantages. These findings reconcile the apparent paradox of women outperforming men in Congress (a professionalized legislature) (Anzia and Berry 2011; Volden, Wiseman and Wittmer 2013) but underperforming in state legislatures overall (where even the most professionalized legislatures fall short of Congress) (Bucchianeri, Volden and Wiseman 2024).

Our research contributes to the field's growing understanding of the complexity of representation in state legislatures and confirms insights gleaned from the study of representation in Congress. It also emphasizes the importance of appreciating state institutional heterogeneity; women legislators face

[2]Bolstering the findings from previous literature (Reingold 2019; Squire 1992*a*; Sanbonmatsu 2010), our data show that women are statistically significantly less likely to hold seats in the most professional legislatures ($\approx 23\%$ of these legislators are women from 2007-2018) than in the least professional legislatures ($\approx 27\%$ of these legislators are women from 2007-2018).

systematically different opportunities and constraints across the subnational legislatures in the United States. In addition, we provide new data on committee assignments as representational resources in the states, finding that while women in professional legislatures can overcome sub-optimal committees to provide effective substantive representation, women in less professional bodies are hampered by their burdensome committee assignments.

"Legislative Effectiveness" as Substantive Representation

Representative democracy requires legislators to represent their constituents' interests. The framers of the U.S. Constitution acknowledged that institutions could align representatives' preferences with those of the polity (*Federalist 52,* Madison 1961*c*) but also recognized that such alignment could hinder effective policymaking (*Federalist 10,* Madison 1961*a*). Pitkin (1967) clarified this distinction by differentiating between descriptive and substantive representation. While descriptive representation reflects shared group identity and can enhance legitimacy (Mansbridge 1999; Schwindt-Bayer and Mishler 2005; Kanthak and Krause 2010), it does not guarantee effective governance or responsiveness to constituents.

Substantive representation emphasizes what representatives *do*, rather than their identity (Pitkin 1967; Swain 1993; Cameron, Epstein and O'Halloran 1996). Although increased descriptive representation *can* improve substantive outcomes, this relationship depends on institutional and contextual factors, such as culture, ideology, and party dynamics (Homola 2019; Grey 2006; MacDonald and O'Brien 2011; Dodson 2006). In the U.S., women remain underrepresented (Rule 1994; Swers 2001), though they win legislative seats at rates comparable to, or higher than men (Lawless 2008; Kanthak and Woon 2015; Burrell 1992; Newman 1994; Seltzer, Newman and Leighton 1997; Fox and Lawless 2010). Evidence suggests barriers before candidacy, rather than during campaigns, explain low descriptive representation (Uhlaner and Schlozman 1986; Burrell 1985). These barriers include lower levels of political ambition (Lawless and Fox 2005, 2010; Kanthak and Woon 2015; Preece and Stoddard 2015), anticipated gender discrimination (Huddy and Terkildsen 1993), underestimation of qualifications (Lawless and Fox 2010), incumbency advantages of male legislators and scare-off effects (Schwindt-Bayer and Mishler 2005), and weak recruitment by party leaders (Sanbonmatsu 2002; Dolan, Deckman and Swers 2007).

Once elected, evidence on women's substantive representation is mixed. At the federal level, Anzia and Berry (2011) argue that women face barriers to legislative entry, resulting in a pool of highly talented women legislators who provide *better* representation than men. Women in Congress direct more federal spending to their districts and sponsor more legislation (Anzia and Berry 2011). House minority party women are particularly effective due to their willingness to compromise and build coalitions (Volden, Wiseman and Wittmer 2013). Recent measures, such as Legislative Effectiveness Scores (LES), assess lawmakers' ability to "act for" their constituents in policymaking (Volden and Wiseman 2014), distinguishing effective legislators from those limited by personal, institutional, or partisan constraints (Pitkin 1967). However, biases or discriminatory practices can hinder women's effectiveness by restricting access to legislative resources or diminishing their voice within institutions (Celis et al. 2008; Childs and Krook 2009; Bratton and Haynie 1999; Heath, Schwindt-Bayer and Taylor-Robinson 2005; Kathlene 1994; Brown 2014; Miller and Sutherland 2023).

At the state level, women are generally less effective than men, controlling for other factors (Bucchianeri, Volden and Wiseman 2024). This effect is more pronounced in lower chambers and suggests significant heterogeneity across states. Using our selection theory, we reconcile the contrasting findings between federal and state legislatures, showing how institutional and structural differences moderate the variation in women's effectiveness.

Theory: Sex-Based Selection Determines Effectiveness and Varies with State Legislative Professionalism

In professionalized legislatures, high barriers to entry produce a sex-based selection of abnormally highly qualified women candidates, leading to lower descriptive representation but greater substantive representation (Anzia and Berry 2011). In contrast, low professionalism states have fewer barriers to entry, allowing greater descriptive representation but yielding legislators who are not higher in quality than their male counterparts.

The literature identifies multiple mechanisms driving sex-based selection of high-quality women candidates, all correlated with high barriers to entry. Anzia and Berry (2011) focus on potential biases against women held by voters and on candidate perceptions of such bias. But, there are a host of other potential mechanisms: The incumbency advantage of sitting male legislators may scare away average female candidates (Schwindt-Bayer and Mishler 2005), party leaders may shy away from

recruiting female candidates (Sanbonmatsu 2002; Dolan, Deckman and Swers 2007), or women may be naturally election-averse (Kanthak and Woon 2015). Regardless of the exact mechanism, when only abnormally highly qualified women run for legislative office, those who then win are extraordinary, in the same way that Black baseball players were when they were more widely discriminated against in professional baseball.[3]

In applying the theory to state legislatures, we claim that each of the entry barriers identified as discouraging women candidates (e.g., ambition disparity, scare-off effect, weak recruitment) becomes more acute as the professionalism of the legislature increases. There is strong evidence that inequalities exist in the candidate recruitment process (Niven 1998; Sanbonmatsu 2002), and we theorize these are likely to be exacerbated in high professionalism states where parties play a more central role in selecting candidates. Even if parties successfully recruit women, more resources are required to win the seat (Berkman and Eisenstein 2000; Francia and Herrnson 2003),[4] incumbency advantages are greater because legislators are more career-oriented in more professional legislatures (Hogan 2003; Jewell and Breaux 1988; Carey, Niemi and Powell 1998), and more quality challengers emerge as competition because the positions are more attractive to potential candidates (Squire 2000).

Additionally, more professional state legislatures offer more staff resources and higher salaries, while also providing more opportunities for career advancement, accentuating the deleterious effects of the gender gap in political ambition (Squire 1992*a*; Maestas 2000; Schwindt-Bayer and Squire 2014; Lawless 2015). Women may be discouraged from running by the increased time commitments in those states which are full-time (in the most professionalized states), as elected women report spending more time engaging in legislative activities (Kurtz, Moncrief, Niemi and Powell 2006), while also bearing a disproportionate share of family burdens (Moncrief 1999; Blair and Henry 1981; Thomas, Herrick and Braunstein 2002). Historically, measures of legislative professionalism such as staff resources, length of session, and salary are correlated with lower women's descriptive representation (Nechemias 1987; Squire 1992*a*; Norrander and Wilcox 1998; Rule 1981; Diamond 1977; Carroll 1985; Schwindt-Bayer

[3]Anzia and Berry's article is titled after the first Black baseball player to be allowed to play in the Major Leagues, Jackie Robinson, who had to be better than white players to break the color barrier.

[4]Hogan (2007) finds women spend as much campaign money as men on average, but it is unknown whether this result is conditioned on legislative professionalism.

and Squire 2014) (See also footnote 2).

Once elected however, and consistent with the sex-based selection effect identified at the congressional level (Anzia and Berry 2011), we expect women to be more qualified than their male counterparts in more professional assemblies. In professional legislatures, women are better educated, more likely to specialize in specific issues, more likely to buck their party leadership, and hold power positions (e.g. party and committee leadership roles) at the same rates as men despite being descriptively underrepresented (Dolan and Ford 1997; Whistler and Ellickson 2011).[5]

For these reasons related to increased barriers to entry and the quality of women who surpass them, we expect:

Hypothesis 1: In professional state legislatures, women will be more effective legislators as compared to men.

Our expectations differ for women legislators who serve in low professionalism states where quality-based selection for women will be less prominent. Seats in these legislatures are not as scarce, require fewer resources to obtain, and generally present a lower hurdle for amateur or unknown candidates. All of these factors promote the representation of traditionally marginalized groups, including women, and allow for greater descriptive representation (Reingold 2019). Because the selection mechanism operating in Congress and professional state legislatures is not as prominent in these institutions, women candidates are expected to be similar to men with respect to competence and legislative skill. All else equal, women will have the same lawmaker aptitude and competence as men, and should be about as effective as their male counterparts.

[5]There are of course many differences between the environments of amateur and professional legislatures, where the capacity "of both individual members and the organization as a whole to generate and digest information in the policymaking process" is heightened (Squire 2007*a*, p. 211). With increased legislative professionalism comes increased information, but also greater demands on the individual. Legislators who are more skilled at managing their own time limitations, directing staff, and more efficiently process information should be more advantaged in these institutional situations, and as a result, more successful at achieving legislative success and representing their constituents through policy action. The key to our expectation resides in the fact that women face higher barriers to entry to these legislative environments because competition for seats is more fierce and thus more likely to be biased in favor of the dominant male group.

There are reasons to be skeptical, however, that equal legislative ability produces the same measured effectiveness for men and women. Though women lawmakers may be of the same quality as their male counterparts in amateur legislatures, they suffer from traditional types of intra-institutional sex bias, through either stigmatization or backlash effects (see O'Brien and Rickne (2016) for a review). Such effects may hamper the ability of women legislators to substantively "act for" their constituents' interests in the legislative process, even as decreases in legislative professionalism drive measurable improvements in the numerical representation of women.

Further, these stigmatization or "backlash" effects are likely to be more pronounced in low professionalism chambers. In these institutions, legislators are citizens who temporarily govern, then return to their districts and their regular lives. Because more professional legislatures are more bounded—membership is difficult to attain and turnover is low (Polsby 1968)—they are more institutionalized, and have well developed norms (Berry, Berkman and Schneiderman 2000). We theorize that this gives leaders less discretion to discriminate against women legislators, consistent with evidence that shows discrimination against constituents increases in low professionalism states (Landgrave and Weller 2020; Garcia and Sadhwani 2023). Finally, because women focus on gender-based issues to a greater extent than men and these issues are less likely to produce enacted public policy (Volden, Wiseman and Wittmer 2018), fewer bills sponsored by women may advance through the legislative process. For all these reasons, even though we expect equal innate quality across legislator sex in less professional legislatures, we hypothesize that women fare worse than men in these states.

Hypothesis 2: In non-professional state legislatures, women will be less effective legislators as compared to men.

The theory of sex-based selection is centered on the personal characteristics of the women candidates and legislators that emerge from electoral competition. Yet, our primary dependent variable concerns "legislative effectiveness" rather than any direct measure of personal characteristics of legislators. While clear conceptually, individual "quality" is impossible to directly measure, so previous research has relied on indirect inferences, supplemented with strong suggestive evidence. For instance, Anzia and Berry (2011) demonstrate that women's effectiveness advantage over men increases as the political conservativeness of the member's congressional district increases. While not dispositive, this assumes

that voters in conservative districts may be more predisposed in favor of gender discrimination when compared to more liberal districts. Thomsen and Sanders (2020) extend this approach by additionally controlling for the extent to which women state legislators are helped or hampered by institutional resources. They use the percentage of women legislators in the chamber as a proxy for the institutional resources that may be afforded to women legislators. We control for this as well, but also more directly measure institutional resources as allocated through standing committee assignments obtained by legislators. By directly measuring institutional sources of bias as an alternative to sex-based selection via elections, we increase confidence that the mechanism behind our observed findings operates through individual "quality" than through some other institutional cause correlated with legislature type.

Data and Empirical Strategy

To assess the extent to which women legislators effectively represent their constituents, we require a measure of substantive representation that is comparable across years and states. Legislative behavior reflects the influences of ideology, constituent preferences, party, and interest groups, culminating in policy preferences pursued through legislative activities.

Our dependent variable, legislative effectiveness, captures a legislator's ability to enact policy, or to "act for" their constituents. This measure, developed by Volden and Wiseman (2014) and extended to state legislatures by Bucchianeri, Volden and Wiseman (2024), quantifies the number of bills a legislator sponsors and advances through legislative stages—introduction, committee consideration, referral, floor consideration, passage, and enactment. For legislator i in term t, the score represents the average advancement of their bills, weighted by the number of bills reaching each stage in their chamber, the chamber size, and the legislative agenda's size. We take the natural log of the raw scores (or of 0.001 for zero values) to address skewness and to ease interpretation.[6]

Sponsoring and achieving legislative success are not the only ways in which legislators can engage in substantive representation, but these activities are among the most basic functions expected of a legislator. Other forms of substantive representation, such as voting behavior, constituent work, and

[6]Bucchianeri, Volden and Wiseman (2024) provide descriptive statistics; Appendix Figure A1 presents state-level boxplots of the raw scores.

delivering particularized benefits are all valued by constituents under different conditions (Harden 2013; Griffin and Flavin 2011). These alternatives, however, pose significant measurement challenges in the states over time, while effectiveness offers a widely used and accepted direct measure of legislator behavior. Further, while the effectiveness measure captures the quantity and quality of representation provided, we cannot directly observe the type of legislation women representatives pursue. However, consistent with a substantial literature, we conceptualize the substantive representation of women as arising from more effective women legislators who use their abilities to pursue legislation consequential to other women (Bratton and Haynie 1999; Volden, Wiseman and Wittmer 2018; MacDonald and O'Brien 2011). Thus, we infer a connection between more effective women legislators and greater substantive representation of women constituents. Effectiveness scores reflect both institutional advantages (e.g., majority party status, leadership roles) and variation in individual performance quality. Legislators with higher scores are better at advancing their agendas, though scores do not account for fundraising, coalition-building, or policy ideas incorporated into others' bills (Volden and Wiseman 2014; Wilkerson, Smith and Stramp 2015).[7]

Our dataset covers district-level legislative effectiveness across state chambers from 2007 to 2018.[8] Legislator sex is coded using Bucchianeri, Volden and Wiseman (2024), with *Female* as an indicator variable.[9]

Given the conditional role of legislative professionalism in our hypotheses, we use the National Conference of State Legislatures' (NCSL) categorization of professionalism.[10] States are classified into five categories: "Green" (most professional), "Light Green," "Gray" (intermediate), "Light Gold," and "Gold" (least professional). For analytical clarity, we collapse these into three groups: "Green"

[7]Reliance on male "surrogates" may lead to underestimating women's substantive representation (Mansbridge 2003), particularly in professional legislatures, potentially biasing against our findings for Hypothesis 1.

[8]Although the dependent variable is measured by Bucchianeri, Volden and Wiseman (2024) at the legislative term (biennium) level, we present yearly models of effectiveness as many of our covariates (including committee resources) are measured yearly. Each inference we make is robust to averaging across yearly covariate observations in a biennium and modeling legislative term-level models, as in Appendix Table B8.

[9]This coding correlates highly with data from Ladam, Harden and Windett (2018).

[10]See http://www.ncsl.org/research/about-state-legislatures/full-and-part-time-legislatures.aspx.

(combining Green and Light Green), "Gray," and "Gold" (combining Light Gold and Gold). Appendix Table A1 lists all state categorizations. We also use the *Squire Professionalism Index* (Squire 2007*a*, 2024) and a yearly dissagregation of the index (Bowen and Greene 2014) as alternative, continuous measures of legislative professionalism in models in Appendix B.[11]

Hypotheses 1 and 2 predict conditional effects of legislative professionalism on the relationship between gender and effectiveness. To model such a relationship empirically, we interact the *Female* indicator with the professionalism measure.[12]

Identifying Sex-Based Selection as a Mechanism

Thomsen and Sanders (2020) identify two mechanisms that can lead to sex-based differences in state legislative performance. First, electoral mechanisms differentially select candidates by sex. This aligns with our theoretical framework: legislatures with high barriers to entry produce women whose legislative qualities exceed those of men, enabling them to overcome other sex-based disadvantages within the legislature. Second, institutional mechanisms can help or hinder women legislators based on how parties and constituents allocate demands, expectations, or resources *after election, once in office.*[13] Women have more impact on legislative outcomes when they are incorporated into powerful

[11]The index includes measures of legislative salary, staff size, and time in session and is calculated once each decade, resulting in minimal variation within-chambers across time (Appendix Table B4 confirms that if state legislatures become more professional over time, women legislate more effectively). We also use a yearly disaggregation (Bowen and Greene 2014; Bucchianeri, Volden and Wiseman 2024) (Appendix Table B5), which indicates that legislative salary drives the results that we report in the main text. The fact that salary most directly shapes the labor market for quality legislators (Boushey and McGrath 2017) makes this finding consistent with our electoral selection argument.

[12]Interacting these variables in pooled models is preferable to regressing sex on effectiveness within subsamples of professionalism, as the interaction method facilitates hypothesis tests of disparate effects of being female across different levels of legislative professionalism (Franzese and Kam 2009).

[13]It is more common to conceptualize institutional bias as working *against* women legislators, but bias in their favor is also possible. For example, Thomsen and Sanders (2020) find that women are institutionally motivated to communicate more effectively with constituents. When measuring committee resources as a potential source of institutional bias, we remain agnostic regarding the direction of such bias.

lawmaking institutions (Reingold and Smith 2012; Reingold 2008) and once given access, women have leadership styles that can make them more effective (Rosenthal 1998).

Recall that findings from the congressional level (Anzia and Berry 2011; Volden, Wiseman and Wittmer 2013) suggest that women are subject to selection at the electoral stage which screens for only the most competent and skilled legislators. Such inferences about the relative effectiveness of legislators by sex can be made by observing legislative activity after elected to office, but any observed outcomes could be due to differential access to institutional resources. Controlling for these resources can strengthen indirect identification of the electoral mechanism that we propose. To account for institutional resources, in the next sections we develop a novel measure of the quality of committee seats afforded to state legislators.

Standing Committee Assignments as an Institutional Resource

Access to valuable standing committees is one of the most important institutional resources for state legislators, as committees draft and amend legislation, oversee the executive branch, and organize legislative business (Gaines, Goodwin, Bates and Sin 2019). Committees not only provide policymaking power but also facilitate individual electoral goals (Fenno 1973; Mayhew 1974). However, not all committees are created equally (Groseclose and Stewart III 1998). Membership on high-value committees grants legislators greater influence over substantive issues and enhances electoral prospects through access to policymaking, fundraising, and pork-barrel opportunities (Fenno 1973; Fowler, Douglass and Clark 1980; Katz and Sala 1996; Deering and Smith 1997; Poole and Romer 1985; Grier and Munger 1991; Hammond and Rosenstiel 2020). There is evidence committee assignments contribute to incumbency advantages at both national (Fowler, Douglass and Clark 1980) and state (Moncrief, Thompson, Haddon and Hoyer 1992) levels. Conversely, legislators generally avoid burden committees (Groseclose and Stewart III 1998).

Because committee assignments matter to legislators, they request and transfer to more valuable committees when possible (Bullock III 1976; Smith and Deering 1983; Kellermann and Shepsle 2009; Frisch and Kelly 2004).[14] For women and other descriptively underrepresented groups, access to

[14]Women may have different committee preferences based on their sex or district characteristics, but like men, they should favor service on powerful committees. Appendix C presents robustness checks demonstrating

influential committees may be particularly critical. Mansbridge (1999) argues that representation in agenda-setting and deliberation is especially important for substantive representation, as it increases the likelihood that women's perspectives shape policy development.

In Congress, despite deference to seniority, party leadership exercises significant discretion over committee assignments, often using them as rewards or punishments (Cann 2008; Yoshinaka 2005; Deering and Smith 1997). While less research exists on state legislative committee assignments, evidence suggests that party leaders reward loyalty with better assignments (Kanthak 2009), implying discretionary control at the state level as well (McGrath and Ryan 2019). Thus, party leaders may use their discretion to exclude women from powerful committees. Though data on individual committee requests and assignments are limited, there are reasons to suspect such bias. Assignment discrimination may also vary by legislative professionalism. More professional legislatures have well-developed rules and norms (Squire 1992*b*), making systematic exclusion of women costlier and a greater norm violation. Additionally, more professional legislatures engage in less discrimination toward constituents, suggesting this pattern may extend to legislative interactions (Landgrave and Weller 2020; Garcia and Sadhwani 2023).

Due to the lack of prior theoretical work on sex-based discrimination in committee assignments or how it interacts with legislative professionalism, we do not formulate formal expectations regarding professionalism's direct effect on women's committee value. However, committee assignments are a key institutional resource that *may* shape women's legislative effectiveness across legislature types. A central contribution of this study is the development of chamber-level committee value scores and new data on sex-based committee assignment patterns. In the next section, we describe our measurement of legislators' committee portfolio values, which enables us to assess institutional resources' role in legislative effectiveness. Controlling for committee resources allows us to more precisely identify the role of sex-based electoral selection in legislator effectiveness.

Measuring Committee Portfolio Values

We quantify the value of individual-level committee service *portfolios*, as legislators typically serve on multiple committees within a term. We first calculate the relative value of each committee j within

that sex-based preference differences do not bias our findings.

a state-chamber, then aggregate these values for legislator i based on their committee assignments within a state-chamber-year. Quantifying committee values has a rich history in the congressional literature, but ours is the first attempt that we are aware of to calculate values for all states across multiple years and produce an overall legislator committee portfolio value.[15]

After compiling legislator-state-chamber-year committee assignment data we can track how individuals within a state-chamber move onto, and off of, standing committees across years. Such transfer data can then be used to calculate "net transfer scores" (Bullock III and Sprague 1969; Bullock III 1973), or more commonly used for congressional committees, "Grosewart" scores (Groseclose and Stewart III 1998; Stewart III and Groseclose 1999).[16] We replicate the "Grosewart" method for state legislatures, adapting it to account for differences between congressional and state-level committee data (see Appendix C for details).

After calculating committee values, we compile individual portfolio scores for each legislator-year. Most committees have positive values, meaning legislators prefer membership over no assignment, though some committees function as "burden" committees, where legislators may prefer no assignment. The simplest method for computing a legislator's portfolio score is summing the values of all committees they serve on. Legislative rules often limit the number of committees a legislator can serve on, but these constraints are constant within legislatures and should not bias inferences, particularly since our models include state-invariant district fixed effects.[17] Committee values are assigned for an average

[15]In Congress, members typically serve on only one or two committees, and party rules limit assignments to powerful committees, making an aggregate portfolio measure less meaningful. In state legislatures, where most members serve on multiple committees, portfolio values provide a more informative measure of institutional resources.

[16]These scores have been widely used to examine party loyalty and power (Clark 2015; Grimmer and Powell 2013; Jenkins and Monroe 2012; Monroe, Roberts and Rohde 2009; Yoshinaka 2005), representation style (Leighton and Lopez 2002), and Senate committee structure (Canon and Stewart III 2002).

[17]Alternatively, we could use a summary measure such as the mean or median committee value. The mean closely aligns with the raw portfolio score used in the main text, while Appendix Tables B1 and B2 report results using the median. We prefer the full portfolio value for substantive reasons; for example, three retirement accounts totaling $800,000 are preferable to one worth $600,000, though this analogy does not account for opportunity costs or diminishing returns to multiple committee assignments. Nonetheless, serving

legislator, but some members may prefer a burden committee due to district-specific needs. Our strategy of comparing legislators within districts accounts for such constituency-driven preferences.

Controlling for Alternative Explanations

In addition to *Female*, *Legislative Professionalism*, and *Committee Portfolio Value*, we include several factors related to variation in descriptive representation in the states. Our rationale follows Thomsen and Sanders (2020), who assess whether greater descriptive representation within a legislative chamber enhances women's effectiveness. Prior research suggests that increases in women's descriptive representation lead to greater substantive representation, particularly when women reach a "critical mass" in the legislature (Phillips 1995; Carroll 2001; Young 2002; Thomas 1994). To test this, we measure the *Proportion of Females in the Chamber* for each legislator-year observation. This variable is re-scaled to a mean of zero to facilitate interaction with the *Female* indicator. In our models of legislative effectiveness, the interaction term captures the marginal effect of increasing descriptive representation for women legislators.

However, some scholars argue that critical mass is neither necessary nor sufficient for substantive representation (Celis et al. 2008; Childs and Krook 2009; Bratton 2005). Instead, a "critical actor" framework posits that women drive substantive representation when they hold key positions of power, such as party leadership roles (Bratton and Haynie 1999; Heath, Schwindt-Bayer and Taylor-Robinson 2005). Conversely, others find that women in leadership may reduce the legislative activity of other women legislators (Swift and VanderMolen 2021). To test these claims, we include a *Female Leader* indicator, measuring whether an individual's party is led by a woman, and interact it with the *Female* indicator.[18]

We do not control for legislator race as our focus is on estimating average treatment effects across legislator sex and the measurement of race is fraught with challenges (Rosenman, Olivella and Imai

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on more valuable committees provides legislators with greater opportunities to influence policy within their jurisdiction.

[18]For 2007-2014, we referenced annual digital editions of the State Yellow Books from State Leadership Directories. For 2014-2018, we used online records from Ballotpedia (`www.ballotpedia.org`) to identify party leaders (Speaker, Majority Leader, or Minority Leader, depending on party and chamber).

2023), though we acknowledge heterogeneous effects by race are possible.

Empirical Strategy

Legislators are grouped by state-chamber-district-year from 2007 to 2018. Since we examine conditional differences in legislative effectiveness by sex, we use an individual unit of analysis. Over-time variation within legislative districts in both the independent and dependent variables allows us to employ district-level fixed effects, estimating within-district differences in legislator sex on effectiveness. Our dataset includes 8,585 districts, with 3,032 having both male and female legislators at some point.[19]

Our fixed effects approach accounts for any time-invariant characteristics correlated with both the election of female legislators and legislative effectiveness. For example, women may be more likely to be elected from urban areas, where economic importance drives legislative activity. By controlling for unobserved district-specific factors, we isolate the effect of legislator sex without separately modeling invariant district characteristics.[20] Thus, any district- or state-level characteristic that does not vary over time (such as the number of legislative seats, chamber institutions and rules, party rules, committee assignment rules, and district ideology) is controlled for.[21]

Following Bucchianeri, Volden and Wiseman (2024), we also control for legislator seniority (years in office), majority party membership, and ideological distance from the median of each member's own party (Shor and McCarty 2011).[22] To account for time trends, we estimate three panel model

[19]Most districts are single-member (SMDs), with one legislator serving at a time. However, ten states in our period include at least some multi-member districts (MMDs) with magnitudes ranging from 2 to 11. Since these MMDs are geographically determined and limited, we include them in our analyses while controlling for time-invariant district fixed effects, as with SMDs.

[20]Our main models cover 2007-2018, but to address redistricting effects from the federal decennial census, Appendix Table B3 presents results using only continuous post-census districts. These districts take effect in 2011 for off-cycle election states (LA, MS, NJ, VA) and in 2012 for all others.

[21]Some characteristics, such as district ideology, change very slowly and are effectively controlled for by the district fixed effects. Further, we include a robustness check that splits the sample pre- and post-redistricting (from the 2010 cycle), which estimates two distinct sets of district fixed effects.

[22]Legislative effectiveness research typically considers majority party status rather than party affiliation.

specifications. First, we use one-way district fixed effects as a baseline, avoiding assumptions about secular temporal trends in legislative effectiveness. Second, we estimate two-way fixed effects models, accounting for both cross-sectional and over-time variation. While these models yield consistent results with the one-way approach, we prefer one-way fixed effects due to interpretability concerns with two-way models (Kropko and Kubinec 2020). Finally, we include models with state-specific yearly trends to capture any unmodeled over-time influences on individual effectiveness scores. We also note that the SLES scores themselves are scaled to account for time differences in agenda size within a state legislative session (Bucchianeri, Volden and Wiseman 2024).[23]

Results: Legislative Professionalism Conditions the Effectiveness of Women Legislators

The first three columns of Table 1 present unconditional effects – for each of the time component strategies described above – of being *Female* on a legislator's effectiveness score. These results indicate that as a baseline (and consistent with the finding of Bucchianeri, Volden, and Wiseman 2024), logged women's effectiveness scores are between .067 and .072 lower than those for male state legislators. Since the outcome variable is log-transformed, we can interpret this unconditional effect as being a decrease in effectiveness of 6.4% and 6.9% as compared to men.[24]

The next three models (columns 4-6) test our hypotheses regarding the effect of being female on logged effectiveness scores, depending on legislative professionalism (and controlling for the influence of committee resources (scaled to mean zero), varying levels of descriptive representation and legislator

However, we also conduct analyses controlling for party identification and testing for heterogeneous effects by party. Appendix Table B6 shows that 1) the effects of being female do not differ by party, 2) our results are robust to party controls, and 3) Democrats have lower legislative effectiveness scores across state legislatures. Also, unlike Bucchianeri, Volden and Wiseman (2024), we control for a member's ideological distance from their own party's median (rather than from the chamber median). We do this because of our focus on committee assignments, which are highly driven by member's parties in state legilsatures (McGrath and Ryan 2019).

[23]For this reason, Bucchianeri, Volden and Wiseman (2024) advise against comparing legislators across states over time, but encourage the kind of within-district comparison of legislators with different characteristics that we pursue.

[24]$1 - exp(-.067) = 0.064$ and $1 - exp(-.072) = 0.069$

characteristics of seniority, majority party status, and ideological extremity).[25]

Here, the results do not support the expectation from Hypothesis 2 regarding SLES underperformance in less professional legislatures in particular. Female legislators in the least professional legislatures (Gold/Amateur category, captured by the *Female* constitutive terms) perform roughly equally to male legislators in each column. This is somewhat surprising, especially in light of the finding below (in Table 2) that women possess less committee resources than men in across all legislative types. It seems as though the inclusion of the seniority control variable in particular accounts for much of the baseline differences in effectiveness by sex. This variable strongly determines legislative effectiveness and the average woman in the the data serves almost a half year less than the average man.

By contrast, the expectation from Hypothesis 1 is strongly supported in these results. Each of the *Female x Hybrid Legislature* and *Female x Professional Legislature* terms is positively signed, and the effect is statistically distinguishable for the most professional legislatures, indicating that women in professionalized legislatures do significantly better in terms of logged SLES than do women in the amateur legislatures. In relation to women in the most amateur legislatures, women in the

[25]The sample sizes of these models are smaller than those from columns 1-3, since there is additional missing data after calculating committee values. In particular, observations from Connecticut and Massachusetts are omitted because legislative committees in these states are usually joint committees across legislative chambers. Nebraska is omitted due to its nonpartisan legislature. And Kentucky is omitted because its committee system produces many temporary committees that exist for a session and then disappear. Likewise, Kansas is omitted from all models with state legislative effectiveness scores as a dependent variable (Bucchianeri, Volden and Wiseman (2024) describe why, along with further limitations to their data in footnote 1 of their article: "Four states enter the sample after 2003: Massachusetts (2009), Nebraska (2007), Oregon (2007), and Rhode Island (2007). Kansas is the only state for which we are unable to gather sufficiently high-quality data to calculate our scores. Specifically, legislators in Kansas do not frequently attach their names to their bills, thus providing little opportunity for researchers to uncover their individual effectiveness, or for voters to hold them accountable for their bill sponsorship and lawmaking activities.") Further, on average across legislator chambers, 14.5% of legislator observations do not have committee portfolio values, mostly due to the member holding positions only on committees that existed too temporarily for us to measure transfer values. The proportions of male and female legislators with missing committee values are indistinguishable from the proportion of legislators for each sex. Our results are robust to arbitrarily treating these missing committee values as zero.

most professional legislatures see performance premiums about 20% higher than those in amateur legislatures. While interesting, this does not yet address our expectation from Hypothesis 1, which states that women should out-perform *men* in the most professional legislatures. To assess this, we need to calculate the marginal effects of being female across legislative types, as we do in Figure 1.[26]

Table 1: Sex-Based Differences in Logged State Legislative Effectiveness Scores, Accounting for Committee Portfolio Values, 2007-2018

	1	2	3	4	5	6
Female	−0.067*	−0.067*	−0.072*	−0.008	−0.007	0.005
	(0.032)	(0.032)	(0.032)	(0.126)	(0.126)	(0.126)
Female Proportion in Chamber (Scaled to Mean 0)				0.396	0.398	0.097
				(0.257)	(0.258)	(0.263)
Female Leader				0.016*	0.013	0.009
				(0.007)	(0.008)	(0.007)
Committee Portfolio Value (Logged) - Scaled				0.037**	0.039**	0.040**
				(0.013)	(0.013)	(0.014)
Female x Scaled Female Proportion in Chamber				−0.385	−0.388	−0.424
				(0.353)	(0.353)	(0.354)
Female x Female Leader				−0.021	−0.021	−0.024
				(0.021)	(0.021)	(0.021)
Female x Hybrid Legislature				0.076	0.076	0.077
				(0.081)	(0.081)	(0.081)
Female x Professional Legislature				0.192*	0.193*	0.190*
				(0.092)	(0.092)	(0.092)
Female x Scaled Committee Portfolio Value				0.030	0.031	0.033
				(0.026)	(0.026)	(0.026)
Seniority (in Years)				0.047***	0.047***	0.047***
				(0.005)	(0.005)	(0.005)
Majority Party Member				0.809***	0.810***	0.810***
				(0.036)	(0.036)	(0.036)
Ideological Distance from Party Median				−0.087***	−0.088***	−0.085***
				(0.023)	(0.023)	(0.023)
N	70984	70984	70984	58103	58103	58103
District Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	no	yes	no	no	yes	no
State x Year trend	no	no	yes	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted from columns 4, 5, and 6 for reasons described in the text. See footnote 25 for more sample restrictions.

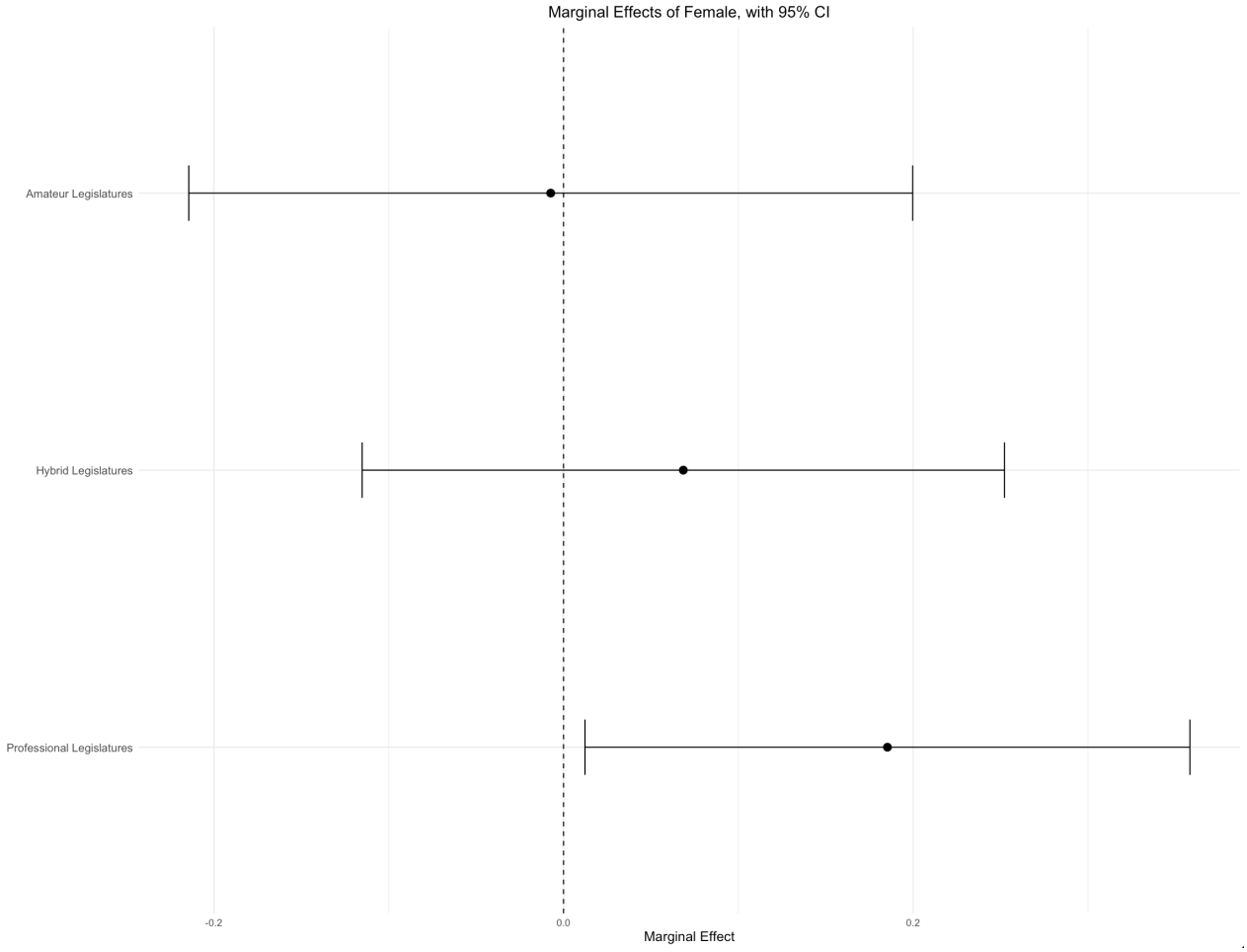
Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Figure 1 demonstrates the marginal effects of *Female* for each legislative chamber type. The effect for amateur legislatures is marginally negative, but not statistically significant, thus rejecting

[26]As mentioned above Appendix Tables B4 and B5 reports similar models to columns 4-6 of Table 1, replacing NCSL categories with a time-varying measures of legislative professionalism (Squire 2007*a*, 2024; Bowen and Greene 2014).

Hypothesis 2. Likewise, there is no average sex-based difference between in effectiveness in hybrid legislatures. The bottom panel of the figure provides strong support for Hypothesis 1: women out-perform men in the most professional legislatures.

Figure 1: Marginal Effects of Female on Legislative Effectiveness Scores, by Levels of Legislative Professionalism



Note: Marginal effects calculated from District Fixed Effects model reported in column 4 of Table 1. This model is identified through male to female and female to male variation within districts over time. The Amateur legislatures effect is $\hat{\beta}_{Female}$, standard error is $\sqrt{var(\hat{\beta}_{Female})}$. For other legislatures, the effect is $\hat{\beta}_{Female} + \hat{\beta}_{Female \times Leg.Type}$, with a standard error of $\sqrt{var(\hat{\beta}_{Female}) + var(\hat{\beta}_{Female \times Leg.Type}) + 2 \times cov(\hat{\beta}_{Female}, \hat{\beta}_{Female \times Leg.Type})}$

This fundamental finding is robust to a number of alternative modeling strategies, the results of which can be found in Appendix B. We alternatively control for legislators' *median* committee value,

as it is less susceptible to outlier committee assignments (Appendix Table B1, as well as Appendix Table B2 which mirrors Table 2 below with the logged median committee value as an alternative dependent variable). Appendix Table B3 demonstrates that the effect for professional legislatures only strengthens when we consider post-redistricting observations. Appendix Tables B4 and B5 show that women perform better with professionalism measured more continuously (and varying within states), with most of the effect attributable to variation in legislative salary in particular. Appendix Table B6 accounts for possible party heterogeneity. And, Appendix Table B7 reports relevant coefficients from fully interacted models. These models control for the possibility that other aspects of lawmaking in professional legislatures condition the individual determinants of legislative effectiveness. Net of any such interactions (there are no other statistically significant interactions), the differential effect of *Female* on effectiveness remains. Finally, since our estimates rely on within-district variation in legislator sex, we are concerned that states vary systematically in the extent to which there is such within-district variation, and there is debate in the literature about whether term limits increase the number of women in legislatures (see Carey, Niemi, Powell and Moncrief 2006). In our data, districts in states with legislative term limits are much more likely than districts in non term-limited legislatures to have within district variation in legislator sex (46% v. 33%).[27] Yet, Appendix Figure B1 confirms that our main finding holds for both sets of states.

In addition to legislative professionalism conditioning the effect of *Female* on logged effectiveness, the control variables perform as one would expect, given recent research (Bucchianeri, Volden and Wiseman 2024). Each additional year in the legislature increases a legislator's effectiveness score by about 4.7%, majority party membership provides a boost of around 122%, and increasing ideological extremity of the member significantly reduces their effectiveness. On the other hand, the variables measuring the "critical mass" and "critical actor" variants of theories of descriptive representation do not produce distinguishable results: women perform no better when there are more women in the legislature or when a woman leads their party in the chamber.

[27]We thank an anonymous reviewer for highlighting this possibility.

Table 2: Sex-Based Differences in Logged Committee Portfolio Values, 2007-2018

	1	2	3	4	5	6
Female	−0.052**	−0.050**	−0.054**	0.014	0.015	0.021
	(0.017)	(0.017)	(0.016)	(0.058)	(0.058)	(0.057)
Female Proportion in Chamber (Scaled to Mean 0)				0.108	0.186	−0.012
				(0.148)	(0.147)	(0.158)
Female Leader				−0.011*	−0.009	−0.001
				(0.005)	(0.005)	(0.005)
Female x Scaled Female Proportion in Chamber				−0.292	−0.296	−0.322
				(0.176)	(0.176)	(0.173)
Female x Female Leader				0.000	0.004	0.000
				(0.011)	(0.011)	(0.010)
Female x Hybrid Legislature				0.047	0.046	0.045
				(0.035)	(0.035)	(0.034)
Female x Professional Legislature				0.017	0.017	0.022
				(0.053)	(0.052)	(0.052)
Seniority (in Years)				0.029***	0.029***	0.029***
				(0.003)	(0.003)	(0.003)
Majority Party Member				0.127***	0.127***	0.131***
				(0.023)	(0.023)	(0.023)
Ideological Distance from Party Median				0.010	0.012	0.017
				(0.015)	(0.015)	(0.015)
N	58103	58103	58103	58103	58103	58103
District Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	no	yes	no	no	yes	no
State x Year trend	no	no	yes	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text.

Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Results: Women Receive Less Valuable Committee Assignments

Beyond controlling for these alternative explanations, we also assess the extent to which effectiveness responds to intra-institutional representational *resources* in the form of a legislator's *Committee Portfolio Value*. We have argued above that this should be an important determinant of success and that it may vary with legislator sex. The coefficient on the *Committee Portfolio Value* term in Table 1 confirms the former claim, while we include Table 2 below to assess the latter. Depending on how the time component is modeled, a 50% increase in an individual's committee portfolio value is expected to coincide with a 1.55%-1.63% increase in a legislator's effectiveness score.[28] While substantively small, this is a statistically significant correlation and by controlling for this, we support our state-level claim that sex-based selection at the electoral level, rather than institutional advantages, drives women's success. But, are women advantaged or disadvantaged by their committee resources? One way to assess this is to look to the the *Female x Scaled Portfolio Value* interaction term from Table 1. We see here that women gain roughly equal effectiveness bonuses from their committee resources as men. But, do men and women have equivalent committee values?

The first three columns of Table 2 demonstrate clear differences in committee portfolio values by sex. Simply put, women receive *less valuable* committee portfolios than men. However, these baseline differences appear to be driven by sex-based variation in seniority and majority party membership, as when these indicators are accounted for in columns 4-6 of Table 2, the negative effect of *Female* disappears. Importantly for our purposes, the interactions with legislative professionalism types indicates that the institutions associated with professionalism do not meaningfully condition sex-based differences in committee portfolio values. This empirical pattern itself is quite interesting[29] and differs from theoretical claims that women would be uniquely disadvantaged in low professionalism states in a way they are not in high professionalism states. Thus, these null findings regarding sex-based

[28] $(1.50^{.038} - 1) * 100 = 1.55$ and $1.50^{.040} - 1) * 100 = 1.63$

[29] And confirms findings of similar outcomes in different settings — Jeydel and Taylor (2003) find, using the same methodology for measuring committee value that we do, that male and female members of Congress receive committee assignments of equal value, controlling for other factors. Kerevel and Atkeson (2013) support this conclusion in the Mexican Chamber of Deputies, where they find that male and female members are equally likely to serve on powerful committees.

differences in committee resources at the state level rule out the possibility that women out-perform men in professional legislatures (from Table 1) because of an institutional bias in their favor.

As previously noted, it is possible that women *prefer* different types of committees than do men (or that state leaders uniformly stereotype women to have such preferences), and because there are usually many more men in state legislatures than women, our measure of portfolio values is capturing sex-based preferences rather than overall committee value. Yet, the results regarding legislative effectiveness (Table 1) themselves indicate the validity of the committee portfolio measure. If women were found to be less effective legislators across legislature types, then one could feasibly believe that women characteristically prefer to focus on "women's issues" that are just less successful in the legislative process (Atkinson and Windett 2019; Höhmann 2020). Instead, we find women to be *more effective* than men in professional legislatures, indicating that they do not primarily focus on policy areas that are less likely to survive the legislative process. Still, we take the threat of differential preferences seriously and take a number of steps to show the robustness of our committee value measure for both men and women in Appendix C. In short, we find that the statistical prevalence of sex differences in committee assignment is less than some might expect (e.g., Carroll and Taylor 1989), and that omitting chambers with evidence of differential selection does not change any of the fundamental results presented in this section. Furthermore, we show that at the congressional level (where data is available to make this comparison), committee value scores estimated separately by legislator sex indicate substantial preference similarity.

In total, the results from our analysis of institutional committee resources strengthen our indirect inference that support for our hypotheses is driven by sex-based electoral selection, rather than by within-institution factors (Thomsen and Sanders 2020).

Conclusion

The number of women serving in American legislatures has increased in recent years, but whether these gains are translating into substantive, women-oriented policy outcomes was unclear. We find that the relationship between descriptive and substantive representation is complex: women legislators out-perform their male counterparts in achieving legislative effectiveness (Bucchianeri, Volden and Wiseman 2024), but only in the most professional state legislatures. Women elected in the most

amateur state legislatures, on the other hand, under-perform men and struggle to achieve substantive representation for their constituents and the issues they care about. We make sense of the varying effectiveness of women state legislators through a theory of sex-based electoral selection, and we rule out alternative explanations, including that women have institutional advantages that exist only in professional legislatures.

Those women legislators who are able to overcome high barriers to entry possess exceptional personal and professional qualities, which also allow them to provide effective representation once in office. But, once elected, women also need access to powerful lawmaking institutions. Valuable committee assignments allow legislators to "act for," or substantively represent their constituents better than they would be able to with more burdensome committee work. We use novel, detailed data on committee assignments to demonstrate that, once in office, women across all legislative types are afforded *less valuable* committee portfolios than men, forcing them to overcome intra-institutional biases as well. Our evidence suggests that women in professional legislatures are able to do so, reflecting their innate quality determined by the entry stage. Women in amateur legislatures, on the other hand, cannot overcome their committee assignments and are instead hampered by their institutional positions, even when they serve in legislatures with large proportions of women colleagues and with women party leaders. This pattern mirrors that found in the comparative politics literature (Senk 2021), indicating that intra-institutional discrimination can reduce the effectiveness of women legislators absent the electoral sex-based selection that occurs in the U.S. Congress and in the most professional U.S. state legislatures. This also suggests that, in general, women must overcome both electoral and institutional barriers that hinder their ability to represent their constituents.

Normatively, while increased descriptive representation should be a continued goal of democratic theorists, our findings identify a thorny practical paradox. Electoral factors that produce greater descriptive representation may ultimately reduce the substantive representation of women if the winning candidates are subject to intra-institutional discrimination (in achieving leadership positions, or, as is our focus, valuable committee seats) that they cannot overcome. In particular, while legislative professionalism has been specifically identified by previous work as hampering descriptive representation, our work identifies this institutional feature as producing a pool of highly qualified women legislators who *can* overcome intra-institutional discrimination. We also note that while we

expect women legislators to better represent women, we cannot say for sure which types of bills women legislators in professionalized states pursue to achieve higher effectiveness. Future research should investigate the extent to which effectiveness is driven by women's-issue bills.

In an era in which the public is increasingly skeptical of government institutions (Citrin and Stoker 2018), and opposed to increasing legislative resources (Squire 2012), there is concern that legislatures may become less professional, especially as salaries stagnate (Bowen and Greene 2014), making the position less competitive with those in the private sector.[30] In turn, this may have the effect of decreasing women's substantive representation. However, public support for more legislative resources can be increased if the public is made aware of the benefits of more professional legislatures (e.g., better governance, bureaucratic responsiveness, etc.) (Fortunato, McCrain and Schiff 2023). Incorporating arguments about the benefits of representation for traditionally marginalized groups may also increase support for greater legislative professionalism, especially among members of that group.

Our research also suggests that women are still discriminated against once elected. The reasons for this are not clear, and future research should seek to improve our understanding of the committee assignment process at the state-level. In most American legislatures, the party leadership—within constraints imposed by chamber rules and norms (such as seniority)—make committee assignment decisions. Why do leaders systematically assign women to lower-valued committees, especially if they are more competent than their male colleagues? Understanding these dynamics will inform our assessments of how traditionally marginalized groups can access the committee resources needed to best pursue effective representation.

[30]Fortunato, McCrain and Schiff (2023) detail a number of efforts to increase state legislator salaries that have been defeated in recent years, along with successful efforts to limit then.

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Supplemental Material for "High Hurdles: Legislative Professionalism and the Effectiveness of Women State Legislators"

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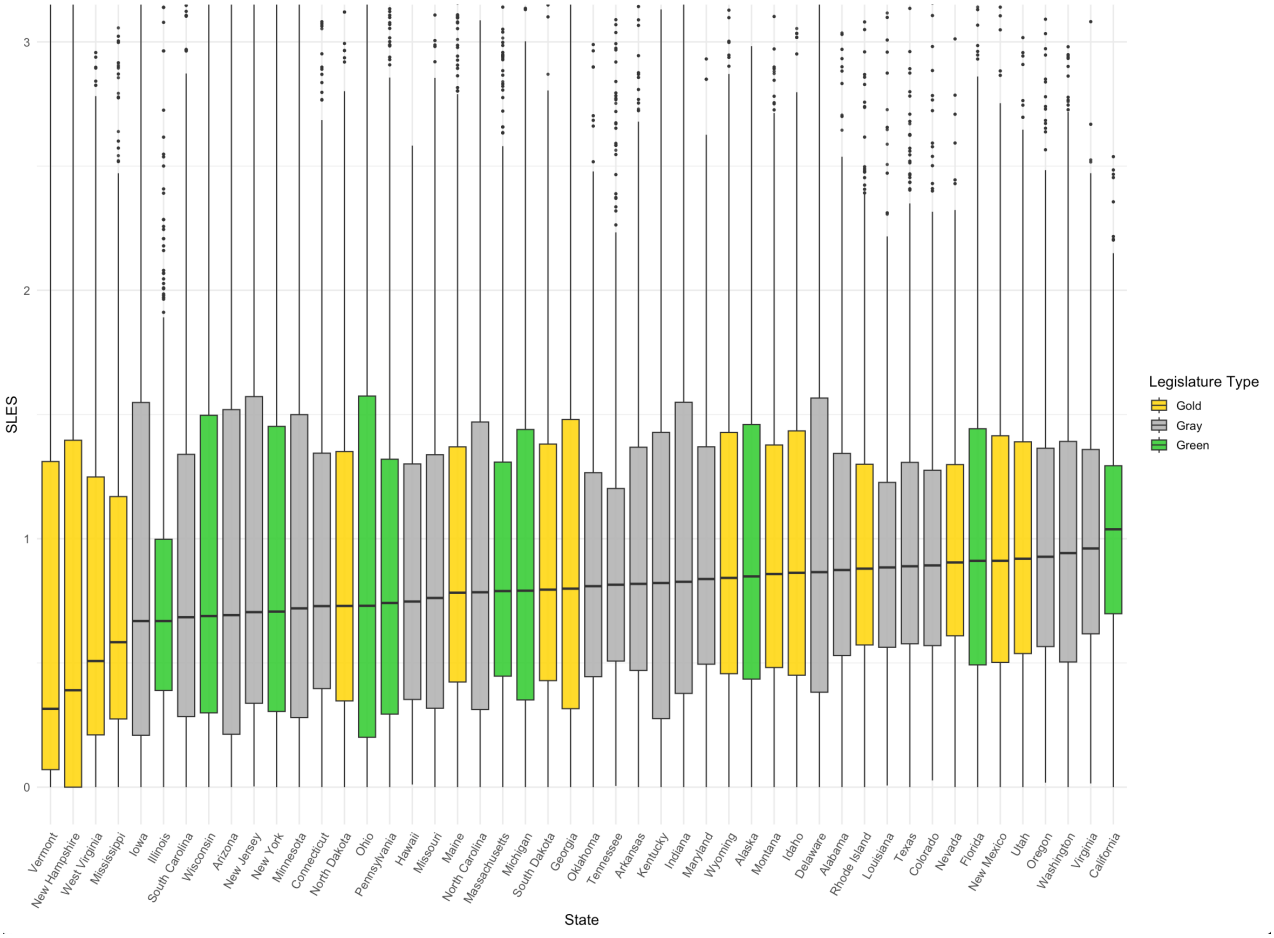
1 Appendix A: Descriptive Information

Appendix Table A1: National Conference of State Legislatures Legislative Professionalism Categorization

Green	**Light Green**		**Gray**	**Light Gold**	**Gold**
California	Alaska	Alabama	Minnesota	Georgia	Montana
New York	Florida	Arizona	New Jersey	Idaho	New Hampshire
Pennsylvania	Illinois	Arkansas	Missouri	Kansas	North Dakota
	Massachusetts	Colorado	Nebraska	Maine	South Dakota
	Michigan	Connecticut	North Carolina	Mississippi	Utah
	Ohio	Delaware	Oklahoma	Nevada	Wyoming
	Wisconsin	Hawaii	Oregon	New Mexico	
		Indiana	South Carolina	Rhode Island	
		Iowa	Tennessee	Vermont	
		Kentucky	Texas	West Virginia	
		Louisiana	Virginia		
		Maryland	Washington		

Note: See http://www.ncsl.org/research/about-state-legislatures/full-and-part-time-legislatures.aspx for more information on coding.

Appendix Figure A1: Boxplots of SLES by State (Outliers Removed, Ordered by Median)



Note: Legend colors refer to NCSL legislative professionalism categories. See http://www.ncsl.org/research/about-state-legislatures/full-and-part-time-legislatures.aspx. "Green" refers to full-time, well paid legislatures, with large staff resources; "Gray" denotes hybrid legislatures; "Gold" are part-time legislatures with low pay and few staff.

2 Appendix B: Alternative Specifications

Appendix Table B1: Sex-Based Differences in Logged State Legislative Effectiveness Scores (Table 1 from main text with alternative committee value), 2007-2018

	1	2	3	4	5	6
Female	−0.067*	−0.067*	−0.072*	−0.004	−0.003	0.010
	(0.032)	(0.032)	(0.032)	(0.125)	(0.125)	(0.125)
Female Proportion in Chamber (Scaled to Mean 0)				0.408	0.415	0.108
				(0.257)	(0.258)	(0.263)
Female Leader				0.016*	0.013	0.009
				(0.007)	(0.008)	(0.007)
Median Committee Value (Logged) - Scaled				−0.003	−0.004	−0.004
				(0.011)	(0.011)	(0.011)
Female x Scaled Female Proportion in Chamber				−0.436	−0.442	−0.481
				(0.355)	(0.354)	(0.355)
Female x Female Leader				−0.022	−0.022	−0.024
				(0.021)	(0.021)	(0.021)
Female x Hybrid Legislature				0.086	0.086	0.088
				(0.083)	(0.083)	(0.082)
Female x Professional Legislature				0.206*	0.207*	0.205*
				(0.093)	(0.093)	(0.093)
Female x Scaled Median Committee Value				0.030	0.031	0.032
				(0.024)	(0.024)	(0.024)
Seniority (in Years)				0.047***	0.047***	0.048***
				(0.005)	(0.005)	(0.005)
Majority Party Member				0.813***	0.815***	0.814***
				(0.036)	(0.036)	(0.036)
Ideological Distance from Party Median				−0.087***	−0.087***	−0.085***
				(0.023)	(0.023)	(0.023)
N	70984	70984	70984	58103	58103	58103
District Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	no	yes	no	no	yes	no
State x Year trend	no	no	yes	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. See footnote 25 in the main text for more sample restrictions.

Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Appendix Table B2: Sex-Based Differences in Logged Median Committee Value (Table 2 from main text with alternative committee value), 2007-2018

	1	2	3	4	5	6
Female	−0.040**	−0.040**	−0.041**	−0.098	−0.095	−0.094
	(0.015)	(0.015)	(0.015)	(0.051)	(0.051)	(0.050)
Female Proportion in Chamber (Scaled to Mean 0)				0.294*	0.267*	0.219
				(0.123)	(0.123)	(0.137)
Female Leader				0.006	0.003	0.004
				(0.004)	(0.004)	(0.005)
Female x Scaled Female Proportion in Chamber				0.113	0.101	0.101
				(0.156)	(0.156)	(0.155)
Female x Female Leader				0.028**	0.026**	0.028**
				(0.009)	(0.009)	(0.009)
Female x Hybrid Legislature				0.034	0.035	0.035
				(0.032)	(0.032)	(0.032)
Female x Professional Legislature				0.025	0.027	0.023
				(0.044)	(0.044)	(0.044)
Seniority (in Years)				0.029***	0.029***	0.029***
				(0.002)	(0.002)	(0.002)
Majority Party Member				0.010	0.009	0.014
				(0.022)	(0.022)	(0.022)
Ideological Distance from Party Median				−0.012	−0.014	−0.008
				(0.016)	(0.016)	(0.016)
N	58103	58103	58103	58103	58103	58103
District Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	no	yes	no	no	yes	no
State x Year trend	no	no	yes	no	no	yes

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text.

Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Appendix Table B3: Sex-Based Differences in Logged State Legislative Effectiveness Scores, 2011/2012-2018 (Depending on when redistricting occurred)

	1	2	3	4	5	6
Female	−0.082*	−0.082*	−0.080*	−0.118	−0.115	−0.087
	(0.039)	(0.039)	(0.039)	(0.173)	(0.173)	(0.171)
Female Proportion in Chamber (Scaled to Mean 0)				−0.050	−0.012	0.147
				(0.347)	(0.351)	(0.337)
Female Leader				0.014*	0.012	0.006
				(0.006)	(0.006)	(0.006)
Committee Portfolio Value (Logged) - Scaled				0.038*	0.038*	0.049**
				(0.018)	(0.018)	(0.018)
Female x Scaled Female Proportion in Chamber				−0.252	−0.262	−0.343
				(0.475)	(0.474)	(0.471)
Female x Female Leader				−0.004	−0.004	−0.009
				(0.019)	(0.019)	(0.019)
Female x Hybrid Legislature				0.176	0.175	0.169
				(0.098)	(0.098)	(0.098)
Female x Professional Legislature				0.298**	0.299**	0.293**
				(0.113)	(0.113)	(0.112)
Female x Scaled Committee Portfolio Value				0.025	0.026	0.020
				(0.033)	(0.033)	(0.033)
Seniority (in Years)				0.057***	0.057***	0.056***
				(0.006)	(0.006)	(0.006)
Majority Party Member				0.748***	0.749***	0.749***
				(0.050)	(0.050)	(0.050)
Ideological Distance from Party Median				−0.020	−0.020	−0.019
				(0.031)	(0.031)	(0.031)
N	43118	43118	43118	35481	35481	35481
District Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	no	yes	no	no	yes	no
State x Year trend	no	no	yes	no	no	yes

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. See footnote 25 in the main text for more sample restrictions.

Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Appendix Table B4: Sex-Based Differences in Logged State Legislative Effectiveness Scores, 2007-2018 (Alternative Legislative Professionalism)

	1	2	3
Female	−0.053	−0.053	−0.043
	(0.125)	(0.125)	(0.125)
Female Proportion in Chamber (Scaled to Mean 0)	0.408	0.411	0.111
	(0.257)	(0.258)	(0.264)
Female Leader	0.017*	0.013	0.009
	(0.007)	(0.008)	(0.007)
Committee Portfolio Value (Logged) - Scaled	0.040**	0.042**	0.042**
	(0.013)	(0.013)	(0.013)
Squire Professionalism Index	−0.125	−0.113	−0.262
	(0.305)	(0.311)	(0.452)
Female x Scaled Female Proportion in Chamber	−0.440	−0.444	−0.476
	(0.347)	(0.346)	(0.347)
Female x Female Leader	−0.020	−0.021	−0.023
	(0.021)	(0.021)	(0.021)
Female x Squire Professionalism Index	0.632*	0.635*	0.641*
	(0.278)	(0.277)	(0.276)
Female x Scaled Committee Portfolio Value	0.022	0.023	0.024
	(0.026)	(0.026)	(0.025)
Seniority (in Years)	0.047***	0.047***	0.047***
	(0.005)	(0.005)	(0.005)
Majority Party Member	0.809***	0.810***	0.809***
	(0.036)	(0.036)	(0.036)
Ideological Distance from Party Median	−0.088***	−0.088***	−0.086***
	(0.023)	(0.023)	(0.023)
N	58103	58103	58103
District Fixed Effects	yes	yes	yes
Year Fixed Effects	no	yes	no
State x Year trend	no	no	yes

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. See footnote 25 in the main text for more sample restrictions.

Appendix Table B5: Sex-Based Differences in Logged State Legislative Effectiveness Scores, 2007-2018 (Alternative Legislative Professionalism 2)

	1	2	3
Female	−0.466	−0.478	−0.434
	(0.278)	(0.278)	(0.279)
Female Proportion in Chamber (Scaled to Mean 0)	0.353	0.351	0.048
	(0.256)	(0.257)	(0.261)
Female Leader	0.018*	0.015	0.010
	(0.008)	(0.008)	(0.007)
Committee Portfolio Value (Logged) - Scaled	0.043**	0.045***	0.046***
	(0.013)	(0.014)	(0.014)
Legprof: Leg. Salary (Logged)	−0.003	−0.004	−0.003
	(0.006)	(0.006)	(0.008)
Legprof: Session Length (Logged)	−0.035	−0.044	−0.026
	(0.045)	(0.045)	(0.049)
Legprof: Staff per Legislator	−0.002	−0.007	−0.016
	(0.023)	(0.024)	(0.030)
Female x Scaled Female Proportion in Chamber	−0.329	−0.333	−0.351
	(0.335)	(0.335)	(0.334)
Female x Female Leader	−0.021	−0.021	−0.023
	(0.021)	(0.021)	(0.021)
Female x Legprof: Logged Leg. Salary	0.038*	0.038*	0.039*
	(0.015)	(0.015)	(0.015)
Female x Legprof: Logged Session Length	0.031	0.034	0.022
	(0.065)	(0.065)	(0.065)
Female x Legprof: Staff per Legislator	0.009	0.008	0.009
	(0.008)	(0.008)	(0.008)
Female x Scaled Committee Portfolio Value	0.017	0.018	0.020
	(0.025)	(0.025)	(0.025)
Seniority (in Years)	0.048***	0.048***	0.048***
	(0.005)	(0.005)	(0.005)
Majority Party Member	0.810***	0.811***	0.811***
	(0.037)	(0.036)	(0.036)
Ideological Distance from Party Median	−0.082***	−0.082***	−0.080***
	(0.023)	(0.023)	(0.023)
N	57630	57630	57630
District Fixed Effects	yes	yes	yes
Year Fixed Effects	no	yes	no
State x Year trend	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. See footnote 25 in the main text for more sample restrictions.

Appendix Table B6: Sex-Based Differences in Logged State Legislative Effectiveness Scores (Assessing party heterogeneity), 2007-2018

	1	2	3
Female	−0.029	−0.028	−0.018
	(0.130)	(0.130)	(0.130)
Female Proportion in Chamber (Scaled to Mean 0)	0.416	0.418	0.114
	(0.256)	(0.257)	(0.263)
Female Leader	0.018*	0.015*	0.011
	(0.007)	(0.007)	(0.007)
Committee Portfolio Value (Logged) - Scaled	0.038**	0.040**	0.041**
	(0.013)	(0.013)	(0.014)
Female x Scaled Female Proportion in Chamber	−0.406	−0.410	−0.449
	(0.352)	(0.351)	(0.352)
Female x Female Leader	−0.021	−0.022	−0.024
	(0.020)	(0.020)	(0.021)
Female x Hybrid Legislature	0.070	0.070	0.070
	(0.081)	(0.081)	(0.081)
Female x Professional Legislature	0.181*	0.182*	0.178*
	(0.092)	(0.092)	(0.082)
Female x Scaled Committee Portfolio Value	0.028	0.029	0.031
	(0.026)	(0.026)	(0.026)
Seniority (in Years)	0.047***	0.047***	0.048***
	(0.005)	(0.005)	(0.005)
Majority Party Member	0.806***	0.807***	0.806***
	(0.037)	(0.036)	(0.036)
Member is a Democrat	−0.102*	−0.103*	−0.106*
	(0.045)	(0.045)	(0.046)
Female x Member is a Democrat	0.071	0.072	0.080
	(0.068)	(0.068)	(0.068)
Ideological Distance from Party Median	−0.083***	−0.083***	−0.081***
	(0.023)	(0.023)	(0.023)
N	58103	58103	58103
District Fixed Effects	yes	yes	yes
Year Fixed Effects	no	yes	no
State x Year trend	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. Legislative professionalism component terms excluded because they are collinear with district fixed effects. See footnote 25 in the main text for more sample restrictions.

Appendix Table B7: Fully Interacted Model of Sex-Based Differences in Logged State Legislative Effectiveness Scores, 2007-2018

	1	2	3
Female	−0.067	−0.007	0.005
	(0.126)	(0.126)	(0.126)
Female x Hybrid Legislature	0.107	0.076	0.077
	(0.081)	(0.081)	(0.081)
Female x Professional Legislature	0.199*	0.193*	0.190*
	(0.092)	(0.092)	(0.092)
N	58103	58103	58103
Control Variables Interacted with Leg. Prof.	yes	yes	yes
District Fixed Effects	yes	yes	yes
Year Fixed Effects	no	yes	no
State x Year trend	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. Legislative professionalism component terms excluded because they are collinear with district fixed effects. See footnote 25 in the main text for more sample restrictions.

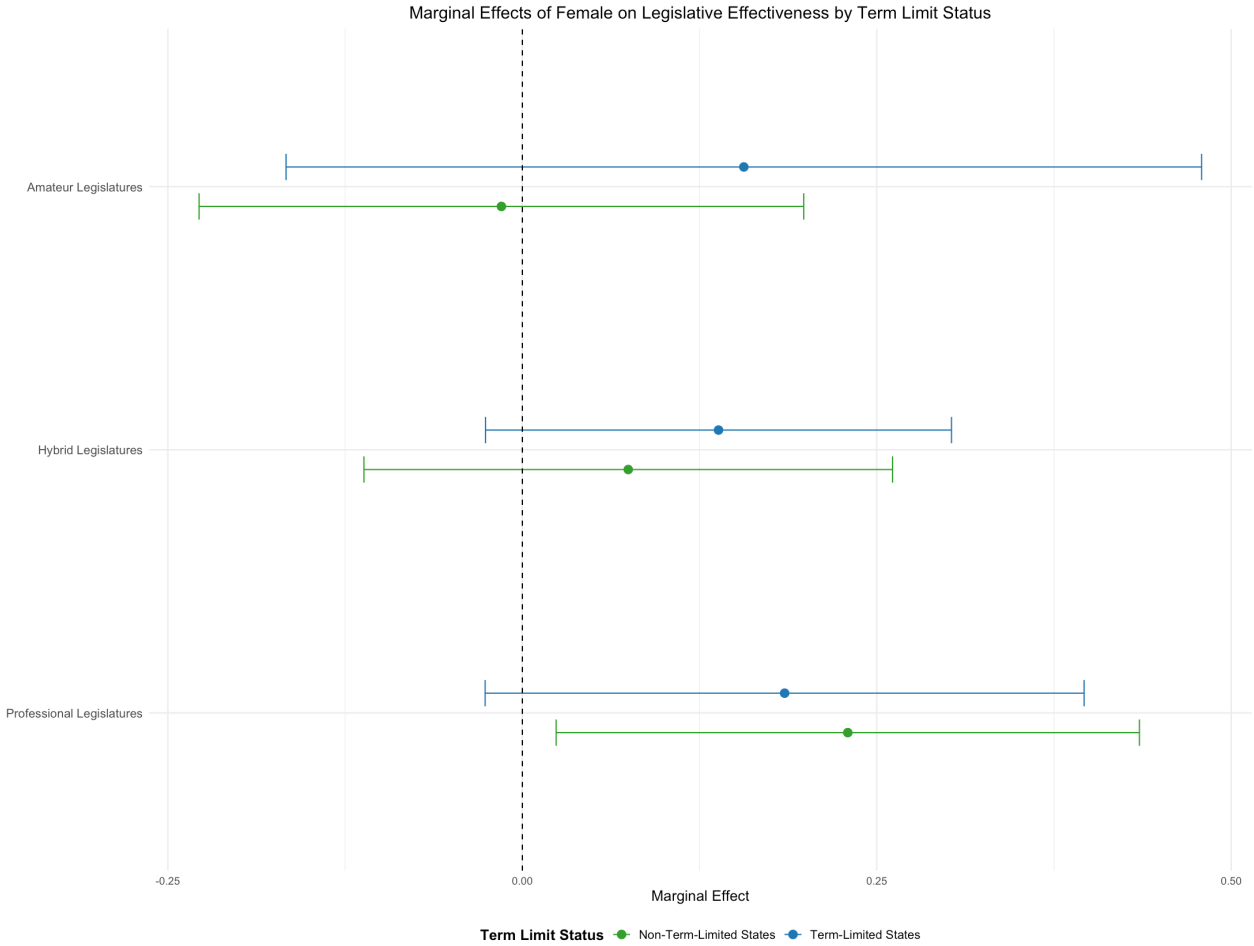
Appendix Table B8: Sex-Based Differences in Logged State Legislative Effectiveness Scores (Legislative term unit of analysis), 2007-2018

	1	2	3	4	5	6
Female	−0.091*	−0.091*	−0.097**	−0.035	−0.035	−0.012
	(0.037)	(0.037)	(0.037)	(0.134)	(0.134)	(0.135)
Female Proportion in Chamber (Scaled to Mean 0)				0.351	0.351	−0.164
				(0.304)	(0.304)	(0.281)
Female Leader				0.021	0.021	0.008
				(0.012)	(0.012)	(0.017)
Committee Portfolio Value (Logged) - Scaled				0.036*	0.036*	0.046**
				(0.016)	(0.016)	(0.017)
Female x Scaled Female Proportion in Chamber				−0.503	−0.503	−0.587
				(0.420)	(0.420)	(0.425)
Female x Female Leader				0.003	0.003	−0.003
				(0.028)	(0.028)	(0.028)
Female x Hybrid Legislature				0.146	0.146	0.151
				(0.093)	(0.093)	(0.093)
Female x Professional Legislature				0.260**	0.260**	0.260**
				(0.100)	(0.100)	(0.100)
Female x Scaled Committee Portfolio Value				0.041	0.041	0.044
				(0.031)	(0.031)	(0.031)
Seniority (in Years)				0.044***	0.044***	0.044***
				(0.005)	(0.005)	(0.006)
Majority Party Member				0.809***	0.809***	0.821***
				(0.042)	(0.042)	(0.042)
Ideological Distance from Party Median				−0.099***	−0.099***	−0.094***
				(0.026)	(0.026)	(0.027)
N	33221	33221	33221	27341	27341	27341
District Fixed Effects	yes	yes	yes	yes	yes	yes
Term Fixed Effects	no	yes	no	no	yes	no
State x Term trend	no	no	yes	no	no	yes

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; Observations from CT, MA, NE, and KY are omitted for reasons described in the text. Legislative professionalism component terms excluded because they are collinear with district fixed effects. See footnote 25 in the main text for more sample restrictions.

Observations from "on-cycle" electoral states are ignored in 2007 (halfway through the 2006-2007 legislative term).

Appendix Figure B1: Marginal Effects of Female on Legislative Effectiveness Scores, by Levels of Legislative Professionalism - Split by Term Limits



Note: Marginal effects calculated from District Fixed Effects model reported in column 4 of Table 1 further interacted with whether a state has legislative term limits in the study period. The Amateur legislatures effect is $\hat{\beta}_{Female}$, standard error is $\sqrt{var(\hat{\beta}_{Female})}$. For other legislatures, the effect is $\hat{\beta}_{Female} + \hat{\beta}_{Female \times Leg.Type}$, with a standard error of $\sqrt{var(\hat{\beta}_{Female}) + var(\hat{\beta}_{Female \times Leg.Type}) + 2 \times cov(\hat{\beta}_{Female}, \hat{\beta}_{Female \times Leg.Type})}$

3 Appendix C: Measuring Legislative Committee Values

In the text of the paper, we describe our goal in measuring committee "portfolio values" for individual state legislators as an indicator of the institutional resources they have for producing substantive representation/SLES scores (Bucchianeri, Volden and Wiseman 2024). This appendix provides details on the data collection and measurement of such portfolio values.

3.0.1 Committee Membership Data

Our first step in creating the portfolio scores was to compile committee membership data for all state legislators over the period between 2007-2018. We found these data in two separate sources covering different periods of time. For 2007-2014, we collected annual digital editions of State Leadership Directories' *State Yellow Books*. And, for 2014-2018, we used online entries from Ballotpedia (`www.ballotpedia.org`). These sources each contain information on all state officials, leadership information, and committee assignments for each year. The formats for the two sources are roughly similar, with rosters of committees listed as names of legislators.

As an example, the first page of the 2007 *State Yellow Book* section for the Alabama Senate gives us these rosters for the Conservation and Forestry and Banking and Insurance committees.[1]

```
-----
Senate Standing Committees Agriculture, Conservation and Forestry
Majority Members Minority Members
KimBeneeld (D-13) Chairperson CharlesBishop (R-5)
RogerH.Bedford,Jr. (D-6) Vice Chairperson
TomButler (D-2) HenryE. ‘‘Hank’’Erwin,Jr. (R-14)
W. H. ‘‘Pat’’Lindsey(D-22) RustyGlover (R-34)
T.D. ‘‘Ted’’Little(D-27) Harri Anne Smith (R-29) ZebLittle (D-4) J.T. ‘‘Jabo’’Waggoner (R-16)
Hinton Mitchem (D-9)
```

[1]We obtained digital .pdf copies of each *State Yellow Book* and then used an Optical Character Recognition routine to produce plain text files that we split by state and chamber.

```
MyronC.Penn (D-28) BobbySingleton (D-24)


Banking and Insurance
Majority Members Minority Members
BobbyE.Denton (D-1) ScottBeason (R-17) Chairperson CharlesBishop (R-5) BobbySingleton (D-24)
BenBrooks (R-35)
Vice Chairperson
Harri Anne Smith (R-29) Lowell RayBarron (D-8) RogerH.Bedford,Jr. (D-6) KimBeneeld (D-13)
ParkerGrifth (D-7) ZebLittle (D-4) JimPreuitt (D-11)
-----
```

We then took this roster data and used a custom Python program to parse this information into a committee-level membership spreadsheet of the form:

```
-----
"comm","mems"
"Agriculture, Conservation and Forestry", "KimBeneeld | CharlesBishop | RogerH.Bedford,Jr. |
TomButler | HenryE. ‘‘Hank’’Erwin,Jr. | W. H. ‘‘Pat’’Lindsey | RustyGlover | T.D. ‘‘Ted’’Little
Harri Anne Smith | ZebLittle | J.T. ‘‘Jabo’’Waggoner | Hinton Mitchem | MyronC.Penn |
BobbySingleton"\
"Banking and Insurance", "BobbyE.Denton | ScottBeason | CharlesBishop | BobbySingleton |
BenBrooks | Harri Anne Smith | Lowell RayBarron | RogerH.Bedford,Jr. | KimBeneeld |
ParkerGrifth | ZebLittle | JimPreuitt"\
-----
```

We did this for each state-chamber-year from 2007-2018, though as we note in the main text, we 1) omit Connecticut and Massachusetts from each analysis since they only have joint committees across chambers, and 2) omit Kentucky because their committees were too temporary to calculate reliable committee values. Once we have these standardized spreadsheets, we reshaped them in a variety of ways to construct aggregated committee-level (“comm”,“mems”) and member-level (“mem”,“comms”) data.

We randomly sampled from the data collected to hand-code committee assignments and ensure the code properly captured committee assignments within the states. The process of writing the Python code involved significant trial-and-error, but after sampling and hand-checking, we are confident our empirical data reflects what is printed in the state yellow books.

3.0.2 Committee Transfer Data

Using the over-time nature of the committee membership data, we constructed information on transfers onto and off of each standing committee within state-chambers. We identified legislators by first and last name, and tracked committee movement within a state-chamber across years. We chose year-to-year changes (as opposed to session-to-session) as the appropriate time frame because though most committee transfers occur after an election, in many state legislatures there is sufficient turnover from year-to-year that substantial variation would be missed by only examining changes between legislative sessions. These changes are due to member resignations, deaths, election to higher office, etc.

3.0.3 Measuring Committee Values

The original formulation of a committee-level value was measured by calculating a "net transfer score," simply the number of transfers onto the committee divided by the total number of transfers onto and off of the committee. The basic intuition is that those committees which members tend to move onto over time are more valuable than those committees which see members exit over time (Bullock III and Sprague 1969; Bullock III 1973). Groseclose and Stewart III (1998) and Stewart III and Groseclose (1999) implement a more sophisticated measure of committee values for the U.S. House and Senate, and their scores are now the most commonly used.[2] Here, we replicate the Groseclose and Stewart method using state legislative committees to find committee values, though we make some modifications to account for differences between state legislative committee service and Congress. The

[2]To cite only a few examples, their committee scores have been used to examine the effects of party loyalty and party power (Clark 2015; Grimmer and Powell 2013; Jenkins and Monroe 2012; Monroe, Roberts and Rohde 2009; Yoshinaka 2005), representation style (Leighton and Lopez 2002), and the structure of the Senate committee system (Canon and Stewart III 2002).

method assumes that if a member transfers from committee j to committee k, she has a preference for committee k as compared to committee j. Additionally, transfers from more valuable committees are worth more to the value of the transferring committee than transfers from a lower value committee. That is, committees are evaluated with respect to the values of the other committees so that pairs of committees represent a "match-up" between the two, and more value is received for a committee when it "defeats" a higher value committee. Committee values are estimated with a probit model where each transfer onto a committee is coded as a one, each transfer off as -1, and zero is recorded if the committee was not involved in the transfer (see Groseclose and Stewart III (1998) and Stewart III and Groseclose (1999) for more details).

In Congress, standing committees are relatively permanent, and committee values can be calculated for each committee over the entire study period (for Groseclose and Stewart III (1998), 1947-1991). This is decidedly not the case at the state level. Many state standing committees are relatively temporary, lasting for a only a few years as new majorities eliminate committees, restructure their jurisdictions, and create entirely new committees (Makse 2014). Because committees are "matched-up" with other committees, only complete sets of committees can be included for any given time period during which committee values are to be calculated. In other words, committees cannot be missing (by entering and/or exiting the dataset) for a given time period. As a result, it is necessary to make decisions about what constitutes a valid study time period. If for example, we created a study time period spanning the entirety of our data (2007-2018), we could only include those committees which existed during that entire period, and committees which did not exist for even a single year during that period would be excluded. Clearly, this standard seems too strict as relatively few committees exist across the entire sample, and it would miss relatively important committees.

An alternative to pooling years would be to construct committee transfer values for each one year period (e.g., transfers that occur from 2013 to 2014), then compute a weighted average for the committee's value across all years it exists in the legislature, with longer-lasting committees receiving a greater relative weight. The problem with this approach is that first, committees for which no transfers occur between two years would not receive a value because no pairwise (between committee) comparisons exist. The result would be a substantial number of missing observations. Second, the committee value estimates would be imprecise with high uncertainty because a transfer of even one

legislator between committees in one year would produce a very high committee value for that year. That is, the committee value score would be sensitive to a low number of transfers.

As a compromise between these approaches, we pool transfers across four-year blocks under the assumption that committees which exist for less than four years are too transient to be deemed a standing committee. Four years ensures that at least three years of transfers are observed for the committee,[3] and includes two terms of a two-year legislature, or one term of a four-year legislature.

For each four-year period, we construct a committee value score using the "Grosewart" technique. If a committee does not exist for any of the four years within the block, it does not receive a score for that four-year block. This strategy produces multiple committee values which overlap in the years for which the committee exists in the legislature. For example, if committee j exists from 2007 to 2012, it will have a separate committee value for the 2007 to 2010 period, the 2008 to 2011 period, and 2009 to 2012 period. To create an overall value for committee j, we take the average committee value across each four-year period block a committee exists to produce a single average committee value. Though this technique already assumes a committee must achieve a baseline level of importance by existing for four sequential years, as a robustness measure we also develop a weighted committee value that scales each committee's value by the number of four-year blocks in which the committee exists, where the average value is multiplied by $\frac{\text{number of four-year blocks present in data}}{\text{total number of four-year blocks}}$, using the intuition that committees that exist for longer periods of time are inherently more important to the operation of the legislature and its members than shorter-lived committees.[4]

The following table shows the output of the "Grosewart" algorithm applied to our state committee membership data with respect to the two Alabama Senate committees demonstrated above (though these values were calculated along with all committee values in that chamber):

---

[3]Starting with committee membership in the first year, transfers may occur after year one, after year two, and after year three.

[4]Caution should be used however, when interpreting average and weighted average committee value scores as they are averaged cardinal value scores; thus one could say that on *average* a committee with a value of four is twice as valuable as a committee with an average value of two, but if the committees do not have exactly overlapping years, the cardinal values are imprecise.

state.cham	comm.name	comm.value	comm.block.count	comm.weight	comm.weighted.value	comm.rank
ALs	AGRICULTURECONSERVATIONANDFORESTRY	-1.57	7	0.636	-0.996	17
ALs	BANKINGANDINSURANCE	0.788	8	0.727	0.573	16

Here, 'comm.value' is the total averaged committee value that we ultimately use to construct portfolio values. 'comm.block.count' measures how many complete 4 year blocks of committee existence we have. The 'weight' columns show the weights and weighted averages for alternatively considering committee longevity as a feature of committee value as described above. And, 'comm.rank' gives the relative rank of the committee's value within the state-chamber. These particular committees rank 16th and 17th in total value out of 25 committees in the Alabama Senate, and while the Banking committee has marginal positive value, perhaps legislators prefer no committee assignment to serving on Conservation and Forestry. These are average committee values, so individual legislators of course have heterogeneous preferences for serving on particular committees and there are likely those who prefer Conservation to Banking, or even to Economic Development (the most valuable general standing committee in the chamber). As noted in the main text, such idiosyncrasies in preferences should be correlated with a legislator's district type. Since district fixed effects are included in all empirical models, we are only estimating the effects of committee allocations (in Table 1) and the determinants of such allocations (in Table 2) within districts, so are essentially comparing legislators to their antecedents and postcedents in the same legislative position and with the same geographical constituencies.

In total, we calculated committee values for 1,888 distinct standing committees across 46 states (omitting CT, MA, NE, and KY as noted above) over the 2007-2018 period. Appendix Table C1 demonstrates descriptive statistics for "Grosewart" committee values by state.

3.0.4 Measuring Committee Portfolio Values

Such committee values are used extensively in the Congress literature, but because most members of Congress serve on only one or two committees, an overall portfolio value is not as meaningful. In states, most legislators serve on multiple committees, which makes aggregated portfolio values more meaningful. So, after calculating these values at the committee-level (using individual transfers on- and off-committees), we map these data back to the individual level by calculating simple additive "portfolio" values. Using the two Alabama Senate committees from our data examples, imagine that

these are the only two committees that exist in this chamber. Senator Bobby Singleton is on both committees and his portfolio value is thus simply 0.788 (the approximate value of Banking) plus -1.565 (the approximate negative value of Conservation), which is -0.777 in total. He thus would have a lower portfolio value than, say Senator Bobby Denton who, in this example, serves only on Banking, thus earning him a portfolio value of 0.788. This is a simple example, but it illustrates how the additive scores are mapped back to the legislator-level. We also created scores using the maximum value of a committee within a legislator's portfolio (instead of the average) and do not find substantive differences in the estimated models.

Since committee values are measured statically across our time period, individual over-time variation in portfolio values derives from legislators moving onto and off of committees from year to year. We calculated such portfolio values for every state legislator in our sample where we had information on committee assignments. In total, this amounts to 12,713 distinct legislators, and 70,834 legislator-years of data.

Appendix Table C2 shows descriptive statistics for portfolio values by state.

3.0.5 Accounting for Sex-Based Preferences in Committee Assignments

As described above, our measures of committee values (and thus also portfolio values) rely on the assumption that committee transfers reflect the average, revealed preferences of legislators. That is, when the legislator is presented with a pairwise comparison between Committee A and Committee B, do they choose one committee over another? Idiosyncratic preferences based on district characteristics do not threaten our strategy for measuring average preferences: by comparing portfolio values using a within-in district design, we effectively control for different baseline portfolio values across state legislative districts. If there are urban committees that are undervalued in some rural state, legislators from the urban districts in those states will all prefer assignment to undervalued urban committees, across members serving over time within a district. Thus, when compared within district, high portfolio values will mean that some legislator served on the baseline undervalued committee *and* other generally valuable committees. And, low portfolio values will mean that a legislator served perhaps on the baseline undervalued committee and other generally lesser valued committees. Within district, then, we can identify legislators with more or less committee resources (as in Table 2 of the

main text) and accurately identify the effects of variation in portfolio values in SLES scores (as in Table 1 of the main text).

A secondary threat to our measurement strategy comes from non-geographic group differences in committee preferences that correlate with committee values. Most relevant for our purposes in this paper, existing research argues that women and men legislators tend to systematically focus on different policy areas (there is much work on this, see Atkinson and Windett (2019), Carroll and Reingold (2008), and Höhmann (2020) for some recent reviews), which means that women and men might systematically *prefer* different types of committee assignments to pursue their distinct policy priorities. For example, Carroll and Taylor (1989) find that women state legislators seek and receive appointment to distinct types of committees (see also Provins (2017), Bolzendahl (2014), and Goodwin, Bates and McKay (2021)). However, in the comparative context, elite-level survey data from Latin America show that men and women have similar preferences in terms of the policy areas that they wish to work in, suggesting they should prefer similar high-value committees (Schwindt-Bayer 2010).

If it is the case that women are driven to their committees completely via the characteristics of their districts, then our within-district design alleviates concerns about the validity of the measurement; but, a recent comprehensive research note on this topic concludes that while district-level factors play *some* role in disparate preferences by legislator sex, legislator background and intra-institutional discrimination also lead women to "women's issue" committees (Payson, Fouirnaies and Hall 2023).[5] Intra-institutional discrimination against women would mean that women hold less valuable committee assignments overall, but it will not affect our measure of committee value unless women are forced to transfer to certain types of committees. This seems unlikely and there is no evidence for it in the literature.

However, if it is the case that women truly prefer, due to descriptive representation concerns, different types of committees to men, then we may not be measuring unconditional committee values

[5]Payson, Fouirnaies and Hall (2023) find that about half of women's bill sponsorship topics are driven by district characteristics, but that "women may be assigned to women's issue committees because of explicit stereotypes, or because of implicit biases, or because of self-censoring, or for any combination of these reasons and others."

with our "Grosewart" measures and portfolios. Instead, we may just be measuring group differences in average committee preferences.

In order to assess the extent to which our in-text empirical strategy is robust to any systematic group-based differences in assignment preference, we wish to identify when sex-based committee preferences are 1) most likely, and 2) least likely, and then to demonstrate that our in-text results are robust to these sub-samples.

To achieve this, we first estimate separate regressions for each state-committee combination. The dependent variable here is an indicator for whether each member is assigned to that committee in that year. Besides district fixed effects and year trends, the only other regressor measures the member's sex. There are a total of 1,888 such state-committee regressions. We then filter these to identify only those where the coefficient on *Female* was significantly positive or negative. Controlling for district fixed effects (and thus time invariant constituency characteristics), we find significant group differences based on sex in only 288 (around 15%) committees. We further filter these to identify those where women were significantly more likely than men to serve on traditional "women's issue" committees *or* where men were significantly more likely to serve on traditional "men's issue" committees (We used the categories of "women's issue" and "men's issue" from Payson, Fouirnaies and Hall (2023)). This returned 55 different committees where sex-based preference assignment was statistically evident. Appendix Table C3 shows the state-chambers where such selection was found. In theory, "Grosewart" values for these chambers could be skewed by sex-based preferences for "women's" or "men's" issues in these chambers. Yet, this possibility is dampened by the sheer number of committees that exist in the states.

Still, since the presence of systematic sex-based committee assignments could violate the assumptions of the "Grosewart" method, we now present an alternative version of our main hypothesis tests from Table 2 of the main text. Here, in Appendix Table C4, we limit our sample to only those chambers that *do not* show evidence of sex-based differential assignment (and thus, do not show evidence of statistically significant sex-based differentials in preferences). We see here that these sub-sample results are fully consistent with the main results of Table 2.

The fact that these results are consistent with the full sample results implies that sex-based committee preferences should not in fact, on average, lead to biased "Grosewart" scores of committee

value.

An alternative approach to assess whether women and men systematically value committees differently is to estimate Grosewart scores separately for men and women in state legislatures and then compare each individual committee's score across the two groups to determine whether there are statistically significant differences. For example, if women value Committee j much higher than men, it would indicate that Committee j is more likely to "defeat' other committees when women legislators make the comparison between the two.

Unfortunately, we are unable to do this within our sample of years due to the few number of women who serve in state legislatures and the vast number of committees. While we could produce separate estimates for men and women, there would be a substantial number of missing committee values for women (i.e., no woman is observed transferring onto or off of a state-committee within a four year period) and, as previously described, when there are limited transfer observations, the Grosewart value is sensitive and imprecisely estimated. In turn, this makes it difficult to compare differences between men and women.

Thus, we compare committee Grosewart scores for men and women in *congressional* committees. We can estimate these scores with greater precision because Congress has fewer committees overall than state legislatures, concentrating members into a smaller universe of possible transfers, and because Congress has had more women representatives than many state legislatures. There are substantial differences between legislator preferences within Congress and state legislatures, and evidence at the congressional level will not necessarily apply to all states (especially states with low levels of professionalism), but if there was strong evidence that women prefer different committees in Congress, it would be an indication that similar dynamics may occur within states as well.

The analysis uses the Stewart Committee data (Stewart and Woon 2016) which extends from the 104-114th Congresses. As in the main body of the text, we replicate the technique used by Groseclose and Stewart, but separately only for members of the House identified as men and women.[6]

As Appendix Table C5 shows, there are virtually no differences in the ways in which men and

[6]Sex coding is taken from the U.S. House: History, Art, and Archives website. See: `https://history.house.gov/Exhibitions-and-Publications/WIC/Historical-Data/Women-Representatives-and-Senators-by-Congress/`.

women evaluate congressional committees. For example, both women and men have the exact same preferences for the top three most valued committees: Ways and Means, Energy and Commerce, and Appropriations. Men prefer Armed Services to a greater extent than women (who rank Transportation and Infrastructure fourth), but both rank Financial Services as the fifth most valuable committee. There is virtually no evidence that some committees are seen as focusing on "women's issues." Women slightly prefer Education and Labor more than men, but perhaps surprisingly, women also value Veterans' Affairs to a greater extent than men. Still, these differences are slight. These results provide some evidence that women are not necessarily predisposed to favor certain committee types.

Appendix Table C1: Summary of "Grosewart" Committee Values by State

state	Mean	Median	SD	Min	Max
AK	2.220	1.687	1.907	0.176	6.438
AL	3.057	2.397	9.362	-20.658	35.524
AR	5.389	6.370	5.983	-5.760	17.586
AZ	1.847	1.519	1.554	0.194	5.476
CA	5.456	2.070	10.626	-10.792	60.779
CO	2.663	1.541	2.931	-0.816	11.216
DE	5.267	5.956	15.029	-34.491	44.163
FL	3.548	1.172	18.784	-59.456	72.011
GA	2.888	2.722	3.877	-3.676	18.311
HI	2.026	7.005	20.471	-65.028	31.324
IA	1.569	1.141	1.405	-0.498	4.982
ID	3.420	3.401	2.223	0.276	8.667
IL	3.136	1.220	9.633	-17.351	61.128
IN	2.877	1.878	14.479	-69.904	42.658
KS	1.759	1.019	4.183	-7.808	25.597
LA	5.959	4.501	7.559	-6.556	29.219
MD	4.970	4.140	3.692	1.640	15.178
ME	7.314	6.402	3.784	3.427	16.759
MI	8.642	3.570	17.943	-48.843	65.411
MN	2.235	1.913	4.292	-9.725	11.086
MO	3.129	1.323	6.801	-12.154	32.098
MS	1.907	2.427	9.418	-35.592	35.963
MT	4.333	2.958	6.592	-7.462	19.532
NC	18.677	2.461	66.070	-111.607	362.815
ND	4.506	2.042	10.404	-12.405	47.741
NH	2.709	1.249	4.347	-5.827	16.286
NJ	3.442	2.566	2.759	-0.102	10.150
NM	10.038	4.279	16.398	-6.782	67.166
NV	6.549	4.403	10.443	-11.207	38.478
NY	3.942	3.266	10.523	-23.114	29.433
OH	1.161	0.668	1.978	-0.591	10.643
OK	1.266	1.024	3.065	-7.394	14.144
OR	1.563	1.629	2.325	-2.187	6.925
PA	2.369	0.682	3.942	-3.037	15.575
RI	2.081	0.868	2.377	-1.138	8.642
SC	5.317	1.613	15.001	-16.296	55.366
SD	7.399	5.908	7.303	-4.213	25.456
TN	1.852	0.932	2.372	-1.373	8.627
TX	3.089	1.677	4.565	-12.926	17.130
UT	5.207	4.473	4.426	-5.058	16.956
VA	2.886	1.460	3.201	-1.140	9.498
VT	4.684	3.483	5.102	-2.454	18.052
WA	2.052	1.110	3.260	-2.903	15.572
WI	2.036	1.011	4.584	-8.009	15.486
WV	5.438	1.864	13.659	-27.971	59.015
WY	3.230	2.195	3.711	-2.518	13.786

Appendix Table C2: Summary of Committee Portfolio Values by State

state	Mean	Median	SD	Min	Max
AK	5.216	3.978	4.774	0.285	34.737
AL	15.556	11.279	14.319	0.089	89.008
AR	14.232	13.094	8.524	0.730	79.544
AZ	4.922	4.584	3.687	0.194	23.250
CA	27.183	14.671	29.864	0.243	181.682
CO	4.755	3.653	3.490	0.349	19.372
DE	37.208	34.193	23.584	0.124	108.266
FL	9.535	1.661	17.668	0.398	104.733
GA	12.913	9.953	10.992	0.034	58.247
HI	11.722	7.803	14.499	0.726	111.569
IA	6.765	6.331	3.752	0.253	27.574
ID	10.626	9.808	5.881	0.600	47.821
IL	12.546	7.235	17.373	0.013	132.027
IN	16.201	5.984	25.117	0.150	182.246
KS	6.451	3.482	8.346	0.004	56.111
LA	12.836	8.353	14.183	0.083	120.750
MD	6.371	3.957	6.892	1.640	48.019
ME	7.942	7.015	4.088	3.427	25.783
MI	19.979	8.735	26.981	0.069	151.499
MN	7.677	5.530	7.189	0.034	46.935
MO	9.999	5.110	13.584	0.110	96.360
MS	23.954	20.829	15.153	0.280	89.664
MT	13.572	11.736	8.294	1.000	68.444
NC	101.775	52.652	132.268	0.067	733.446
ND	12.562	9.357	12.430	0.077	94.852
NH	2.797	1.258	4.518	0.088	48.986
NJ	7.955	6.514	6.182	0.114	60.525
NM	20.484	16.055	21.460	0.488	139.292
NV	27.697	23.666	15.289	2.811	85.228
NY	27.697	25.846	21.165	0.216	113.488
OH	3.086	2.055	2.986	0.150	18.945
OK	6.378	2.927	7.312	0.079	35.489
OR	3.908	3.484	2.535	0.218	11.497
PA	6.631	2.218	11.156	0.016	66.458
RI	4.480	3.929	3.372	0.451	21.732
SC	19.588	2.744	32.089	1.000	140.982
SD	23.033	23.015	13.338	1.000	128.490
TN	4.629	2.788	4.771	0.163	38.413
TX	8.353	3.908	10.837	0.120	84.456
UT	13.666	11.429	7.702	1.658	46.845
VA	13.460	11.087	10.215	0.092	58.304
VT	6.225	4.757	7.517	0.156	95.038
WA	4.272	2.564	4.720	0.018	33.354
WI	6.338	5.136	5.912	0.011	48.156
WV	17.908	5.352	29.968	0.050	161.374
WY	5.694	3.731	5.459	0.560	62.097

Appendix Table C3: State-Chambers with Significant Evidence of Sex-Based Assignment

state	chamber
Colorado	house
Colorado	senate
Georgia	senate
Hawaii	senate
Idaho	house
Idaho	senate
Illinois	senate
Indiana	senate
Minnesota	house
Minnesota	senate
Nevada	senate
New Hampshire	house
New York	senate
North Carolina	house
Ohio	senate
Oregon	senate
Rhode Island	senate
South Carolina	senate
Tennessee	senate
Washington	house
West Virginia	house
Wisconsin	senate

Appendix Table C4: Sex-Based Differences in Logged State Legislative Effectiveness Scores (Chambers with No Significant Evidence of Sex-Based Assignment to Committees)

	1	2	3
Female	−0.00053	−0.00190	−0.00119
	(0.06025)	(0.05990)	(0.06001)
Female Proportion in Chamber (Scaled to Mean 0)	−0.12907	−0.06540	−0.15244
	(0.16102)	(0.16051)	(0.17232)
Female Leader	−0.01283*	−0.01080*	−0.00090
	(0.00521)	(0.00523)	(0.00511)
Female x Scaled Female Proportion in Chamber	−0.22802	−0.22083	−0.24554
	(0.18551)	(0.18475)	(0.18463)
Female x Female Leader	−0.00274	0.00061	−0.00022
	(0.01069)	(0.01060)	(0.01010)
Female x Hybrid Legislature	0.03835	0.03551	0.04190
	(0.03841)	(0.03820)	(0.03796)
Female x Professional Legislature	−0.00425	−0.00500	0.00572
	(0.05318)	(0.05294)	(0.05291)
Seniority (in Years)	0.02525***	0.02532***	0.02525***
	(0.00290)	(0.00290)	(0.00285)
Majority Party Member	0.11388***	0.11586***	0.11895***
	(0.02385)	(0.02381)	(0.02347)
Ideological Distance from Party Median	0.00051	0.00339	0.00473
	(0.01617)	(0.01616)	(0.01598)
N	52087	52087	52087
District Fixed Effects	yes	yes	yes
Year Fixed Effects	no	yes	no
State x Year trend	no	no	yes

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; Legislative professionalism component terms excluded because they are collinear with district fixed effects.

Appendix Table C5: Congressional Committee Grosewart Scores by Legislator Sex

Stewart Comm. Id.	Committee Name	Overall Score	Women	Men
196	Ways and Means	2.77 (1)	2.87 (1)	2.82 (1)
128	Energy and Commerce	2.48 (2)	2.17 (2)	2.56 (2)
104	Appropriations	2.36 (3)	1.80 (3)	2.47 (3)
106	Armed Services	1.30 (4)	1.02 (6)	1.36 (4)
113	Financial Services	1.11 (5)	1.07 (5)	1.11 (5)
173	Transportation and Infrastructure	0.98 (6)	1.57 (4)	0.94 (6)
176	Rules	0.72 (7)	0.58 (12)	0.78 (7)
156	Judiciary	0.63 (8)	0.60 (11)	0.63 (8)
102	Agriculture	0.60 (9)	1.02 (7)	0.56 (10)
134	Foreign Affairs	0.60 (10)	0.84 (8)	0.59 (9)
242	Intelligence (Select)	0.42 (11)	0.43 (14)	0.42 (11)
251	Homeland Security	0.40 (12)	0.46 (13)	0.39 (13)
124	Education and Labor	0.39 (13)	0.67 (10)	0.34 (14)
138	Government Reform and Oversight	0.32 (14)	0.05 (19)	0.39 (12)
164	Natural Resources	0.24 (15)	0.36 (15)	0.20 (15)
192	Veterans Affairs	0.19 (16)	0.83 (9)	0.12 (17)
182	Science, Space, and Technology	0.18 (17)	0.31 (16)	0.19 (16)
115	Budget	0.11 (18)	0.25 (17)	0.09 (18)
186	Ethics	0.02 (19)	0.20 (18)	-0.03 (19)
184	Small Business	-0.03 (20)	-0.17 (20)	-0.03 (20)
142	House Administration	-0.24 (21)	-0.79 (21)	-0.22 (21)