Legislative Effectiveness in the American States

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Abstract

We develop State Legislative Effectiveness Scores for state legislators across 97 legislative chambers over recent decades, based on the number of bills that they sponsor, how far those bills move through the lawmaking process, and their substantive importance. We assess the scores through criterion and construct validation, and reveal new insights about effective lawmaking across legislators. We then offer two illustrations of the immense opportunities that these scores provide for new scholarship on legislative behavior. First, we demonstrate greater majority-party influence over lawmaking in states featuring ideological polarization, majority-party cohesion, and where there is greater electoral competition for chamber control. Second, we show how institutional design choices – from legislative rules to the scope of professionalization – affect the distributions of policymaking power from state to state.

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Within American legislatures, individual lawmakers introduce and work to advance policy proposals, offering an important connection among representatives, their constituents, and the laws that govern them. Examinations of which legislators' proposals flourish and which languish may offer great insights into the lawmaking process. Is the minority party treated as a coproducer of public policy or as a nuisance to be brushed aside? Do compromises put forward by ideological moderates succeed or fail in increasingly polarized legislatures? Are legislatures organized to place a high value on policy expertise and specialization in committees as they formulate new laws? These and many other important questions of public policy, legislative behavior, and representative democracy can be addressed with a focus on legislators and the fates of their proposals.

As such, scholars have long sought to study the lawmaking effectiveness of individual legislators across the American states. Unfortunately, data availability and technological limitations have often restricted their ability to offer comprehensive, cross-sectional, time-series information about state legislators. These earlier efforts tended to rely on subjective surveys in a single state; on a single-period, cross-state snapshot; or on relatively coarse metrics, such as how many of a sponsor's bills become law. Given increasingly accessible information on legislative proposals across the states, along with technological advances in data gathering and processing, we are able to overcome many of these limitations. As a result, we generate State Legislative Effectiveness Scores (SLES) for legislators in 97 state legislative chambers over time, building on innovative approaches that have been utilized in recent studies of the U.S. Congress.

Specifically, for each bill proposed in each state legislature across recent decades, we identified the bill sponsor and calculated the size of her overall legislative portfolio. We then identified the extent to which bills in a legislator's portfolio advanced through each major stage

of the lawmaking process. To generate the SLES, we gave greater weight to later (and thus rarer) stages of lawmaking, while also downgrading commemorative proposals and upgrading the most significant proposals. In total, this effort resulted in 80,344 scores for individual legislators over a total of 1,032 legislative sessions across 97 state legislative chambers, over a time span from 1987 to 2018, based on the coding and classification of about 1.8 million bills.

We subject the SLES to several validity checks, showing that they correlate highly with the subjective surveys that are conducted regularly for the North Carolina legislature, and demonstrating that they reveal both stability over time and well-known patterns in legislative success, such as greater lawmaking effectiveness among majority-party legislators, committee chairs, and more senior legislators. We then argue that these scores and their fifteen components are highly useful in examining significant questions surrounding legislative behavior.

To illustrate this point, we first show that there is sizable variance across the states and over time in the extent to which majority-party legislators are more effective than their minority-party counterparts in advancing their proposals. Consistent with the theory of conditional party government (*e.g.*, Aldrich and Battista 2002), we show a greater bias in favor of majority-party lawmaking when the two major political parties are more ideologically distant from one another and when the majority party is highly ideologically cohesive. Moreover, we show that the proposals of majority-party lawmakers are promoted while those of minority-party lawmakers are dismissed when the majority party holds only a slim margin of control in chamber seats. This latter finding is consistent with Rosenthal's (1998, 184) argument that partisanship becomes more salient and intense when party control of the chamber is tenuous.

In addition to explaining the correlates of majority party effectiveness, we also argue that the relative lawmaking influence across legislators is fundamentally linked to how state

legislative institutions are structured. In particular, we analyze numerous rules and procedures that vary across the legislatures, as well as the differing allocations of resources and other considerations, in order to demonstrate how these decisions impact the relative lawmaking influence of minority-party legislators, other rank-and-file legislators, and freshmen, relative to those who commonly wield more lawmaking power.

In so doing, we make the case that State Legislative Effectiveness Scores, coupled with the substantial variance in institutional design and legislative configurations across the American states, offer countless opportunities for new insights into legislative politics and the study of representative democracy. Work in this area holds the promise of uncovering the likely impact of potential institutional reforms, not only across the states, but also in the U.S. Congress and in legislative bodies around the world.

Constructing State Legislative Effectiveness Scores

The concept of legislative effectiveness has been parsimoniously articulated as "the proven ability to advance a member's agenda items through the legislative process and into law" (Volden and Wiseman 2014, p. 18). "Proven ability" means that effectiveness must be on display. Committee chairs and others endowed with institutional power only become effective when that power is used; otherwise, their potential for effectiveness is unrealized. "To advance a member's agenda items" means a focus on positive changes in laws. On its face, this definition of legislative effectiveness thus excludes activities such as oversight, voting on the floor in accordance with or opposition to district interests, communicating well with various audiences, or obstructing the proposals of others. That said, such concepts (measured properly in their own right) could be explored in terms of how they relate to legislative effectiveness. Finally, "through the legislative process" means that effectiveness is best captured not simply by the

number of laws produced, but also with a focus on the many different stages along the way that a bill travels from introduction until (possibly) becoming law.

Together, these considerations point to a particular measurement strategy. First, we focus on individual lawmakers – relative to one another – rather than on the productivity of a legislature as a whole. Second, we measure the proposals of such legislators that, if enacted, have the full force of law. Third, we track these legislative portfolios throughout the lawmaking process, as gaining traction in committee or passing one's home chamber establishes a degree of effectiveness, even for proposals that ultimately fall short of becoming law in a given legislative session. Fourth, we believe that proven ability is established more fully in bringing about major substantive policy change rather than in moving forward commemorative or relatively minor legislation. Fifth, to be most useful to those interested in understanding legislative behavior and policymaking, we include as many comparable legislatures as possible, over as long of a time series as possible.

We apply this measurement strategy to all U.S. state legislatures, gathering data on all available bill proposals, their importance, their sponsors, and their fates. To do so, we pulled data directly from each state government's online legislative archive. The benefit to this approach is that it allowed us access to an expansive time-series, with the data for the earliest states in our sample – Maine, New Hampshire, Pennsylvania, South Carolina, and Texas – beginning in the late 1980s, and near full-coverage across the states from 2003 onward.[1] With these data in hand, we first parse the information for each proposal to include – at a minimum –

[1] 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. See Table A1 in the Supplemental Appendix for a full list of states, time periods, and observations.

the name of the primary legislative sponsor, a title or summary, and the bill's complete legislative history.[2] Next, we construct a set of state-specific text dictionaries to map legislative history items to stages of the lawmaking process, and we code each bill according to how far it progressed in the lawmaking process. Finally, we use the LexisNexis and Newsbank databases to gather an expansive set of newspaper articles that cover legislation within each state, and we parse the text to identify mentions of legislation in each state and year for which we have legislative data. We use these newspaper mentions, in tandem with an additional set of state-specific dictionaries adapted from the terms used by Volden and Wiseman (2014), to code the substantive significance of each proposal.[3]

Ultimately, for each bill that was introduced by a state legislator (BILL), we use the legislative histories to identify whether it received any action in committee (AIC), any action beyond committee (ABC), whether it passed its respective home chamber (PASS), and whether it became law (LAW).[4] In addition, we use the bill titles and summaries in tandem with the newspaper mentions of legislation to code each bill as being Commemorative (C), Substantive (S), or Substantive and Significant (SS).[5] For additional coding details across the states, see

[2] One challenge to identifying sponsors at the state level is that – unlike in Congress – many states permit multiple primary sponsors or committee-sponsored legislation (e.g., Hamm, Hedlund, and Martorano 2006). In these cases, we attribute each bill to the individual legislator most directly connected to each piece of legislation, using information about, for example, who formally introduced the bill, who requested it to be written, or who shepherded it through the legislative process. This decision (and our selection process) is discussed in detail in the Supplemental Appendix.

[3] In Table A2 of the Supplemental Appendix we provide a complete list of the newspapers that we use for each state. When possible, we used the newspaper located in the state capital; however, when not available, we instead used the largest daily newspaper by circulation within each state's borders. We then screened these papers to ensure they contained extensive mentions of individual bills within the state's legislature.

[4] Given our focus here on effective lawmaking, we only include legislative actions that have the possibility of carrying the full force of law. This means, for example, that resolutions in only one chamber are excluded. The criteria used for such determinations, based on bill numbering and other restrictions, are included in Table A3 in the Supplemental Appendix.

[5] Put most simply, bills naming or renaming sites or buildings and/or commemorating individuals or dates were downgraded as commemorative. Those mentioned in prominent news outlets were characterized as substantive and significant. All other bills were coded as substantive.

descriptions in the Supplemental Appendix. Counting how many bills a legislator sponsors at each of these three levels of substantive significance and that reach each of these five lawmaking stages results in fifteen indicators of effective lawmaking.

We then compute a State Legislative Effectiveness Score (SLES) for each state legislator (*i*) in each legislative term (*t*) within each legislative chamber based on a weighted average of these fifteen metrics:

$$SLES_{it} = \left[\begin{array}{l} \frac{\alpha BILL_{it}^{C} + \beta BILL_{it}^{S} + \gamma BILL_{it}^{SS}}{\alpha \sum_{j=1}^{N} BILL_{it}^{C} + \beta \sum_{j=1}^{N} BILL_{it}^{S} + \gamma \sum_{j=1}^{N} BILL_{it}^{SS}} \\ + \frac{\alpha AIC_{it}^{C} + \beta AIC_{it}^{S} + \gamma AIC_{it}^{SS}}{\alpha \sum_{j=1}^{N} AIC_{it}^{C} + \beta \sum_{j=1}^{N} AIC_{it}^{S} + \gamma \sum_{j=1}^{N} AIC_{it}^{SS}} \\ + \frac{\alpha ABC_{it}^{C} + \beta ABC_{it}^{S} + \gamma ABC_{it}^{SS}}{\alpha \sum_{j=1}^{N} ABC_{it}^{C} + \beta \sum_{j=1}^{N} ABC_{it}^{S} + \gamma \sum_{j=1}^{N} ABC_{it}^{SS}} \\ + \frac{\alpha PASS_{it}^{C} + \beta PASS_{it}^{S} + \gamma PASS_{it}^{SS}}{\alpha \sum_{j=1}^{N} PASS_{it}^{C} + \beta \sum_{j=1}^{N} PASS_{it}^{S} + \gamma \sum_{j=1}^{N} PASS_{it}^{SS}} \\ + \frac{\alpha LAW_{it}^{C} + \beta LAW_{it}^{S} + \gamma LAW_{it}^{SS}}{\alpha \sum_{j=1}^{N} LAW_{it}^{C} + \beta \sum_{j=1}^{N} LAW_{it}^{S} + \gamma \sum_{j=1}^{N} LAW_{it}^{SS}} \end{array} \right] \left[\frac{N}{5} \right] \quad (1)$$

The five large terms from top to bottom in this equation represent legislator *i*'s fraction of bills that were (1) introduced, (2) received action in committee, (3) received action beyond committee, (4) passed their respective chamber of introduction, and (5) became law, relative to all *N* legislators. Within each of these five terms, consistent with the weighting scheme of Volden and Wiseman (2014), commemorative bills are weighted by $\alpha = 1$, substantive bills are weighted by $\beta = 5$, and substantive and significant bills are weighted by $\gamma = 10$. This means that substantive bills are given five times as much weight in our generation of the SLES as are commemorative bills, and substantive and significant bills are given ten times as much weight (*i.e.*, double other substantive bills). The normalization (*N*/5) across all *N* legislators in the chamber ensures that the SLES takes an average value of one for each chamber in each

legislative term. State legislators with a higher SLES may be thought of as more effective at lawmaking than those with lower scores.[6]

Given the significant variance in rules, procedures, and norms across states and their legislative chambers (Squire and Hamm 2005), it is important to be clear regarding what state-level variation is incorporated in these scores and what is set aside. Put simply, these scores are designed to capture the relative share of all lawmaking activities within a two-year term, within each chamber that are attributable to each legislator in that chamber. Based on the weighted averaging above, this means that in states with more bills introduced and more laws produced (as in some of the more professional legislatures), each of those actions will be given a lower weight because they are more common. In states like Nebraska with a norm that every member gets a bill passed or Colorado where every bill gets a hearing, our coding approach will naturally reveal greater parity across lawmakers. Other state-specific decisions, such as dropping the "by request" bills that legislators in Massachusetts are required to sponsor, or resolving who was the main sponsor for plentiful "committee bills" in Connecticut, Iowa, and Idaho, required great care and consultation with key legislative officials and parliamentarians in each state. All major decisions in such cases are documented in detail in the Supplemental Appendix.

Given the normalization within each chamber-term, the SLES captures the share of lawmaking attributable to each legislator, with a value of zero given to anyone who does not introduce any legislation and a mean of one within each term for each chamber. This means that some sorts of comparisons across states and over time are appropriate, while others need to be treated with greater caution. Specifically, given significant institutional differences, legislative

[6] On the whole, this approach differs from prior work on state legislative effectiveness that relied instead on subjective surveys in a single state (e.g., Weissert 1991a, Haynie 2002) or on hit-rate based analyses in a limited number of states (e.g., Hamm, Harmel, and Thompson 1983).

agendas, and other considerations, direct comparisons between an individual legislator in Virginia from the late 1990s with a score of, say, 1.53 and a legislator in Tennessee in 2018 with a score of 2.04 would be inappropriate. The Tennessean legislator may or may not be more effective than the Virginian legislator were they facing the same circumstances, in the same legislature.

In contrast, comparisons of the relative impacts of characteristics of legislators – based on factors such as party status, gender, or seniority on their lawmaking effectiveness – in different settings would be much more appropriate than comparisons of individual legislators' scores to each other, directly, across chambers and over time. For example, a finding that majority-party lawmakers are 50% more effective than minority-party lawmakers in one state, while only 20% more effective in another, raises questions about the conditions under which minority-party members' proposals are dismissed at a greater rate in the former state. The normalization of scores within each legislative chamber and legislative term facilitates these sorts of comparisons. In so doing, these scores allow examinations of how specific institutional designs, legislative norms, and other conditions – from polarization (Shor and McCarty 2011) to professionalism (Squire 1992) to term limits (Kousser 2005) – matter for lawmaking.[7] For example, why do some legislative chambers treat all proposals and lawmakers approximately equally, and why do others systematically dismiss the ideas of minority-party legislators (e.g., Clark 2015, Jenkins 2016), of women (e.g., Saint-Germain 1989, Mahoney 2018), or of minorities (e.g., Bratton and Haynie 1999, Reingold et al. 2021)? Below, we illustrate the sorts of analyses that can be accomplished along these lines.

[7] Additional considerations, like the possibility of leadership throwing support (or even sponsorship opportunities) to electorally vulnerable party members, can be identified and systematically explored with these data.

Moving beyond prior state legislative effectiveness analyses based on surveys or hit-rates in a limited number of states, our approach in constructing the SLES follows the widely accepted standard currently used to assess legislative effectiveness in the U.S. House (Volden and Wiseman 2014) and U.S. Senate (Volden and Wiseman 2018).[8] Generating more than 80,000 scores for legislators across more than 1,000 chamber-sessions, we believe this approach represents both a qualitative and quantitative leap forward in state legislative effectiveness studies, while offering numerous opportunities to glean new insights about legislative behavior and representative democracy.

SLES Validity Explorations

As the discussion above hopefully illustrates, in constructing the State Legislative Effectiveness Scores, we adapted the approach commonly employed for the study of effective lawmaking in Congress to meet the challenges that arose in various state legislative chambers. That said, some assessment of the validity of the resulting metric is also warranted.

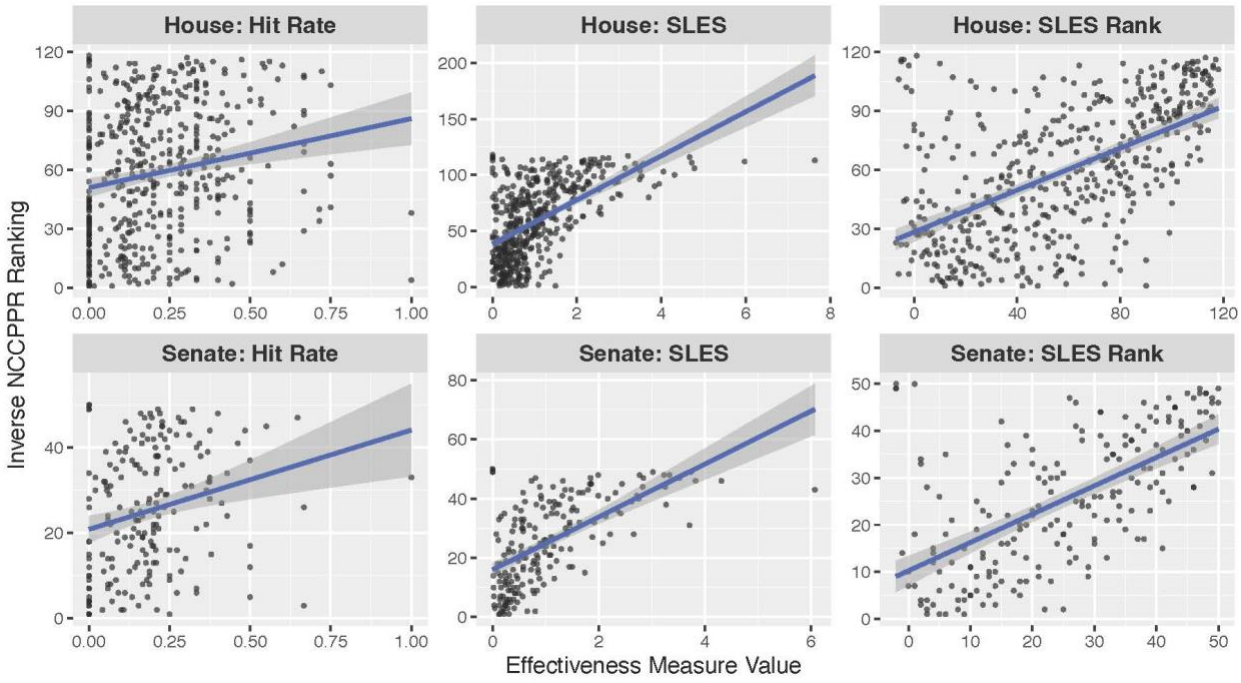
First, given the scale of this project, extensive computer code and text-as-data techniques were required. In each case, we compared the results of that code to a carefully selected subset of data checked by hand by a team of research assistants. Details of these validity assessments are given in the Supplemental Appendix, related to coding the commemorative vs. substantive bills, the identification of substantive and significant bills through newspaper coding, and the determination of which bills reached which stages of the lawmaking process. For the

[8] The Legislative Effectiveness Scores for Congress have been widely used in scholarship on Congress (e.g., Montgomery and Nyhan 2017; Battaglini, Leone Sciabolazza, and Patacchini 2020) as well as in the media, by those seeking legislative reforms, and by legislators themselves. To the extent that they have been criticized, such concerns are based on what is not included (e.g., oversight, obstruction, constituency service) or on not assigning credit for lawmaking activities behind the scenes. Casas, Denny, and Wilkerson (2020), for example, show how some legislators' proposals "hitchhike" on must-pass legislation. While using plagiarism-style software to detect bill language added across the lawmaking process may be feasible for assessing effectiveness in Congress, such an approach is currently infeasible at the state level.

penultimate version of the code, we used stratified random sampling to select 10% of bills (up to a maximum of 250 bills) from each chamber in each term. Of those 49,037 bills, research assistants found 46,693 (95.2%) of them to be accurately coded. Where errors were detected, they tended to be repeated within such chamber-terms in ways that allowed us to modify the code with one or two small adjustments, resulting in a greater than 99% alignment between hand-coding and the finalized automated code.

Second, we engage in a form of "criterion validation," by comparing the SLES to the subjective measure of legislator effectiveness that is commonly used in the state of North Carolina. Specifically, we focus on the biennial effectiveness rankings produced by the North Carolina Center for Public Policy Research (NCCPPR) between 2005 and 2012, as collected by Edwards (2018). It is important to note that the NCCPPR rankings and the SLES may tap into somewhat different concepts. For example, party leaders who act behind the scenes, or who structure the legislative agenda, may be seen as more powerful based on such considerations than what we are able to detect based on the pieces of legislation that they advance themselves. Nevertheless, as shown in Table A4 of the Supplemental Appendix, the SLES for North Carolina is highly correlated with these subjective rankings. Notably, across both chambers and all legislative terms, the SLES explains approximately half of the variation in the NCCPPR rankings by itself. It also outperforms multiple alternative "hit rate" metrics, as measured by the R-squared and root mean squared error, in specifications with and without supplementary covariates included. Figure 1 illustrates these correlations, across both the House and Senate, offering evidence of the validity of the SLES approach as an objective metric of the effectiveness concept measured independently by subject experts in North Carolina.

Figure 1: Criterion Validation in North Carolina

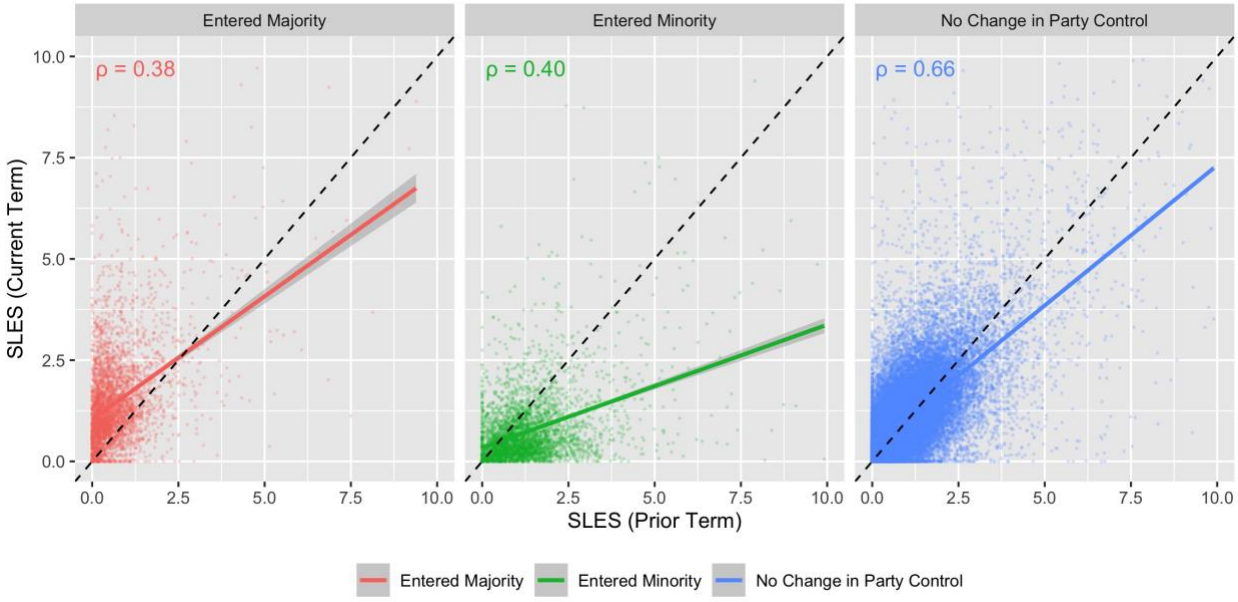


Note: The figure shows the relationship between the State Legislative Effectiveness Scores and the survey-based rankings from the North Carolina Center for Public Policy Research (NCCPPR). The top panel focuses on the North Carolina House, and the bottom panel on the North Carolina Senate. The right and middle panels show the SLES scores (and especially the ranking version) correlate highly with the NCCPPR rankings, even more so than do simple "hit rates" in the left panel. Model specifications and results for the linear fit lines can be found in the main analysis file under Figure 1 on the APSR Dataverse.

Next, we employ a form of "construct validity" in ascertaining whether the SLES captures a number of well-established patterns about the characteristics of the most effective lawmakers across the American states. In particular, to the extent that the SLES is detecting the lawmaking skill of individual state legislators, perhaps supplemented by their institutional positions, we should expect a significant degree of correlation among the same legislators from one legislative term to the next. Figure 2 illustrates this significant positive correlation over time, especially in the case in which the same party is in the majority in both time periods. That these correlations are also strong and positive upon changing party control indicates that the

SLES is not simply linked to one's legislative position but also to one's own innate or cultivated lawmaking ability.

Figure 2: Construct Validation over Time



Note: The figure shows the relationship between the SLES and its lagged value for those who served in the state legislature in the previous legislative term. The correlation coefficients for each comparison are included in the upper left of each panel. The high degree of positive correlation indicates that the scores are tapping into underlying regular patterns of effectiveness rather than random or idiosyncratic considerations. As expected, the correlations are particularly strong in cases where majority party control of the legislative chamber remained the same across consecutive sessions. Model specifications and results for the linear fit lines can be found in the main analysis file under Figure 2 on the APSR Dataverse.

To further explore construct validity, we note that prior work (e.g., Weissert 1991b, Padro i Miquel and Snyder 2006, Edwards 2018) and conventional wisdom both point to majority-party legislators, committee chairs, and more senior legislators being more effective in advancing their proposals than are minority-party, rank-and-file, or freshman members. To examine whether such patterns emerge within our metric, we pool together all 72,888 scores for which we have a robust set of covariates and conduct an ordinary least squares analysis, including independent variables that capture these key considerations and other likely

determinants of lawmaking effectiveness.[9] To further account for any cross-state or over-time differences, we include appropriate fixed effects, and we cluster the standard errors by legislator. We report the results of our analyses in Table 1, and offer all variable definitions, sources, and summary statistics at the individual and chamber levels in Appendix Tables A5 and A6.

Consistent with expectations, and as evidence of SLES construct validity, we find strong patterns of senior legislators, majority-party members, and committee chairs being especially effective, on average.[10] In particular, as seen in Model 1.1, each term of seniority is associated with about a three-percent boost in a member's SLES, compared to the variable's average value of one.[11] Compared to the mean SLES for minority-party legislators (0.636), the 0.370 coefficient on *Majority Party* indicates a 58-percent greater effectiveness score among majority-party members, all else equal. And committee chairs are significantly more effective still. As Figure 3 illustrates, these effects are also clear in the raw data upon which the regression analyses are conducted. A lawmaker's first three terms in office are important for gaining legislative knowledge key to effectiveness both among minority- and majority-party members; and further experience is valuable for committee chair success.

[9] We lose approximately 8,000 observations as a result of missingness in the independent variables. These missing values can primarily be attributed to three variables: distance from the ideological median, committee chair/leader, and vote share. In addition, given its nonpartisan structure, we also lose all 301 observations from the Nebraska Unicameral.

[10] Table A8 in the Supplemental Appendix shows these results to be robust to further normalization of the SLES metric across the states to a mean value of zero and standard deviation of one for each chamber and legislative term.

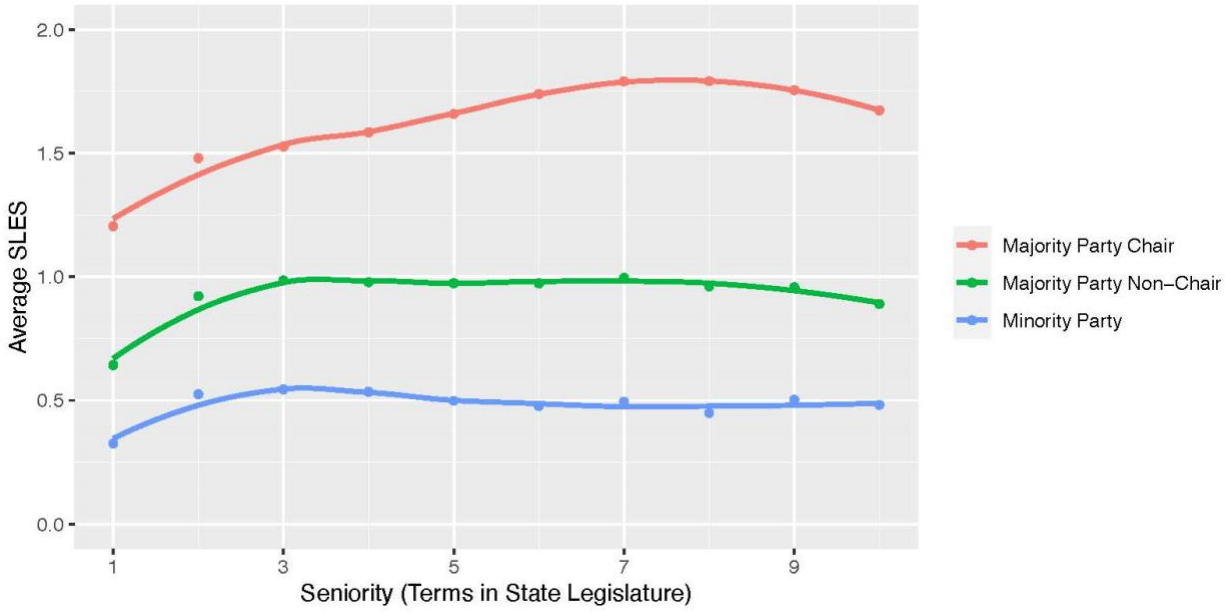
[11] Although we code seniority here as consecutive terms within the current chamber, coding seniority instead based on all prior terms cumulatively or combining service across chambers yields similar results (as shown in Appendix Table A7).

Table 1: Determinants of State Legislative Effectiveness Scores

	Full Sample	Lower Chambers	Upper Chambers
	(1.1)	(1.2)	(1.3)
Seniority	0.032**	0.039**	0.011**
	(0.006)	(0.008)	(0.004)
Committee Chair	0.507**	0.609**	0.307**
	(0.025)	(0.037)	(0.021)
Majority Party	0.370**	0.362**	0.387**
	(0.029)	(0.037)	(0.027)
Majority Leadership	0.073*	0.154**	0.009
	(0.034)	(0.052)	(0.039)
Minority Leadership	0.156**	0.211*	0.065*
	(0.046)	(0.085)	(0.029)
Speaker/President	0.308*	0.568*	0.081
	(0.118)	(0.220)	(0.073)
Power Committee	0.097**	0.119**	0.033+
	(0.020)	(0.026)	(0.017)
Distance from Median	-0.114**	-0.118**	-0.125**
	(0.025)	(0.032)	(0.021)
Female	-0.034*	-0.056**	0.038+
	(0.016)	(0.019)	(0.022)
African American	-0.101**	-0.098*	-0.120*
	(0.035)	(0.043)	(0.052)
Hispanic	-0.078**	-0.076*	-0.070+
	(0.028)	(0.034)	(0.043)
Vote Share	0.593*	0.596*	0.230
	(0.265)	(0.278)	(0.684)
Vote Share Squared	-0.376*	-0.366*	-0.169
	(0.172)	(0.183)	(0.439)
Constant	0.312**	0.231*	0.527+
	(0.121)	(0.130)	(0.273)
State-Chamber FE	Yes	No	No
State FE	No	Yes	Yes
Term FE	Yes	Yes	Yes
Observations	72,888	53,846	19,042
R^2	0.131	0.133	0.171

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* All models include fixed effects by term (biennium) and by state-chamber. Standard errors are clustered by legislator. Among other findings, the results show that more senior legislators, committee chairs, and majority-party members all receive higher State Legislative Effectiveness Scores on average, thus providing some construct validity for the SLES.

Figure 3: Majority Party, Chair, and Seniority SLES by Term

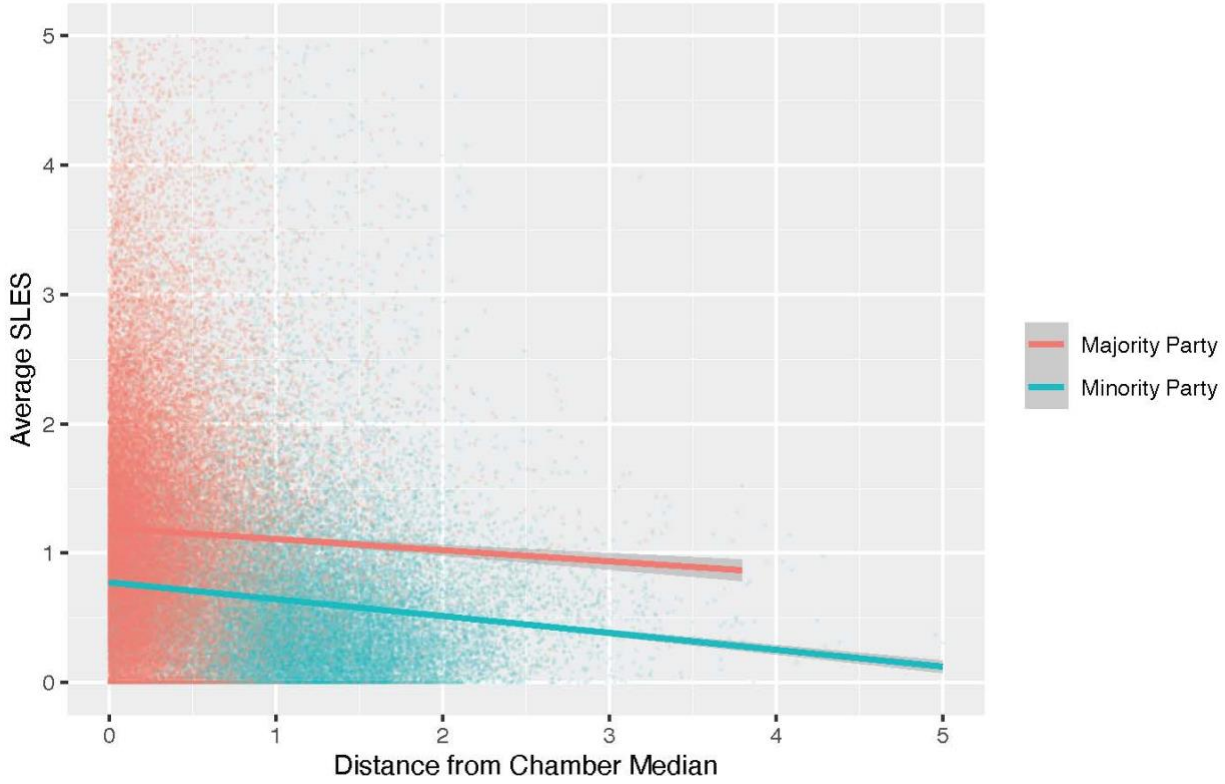


Note: As a further construct validation, the figure shows higher average SLES for majority-party members over minority-party members, and even higher scores for committee chairs. Moreover, the figure shows rising effectiveness over time, especially across lawmakers' first three terms and for committee chairs. Model specifications and results for the loess fit lines can be found in the main analysis file under Figure 3 on the APSR Dataverse.

Beyond these expected findings, the baseline analysis of the scores in Table 1 reveals some additional intriguing patterns. First, party leaders see a modest increase in legislative effectiveness, particularly in lower chambers, and this increase is relatively stable regardless of whether the party controls the chamber or not. Second, particular committee appointments seem to be related to effective lawmaking in the states. Specifically, the positive coefficient on *Power Committee* implies that those legislators who sit on budget or appropriations-related committees, and those who set the rules for their legislatures, are more effective on average than are others, especially in states' lower chambers. Third, ideological moderates – those closer to the chamber median, as captured by *Distance from Median* – are more effective lawmakers than are extremists, consistent with Median Voter Theorem models of lawmaking (e.g., Downs 1957;

Black 1958; Hitt, Wiseman, and Volden 2017). We illustrate this relationship in Figure 4. Fourth, the nonlinear relationship shown in the *Vote Share* and *Vote Share Squared* coefficients indicates that neither highly secure nor highly at-risk legislators perform as well as those from moderately safe districts.

Figure 4: Ideological Moderates Are More Effective



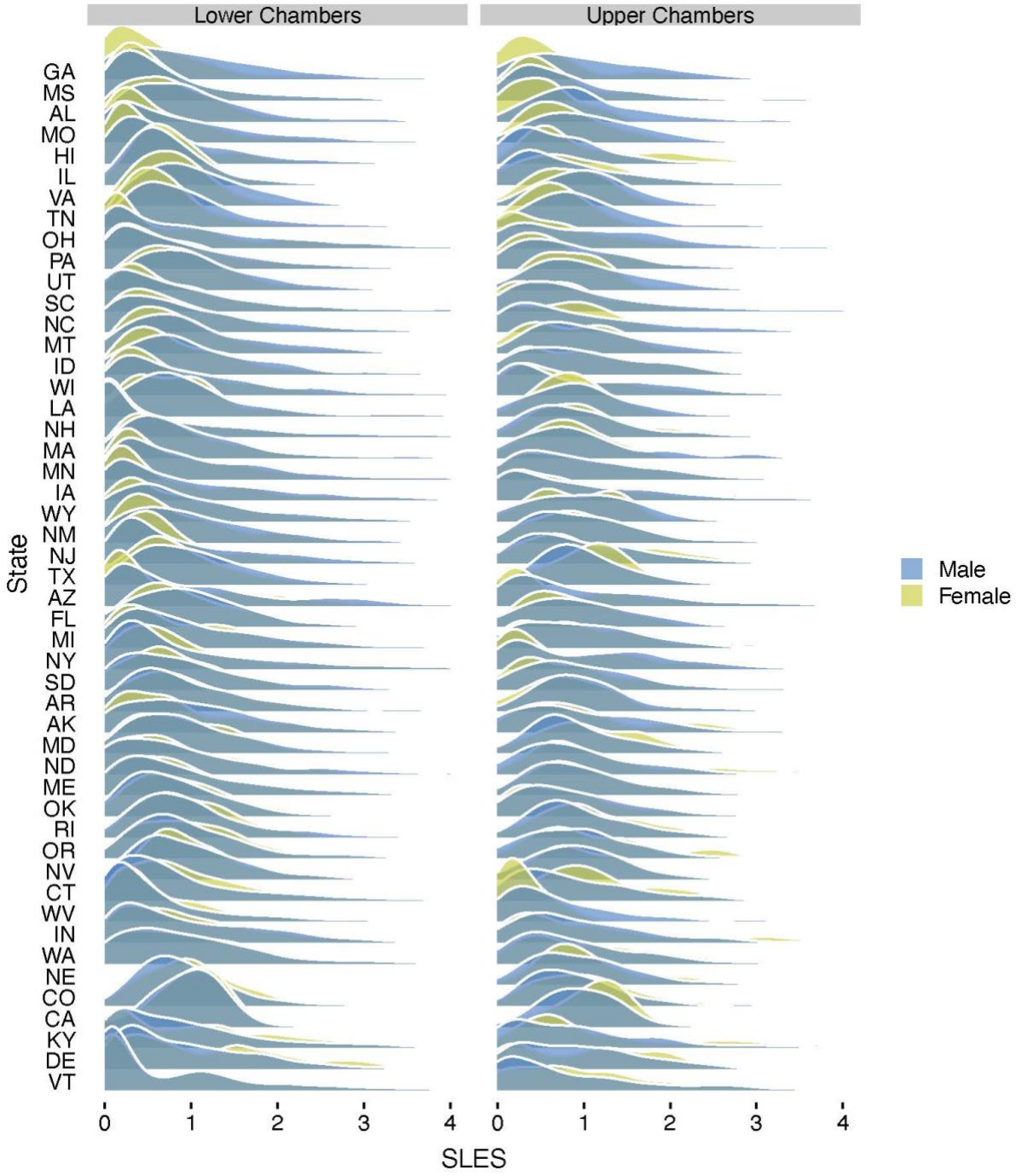
Note: The figure shows declining State Legislative Effectiveness Scores in both the majority and minority parties among those who deviate further from the legislative median, as based on ideological ideal points constructed by Shor and McCarty (2011). Model specifications and results for the linear fit lines can be found in the main analysis file under Figure 4 on the APSR Dataverse.

Table 1 also shows that women and underrepresented minorities tend to receive lower scores, all else equal. For such results (as well as for the findings for all control variables), we urge caution in drawing overly strong conclusions about their meaning without further investigation. Indeed, with respect to women and minority legislators at the state and

congressional levels, an extensive literature has begun to explore the conditions under which these lawmakers might be more or less effective on various measures of legislative effectiveness (e.g., Anzia and Berry 2011; Volden, Wiseman, and Wittmer 2013). For instance, there are well-documented biases against the advancement of issues that are raised disproportionately by women and underrepresented minorities (Bratton and Haynie 1999; Smooth 2011; Volden, Wiseman, and Wittmer 2018). Women, and particularly women of color, are often marginalized in many of their legislative activities (Hawkesworth 2003). Investigations into such intersectionality considerations have found numerous biases at the state legislative level (e.g., Orey et al. 2007; Reingold, Hayne, and Widner 2021; Brown, Clark, and Mahoney 2022).

Although such scholarship has made remarkable progress in uncovering various conditions under which biases occur and how they are overcome, many studies in this area tend to be limited to a single legislature (i.e., Congress), or to a small handful of states, or a single period in time. One of the benefits of the approach offered here is the opportunity to explore the considerations raised above (all of which vary significantly over time and across states) across the more than 1,000 chamber-terms that we score. Indeed, as Figure 5 shows, there is significant variation across legislative chambers in the relative State Legislative Effectiveness Scores of men and women. This variance provides significant opportunities for scholars to address when, where, and why lawmaking biases by gender (or race, or both) exist, and how they might be overcome.

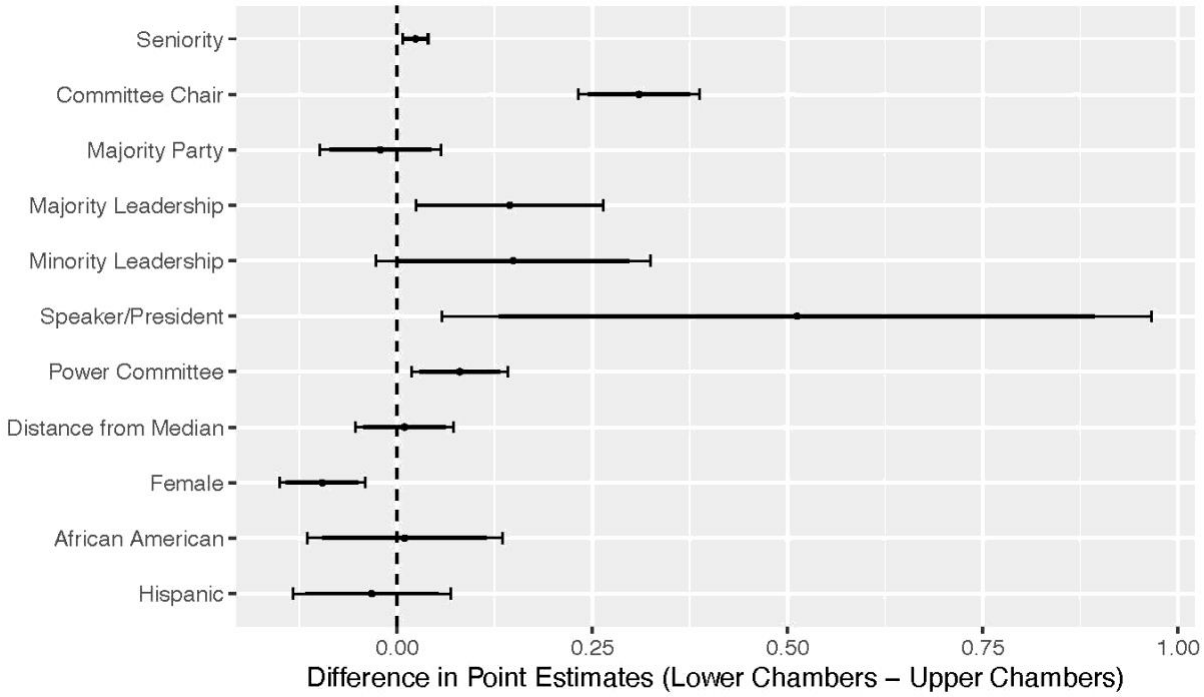
Figure 5: Gender Differences in Effectiveness Scores Across the States



Note: The figure shows the distributions of State Legislative Effectiveness Scores for men (blue) and women (yellow) across states. States near the top of the figure show a greater gender bias toward men in lawmaking, whereas women score higher on average in states near the bottom of the figure. Explorations of this variance may shed light on the causes of gender biases and on institutional reforms or conditions under which any such biases might be overcome. R code to reproduce the densities displayed here can be found in the main analysis file under Figure 5 on the APSR Dataverse.

Returning to the models in Table 1, given the differences that arise due to significant variance in chamber sizes (e.g., Squire and Hamm 2005, Mooney 2012), one might expect that larger legislative chambers require greater reliance on seniority norms and on institutional structures of parties and committees to overcome their otherwise unwieldy lawmaking environments. Consistent with such expectations, the advantages that come from seniority and from holding an institutionally powerful position, such as being in the leadership, being a committee chair, or being assigned to a powerful committee, yield larger differences in legislative effectiveness relative to rank-and-file members in (larger) lower chambers than upper chambers, as shown in the final columns of Table 1. Figure 6 depicts these relationships, showing the difference in the estimated coefficients for the chamber-specific models (lower minus upper) for each covariate. In contrast to the heightened benefits arising from such institutional positions in lower chambers, the effects of many individual characteristics such as race, ethnicity, and ideology do not vary significantly from House to Senate. However, women seem to excel more in smaller Senate chambers, all else equal.

Figure 6: Leaders, Chairs, and Senior Members Are Even More Effective in Lower Chambers



Note: This figure shows the difference in the coefficients from the two chamber-specific models in Table 1. Differences greater than 0 indicate the coefficient was larger in lower chambers, while those below 0 indicate it was larger in upper chambers. Confidence intervals are constructed from a regression model with all covariates interacted with a "lower chamber" indicator variable, with the thin and thick lines corresponding to 95% and 90% confidence intervals, respectively. Results show the importance of committee positions and party leadership in structuring lawmaking in larger (lower) chambers.

Opportunities for New Research Insights

The comparison to North Carolina's subjective rankings and the explorations reported in Table 1 and in the above figures help show that the SLES metric is tapping into the concept of legislative effectiveness as desired. Moreover, these analyses also offer a glimpse into how the scores can provide useful insights into lawmaking and representation across the American states. To mention just a couple emerging insights, the finding that ideological moderates are more effective raises the possibility that centrists have been able to overcome rising polarization across the states in recent years; and the mixed results for female legislators show some grounds to hope

that women lawmakers can achieve an equal footing to men, despite the substantial work that is left to be done to represent women in equal numbers in state legislatures.

More broadly, we believe the State Legislative Effectiveness Scores and their components present scholars of legislative politics with countless opportunities for new research projects and findings. For example, our inclusion of 97 legislative chambers, totaling more than a thousand legislative sessions, allows for important comparisons over time and across institutional settings, in line with Squire and Hamm's (2005) encouragement to use the variance across chambers to better understand legislative politics. Theories and claims that have been made with respect to the U.S. Congress can now be more fully examined under varying conditions across the states. Whether studying the effects of polarization (e.g., Theriault 2008, Thomsen 2014), supermajoritarian institutions (e.g., Brady and Volden 1998, Krehbiel 1998), party competitiveness (e.g., Lee 2016, Hinchliffe and Lee 2016), legislative capacity (e.g., Bolton and Thrower 2016, Squire 1992), descriptive representation (e.g., Gay 2002; Lowande, Ritchie, and Lauterbach 2019; Mansbridge 1999; Minta 2011), or other elements that are central to our understanding of legislative politics, the data available here offer a level of variance that vastly exceeds what is possible through a focus solely on the U.S. Congress.

Additionally, the component parts of the SLES may also be valuable in addressing key questions. Focusing on the success of proposals as they move across lawmaking stages can help scholars better explore the gatekeeping influence of committees (e.g., Crombez, Groseclose, and Krehbiel 2006; Denzau and Mackay 1983), agenda-setting powers on the chamber's floor (e.g., Anzia and Jackman 2013, Cox and McCubbins 2005), or the consequences of bicameralism (e.g., Diermeier and Myerson 1999, Rogers 2003). Alternatively, a focus on the substantive and significant legislation highlighted here allows scholars to more fully incorporate the American

states into explorations about the emergence of landmark legislation (e.g., Mayhew 1991), or legislators' responsiveness to the issues of greatest interest to the public (e.g., Binder 1999, Jones and Baumgartner 2005).

To illustrate the value of the State Legislative Effectiveness Scores along some of these lines, we next offer two brief studies in which we use the SLES to examine fundamental issues arising within state legislative studies: the varying strength of the majority party and how institutional designs influence the balance of power across legislators.

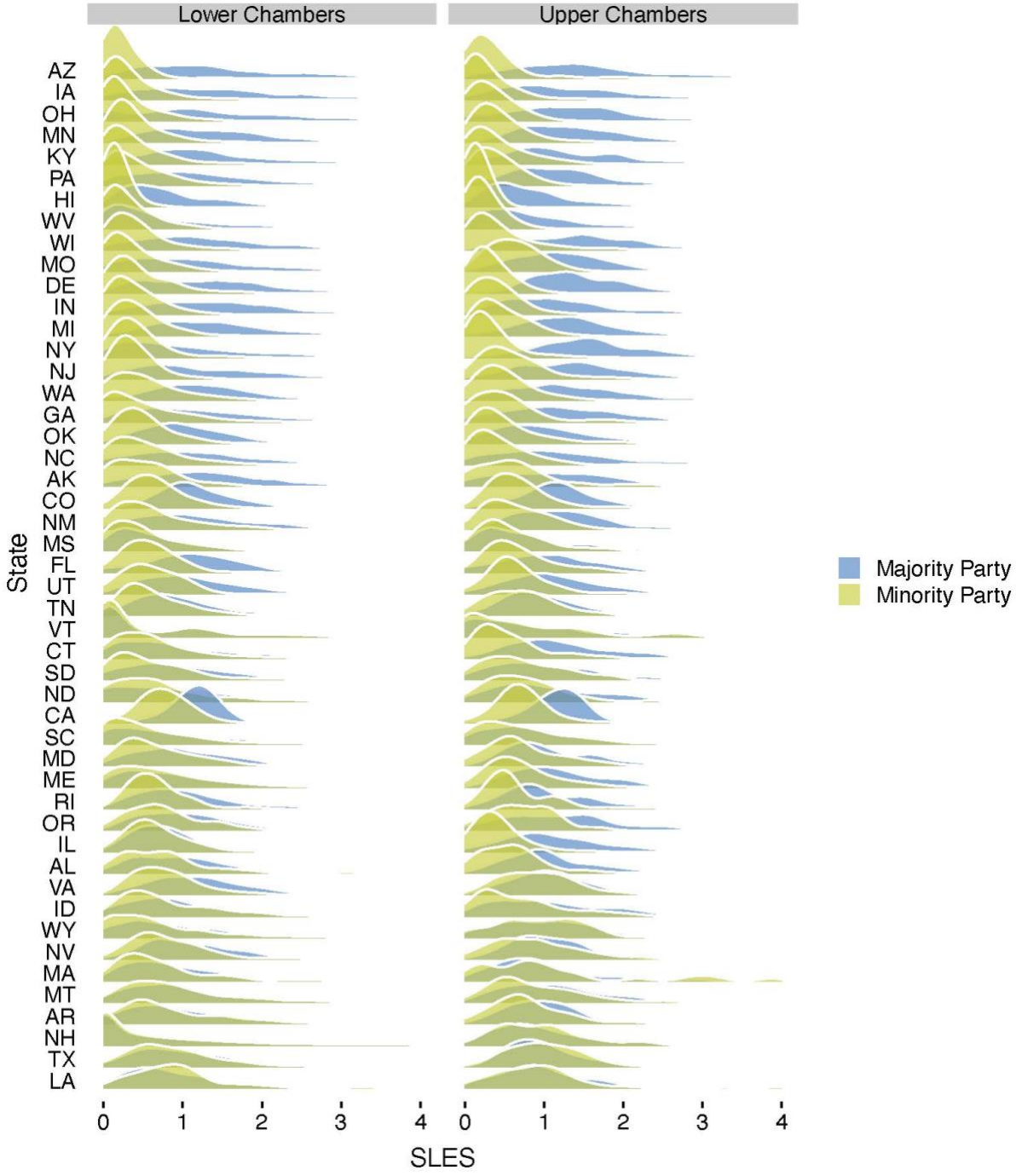
Study 1: The Power of the Majority Party

As was shown in Table 1, members of the majority party tend to be more effective than minority-party lawmakers across the American states. This finding is unsurprising. Being in the majority affords legislators a larger natural coalition, more ideologically aligned supporters, and (in many cases) control over the committees that are instrumental to lawmaking. However, the scope of influence of the majority party may vary across institutional settings and over time. As Squire and Hamm (2005, 105) note, state legislatures "offer an exceptional opportunity for scholars to develop a wide-ranging set of tests to try and uncover the effects of party." And numerous scholars of state legislators have taken up this call, using data from floor votes (e.g., Battista and Richman 2011), surveys (e.g., Francis 1985, Mooney 2012), or bill fates (e.g., Clark 2015, Jenkins 2016).

In terms of State Legislative Effectiveness Scores, Figure 7 illustrates the variation in majority-party and minority-party effectiveness. The blue distributions show the SLES for majority-party members, while the yellow distributions show minority-party members. The states are sorted such that those with the largest majority-party advantage are near the top and those with a lesser advantage are near the bottom. Why might states like Arizona, Iowa, and

Ohio feature such strong majority-party differences, while states like New Hampshire, Texas, and Louisiana see relatively small differences?

Figure 7: The Majority Party Advantage Across the States



Note: The figure shows the distributions of State Legislative Effectiveness Scores in the majority (blue) and minority (yellow) parties across states. States near the top of the figure show a greater majority-party advantage in lawmaking than states near the bottom of the figure. R code to reproduce the densities displayed here can be found in the main analysis file under Figure 7 on the APSR Dataverse.

Although there are many explanations for party influence in the literatures on Congress and on the state legislatures, we dedicate ourselves here to exploring two of the most common hypotheses, while controlling for other possibilities. The first is often labeled "conditional party government" (e.g., Aldrich 1995, Aldrich and Battista 2002, Aldrich and Rohde 2000, Rohde 1991). In this theory, when the parties overlap with one another ideologically, they lack both the motive and the means for the majority party to select strong leaders and press its advantages. In contrast, when an ideological divide opens up between the parties – as has happened in Congress and in many states over recent decades (McCarty, Poole, and Rosenthal 2006; Shor and McCarty 2011; Theriault 2008) – the majority party takes a greater interest in strengthening its leadership to advance its own goals and thwart the minority party. This is especially true – and easier to accomplish – when members of the majority party are themselves closely aligned ideologically. At the state level, scholars have used a variety of approaches that yield mixed support for this hypothesis (e.g., Aldrich and Battista 2002, Battista and Richman 2011, Mooney 2012).

A second significant theory about party strength arises from electoral considerations. When the electorate is evenly divided across party lines and neither party holds a large and secure majority in the legislature, legislative battles become highly partisan. Rosenthal (1998, 184) offers such a claim at the state level, and evidence suggests that such patterns also hold within Congress (Lee 2016) and on city councils (Bucchianeri 2020). In such situations, the majority party then works hard to establish its own policy successes (especially for legislators from highly contested districts), and to deprive minority-party lawmakers of legislative successes. Scholars of state legislatures have focused on such party competition (or insecure majorities), again with mixed results for explaining majority-party influence (e.g., Francis 1985, Mooney 2012, Clark 2015, Jenkins 2016).

To test these two hypotheses – regarding conditional party government and insecure majorities – we move from the level of individual lawmakers, characterized in Table 1, to instead consider entire legislative chambers as our units of analysis. Specifically, each chamber in each two-year term is considered as an observation, and we create two dependent variables to explore the relative party strength within each of these chambers in comparison to each other. The first variable is the *SLES Partisan Difference*, which captures the median SLES value among majority-party members minus the median SLES among minority-party members. The second variable is *Share More Effective*, which measures the proportion of majority-party legislators whose SLES exceed the median SLES of minority-party members. For both variables, greater values indicate a larger majority-party advantage in the legislature, capturing the extent to which majority-party legislators are more successful at advancing their bills through the lawmaking process than are minority-party legislators.

To capture the ideological positions of legislators in each chamber, we rely on the common-space ideology scores that have been advanced by Shor and McCarty (2011) to construct three variables. *Polarization* captures the ideological distance between the party medians, based on their left-right alignment. *Majority-Party Heterogeneity* is the standard deviation of ideological ideal points among majority-party members. *Minority-Party Heterogeneity* is a similar metric among minority-party members, included to allow for the possibility that minority party cohesion enhances that party's influence (e.g., Ballard and Curry 2021). The conditional party government hypothesis predicts a positive coefficient on *Polarization* and a negative coefficient on *Majority-Party Heterogeneity*, consistent with cohesive but polarized parties leading to greater majority-party influence in legislatures.

To test the insecure majorities hypothesis, we construct *Partisan Seat Share Imbalance*, which captures the proportion of seats in the legislative chamber controlled by the majority party minus the proportion controlled by the minority party. A negative coefficient would be consistent with greater partisanship in lawmaking as the party imbalance decreases (when party control of the legislature is more tenuous).[12] We also include a variety of additional institutional variables that have been raised in the literature as relevant to explaining party influence, including: the degree of legislative professionalism (Squire 1992, 2017; Clark 2015; Jenkins 2016); whether legislative rules formally empower the majority party by providing for committee gatekeeping or setting the agenda via the legislative calendar (Anzia and Jackman 2013); whether the state is experiencing unified party governance (Jenkins 2016); a logged version of the chamber size (Mooney 2012); and whether the state has adopted term limits (Anderson, Butler, and Harbridge 2016).

Table 2 shows the results of our analyses. Across the nearly 900 chamber-terms in our analysis, we find strong support for both main hypotheses.[13] When the parties are ideologically polarized and the majority party is cohesive, majority-party lawmakers are significantly more effective, according to the SLES. For example, each one standard-deviation (0.48) increase in *Polarization* is associated with both a 0.075 increase in the difference between the SLES of the median majority-party lawmaker and the median minority-party lawmaker (Model 2.1) and an additional 3.5% of majority-party legislators outperforming the median minority-party member

[12] We find similar patterns when inserting the Holbrook and Van Dunk (1993) measures of electoral competitiveness instead of the seat share metric, although with somewhat less statistical significance (around $p = 0.06$) in part due to fewer observations available for these measures.

[13] Although we score 1,032 chamber-terms, we lose observations in the analysis primarily due to missing values in two sets of covariates: (1) the measures constructed from the Shor and McCarty (2011) data, which cover 1993-2016, with some states starting later in the 1990s; and (2) the *Majority Party Controls Calendar* variable from Anzia and Jackman (2013), which is missing for three chambers.

Table 2: Determinants of Majority-Party Advantage

	Dependent variable:	
	SLES Partisan Difference	*Share More Effective*
	(2.1)	(2.2)
Polarization	0.158*	0.072**
	(0.062)	(0.027)
Majority Party Heterogeneity	-0.886**	-0.347**
	(0.226)	(0.092)
Minority Party Heterogeneity	-0.120	-0.100
	(0.228)	(0.123)
Partisan Seat Share Imbalance	-0.529**	-0.168**
	(0.115)	(0.056)
Legislative Professionalism	0.693**	0.351**
	(0.258)	(0.094)
Committee Gatekeeping Power	0.128*	0.022
	(0.062)	(0.027)
Majority Party Controls Calendar	0.128*	0.058*
	(0.062)	(0.032)
Unified Government	0.075*	0.021
	(0.032)	(0.015)
Log Chamber Size	-0.048	-0.030
	(0.053)	(0.024)
Term Limits	-0.075	-0.013
	(0.063)	(0.027)
Constant	0.587*	0.832**
	(0.232)	(0.101)
Observations	868	874
R^2	0.305	0.245

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Standard errors are clustered by state-chamber. The results show support for the conditional party government hypothesis (based on the *Polarization* and *Majority Party Heterogeneity* variables) and the insecure majorities hypothesis (based on *Partisan Seat Share Imbalance*).

(Model 2.2). Furthermore, a one-standard-deviation decline in *Majority Party Heterogeneity* is accompanied by a significant rise in SLES advantage (0.10 points) and share of majority party

legislators outperforming the median minority-party member (4.0%). Together, the conditional party government conditions go a significant way toward explaining the 0.370-point majority-party advantage found in Table 1.

Support also emerges for the insecure majorities hypothesis, as shown by the large and significant negative coefficient on *Partisan Seat Share Imbalance*. To see the effect of this variable, consider the most recent complete term in our data (2017-18), in which the Arkansas Senate was dominated by Republicans, 26-to-9, yielding a partisan seat share imbalance of 0.49. In contrast, Colorado featured a nearly even Democrat-Republican split in 2017-18, with the Republicans holding a single-seat advantage, which equates to an imbalance of 0.03. Based on the seat share variable alone, Model 2.1 would predict a 0.24-point larger partisan SLES gap in Colorado than in Arkansas. This is consistent with the patterns emerging in Figure 7, and with the insecure majorities hypothesis.

Beyond the support for these hypotheses, Table 2 reveals additional potentially important findings. First, there appears to be a larger majority-party advantage in more professional legislatures. Second, Model 2.1 suggests greater majority-party advantages in state legislative chambers that have the institutional tools of gatekeeping and calendar control – tools that majority-party leaders can use to advance their preferred policies and thwart those of minority-party members. In the next study, we explore these two patterns further. Third, there does seem to be something of an advantage that follows from the majority party also controlling the other chamber in the state and the governorship. In sum, while there is an overall lawmaking benefit from being in the majority party, this advantage varies across states and over time in ways that shed light on the conditions under which the majority party dominates state legislative processes.

Study 2: The Impact of Institutional Designs

Having explored the conditions under which party status matters for the successful advancement of bills in state legislatures, we now turn to broader questions of institutional design and its relationship to lawmaking effectiveness. Do the procedures under which legislatures operate, and their choices of how to allocate money, time, and personnel to members within the chamber, influence the relative power of lawmakers in ways that can be detected by patterns in the State Legislative Effectiveness Scores? Quite possibly so, if one believes the colorful wisdom of Congressman John Dingell (D-MI), who was known to say, "If you let me write the procedures … I'll screw you every time."[14]

More specifically, in this section we explore a wide range of differences, based on whether a legislator is in the majority or minority party, whether she holds a committee chair or is a rank-and-file legislator, and whether she is a new member or a more senior legislator. We construct different dependent variables to capture these power differences as evident in the relative State Legislative Effectiveness Scores, while holding steady the independent variables that account for differences across legislative chambers in their professionalism, their internal procedures and electoral rules, and their allocations of resources to legislators and staff. We discuss each of these variables in turn.

To explore these broad relationships of how chamber-level rules and conditions influence the relative power of groups of lawmakers, we again focus on chamber-level units of analyses. Our first dependent variable comes from the analysis reported in Table 2: *SLES Partisan Difference*, which captures the difference between the median SLES values in the majority and minority parties. We build on this approach to model our other dependent variables. *SLES*

[14] Oleszek (2001, p. 12) offers a more sanitized version of Dingell's commonly referenced quote.

Chair Difference captures the median SLES among committee chairs minus the median SLES among rank-and-file legislators.[15] *SLES Seniority Difference* captures the median SLES among non-freshmen legislators minus the median SLES among freshmen, which we examine separately for those in the minority and the majority party (due to differences in whether freshmen are more likely to be in one party or the other). Across these four dependent variables, we should be able to gain an understanding of some important power dynamics within American state legislatures.

We construct independent variables for nine key considerations that might potentially shape the lawmaking environment across the various legislative chambers. The first three factors break apart the overall legislative professionalism variable included in Table 2. *Log Annual Salary* captures legislator pay, whereas *Log Session Length* captures the average number of days out of the year during which the legislature is in session.[16] *Staff per Legislator* measures the level of staff support available for lawmakers.[17] These three variables capture the main components of state legislative professionalism combined together by Squire (1992).

Next, we include three indicator variables to capture the potential agenda-setting power among different actors in each legislative body: *Majority Party Controls Calendar* for the ability of the majority party to keep proposals off the floor; *Committee Gatekeeping Power* for the ability of committees to bottle proposals and keep them from floor consideration; and *Chamber Votes on Committee Appointments* for the ability of rank-and-file lawmakers to have a say over the appointments that could empower certain committees and their chairs. The values of these

[15] Berry and Fowler (2018) show the many dimensions of committee chair advantages in the congressional setting, while Hamm, Hedlund, and Martorano (2006) explore committee powers in the states.
[16] These variables are adapted from the professionalism components used by Bowen and Greene (2014). However, as our scores follow the electoral calendar of the lower chamber in each state, and some terms are four years long, we take the yearly averages of each metric as opposed to summing over each biennium.
[17] Clark (2015) suggests that it is the staffing component of professionalism that explains minority-party influence across state legislatures.

variables come from Anzia and Jackman (2013), who coded them after evaluating each legislature's rules. Thus, these variables are meant to capture the *de jure* power of these actors.[18]

We also control for the *Number of Committees* found in each chamber and *Log Chamber Size*.[19] Presumably, larger chambers are more difficult to navigate for freshmen members, and present opportunities for consolidating power in committees or through parties (e.g., Mooney 2012), as suggested in Figure 6 above. Finally, we include an indicator for whether legislators face *Term Limits*.[20] Beyond these nine variables of institutional resources and design, we include as controls the other variables that are introduced in Table 2.

There are many reasons to expect that such institutional designs will influence the relative lawmaking effectiveness of different groups of legislators. Prior research relates some of these features to majority-party influence. For example, Anderson, Butler, and Harbridge (2016) establish that term limits, legislative professionalism, and partisan agenda controls all affect the degree to which legislator preferences over issues reflect those of party leaders. Anzia and Jackman (2013) show that gatekeeping and agenda control rules lower majority-party "rolls" and "roll rates," building on the congressional work of Cox and McCubbins (2005) and Wiseman and Wright (2008). Cox, Kousser, and McCubbins (2010) illustrate the importance of the majority party's ability to set the agenda in state legislatures with a focus on rule changes over time in California and Colorado. But institutional design elements may also influence relative legislator

[18] Scholars have engaged in a robust debate around how to measure the power of party leaders in state legislatures (e.g., Aldrich and Battista 2002, Clucas 2007, Battista 2011, Battista and Richman 2011). We here rely on the Anzia and Jackman metrics due to their objective measurement approach (based on formal rules) and due to their availability and consistency across chambers and over time. Explorations of additional leadership strategies and their impact on effective lawmaking, including using alternative metrics and approaches, may be fruitful.
[19] Kirkland (2014) shows the relationship between chamber size and collaborative networks in state legislatures.
[20] There are many ways to consider the timing and impact of term limits (e.g., Kousser 2005; Carey, Niemi, and Powell 2009). Here, we simply capture whether term limits have been adopted in the state. In Table A9 of the Supplemental Appendix, we instead explore whether term limits are binding in the states. Future work examining the lengths of terms limits may also be valuable.

power beyond partisan considerations, as evidenced by assessments of term limits across the states (e.g., Kousser 2005; Carey, Niemi, and Powell 2009).

Before considering the findings below, it is worth emphasizing the exploratory nature of our analyses. Although we have several expectations regarding the relationships between these many institutional variables and the scope of lawmaking effectiveness within and across groups of legislators, we are not advancing specific hypotheses to be tested. Moreover, it is also important to note that many of the relationships uncovered here may benefit from additional examinations that confront potential endogeneity considerations. Were agenda-setting rules chosen by already-strong parties to enhance their control? Were term limits or various components undergirding professionalism adopted in order to reduce the tight grip on power by entrenched politicians? Future work on the stability of these institutional designs and on patterns before and after they are changed may be quite fruitful. Our current purposes, however, are more focused on simply illustrating some of the questions that can be asked and answered through the sorts of analyses now possible with SLES data.

Having stated these caveats, we now turn to Table 3, in which we present the results of four regression models, relating our nine key institutional variables to the relative effectiveness scores based on party control, committee chair positions, and seniority. As we can see from the table, for each institutional variable, we find one or more significant and intriguing relationships across our dependent variables of interest; and many highlights are worth noting. First, professional legislatures – especially in terms of legislator pay – seem to attract and/or cultivate effective lawmaking among freshman members at a level not seen in the citizen legislatures, as evident in Models 3.3 and 3.4. Such effects may arise because these well-endowed legislatures attract candidates who are more capable of hitting the ground running from day one.

Table 3: The Effects of Institutional Design on Patterns of State Legislative Effectiveness

Dependent variable:	*SLES Partisan Difference*	*SLES Chair Difference*	*Majority SLES Seniority Difference*	*Minority SLES Seniority Difference*
	(3.1)	(3.2)	(3.3)	(3.4)
Log Annual Salary	0.029	-0.015	-0.032**	-0.026*
	(0.025)	(0.015)	(0.009)	(0.011)
Log Session Length	0.179**	0.206**	-0.046	-0.071**
	(0.051)	(0.066)	(0.047)	(0.028)
Staff per Legislator	-0.014	-0.020*	-0.004	0.003
	(0.009)	(0.009)	(0.005)	(0.004)
Majority Party Controls Calendar	0.116*	0.120+	-0.031	-0.040
	(0.058)	(0.069)	(0.041)	(0.026)
Committee Gatekeeping Power	0.103	-0.027	0.035	0.038
	(0.063)	(0.070)	(0.032)	(0.039)
Chamber Votes on Committee Appointments	0.093	-0.180**	-0.047	0.007
	(0.071)	(0.066)	(0.042)	(0.034)
Number of Committees	0.003	0.001	0.005+	-0.0002
	(0.003)	(0.005)	(0.003)	(0.001)
Log Chamber Size	-0.045	0.205*	0.079*	0.041+
	(0.047)	(0.084)	(0.032)	(0.025)
Term Limits	-0.089	-0.071	-0.094+	0.014
	(0.057)	(0.065)	(0.049)	(0.029)
Polarization	0.231**	0.078	-0.064	-0.084**
	(0.051)	(0.064)	(0.044)	(0.029)
Majority Party Heterogeneity	-1.029**	-0.344	-0.073	0.258**
	(0.222)	(0.322)	(0.209)	(0.090)
Minority Party Heterogeneity	-0.254	-0.050	-0.088	0.245*
	(0.213)	(0.179)	(0.160)	(0.102)
Partisan Seat Share Imbalance	-0.407**	-0.185	0.012	-0.183**
	(0.100)	(0.149)	(0.092)	(0.059)
Unified Government	0.030	-0.011	-0.012	-0.031+
	(0.031)	(0.034)	(0.028)	(0.018)
Constant	-0.327	-0.755*	0.684**	0.583**
	(0.330)	(0.361)	(0.206)	(0.140)
Observations	803	818	787	776
R^2	0.366	0.214	0.116	0.124

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Standard errors are clustered by state-chamber.

Second, legislatures that are in session for more days seem to promote majority-party and committee-chair lawmaking success, as seen in Models 3.1 and 3.2. This is the sole component of the Squire professionalism measure – found to be positively related to majority-party influence in Table 2 – which accounts for such an overall finding. While professional legislatures (in terms of time in session) seem to go hand-in-hand with strong majority-party and committee influence, such long sessions also seem to give time for freshmen to learn the ropes and to narrow the lawmaking gaps to their senior colleagues.[21] Third, we see from Model 3.2 that offering legislative staff support for members seems to promote individual lawmaking effectiveness, rather than the strong powers of committee chairs who can often exploit expertise advantages in chambers with less legislative staff support. Together, these results suggest that an aggregate measure of professionalism may mask some intriguing variance in the types of time and money considerations that dramatically shift the levers of lawmaking power across the different state legislatures.

Fourth, consistent with Anzia and Jackman (2013), we find that majority-party agenda control via the calendar enhances the lawmaking effectiveness advantage of majority-party members; and there is suggestive evidence that the majority party also benefits from committee gatekeeping powers. These procedural elements also seem to improve the effectiveness of committee chairs relative to other legislators, although those differences are not statistically significant for committee gatekeeping powers. In contrast, empowering the entire chamber to vote on committee appointments seems to limit the ability of leaders to stack committees in ways that enhance chairs' relative lawmaking advantages over rank-and-file legislators.

[21] Longer time in session may also help freshman build the network ties that are crucial to lawmaking in the states (e.g., Kirkland 2011).

Fifth, as evident in Model 3.3, larger legislative chambers and those with more committees seem to limit the lawmaking effectiveness of freshmen legislators, relative to those who are more senior and have had time to navigate the committee system and build relationships with their many colleagues. Larger chambers also likely require more structure to overcome collective action problems, a logic that is consistent with stronger committee chairs as shown in Model 3.2. Sixth, and finally, term limits, for all their other benefits and harms, seem to shift the balance in lawmaking power away from traditional sources, as seen in the negative coefficients in the first three columns, representing the strength of the majority party, committee chairs, and senior majority-party members (with the third comparison being statistically significant).

Although the analyses in Table 3 are conducted at the chamber level, many of these relationships can also be uncovered in individual-level analyses comparable to those of Table 1. For example, in Table A10 of the Supplemental Appendix, we demonstrate how interacting *Log Session Length* with individual variables for being in the *Majority Party* or being a *Committee Chair* enhances the lawmaking effectiveness of members in these favorable positions given longer legislative sessions. We likewise show interactions of how larger legislative chambers improve the effectiveness of committee chairs and senior lawmakers over junior and rank-and-file legislators. Moreover, we can gain further insights by breaking the SLES variable apart, focusing on each of its five individual lawmaking stages. Tables A11 and A12 in the Supplemental Appendix show the results of generating a version of the SLES that only includes each one of these stages separately (and sets aside the others). Doing so illustrates that the majority party's lawmaking influence from controlling the calendar (Table A11) and from committee gatekeeping rules (Table A12) emerges in a most pronounced way in the committee stages of lawmaking. Such findings enhance our confidence in the empirical findings above,

because they are consistent with the logic of when and where such legislative procedures would be expected to be influential.

Taken as a whole, Study 2 reveals that the relative lawmaking power across legislators varies significantly from one state to the next, and for understandable reasons. Reformers who are concerned about any such imbalances therefore have many tools at their disposal to address their concerns. That said, in many cases, those who hold the power in these institutions are also the ones who set the rules and allocate resources. It is unsurprising, for example, that majority-party leaders would seek to retain their ability to bottle proposals up in committee or keep them off the floor, or that committee chairs would rather control staffing resources instead of having them spread out to all lawmakers. Lawmaking is tilted in favor of these groups, and they would like to keep it that way.

Conclusions and Future Directions

State legislators differ from one another in how effective they are at lawmaking. Such differences arise due to their institutional positions and their individual characteristics. We seek to measure differences in lawmaking effectiveness by constructing State Legislative Effectiveness Scores, where the SLES is drawn from fifteen metrics based on the bills that each legislator sponsors within each legislative term, how far those bills move through five lawmaking stages, and how substantively significant those bills are. In total, we generate more than 80,000 scores across more than 1,000 chamber-sessions, for 97 legislative chambers across recent decades.

We confirm the validity of these scores, comparing them to widely employed subjective survey-based rankings in North Carolina, showing their stability over time, and assessing the extent to which they capture common patterns of greater effectiveness among senior legislators,

committee chairs, and those who are in the majority party. In so doing, we establish other important findings, such as higher lawmaking effectiveness among ideological moderates within the chamber, and among those legislators whose seats are neither too safe (electorally) nor overly at-risk. We then demonstrate how these scores – by themselves, aggregated to the chamber level, or broken into their various components – can be used to shed light on a number of pressing concerns about legislative politics.

For example, we reveal that the advantages of majority-party legislators are enhanced when the majority party has a tenuous grip on power, when it is ideologically distant from the minority party, and when it is ideologically cohesive. We also show that the majority party is further advantaged through institutional designs, such as committee gatekeeping and floor agenda setting. Such institutional design components also influence relative lawmaking advantages between committee chairs and rank-and-file members, as well as between senior and junior legislators. For example, giving greater staff resources to individual members narrows the lawmaking gap they experience relative to committee chairs. Higher legislative salaries, longer sessions, and term limits are all linked to greater relative lawmaking effectiveness among freshmen legislators.

We believe that the SLES approach to measuring lawmaking effectiveness and the data undergirding this effort offer many paths forward for scholars of legislative politics, public policy, and representative democracy. At a minimum, we see opportunities in three broad categories. The first explores the identification of potentially effective lawmakers. Are there clear and measurable characteristics of potential candidates who would be effective if only they would choose to run for and be elected into their state legislatures? For example, are there conditions under which women are more effective lawmakers than men (i.e., Saint-Germain

1989; Thomas 1991; Volden, Wiseman, and Wittmer 2013; Mahoney 2018)? Are there other characteristics, with respect to educational backgrounds, prior occupations and/or past military service, that correlate with legislators' lawmaking effectiveness?

Second, research could focus on cultivating the lawmaking effectiveness of legislators once they have been elected, and likewise cultivating institutional structures that help them succeed in advancing their agendas. Our work here on institutional designs offers a glimpse at what can be accomplished in this area. Are there some institutional designs and patterns of lawmaking effectiveness that result in more effective legislatures on the whole? For example, are legislatures that empower minority-party and majority-party lawmakers alike, and that incorporate the ideas of freshmen and under-represented minorities in an egalitarian manner, more likely to adopt innovative policy solutions that resonate across the country (i.e., Boehmke and Skinner 2012)? Are there also individual choices – such as reaching more regularly across party lines or tailoring an agenda based on their backgrounds and committee assignments – that can help legislators succeed? Many states offer training programs for new state legislators and staff; under what conditions do such programs work, generating more effective lawmakers? How do leadership styles matter; and what are the roles of lobbyists, staff, and interactions with the executive branch in cultivating effective lawmaking?

Finally, what are the consequences of being an effective lawmaker? Are those who excel at lawmaking more likely to be reelected, to achieve committee chair status or become party leaders, or to seek higher office and win? On the flip side, are there conditions under which voters hold ineffective lawmakers accountable (e.g., Hirano and Snyder 2019, Treul et al. 2022)? We hope that scholars will explore these and other issues with renewed vigor and with the ability

to focus on a wide array of states and over-time variation through the metrics and approaches illustrated here.

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Supplemental Appendix for
Legislative Effectiveness in the American States

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Table A1: States and Legislative Sessions Included in SLES Construction and Analysis

State	Years	Unique Legislators	Unique Scores
AK	1993-2018	210	795
AL	1999-2018	301	736
AR	1997-2018	536	1485
AZ	1995-2018	367	1101
CA	1993-2018	501	1588
CO	1999-2018	358	1046
CT	1999-2016	431	1703
DE	2003-2018	121	503
FL	2001-2018	470	1475
GA	2001-2018	592	2169
HI	1999-2018	193	769
IA	2003-2018	343	1217
ID	1999-2018	324	1081
IL	1997-2018	472	2030
IN	1999-2018	349	1529
KS	None	0	0
KY	2001-2018	293	1268
LA	1996-2019	400	953
MA	2009-2018	326	1024
MD	1995-2018	457	1192
ME	1987-2018	1019	3006
MI	1995-2018	614	1798
MN	1995-2018	630	2449
MO	1995-2018	745	2409
MS	1996-2019	408	1098
MT	1999-2018	522	1500
NC	1993-2018	603	2252
ND	1997-2018	366	1568
NE	2007-2018	125	301
NH	1989-2018	2228	6406
NJ	1996-2017	306	1379
NM	1997-2018	306	1246
NV	1995-2018	212	755
NY	1999-2018	493	2210
OH	1997-2018	457	1531
OK	1993-2018	500	1965
OR	2007-2018	182	552
PA	1989-2018	709	3845
RI	2007-2018	229	687
SC	1989-2018	532	2588
SD	1997-2018	394	1176
TN	1995-2018	363	1614
TX	1989-2018	609	2729
UT	1997-2018	325	1180
VA	1994-2017	358	1728
VT	1993-2018	667	2395
WA	1991-2018	517	2111
WI	1995-2018	373	1597
WV	1993-2018	468	1781
WY	2001-2018	254	824

Table A2: State Newspapers Used to Detect Substantive and Significant Legislation

State	*Newspaper(s)*	*Newspaper Location*	*State Capital*
AK	*Anchorage Daily News*; Juneau Empire	Anchorage, Juneau	Juneau
AL	*The Birmingham News*	Birmingham	Montgomery
AR	*Arkansas Democrat-Gazette*	Little Rock	Little Rock
AZ	Arizona Capital Times; *Arizona Daily Star*	Phoenix, Tucson	Phoenix
CA	Orange County Register	OC (Irvine HQ)	Sacramento
CO	*Denver Post*; Daily Camera	Denver, Boulder	Denver
CT	*Hartford Courant*	Hartford	Hartford
DE	*Delaware State News*	Dover	Dover
FL	Tampa Bay Times	Tampa Bay	Tallahassee
GA	Atlanta Journal-Constitution	Atlanta	Atlanta
HI	*Honolulu Star Bulletin*; *Honolulu Star-Advertiser*	Honolulu	Honolulu
IA	Telegraph Herald	Dubuque	Des Moines
ID	Idaho Business Review	Boise	Boise
IL	State Journal-Register	Springfield	Springfield
IN	Fort Wayne News-Sentinel	Fort Wayne	Indianapolis
KS	*Topeka Capital Journal*	Topeka	Topeka
KY	*Lexington Herald-Leader*	Lexington	Frankfort
LA	*The Advocate*	Baton Rouge	Baton Rouge
MA	Telegram and Gazette	Worcester	Boston
MD	The Capital	Annapolis	Annapolis
ME	*Portland Press Herald*	Portland	Augusta
MI	The Detroit News	Detroit	Lansing
MN	St. Paul Pioneer Press	Saint Paul	Saint Paul
MO	*St. Louis Post-Dispatch*	Saint Louis	Jefferson City
MS	*Mississippi Sun Herald*; Mississippi Business Journal	Biloxi/Gulfport, Jackson	Jackson
MT	*Billings Gazette*	Billings	Helena
NC	*The News & Observer*	Raleigh	Raleigh
ND	Bismarck Tribune	Bismarck	Bismarck
NE	Lincoln Journal Star	Lincoln	Lincoln
NH	*New Hampshire Union*	Manchester	Concord
NJ	*The Press of Atlantic City*	Atlantic City	Trenton
NM	Santa Fe New Mexican	Santa Fe	Santa Fe
NV	*Las Vegas Review-Journal*	Las Vegas	Carson City
NY	New York Times; New York Daily News	New York City	Albany
OH	Dayton Daily News	Dayton	Columbus
OK	*Daily Oklahoman*	Oklahoma City	Oklahoma City
OR	Daily Journal of Commerce	Portland	Salem
PA	Philadelphia Daily News; *The Patriot-News*	Philadelphia, Harrisburg	Harrisburg
RI	Providence Journal	Providence	Providence
SC	*The Post & Courier*	Charleston	Columbia
SD	*The American News*	Aberdeen	Pierre
TN	*Chattanooga Times Free Press*	Chattanooga	Nashville
TX	*Austin American-Statesman*	Austin	Austin
UT	Salt Lake City Deseret News	Salt Lake City	Salt Lake City
VA	Richmond Times Dispatch	Richmond	Richmond
VT	*Brattleboro Reformer*	Brattleboro	Montpelier
WA	*Seattle Times*; The Columbian	Seattle, Vancouver	Olympia
WI	Wisconsin State Journal	Madison	Madison
WV	Charleston Gazette-Journal	Charleston	Charleston
WY	Wyoming Tribune-Eagle	Cheyenne	Cheyenne

Note: Newspapers in *italics* were accessed through Newsbank, with the rest accessed through LexisNexis.

Table A3: Prefixes and Restrictions Used to Capture Bills with Full Force of Law

State	Bill Prefixes	Additional Restrictions
AK	HB, SB	
AL	HB, SB	
AR	HB, SB	
AZ	HB, SB	
CA	AB, SB	
CO	HB, SB	
CT	HB, SB	
DE	HB, SB	
FL	HB, SB	
GA	HB, SB	
HI	HB, SB	
IA	HF, SF	
ID	H, S	
IL	HB, SB	
IN	HB, SB	
KY	HB, SB	
LA	HB, SB	
MA	H, S	Legislation is labeled “bill” on the state webpage
MD	HB, SB	
ME	HP, SP	Legislation has an LD number and is not titled “resolution”
MI	HB, SB	
MN	HF, SF	Legislation is labeled “bill” on the state webpage
MO	HB, SB	
MS	HB, SB	
MT	HB, SB	
NC	H, S	Legislation is labeled “bill” on the state webpage
ND	HB, SB	
NE	LB	
NH	HB, SB	
NJ	A, S	
NM	HB, SB	
NV	AB, SB	
NY	A, S	
OH	HB, SB	
OK	HB, SB	
OR	HB, SB	
PA	HB, SB	
RI	H, S	Legislation is labeled “an act” on the state webpage
SC	H, S	Legislation is not labeled “resolution” on the state webpage
SD	HB, SB	
TN	HB, SB	
TX	HB, SB	
UT	HB, SB	
VA	HB, SB	
VT	H, S	
WA	HB, SB	Legislation is labeled “bill” on the state webpage
WI	AB, SB	
WV	HB, SB	
WY	HB, SF	

Table A4: Evaluating the Explanatory Power of Effectiveness Measures in North Carolina

Effectiveness Measure	Base Model		Covariate Model	
	R^2	RMSE	R^2	RMSE
SLES	0.460	25.0	0.658	19.8
SLES Rank	0.465	24.9	0.657	19.9
Hit Rate (Edwards 2018)	0.394	26.4	0.608	21.2
Bayesian Hit Rate (Edwards 2018)	0.425	25.7	0.614	21.0
Bayesian Hit Rate Rank	0.416	26.0	0.623	20.8
Hit Rate (SLES Data)	0.249	29.5	0.570	22.2
Passage Rate (SLES Data)	0.254	29.4	0.574	22.1

Note: The base model includes the effectiveness measure of interest, interacted with an indicator for chamber to account for differing chamber sizes, and term fixed effects. In the covariate models, we also add variables found in the analysis of Table 1. Taken together, the results show that the SLES measures outperform the more commonly used hit rate variables at explaining the NCCPPR Rankings (dependent variable), regardless of how those hit rates are constructed (i.e., with or without credit for cosponsored legislation), with the SLES metrics yielding the highest R^2 values and minimizing the root mean squared error.

Table A5: Descriptive Statistics and Sources for Individual-Level Variables

Variable	Description	Mean	Std. Dev.	Sources
SLES	State Legislative Effectiveness Score	1.000	1.118	Constructed by authors as described in main article text
Seniority	Number of consecutive terms served by member in chamber	3.787	3.196	Constructed by authors in tandem with data from Klarner (2018)
Committee Chair	Equals "1" if member is a committee chair	0.257	0.437	Fouirnaies (2018); Fouirnaies and Hall (2018); State Legislative Webpages
Majority Party	Equals "1" if member is in majority party	0.614	0.487	Constructed by authors in tandem with data from Klarner (2018)
Majority-Party Leadership	Equals "1" if member is the majority-party leader	0.026	0.159	Fouirnaies (2018); State Legislative Webpages
Minority-Party Leadership	Equals "1" if member is the minority-party leader	0.028	0.166	Fouirnaies (2018); State Legislative Webpages
Speaker/President	Equals "1" if member is Speaker or President of the chamber	0.025	0.157	Fouirnaies (2018); State Legislative Webpages
Power Committee	Equals "1" if member serves on a committee related to the budget, finance, appropriations, or rules	0.434	0.496	Fouirnaies and Hall (2018); State Legislative Webpages
Distance from Median	| Member i's Shor-McCarty ideology score - Median member's ideology score|	0.679	0.600	Shor and McCarty (2011)
Female	Equals "1" if member is female	0.232	0.422	Center for American Women and Politics Women Elected Officials Database
African American	Equals "1" if member is African American	0.024	0.152	Estimated by authors using methods from Imai and Khanna (2016)
Latino	Equals "1" if member is Latino/Latina	0.032	0.176	Estimated by authors using methods from Imai and Khanna (2016)
Vote Share	Proportion of vote received in previous election	0.685	0.253	Klarner (2018)

Table A6: Descriptive Statistics and Sources for Chamber-Level Variables

Variable	Description	Mean	Std. Dev.	Sources
SLES Partisan Difference	Median SLES among majority-party members minus that among minority-party members in the chamber	0.542	0.385	Constructed by authors as described in main article text
Share More Effective	Proportion of majority-party members with SLES above minority-party median SLES in the chamber	0.786	0.176	Constructed by authors as described in main article text

SLES Chair Difference	Median SLES among committee chairs minus that among rank-and-file members in the chamber	0.693	0.476	Constructed by authors as described in main article text
Majority SLES Seniority Difference	Median SLES among majority-party senior members minus that among majority-party freshmen in the chamber	0.414	0.377	Constructed by authors as described in main article text
Minority SLES Seniority Difference	Median SLES among minority-party senior members minus that among minority-party freshmen in the chamber	0.187	0.277	Constructed by authors as described in main article text
Annual Legislative Salary	Average yearly salary excluding per diem for state legislative service	28,977	24,653	Bowen and Greene (2014); The Book of the States (2014-2018)
Session Length	Average yearly length of legislative sessions (including specials)	76.518	45.585	Bowen and Greene (2014); The Book of the States (2014-2018)
Staff per Legislator	Average Number of legislative staff per state legislator	4.867	4.072	National Conference of State Legislatures
Squire Index	Squire index of legislative professionalism	0.205	0.120	Squire (1992); Squire (2017)
Majority Party Sets Calendar	Equals "1" if majority party leadership and/or majority party-controlled committees have power over the legislative calendar	0.619	0.486	Anzia and Jackman (2013)
Committee Gatekeeping Power	Equals "1" if majority party-controlled committees have the power to deny a bill a hearing and/or not report it to floor	0.780	0.414	Anzia and Jackman (2013)
Chamber Votes on Committee Appointments	Equals "1" if the full chamber membership votes on committee appointments	0.167	0.373	Anzia and Jackman (2013)
Number of Committees	Number of standing committees	17.987	8.657	The Book of the States (1987-2018)
Chamber Size	Number of seats in a legislative chamber	76.296	58.156	Klarner (2013)
Term Limits	Equals "1" if a state has adopted term limits for state legislators	0.304	0.460	National Conference of State Legislatures
Polarization	Absolute difference in median Shor-McCarty ideology scores between parties	1.520	0.480	Shor and McCarty (2011)
Majority Party Heterogeneity	Standard deviation of majority party's Shor-McCarty ideology scores	0.279	0.115	Shor and McCarty (2011)
Minority Party Heterogeneity	Standard deviation of minority party's Shor-McCarty ideology scores	0.290	0.114	Shor and McCarty (2011)
Partisan Seat Share Imbalance	Absolute difference in share of seats controlled by each party	0.263	0.194	Constructed by authors in tandem with data from Klarner (2013)
Unified Government	Majority party controls all legislative chambers and governor's office	0.540	0.499	Constructed by authors in tandem with data from Klarner (2013)

Table A7: Replication to Seniority Coded Based on Total Prior Legislative Service

	Dependent variable: SLES				
	Full Sample	Lower Chambers		Upper Chambers	
	(A7.1)	(A7.2)	(A7.3)	(A7.4)	(A7.5)
Terms Served - Total	0.026**	0.033**		0.010**	
	(0.004)	(0.007)		(0.003)	
Terms Served - Same Chamber			0.033**		0.008**
			(0.007)		(0.003)
Committee Chair	0.517**	0.618**	0.619**	0.309**	0.310**
	(0.024)	(0.036)	(0.036)	(0.021)	(0.021)
Majority Party	0.367**	0.360**	0.360**	0.386**	0.384**
	(0.028)	(0.036)	(0.036)	(0.028)	(0.027)
Majority Leadership	0.078*	0.164**	0.164**	0.008	0.010
	(0.033)	(0.051)	(0.051)	(0.039)	(0.039)
Minority Leadership	0.164**	0.213*	0.214*	0.068*	0.067*
	(0.046)	(0.085)	(0.085)	(0.029)	(0.029)
Speaker/President	0.320**	0.578**	0.578**	0.082	0.085
	(0.121)	(0.224)	(0.224)	(0.071)	(0.073)
Power Committee	0.100**	0.119**	0.120**	0.033+	0.034*
	(0.019)	(0.026)	(0.026)	(0.017)	(0.017)
Distance from Median	-0.114**	-0.118**	-0.118**	-0.124**	-0.126**
	(0.025)	(0.032)	(0.032)	(0.021)	(0.021)
Female	-0.032*	-0.053**	-0.054**	0.039+	0.038+
	(0.015)	(0.019)	(0.019)	(0.022)	(0.022)
African-American	-0.100**	-0.094*	-0.095*	-0.121*	-0.121*
	(0.035)	(0.043)	(0.043)	(0.052)	(0.052)
Hispanic	-0.079**	-0.077*	-0.077*	-0.070+	-0.070+
	(0.028)	(0.034)	(0.034)	(0.042)	(0.043)
Vote Share	0.607*	0.617*	0.614*	0.209	0.259
	(0.265)	(0.279)	(0.279)	(0.686)	(0.688)
Vote Share Squared	-0.376*	-0.370*	-0.368*	-0.155	-0.183
	(0.172)	(0.183)	(0.183)	(0.441)	(0.442)
Constant	0.312**	0.226+	0.227+	0.525+	0.519+
	(0.121)	(0.131)	(0.131)	(0.274)	(0.274)
Observations	72,888	53,846	53,846	19,042	19,042
R^2	0.130	0.132	0.132	0.171	0.171

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, two-tailed. All models include fixed effects by term (biennium) and by state-chamber. Standard errors are clustered by legislator. Complete model results, including fixed effects coefficients are available in the accompanying Dataverse files. The results demonstrate that the findings of Table 1 are robust to counting Seniority based on all terms served, even nonconsecutively, either within the same chamber or across either chamber in the state.

Table A8: Replication to Further Normalization of Scores across States

	Dependent variable: Normalized SLES		
	Full Sample	Lower Chambers	Upper Chambers
	(A8.1)	(A8.2)	(A8.3)
Seniority	0.029**	0.035**	0.010**
	(0.005)	(0.007)	(0.003)
Committee Chair	0.453**	0.545**	0.274**
	(0.023)	(0.033)	(0.019)
Majority Party	0.331**	0.324**	0.346**
	(0.026)	(0.033)	(0.025)
Majority Leadership	0.065*	0.138**	0.008
	(0.030)	(0.046)	(0.035)
Minority Leadership	0.139**	0.189*	0.058*
	(0.041)	(0.076)	(0.026)
Speaker/President	0.276**	0.508**	0.072
	(0.106)	(0.197)	(0.065)
Power Committee	0.087**	0.106**	0.030+
	(0.018)	(0.024)	(0.015)
Distance from Median	-0.102**	-0.106**	-0.112**
	(0.022)	(0.029)	(0.019)
Female	-0.030*	-0.050**	0.034+
	(0.014)	(0.017)	(0.019)
African American	-0.090**	-0.087*	-0.107*
	(0.031)	(0.038)	(0.046)
Hispanic	-0.070**	-0.068*	-0.063+
	(0.025)	(0.030)	(0.038)
Vote Share	0.531*	0.533*	0.206
	(0.237)	(0.249)	(0.612)
Vote Share Squared	-0.337*	-0.328*	-0.151
	(0.154)	(0.163)	(0.393)
Constant	-0.615**	-0.688**	-0.423+
	(0.108)	(0.117)	(0.244)
Observations	72,888	53,846	19,042
R^2	0.131	0.133	0.171

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* All models include fixed effects by term (biennium) and by state-chamber. Complete model results, including fixed effects coefficients are available in the accompanying Dataverse files. Standard errors are clustered by legislator. The results demonstrate that the findings of Table 1 are robust to normalizing the State Legislative Effectiveness Scores to a mean of zero and standard deviation of one, set within each chamber and each legislative term.

Table A9: Replication of Institutional Effects Including Binding Term Limits

	Dependent variable:			
	SLES Partisan Difference	SLES Chair Difference	Majority SLES Seniority Difference	Minority SLES Seniority Difference
	(A9.1)	(A9.2)	(A9.3)	(A9.4)
Log Annual Salary	0.028	-0.016	-0.032**	-0.025*
	(0.025)	(0.015)	(0.009)	(0.011)
Log Session Length	0.177**	0.204**	-0.046	-0.069*
	(0.051)	(0.067)	(0.047)	(0.028)
Staff per Legislator	-0.014+	-0.020*	-0.004	0.003
	(0.008)	(0.009)	(0.005)	(0.004)
Majority Party Controls Calendar	0.122*	0.124+	-0.027	-0.041
	(0.058)	(0.068)	(0.041)	(0.026)
Committee Gatekeeping Power	0.106+	-0.024	0.035	0.034
	(0.064)	(0.071)	(0.032)	(0.039)
Chamber Votes on Committee Appointments	0.106	-0.171**	-0.042	0.001
	(0.073)	(0.066)	(0.040)	(0.035)
Number of Committees	0.004	0.001	0.005+	-0.0005
	(0.003)	(0.005)	(0.003)	(0.001)
Log Chamber Size	-0.042	0.208*	0.082*	0.041
	(0.047)	(0.084)	(0.032)	(0.025)
Term Limits (Binding Date)	-0.050	-0.041	-0.088+	-0.017
	(0.058)	(0.065)	(0.051)	(0.030)
Polarization	0.227**	0.077	-0.058	-0.078*
	(0.054)	(0.063)	(0.045)	(0.033)
Majority Party Heterogeneity	-1.005**	-0.329	-0.062	0.245**
	(0.224)	(0.320)	(0.208)	(0.092)
Minority Party Heterogeneity	-0.234	-0.037	-0.082	0.236*
	(0.216)	(0.181)	(0.159)	(0.103)
Partisan Seat Share Imbalance	-0.403**	-0.181	0.017	-0.182**
	(0.100)	(0.149)	(0.091)	(0.060)
Unified Government	0.033	-0.008	-0.009	-0.032+
	(0.031)	(0.034)	(0.028)	(0.018)
Constant	-0.354	-0.778*	0.651**	0.580**
	(0.325)	(0.361)	(0.200)	(0.140)
Observations	803	818	787	776
R^2	0.359	0.211	0.113	0.125

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Standard errors clustered by state-chamber. The results show the effects from Table 3 with the substitution of binding term limits instead of the adoption of term limits.

Table A10: Replication of Institutional Effects on Individual-Level Data

	Dependent Variable: SLES			
	(A10.1)	(A10.2)	(A10.3)	(A10.4)
Log Session Length	-0.080**	0.022		
	(0.020)	(0.018)		
Log Session Length × Majority Party	0.192**			
	(0.020)			
Log Session Length × Committee Chair		0.051+		
		(0.030)		
Log Chamber Size			1.294	1.032
			(1.295)	(1.288)
Log Chamber Size × Committee Chair			0.384**	
			(0.039)	
Log Chamber Size × Seniority				0.037**
				(0.006)
Seniority	0.033**	0.033**	0.029**	-0.137**
	(0.006)	(0.006)	(0.006)	(0.027)
Committee Chair	0.479**	0.272*	-1.171**	0.500**
	(0.026)	(0.131)	(0.157)	(0.025)
Majority Party	-0.423**	0.374**	0.371**	0.374**
	(0.079)	(0.031)	(0.029)	(0.029)
Observations	68,948	68,948	72,888	72,888
R^2	0.130	0.128	0.138	0.135

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Fixed effects by chamber and term, standard errors clustered by legislator. All control variables from Table 1 are included in all models. Complete model results, including coefficients for all control variables and fixed effects coefficients are available in the accompanying Dataverse files. The results show that key institutional effects from Table 3 are robust to analyses of individual-level data.

Table A11: Importance of Calendar Control across Legislative Stages

	Dependent variable:				
	BILL Score (A11.1)	*AIC Score* (A11.2)	*ABC Score* (A11.3)	*PASS Score* (A11.4)	*LAW Score* (A11.5)
Majority Party × Majority Party Controls Calendar	0.110**	0.239**	0.309**	0.305**	0.316**
	(0.022)	(0.028)	(0.028)	(0.025)	(0.028)
Majority Party Controls Calendar	0.065	0.038	0.018	0.027	0.039
	(0.112)	(0.162)	(0.165)	(0.125)	(0.147)
Majority Party	0.154**	0.236**	0.232**	0.212**	0.160**
	(0.030)	(0.038)	(0.041)	(0.025)	(0.027)
Observations	69,186	69,186	69,186	69,186	69,186
R^2	0.067	0.105	0.123	0.139	0.107

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Fixed effects by chamber and term, standard errors clustered by legislator. All control variables from Table 1 are included in all models. Complete model results, including coefficients for all control variables and fixed effects coefficients are available in the accompanying Dataverse files. The dependent variables are the five legislative stage components that make up the SLES (each normalized to a mean value of one). The results from the interactive variable show that – in state legislative chambers where the majority party controls the calendar (according to Anzia and Jackman 2013) – the average difference between a majority- and minority-party lawmaker's SLES rises through the committee stages and remains large throughout later lawmaking stages.

Table A12: Importance of Gatekeeping Powers across Legislative Stages

	Dependent variable:				
	BILL Score (A12.1)	*AIC Score* (A12.2)	*ABC Score* (A12.3)	*PASS Score* (A12.4)	*LAW Score* (A12.5)
Majority Party × Committee Gatekeeping Power	0.112**	0.387**	0.426**	0.360**	0.346**
	(0.026)	(0.029)	(0.030)	(0.028)	(0.031)
Committee Gatekeeping Power	-0.183*	-0.420**	-0.474**	-0.409**	-0.401**
	(0.082)	(0.092)	(0.099)	(0.096)	(0.103)
Majority Party	0.142**	0.091*	0.107**	0.139**	0.105**
	(0.031)	(0.038)	(0.039)	(0.029)	(0.030)
Observations	72,888	72,888	72,888	72,888	72,888
R^2	0.068	0.107	0.127	0.142	0.109

Note: $^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$, *two-tailed.* Fixed effects by chamber and term, standard errors clustered by legislator. All control variables from Table 1 are included in all models. Complete model results, including coefficients for all control variables and fixed effects coefficients are available in the accompanying Dataverse files. The dependent variables are the five legislative stage components that make up the SLES (each normalized to a mean value of one). The results from the interactive variable show that – in state legislative chambers where the majority party exercises committee gatekeeping authority (according to Anzia and Jackman 2013) – the average difference between a majority- and minority-party lawmaker's SLES rises through the committee stages and remains large throughout later lawmaking stages.

Code, Coding Decisions, and Validation Across States

Given the differences across states, legislative chambers, and over time, significant research was done to properly code each bill in respect to: (1) linking the bill to its primary sponsor; (2) coding bill progress, in terms of which stages of the lawmaking process the bill reached; and (3) coding the bill as "commemorative", "substantive", or "substantive and significant". This section of the appendix discusses each of these in turn.

For each state, constructing and refining an accurate coding protocol involved consulting the state legislative websites and related documents, contacting the relevant parliamentarian or other officials in the state, and working through numerous examples.

Upon a determination by the authors that the resultant code was working well, we drew a sample of 10% of the bills from each chamber-term, up to a maximum of 250 bills within each. We used stratified random sampling, with the strata based on the different patterns of bill codings (such as substantive bills that became law or commemorative bills that received action in committee), in order to ensure that no single category would represent the entire validation set and thus crowd out our ability to identify errors.

A team of graduate student research assistants then used this sample and validated 49,037 bills in total. Of those, 95.2% (46,693) were determined to be accurately coded. For the remaining cases (38 of which identified an error between commemorative and substantive bills; and 2,306 of which identified an error with the lawmaking stage classification), we checked each possible error raised. Many of these were ultimately not errors, but were misidentified as such by the RA's. For the others, often there was a single common cause that led to the errors being repeated multiple times within the same chamber-term. In such cases, one or two corrections to the code were sufficient to remove the errors. When such coding changes were made, we then verified that they corrected the identified errors and that they did not introduce any other unanticipated changes to the data. This process allowed in excess of 99% alignment between the automated data and the bills checked by hand. It is this refined code that we include in the replication materials on the APSR Dataverse.

Further details of each of these coding decisions are given below.

Identifying Primary Bill Sponsor

Across the states, there are different processes involved in sponsoring bills. We engaged in an in-depth analysis state-by-state, confronting such issues as multiple sponsors, bills sponsored by request, and bills sponsored by committees. In each case, we consulted legislative rules and, when necessary, contacted state parliamentarian (or similar) offices.

The following three subsections explain how we identify the legislator most closely associated with each piece of legislation.

Selecting among Multiple Primary Sponsors

When an individual legislator is identified as the primary sponsor or primary author alone, we credit that individual with having introduced the bill and shepherded it through the legislative process. However, in many states, more than one sponsor may be identified as the primary sponsor or author.

We explored whether to assign credit to multiple legislators in such cases or to focus solely on a single primary sponsor, ultimately choosing the latter approach. Our decision was based on three considerations. First, qualitatively, we contacted individuals in the legislative research and drafting offices in several states that allowed multiple sponsors. Based on these conversations, we discerned that the first sponsor listed was typically the introductory sponsor and that such an individual tended to be most heavily involved in the shepherding and advocating work that signals their effectiveness at lawmaking. Second, for the state of North Carolina, we constructed three sets of State Legislative Effectiveness Scores – one based on the first-listed introducing sponsor; one based on dividing credit among all primary sponsors equally; and one based on all sponsors and cosponsors equally. In comparing these scores to the NCCPPR survey rankings (as discussed in the main body of the manuscript and in Appendix Table A4), we found much worse performance for the broadest measure and no significant (substantive nor statistical) difference between the inclusion of a single introductory sponsor vs. all primary sponsors combined. Third, relying on the newspaper coverage for Substantive and Significant legislation (as discussed in the main body of the manuscript and detailed further below), we searched for proper names within 50 words of the bill reference in each article. In 308 instances, such articles included a reference to one of the primary sponsors. For 281 of these cases (91%), the reference was to the introducing sponsor that we identified, yielding further confidence to the central lawmaking role played by such single individuals. Coupled with the desire for consistency with the coding for other states in which multiple sponsors are not allowed, we proceeded with assigning credit to a single sponsor for each bill in each state.

To identify the single primary sponsor in states allowing multiple sponsors, we rely on the order that legislators' names are listed on the state legislative records for each bill. Notably, for all of the states in our sample where multiple sponsors are permitted, these lists are *not alphabetized* in the available bill text (a feature that might suggest the order is not meaningless); rather, the individual who either requested the bill's drafting or formally introduced it to the chamber is listed first.[22] In turn, in cases where we need to select from among multiple possible primary sponsors, we use this ordering as our primary means of doing so.

As a related issue, we occasionally encounter pieces of legislation for which the legislative records are missing information about the primary sponsor. In these cases, we are tasked with the choice of either selecting a primary sponsor from among the set of cosponsors (or coauthors) listed on the bill page or omitting the legislation entirely from our calculations. When possible, we opt for the former method. For example, in Indiana, when the primary sponsor is not listed, we attribute the bill to the first coauthor, who tends to be more like a co-primary sponsor than what we would typically describe as a cosponsor. In contrast, for Massachusetts, we attribute

[22] It is worth noting that for some states and time periods, the main bill information page from which we pull most of our data does alphabetize the list of primary sponsors. In these cases, we instead pull the names of the sponsors from the bill text directly, which does not suffer from this problem.

bills with missing primary sponsors to the individual who originally filed the bill. More generally, we adapt our solutions to the recording practices and rules for each state, and when not able to identify the likely missing information, omit the record instead.

Accounting for Bills Sponsored by Request

Another relatively unique feature of the lawmaking process in state legislatures is that many permit their members to introduce bills by request of an outside party. Typically, this means the governor, state agencies, and interest groups, though in some states, this can even be individuals. Our general rule for "by request" bills is that we attribute them to the member who introduced it and ignore the requesting entity. While an outside party may have written the legislation and lobbied for it throughout the legislative process, the legislator still had to make the choice to introduce the bill to the chamber, and that legislator's institutional position and/or lawmaking skills may help determine the bill's fate, thus signaling the lawmaker's effectiveness. As such, we take this introduction as a tacit endorsement of the legislation and a stated willingness to advocate for the bill.[23]

The primary exception to our standard practice for "by request" bills is Massachusetts, where we drop all bills introduced by request. The reason for this is that the Massachusetts state constitution establishes a right of free petition (see Article XIX), which essentially requires legislators to introduce petitions from constituents in their district. Whereas in other states legislators have a choice of whether or not they introduce a bill by request, members of the Massachusetts General Court must do so regardless of their preferences for the legislation. Given this lack of choice, we drop all such bills from our sample and do not use them in the estimation of our effectiveness scores.

Identifying the Primary Sponsor on Committee-Sponsored Legislation

For the majority of states that permit committee-sponsored legislation, we drop committee bills entirely. In most cases, these bills make up less than 10 percent of all legislation. In other states, however, committee bills make up a larger portion of the bills that are written and advanced through the legislative process. For example, in North Dakota, South Dakota, and Wyoming, committee bills make up approximately 20 to 35 percent of all legislation. In Oregon, this number is closer to 50 percent. Despite the larger share of legislation in these states that is sponsored by committees, however, what all these states have in common is that committee-sponsored legislation is not the primary vehicle through which law gets made. As such, we largely drop committee bills from our analysis and instead focus on bills directly sponsored by individual lawmakers.

The four exceptions to this rule are Connecticut, Iowa, Idaho, and Kansas. In each of these states, the overwhelming majority of legislation is sponsored by committees; and we were not comfortable with simply dropping these bills, because the remaining sample is incredibly small, meaning very few legislators would ultimately end up being credited with sponsoring any legislation. Instead, for three of these states, we identified an alternative method to identify the legislator most closely connected to each piece of legislation. Unfortunately, we were not able to

[23] Interestingly, some states openly specify in their records that introduction of "by request" bills neither implies support nor opposition of the legislation. Yet, so long as the legislator has a choice to introduce it, we take the action of doing so as sufficient evidence to attribute credit for it to the legislator.

find a solution for Kansas, and so we chose not to estimate scores for the state at all. While we are optimistic this may change in the future, for now we simply cannot include it.

For the other three states, we took the following steps:

1. Connecticut:
   - There are 3 main types of bills in Connecticut: "proposed bills", "committee bills", and "raised bills". See the "About Bills" page from the Connecticut Legislative Commissioner's office for more details.
   - Committee bills generally begin as proposed bills, and once the committee formalizes the language, the committee becomes the sponsor. Thus, for committee bills, we recode committee-sponsored legislation using the name of the legislator who introduced the bill (i.e., is listed first on the original "proposed bill"). For example, compare the bill information page for S.B. 1 here with the PDF of the proposed bill here. Note that for the period 1991 to 1998, we do not have the name of the legislator who introduced each bill. Instead, we use the first cosponsor. The reason for this is that from 1999 onward, the legislator who introduced the bill is nearly always the first cosponsor listed on committee bills.
   - For raised bills, we follow the pre/post-1999 logic above and fill in as many sponsors as possible using the first cosponsor from the chamber where the bill was introduced. We attribute all remaining raised bills (approximately 20 percent of the total sample in any given term) to the relevant committee chair.
2. Iowa:
   - We code the individual designated as the floor manager as the primary sponsor for committee-sponsored bills. Based on our interpretation of the legislative rules and discussions with their legislative information office, floor managers play a similar role to sponsors in other states (opening/closing debate, guiding a bill through the floor). They also are often the chair of the subcommittee that heard the bill. The downside to using floor managers is that bills that do not make it out of committee do not necessarily have floor managers. In practice, however, most bills make it out of committee and so we only end up dropping a relatively small number of the remaining uncoded bills.
3. Idaho:
   - We recode committee-sponsored bills with the name of the individual who originally requested the bill. This is listed on the bill's statement of purpose. For an example, see the bill information page for HB93 in 2019 here and click the link for the statement of purpose.

Coding Bill Progress

The terminology capturing bill progress also varies across states. Again, we consulted rules and procedures as well as knowledgeable individuals to generate a protocol for coding decisions on a state-by-state basis.

For example, key phrases used to capture stages after bill introduction in North Dakota are:

- **AIC**: 'committee hearing', 'reported back', 'do pass', 'do not pass', 'divided committee report', 'majority report'

- **ABC**: ‘reported back’, ‘placed on calendar’, ‘second reading’, ‘^amendment’, ‘passed’, ‘failed’, ‘reconsidered’, ‘rereferred’
- **PASS**: ‘second reading, passed’
- **LAW**: ‘signed by gov’, ‘filed with secretary of state’

All code needed to identify these stages is available in the replication materials in the APSR Dataverse. As shown in the code, the standard language sometimes changes from one term to the next within certain chambers. As such, we advise future researchers who wish to use our code to extend this work to follow a similar iterative coding and verifying process as we note above for the current data.

Coding Bill Significance

As mentioned in the text, references in major newspapers in each state are used to identify “substantive and significant” bills. Table A13 provides a list of the base terms that we use to generate the list of commemorative bills, with the initial categories in rows 1 and 2 identifying such bills as possibilities and the third category used to exclude bills that have phrases often used in commemorative bills but also by our definition deal with substantive issues. For each state, we adjust these terms manually, to account for the unique patterns and recording practices used in that state. As noted above, we then had a team of research assistants verify the accuracy of this coding. They identified 38 errors in the 49,037 bills checked (for a greater than 99.9% confirmation rate); nevertheless, we hand corrected these 38 instances to reduce the known errors to zero.

Table A13: Regular Expression Terms Used to Code Commemorative Bills

Terms from Volden and Wiseman (2014)	expressing support; urging; condol; commemorat; honor|^honor; memoria; congratul; public holiday; for the relief of; for the private relief of; retention of the name; medal; posthumous; provide for correction; to name; rename; to remove any doubt
Additional Terms	anniversary; raise awareness; awareness (day|week|month); dedicating; celebrat; appreciat; commend|^commend; official design; official emblem; remembrance; state symbol; proclamation
Excluded Terms	appropriates; appropriation; approp\\.; appropriating; to appropriate; \\$; dollars; to fund; funding; funds; expenditure; penalt; felony; memorial (act|law); criminal; lien; statutory; license fee; ^tax| tax; prohibit; rainy day; procedure; contract; firearm; weapon; inflation; exempt; legislative intent; deposit; budget; tuition; violation; compensation; promulgate; regulation; bonds; jurisdiction; liabilit; task force; annuity; probate; financ; honor[a-z]+ discharge; revenue; compliance; sale of; health benefit; insurer; primary care; grant program; purchase; donation; official language; refund; election; capital improvements; liquor sales

Note: To code commemorative bills, we use all available title, summary, and keyword information for each bill. We begin by using the terms identified by Volden and Wiseman (2014) in their coding of commemoratives for Congress and then supplement this list with a set of additional terms that are useful for state legislation specifically. To minimize the false positive rate, we also establish a set of excluded terms, primarily but not exclusively related to spending, that

– if contained in a bill's description – will not be coded as commemorative. Finally, for each state, we adjust these terms as necessary to ensure that particular aspects of a state's textual style either do not prevent us from identifying known commemorative bills or incorrectly coding substantive bills as commemorative.

To identify bills that are both substantive and significant, we rely on newspaper coverage of legislation from all 49 of the states for which we estimate effectiveness scores. The logic here is relatively simple: bills that are likely to have a large impact on state politics and policy should be more likely to receive coverage in a state-focused newspaper, and so by extracting mentions of legislation from newspaper coverage, we can identify a list of bills to classify as substantive and significant. To do so, we do the following:

1. Identify a newspaper for each state and time period using three criteria: (a) availability in either LexisNexis or Newsbank over an extended period of time; (b) coverage of state legislative action, including specific reference to bill numbers in each legislative session; and (c) location (either in the state capital, one of the state's largest cities, or having one of the largest circulations of newspapers in the state).[24] Of the 58 newspapers selected across the 49 states that we analyze, 29 are located in state capitals. Of the remaining 29, most are from the largest non-capital city in the state or the largest newspaper by circulation (or both). However, where such a paper was not available to us in LexisNexis or Newsbank over a consistent period of time, or where such paper did not include reports of legislative bill numbers, we continued down the list to smaller outlets. Three cases stand out as being from smaller cities and lower circulation outlets: *The Telegraph Herald* (Dubuque, Iowa), *The Mississippi Sun Herald* (Biloxi/Gulfport, Mississippi), and the *Brattleboro Reformer* (Brattleboro, Vermont). A complete list of Newspapers that we use to identify legislation can be found in Table A2.
2. Identify and gather (temporarily) the text of all articles covering state legislation. To do so, for each state, we restrict our search to the selected newspaper and time period, keeping only articles that are published during each legislative session (with a two-week buffer on each side). For most states, we deem an article to be related to legislation if it uses either the term "bill" or "legislation". However, in some states, we also require that the term "bill" be paired with a mention of one of the legislative chambers (i.e., "house", "senate", or "assembly").
3. Trim down the list of articles identified as discussing legislation. To do so, we drop any article that:
    - Includes a link to the website for the U.S. Congress (as these are almost certainly federal bills)
    - Is located in the sports section or contains one of a set of terms that is blatantly sports related (e.g., "quarterback", "ground ball").[25]
    - Does not include any remotely political or legislative terms, such as "chamber", "committee", "agenda", "hearing", "vote", "election", and approximately 25 others.

[24] Because Newsbank was unavailable at our universities, we paid for access to the needed newspapers and signed a data licensing agreement, allowing us to share the output from our analysis but not the raw text files. Researchers seeking a similar agreement should reach out to Newsbank directly (newsbank.com/sales).

[25] For whatever reason, there are many sports writers named "Bill". Relatedly, we also encounter a number of difficulties with baseball box scores, which include text like "ab", which we might interpret as a reference to an assembly bill rather than an "at bat".

4. Extract mentions of legislation from the text of each article using a highly flexible set of regular expressions (included in the replication files). This allows us to collect all mentions of the form: “House Bill 1000”, “HB1000”, “1998-HB-1000”, “HB1000-EX1”, and many others.
5. Parse and standardize the extracted bill mentions. After doing so, we drop any bill mention that:
    - Contains dollar amounts, decimals, or clear but frequent mismatches (unions like “local s6”, the airbus “a300” airplane, etc.)
    - Refers to a bill type that is incompatible with the state’s recording practices or chambers (e.g., “HB” or “SB” in Maine or mentions of an assembly bill in states where the lower chamber is not identified as the assembly).
    - Is of the form “S0123” and the article mentions the U.S. Congress (excluding “ID”, “MA”, “NC”, “NJ”, “NY”, “RI”, “SC”, “VT”, which also use the format “S0123” to identify Senate bills).
    - Indicates the bill is a Senate bill and the article mentions the U.S. Congress within a 25-word text snippet on either side of the bill mention (this applies to newspapers sourced from Newsbank only).
    - Comes from an article that mentions 10 or more unique pieces of legislation. This is necessary because some papers will occasionally publish articles identifying all pieces of legislation that are either currently active or have scheduled committee hearings.
    - Is identified via a manual evaluation of the matches as being a false positive.
6. Merge the mentions into our larger database of legislation, accounting for legislative term and, when possible, special sessions.

We make two sets of adjustments to our coding processes by state. First, for Tennessee and Vermont, we drop any bill mention in which the article also mentions Georgia and New Hampshire, respectively. We do this to account for the fact that the newspapers that we use for these states provide significant coverage of the Georgia and New Hampshire legislatures as well as the Tennessee and Vermont legislatures.

Second, for a subset of states (California, Colorado, Iowa, Maine, Michigan, Minnesota, Nebraska, New Hampshire, and Wyoming), we either supplement or omit terms from the main set of regular expressions to identify bill mentions, in order to account for unique features of each state’s bill recording practices or newspaper coverage.

Once this process is complete, we use our commemorative and S&S lists to code each bill. When a bill is identified as being both commemorative and substantive and significant (or when a bill is identified as neither commemorative nor substantive and significant), we code it as substantive.

For the Substantive and Significant bills coding, as described here, we also engaged in a lengthy process of replication by a team of research assistants. Specifically, for the states of North Carolina, Virginia, and Texas, over the years of 2009-2017, student research assistants read each of the newspapers we used during the terms of the legislative sessions including all stories that

mentioned the word “bill” or the partial phrase “legis”. Our main purpose for doing so was to identify whether our restriction in the automated process to bills that were identified by bill numbers was missing a significant number of those that are identified by sponsor alone or by title or common phrasing (e.g., North Carolina’s “bathroom bill” targeting transgender individuals). Whereas the automated process took less than a month of programming time for all states and years, this hand-coding took a team of three RA’s about three months per state. In the end, the automated process identified about 70% of the manually coded bills (634 out of 923 substantive and significant bills in North Carolina, 920 out of 1221 in Texas, and 774 out of 1065 in Virginia). Considered in reverse, the hand-coding identified just under 70% of the automated bills (634 of 979 in North Carolina, 920 of 1235 in Texas, and 774 of 1273 in Virginia). Thus the errors in research assistants missing bills (due to various human errors) that are identified automatically seemed on par with the errors in the coded process missing bills (due to focusing on bill numbers alone) identified by the research assistants.

The Code

All code used to collect and characterize bills and lawmakers across all state legislatures included here is available as a series of R scripts in the accompanying APSR Dataverse files.