Estimating Proposal and Status Quo Locations for Legislation using Cosponsorships, Roll-Call Votes, and Interest Group Bill Positions

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Abstract

Generation of point estimates for bill proposals and status quo locations has long proven a difficult impediment to the study of policymaking. Indeed, while legislators' ideal points and roll call cutpoints are well-identified using existing methods, identification of proposal and status quo locations is fragile and relies crucially upon the curvature of the legislators' assumed utility functions. In this study, we develop an original dataset of 1,007 bill proposal and status quo point estimates from the 110th through the 114th Congresses, by jointly scaling cosponsorship, roll call, and interest group position-taking data. Importantly, because interest groups in our data take public positions on bills before they ever receive a roll call vote, our approach generates point estimates for a large number of bills that never receive a roll call vote, permitting comparison between bills that do and do not advance through Congress. After introducing our methodology, we demonstrate how these data and the underlying methodology can contribute to study of a wide variety of topics in legislative politics, including partisan agenda-setting and members' bill sponsorship strategies.

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Questions regarding the spatial locations of bill proposals and their associated status quos are fundamental to understanding both individual legislator behavior and macrolevel policymaking outcomes. Indeed, whether one wishes to investigate strategic proposal moderation by legislators of different parties or ideological persuasions, gatekeeping patterns under various majority control regimes, or bill passage rates under divided and unified government, information about the ideological content of legislation is frequently of first-order importance. Despite this importance, knowledge about the ideological content of legislation and relevant status quos remains scant, due in large part to a variety of methodological and measurement challenges.

As previous research has underscored, a primary barrier to empirical research in this area derives from pernicious measurement challenges associated with identifying bill proposal and associated status quo locations in ideological space (Clinton 2017). Indeed, because common estimation techniques identify only a spatial cutpoint between "yay" and "nay" roll call votes, identification of either status quo or bill proposal locations relies heavily on assumptions about the curvature of legislators' utility functions. Generation of better-identified estimates therefore requires additional information from alternative data sources or from the context surrounding individual roll call votes themselves (e.g., Woon 2008; Richman 2011; Clinton 2012; Peress 2013). Moreover, despite significant progress in incorporating such additional information from a variety of other sources, current measurements of bill proposal and status quo locations lack several key features necessary for studying the policymaking process. Most notably, such methods score a relatively small sample of bills or issue areas, are confined to legislative proposals that actually receive a roll call vote, or fail to place both proposals and status quos on a common ideological dimension.

In this paper, we build on previous measurement approaches to develop a large new dataset of bill proposal and status quo estimates. To generate these estimates, our approach jointly scales roll-call and cosponsorship data with public positions taken by organized interest groups on legislation before the 110th through 114th Congresses. A key advantage of our approach is that our proposal and status quo estimates include hundreds of bills on which interest groups took positions but that died in committee, and thus never received a roll-call vote. Scoring such proposals allows for improved inferences about agenda-setting, proposal-making, and legislative institutions. Moreover, in incorporating interest group position-taking into these estimates, we provide a framework for generating similar estimates whenever interest group positions are available.

We proceed as follows. First, we review existing methods and measures of bill proposal and status quo location estimates, underscoring the need for an approach that affords researchers both a larger sample size and data on both successful and unsuccessful legislation. Second, we detail our approach for generating such estimates and the data we use to do so. Third, we execute validity checks for our estimates, including both bill-specific and member-specific parameters. Fourth, we present an application of our data to a common empirical question in the study of agenda-setting, highlighting how our scores provide useful information that may diverge from expectations under existing theories of Congress. We conclude by outlining future uses for our data, as well as avenues for expansion of our existing data.

Approaches to Estimating Bill Proposal and Status Quo Locations

To date, widespread measures of bill proposal and status quo locations have proven highly elusive. As Clinton summarizes in his review (Clinton 2017) of strategies for measuring the content and direction of policy changes, common methodologies for generating ideal point estimates (e.g. Poole and Rosenthal 1997; Clinton, Jackman and Rivers 2004) fall short of producing widespread and reliable estimates for proposal and status quo locations. Indeed, while legislators' ideal points and bills' cutpoints are well identified using existing methods, identification of proposal locations (and, relatedly, status quo positions) is fragile and relies crucially upon the curvature of legislators' assumed utility functions. This fragile identification, per Poole and Rosenthal's (1991) initial warning, has prevented legislative scholars from using proposal and status quo estimates in analyses of policymaking.

Several recent studies have attempted to address the proposal location identification problem by incorporating additional information about the policymaking process itself into the estimation process. Clinton and Meirowitz (2001), Clinton and Meirowitz (2004) and Clinton (2012), for example, utilize information from bills' legislative histories to determine how votes on various amendments and motions relate to one another. Using this information, estimation of individual "yay" and "nay" spatial parameters is constrained accordingly, allowing for better identification of each "yay" or "nay" location parameter for a given roll call. Several studies have applied this approach to examine policy changes in a variety of issue areas, such as immigration (Pope and Treier 2011) and civil rights (Jeong, Miller and Sened 2009). In spite of the advantages of this approach, however, the level of detailed historical information it requires precludes broad, multi-issue application of the method. Indeed, while incorporation of such information is well-suited to investigations of particular bills or sequences of bills, it is not practical for amassing estimates required to examine across-issue differences, overall bill proposal strategies, or differences between bills that receive votes and those that do not.

For this reason, recent studies have turned to other data to better identify status quo and proposal locations. In a recent paper on civil rights legislation in the 19th, 20th, and 21st Centuries, for example, Bateman, Clinton and Lapinski (2017) impute votes for members of Congress on legislation predating their tenures, based on their actual votes on similar legislation. Members who voted in favor of modern reauthorizations of the Voting Rights Act, for example, would also have voted for the original Voting Rights Act, they argue, as the modern authorization is far more liberal than the original law itself. The addition of these imputed votes into an estimation matrix improves the estimation of bill cutpoints, ensuring that ideal points and cutpoints from the 21st Century are substantively comparable to 19th Century estimates. These improvements notwithstanding, though, the issue of fragile identification still obtains, as the method improves the identification of cutpoints, not the proposal locations themselves.

Rather than relying upon roll call data entirely, Richman (2011) uses information from candidate surveys (the National Political Awareness Test or NPAT) to better identify status quo locations at the issue-area level. That is, while roll call data provide information necessary to capture legislators' preferences, candidates' responses to survey questions about their desired policy changes—i.e., whether they believe policy in a specific issue area is too liberal or conservative—allow Richman to capture where current policy lies, relative to these legislator preferences. Indeed, if a member believes current policy is too conservative, then the status quo must lie to the right of her ideal point (and vice versa for status quos that are too liberal). Given the number of legislators who answer the NPAT and also possess a DW-NOMINATE score, this approach allows Richman to narrow down the spatial location of the status quo. In spite of the intuitiveness and unique features of this measure, though, the scores remain better suited for some applications than others. First, for scholars interested in bill-level analyses of the legislative process, the issue-level nature of these data is limiting—especially given the multi-issue nature of many modern bills. Relatedly, while Richman's approach generates plausible status quo estimates, it does not generate proposal locations associated with the issue areas it covers. Thus, for scholars interested in the status quo specifically, Richman's approach is well-suited to such applications—particularly given the fact that it tracks changes in issue-level status quos over time. Nevertheless, for bill- and proposal-level examinations, other measures based on more bill-specific information are likely better-suited.

In their analyses of legislative proposal-making in Congress, both Woon (2008) and Peress (2013) make use of such bill-specific information: cosponsorship data. In his study, Woon (2008) uses cosponsorship information to generate bill proposal location estimates by arguing that members make cosponosorship decisions based on a random utility model centered around their proximities to the proposed legislation. Doing so allows Woon to measure a proposal location independent of its related status quo. Given the prevalence of cosponsorship data, this approach generates thousands of proposal estimates in each Congress; moreover, given its incorporation of DW-NOMINATE scores into the estimation process, the approach makes use of well-vetted estimates of legislator preferences. These advantages notwithstanding, though, Woon's measures lack some key features—namely, bill proposals' status quo locations—that might broaden their applicability to studies of policymaking in Congress.

Peress (2013) therefore extends Woon's approach along these lines by developing a method that *jointly* scales roll call and cosponsorship decisions, in order to identify *both* proposal locations and vote-specific cutpoints. As with Woon's approach, key to Peress's identification strategy is his characterization of members' decisions to cosponsor: rather than a relative-utility choice between a proposal and its related status quo, cosponsorship decisions are better described as a "utility threshold" decision—meaning that a member of Congress will sponsor legislation that is sufficiently close to her ideal point, regardless of the location of the status quo. Under this characterization, then, cosponsorships are inherently expressive: the decision *against* cosponsorship does not count as tacit support for the status quo. This stands in contrast to voting decisions, for which members clearly must decide between a proposal and a reversion point or status quo.

Peress shows that this characterization of cosponsorship data, when combined information about a bill's cutpoint imparted by roll call data, allows for the identification of proposal locations and cutpoints on the same preference scale. When combined, the cutpoint information generated through voting data and the proposal-specific information imparted by cosponsorship allow one to then "solve" for the location of the status quo. Thus, rather than relying upon fragile identification via players' utility functions, Peress's approach leverages information from cosponsorship decisions to identify bill locations.

This approach, however, is not without limitations. More specifically, because legislative proposals change considerably before they eventually receive votes, finding cosponsorship data that is specific to the version of a bill that ultimately receives a vote is difficult. In fact, because the House does not allow cosponsorship of amendments, Peress is forced to restrict his analysis to a relatively small number of bills introduced in the Senate. Thus, while his joint scaling of cosponsorship and roll data provide a creative and useful strategy for identifying proposal and status quo locations, the operationalization of the method generates a sample of bills too small for many research applications within the study of legislative behavior and policymaking.

Taken together, then, current approaches to proposal and status quo estimation lack several characteristics necessary for widespread application in the study of legislative politics. Indeed, while some approaches excel in identifying policy movements as bills progress through Congress, the information necessary to execute these approaches precludes widespread application across issue areas and time periods. Conversely, while other approaches rely upon more easily collectable data, institutional features in Congress severely restrict the sample of bills score-able through such methods. Further still, nearly all of the aforementioned approaches (with the exception of Woon's) fail to provide a means for estimating proposal locations for bills that never receive a roll call vote.[1]

In this study, we address these challenges by adapting Woon's and Peress's basic approach to include yet another source of information into the estimation of proposal locations: public position-taking by interest groups on bills before Congress. In doing so, we generate bill proposal and status quo location scores for 1,007 pieces of legislation before the 110th - 114th Congresses—including a large number that never received a roll call vote. Below, we detail how interest-group position-taking data enable us to generate such scores and further lay out the methodology and data underlying our

[1] Richman's method provides some such information, as it generates a status quo location for various issue areas at the beginning of each Congress. However, given the issue-level—and not bill-level—nature of his estimates, the resulting data are more useful for macro-level examinations of policymaking outcomes than individual-level differences in bill-sponsorship patterns.

approach.

Using Position-Taking Data to Estimate Bill Proposal and Status Quo Locations

As noted above, we build upon Peress's estimation approach to generate our location scores for bill proposals and their associated status quo locations. According to this approach, bill proposal (and, later, status quo) locations may be identified by jointly scaling members' roll call and cosponsorship decisions. With regard to voting decisions specifically, Peress's model mimics most common spatial models of voting, with members voting in favor of legislation when the proposed policy movement p_j lies closer to the member i's ideal policy α_i than the associated status quo s_j. Formally, member i vote "yay" when

$$u^p_{i,j} \geq u^s_{i,j}$$

$$-(p_j - \alpha_i)^2 + \epsilon^p_{i,j} \geq -(s_j - \alpha_i)^2 + \epsilon^s_{i,j}$$

$$\epsilon^p_{i,j} - \epsilon^s_{i,j} \geq p_j^2 s_j^2 - 2\alpha(p_j - s_j)$$

Suppose that $\epsilon^p_{i,j} - \epsilon^s_{i,j}$ has standard deviation θ_j and CDF $F(\epsilon/\theta_j)$. Defining $\epsilon_{i,j} = \epsilon^p_{i,j} - \epsilon^s_{i,j}$ and supposing that $\epsilon_{i,j}$ are independent across i and j, we can show that:

$$Pr(y_{i,j} = 1; \alpha_i, p_j, s_j, \theta_j) \sim F\left(\frac{p_j^2 s_j^2 - 2\alpha(p_j - s_j)}{\theta_j}\right)$$

.

Given his goal of recovering p_j and s_j, Peress combines this parameterization with cosponsorship information to prove that p_j and s_j are globally identified using a joint scaling of roll call and cosponsorship data. To capture the expressive, non-instrumental nature of cosponsorship decisions, he next models cosponsorships using a utility threshold model. Under such a model, members will cosponsor legislation when the proximity of that legislation crosses some (bill- and legislator-adjusted) threshold. Formally, member i will cosponsor bill j when

$$u^c_{i,j} \geq \overline{u}_{i,j}$$

$$-(p_j - \alpha_i)^2 \geq \theta' x_i + q_j + \epsilon^c_{i,j}$$

where x_i represents a member-specific fixed effect and q_j represents a bill-specific fixed effect.

Peress shows that, when modeled in this fashion, roll call and cosponsorship information allow one to accurately recover proposal and status quo locations. Central to his method, however, is the assumption that the item to which members respond—proposal p_j—remains constant across cosponsorship and voting decisions. As noted above, this eventually serves as a major impediment to the broad application of Peress's methodology, as most cosponsorship decisions occur at a different time than votes for final passage—meaning that the cosponsored version of a bill frequently differs substantively from the version upon which members evaluate against the status quo. As a result, for thousands of bills that are amended before receiving a vote, usable cosponsorship data are not available. In the House, for example, members cannot cosponsor amendments at all, leading Peress to focus his efforts on Senate bills. Even in the Senate, though, cosponsorship of amendments is far less typical than cosponsorship on original legislation. Consequently, Peress's approach is ultimately applicable to a relatively small subsample of bills that receive roll call votes in Congress.

We address this challenge by introducing information from interest-group position-taking into Peress's estimation procedure. As previous studies have underscored (e.g., Lorenz 2019, Crosson, Furnas and Lorenz 2019), interest groups take public positions on thousands of pieces of legislation before Congress. Whether through editorials, social media, Congressional testimony, press releases, or other venues, interest groups routinely urge members of Congress to vote in favor of or against specific bills in the House and Senate. Crucially, these positions share several similarities with roll call voting. First, like roll call voting, interest-group positions are bill-specific and can be characterized in a "yay" v. "nay" fashion. Moreover, interest groups take positions on a large number of bills across a wide range of issue areas. Finally, interest groups commonly take positions on many of the same bills within each Congress. Taken together, these features of interest-group position-taking data enable their use in scaling applications. Crosson, Furnas and Lorenz (2019) and Thieme (Forthcoming), for example, treat interest groups as quasi-legislators and jointly scale their bill-specific positions with roll call data in Congress and the state legislatures to generate ideal points for position-taking groups.

Unlike roll call voting, however, interest-group position-taking is *not* confined in its timing. Indeed, a bill need not come up for a vote in order for a group to take a position on it. This feature in particular renders such data highly useful for applying Peress's basic methodology to a larger number of bills than what Peress was able to achieve. That is, because interest groups frequently take positions at the *beginning* of the legislative process—often at the time of bill introduction—the timing of such positions render usable for scaling the thousands of (previously unusable) cosponsorship decisions members make when legislation is originally introduced. Put differently, since interest groups provide an up/down vote on introduced legislation—allowing for the estimation of a cutpoint—cosponsorship on original legislation may be used to identify proposal locations *at the time of introduction*. Consequently, not only does jointly scaling interest group position-taking, cosponsorship, and roll call data make greater use of existing cosponsorship data to generate location estimates, but it also allows for the estimation of proposal locations for bills that never actually receive a roll call vote. Our approach thereby generates estimates for approximately 8 to 10 times as many bills as Peress originally scored. Moreover, over 80 percent of these estimates relate to bills that did not receive a roll call vote.

Data and Estimation Procedure

To execute our modified application of Peress's methodology, we rely on interest-group position-taking data compiled by the non-profit organization MapLight. As Lorenz (2019) and Crosson, Furnas and Lorenz (2019) summarize, MapLight uses a combination of both automated and traditional data collection methods to search for public interest group positions for a large number of bills introduced in each Congressional session. Sources for these positions include press releases, newsletters, social media, and coalition letters, and other over the time period covered in this study (110th through 114th Congresses), MapLight amassed interest-group positions for thousands of bills in both the House and Senate.[2]

Given that MapLight only records a position for an interest group when it takes a clear position in support or opposition to a specific bill, the data allow one to scale groups jointly with legislators, generating ideal points for such groups on the same scale as members of Congress (Crosson, Furnas

[2]For a further discussion of potential selection issues associated with using MapLight data, see Lorenz (2019).

and Lorenz 2019). We incorporate interest-group position-taking in a similar fashion here, introducing interest groups as legislators within our roll call matrix. Given that interest groups may change their position on a bill as it changes substantively, however, we introduce *amended* legislation as its own item within the roll call and cosponsorship matrices. Though proposal locations for such legislation are estimable at the time of introduction, we typically are not able to generate updated proposal locations for subsequent iterations of amended legislation (given that such amendments are generally not cosponsored). However, splitting altered bills into separate items allows us to ensure that interest groups' positions are paired with the proper version of a piece of legislation. Voting decisions in our estimation procedure are modeled identically to those found in typical applications of item-response theory to ideal point estimation (see Clinton, Jackman and Rivers 2004):

$$Pr(y_{i,j} = 1; \gamma, \beta, \alpha) \sim F(\beta_j \alpha_i + \gamma_j)$$

where discrimination parameter $\beta_j = \frac{-2(p_j s_j)}{\theta_j}$ and difficulty parameter $\gamma_j = \frac{p_j^2 s_j^2}{\theta_j}$.

To determine which bills and interest groups are included in our estimation process, we apply a standard similar to that detailed by Crosson, Furnas and Lorenz (2019). That is, we subject our position-taking matrix to a k-core filtration process where k = 5 (Dorogovtsev, Goltsev and Mendes 2006). Rather than applying this standard to a combined roll-call/interest group matrix, however, we use the procedure to ensure that interest-group position taking at the *bill introduction* stage meets the k-core filtration standards. As Crosson, Furnas and Lorenz (2019) explain, k-core filtration decomposes a matrix—treated graph theoretically—into a series of subgraphs in which each node is connected to at least k other nodes that are themselves also connected to k nodes. After applying this procedure to our data, we are therefore left with a position-taking matrix of groups that took at least 5 positions on introduced bills that themselves had at least 5 positions taken on them (by groups also taking at least 5 positions on bills, recursively). This ensures that our cutpoint estimates are derived from the core of the position taking network.

Cosponsorship information, which is drawn from Fowler, Waugh and Sohn's (2017) compilation of GovTrack's cosponsorship data, is also organized into a matrix where rows represent legislators and columns represent the same bills/bill versions found in the roll call matrix. In this case, however, interest groups' cosponsorship "decisions" are simply coded as missing, since interest groups are not able to cosponsor legislation. Using these data, we model cosponsorship decisions as follows:

$$Pr(y^c_{i,j} = 1) \sim F(-x_i - q_j - \rho(p_j - \theta_i)^2)$$

where x_i and q_j are legislator- and bill-specific fixed effects and ρ represents the weight that legislators place on ideological proximity (rather member- or bill-specific factors) in rendering their cosponsorship decisions.

To jointly scale the above voting and cosponsorship decisions, we use a Bayesian approach, assuming the following priors over the parameters in our model:[3]

$$\alpha_i \sim \mathcal{N}(0, 1)$$

$$x_i \sim \mathcal{N}(0, 1)$$

$$\gamma_j \sim \mathcal{N}(0, .04)$$

$$q_j \sim \mathcal{N}(0, 1)$$

$$p_j \sim \mathcal{N}(0, 1)$$

$$\rho \sim U(0, 1)$$

For parameters common to previous applications of Bayesian IRT to ideal point estimation, these prior distributions mirror those found in previous studies. For parameters not found in prior studies, including $x_i,\ q_j,\ p_j$ and ρ, generally uninformative priors are drawn from a standard normal distribution.[4] Finite sample identification is achieved by positively and negatively truncating the prior distributions of a known liberal and conservative member of Congress,[5] in a fashion similar to that introduced by Martin and Quinn (2002).

We generate our parameter estimates in JAGS, running 3 chains of 55,000 iterations each, using a

[3]For the full model statement, along with all of the code used to estimate our scores, see Appendix A

[4]The lone exception is the weighting parameter ρ, for which entirely uninformative Uniform priors are used.

[5]In our case, Rep. Jim Sensenbrenner (R - WI) on the right and Rep. Pete Stark (D - CA) on the left

burn-in of 5,000 and thinning to every 50th iteration. In total, posterior distributions were generated for 15,150 parameters, over a time period of approximately seven days. To ensure as efficient an estimation process as possible, we generated starting values for α_i, β_j, and γ_j by scaling the roll call matrix using the `ideal()` function in the **R** package `pscl` (Jackman 2017). Doing so is similar to `ideal()`'s usage of eigenvalue-eigenvector decomposition to generate starting values for estimated parameters.

Validation

Given our scores' coverage of pre-vote stages of the legislative process, along with the bill coverage provided by our method, we believe the data we generate are useful for a wide variety of applications. Below, we undergo several checks on the validity of our estimated scores, before underscoring some of these applications. First, we compare the legislator and interest group ideal points that result from our estimation procedure to ideal points generated via previous approaches. After establishing that our ideal points bear strong resemblance to previous measures of legislative and interest group preferences, we next validate the bill scores themselves by re-examining findings from previous investigations of proposal behavior. After presenting some basic descriptive information about our bill scores and status quo estimates, we find that our scores replicate several key findings from Woon's (2008) and Peress's (2013) earlier examinations of legislative proposals.[6]

Estimated Legislator and Interest Group Ideal Points

As a basic face-validity check on our scores, we first take advantage of the fact that our estimation process generates legislator and interest-group ideal points in addition to proposal and status quo locations. That is, we compare here our resulting ideal points to existing measures of legislator and interest-group preferences, in order to assess whether any peculiarities about our bill sample or estimation process significantly alter the recovered dimension underlying our scores. Overall, we find that in spite of the fact that our estimation procedure introduces two new data sources to traditional

[6]We are generally not able to compare our scores directly to Woon's or Peress's bill proposal scores, given that our data cover a different time period than do those studies.

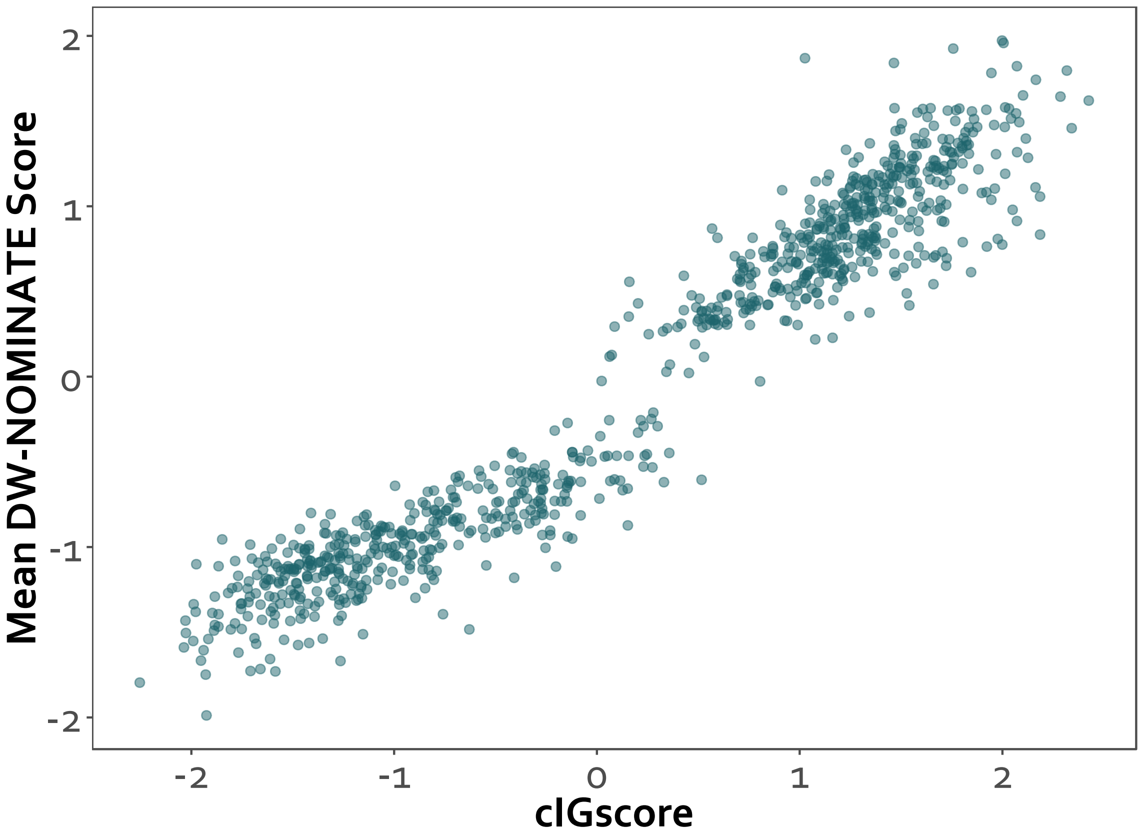

Figure 1: **cIGscores v. DW-NOMINATE, 110th - 114th Congresses**

Notes: *DW-NOMINATE scores on y-axis are equal to the mean DW-NOMINATE score for each legislator from the 110th through 114th Congresses. Overall, the spearman correlation equals 0.952.*

vote-based preference measures, our recovered ideal points correlate strongly with previous measures.

Our first such comparison lies between our ideal points, which we call cIGscores, and first-dimension DW-NOMINATE scores.[7] Figure 1 displays this comparison between cIGscores and the mean DW-NOMINATE score for each legislator over the 110th through 114th Congress period. As the figure depicts, the correlation between the sets of ideal points is strong, exhibiting a Spearman correlation of $\rho = 0.952$. Though perhaps not surprising (given that cIGscores and DW-NOMINATE share some underlying roll-call data), this correlation compares favorably to other scores' correlations with DW-NOMINATE, such as CFscores ($\rho = 0.844$) and Peress's own "combo" cosponsorship-voting ideal points ($\rho = 0.87$).[8]

[7]We call our ideal points cIGscores, because the data underlying our scores is identical to the data used to estimate Crosson, Furnas and Lorenz's (2019) IGscores—with the exception of the added cosponsorship data here.

[8]The Spearman correlation for Peress's scores is drawn from the legislator ideal points provided in his replication file [9] It is unclear whether these ideal points are from a single Congress or all Congresses in his data, as the materials included only one dataset with legislator ideal points

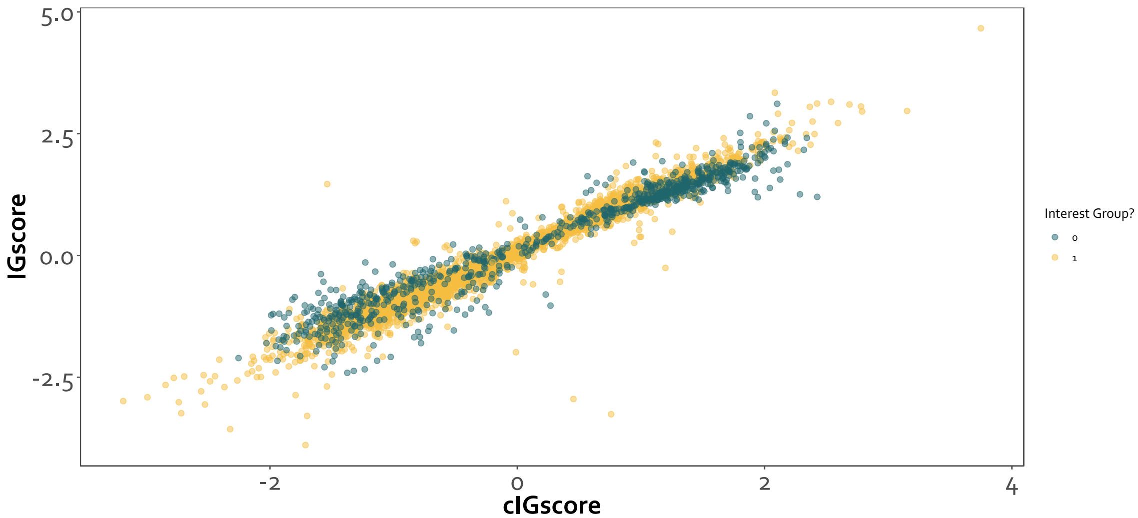

Figure 2: **cIGscores v. IGscores**

Notes: *Correlations between IGscores and cIGscores are* $\rho = 0.958$ *for legislators,* $\rho = 0.980$ *for interest groups, and* $\rho = 0.979$ *overall.*

Correlations with previous composite measures of legislator and interest-group preferences are similarly strong. In Figure 2, we compare cIGscores with Crosson, Furnas and Lorenz's (2019) IGscores. As the figure depicts, for both legislators (blue) and interest groups (yellow), cIGscores exhibit high Spearman correlations with IGscores: $\rho = 0.958$ for legislators, $\rho = 0.980$ for interest groups, and $\rho = 0.979$ overall. Indeed, despite the fact that cIGscores rely upon only a subset of groups and bills used to generate IGscores, these correlations provide reassuring evidence that the cosponsorship data and bill/group sample differences are not dramatically altering the dimension recovered by our estimation procedure.

Bill and Status Quo Coverage, Attributes

Before executing validity tests for our bill and status quo scores, we next present the raw bill and status quo scores themselves, along with basic descriptive information about the scores and our sample of bills. Both exercises serve to ensure that the estimated scores do not cover a peculiar sample of bills, nor do they exhibit qualities that are consonant with conventional wisdom about American policymaking.

In terms of advancement through the legislative process, our scores compare similarly to all bills introduced during the 110th through 114th Congresses. Overall, 3.4 percent of our bills eventually became law, compared to 2.8 percent of all bills over the same time period.[10] Likewise, 15.3 perecent of our bills passed through their chamber of origin, compared to 15.5 percent of all bills. Additionally, chamber origination patterns are similar between our sample of bills and the population introduced over the same time period. 59.8 percent of our bills originated in the House (compared to 65 percent of all bills) and 40.2 percent in the Senate (compared to 35 percent overall).[11] Taken together, these similarities in origin and outcomes suggest that our scored bills cover a subset of bills that does not substantially differ from the population of bills on at least a few major dimensions. Moreover, given that the recovered ideal points presented above correlate so strongly with broad-based roll-call preference measures, it appears that the bill data underlying our scores is well-suited for examining bill proposal patterns in Congress.

Figure 3 presents distributions of our proposal locations across all Congresses within our sample, broken down by party. To provide context, we also present party-level distributions of legislators' cIGscores (depicted in dashed lines). As the figure illustrates, proposal and ideal point estimates cover similar ranges on the ideological scale, with most Democratic proposals lying to the left and most Republican proposals lying to the right. Notably, however, the proposals exhibit considerably more moderation and overlap than do the ideal points, a phenomenon we discuss at greater length below. Additionally, the distribution of Democratic proposals includes two significant modes—one notably more moderate (-0.0873) than the other (-1.204).[12] Although Republican proposals range considerably—from moderate to highly conservative—the distribution of proposals captured in our sample features only one mode, located at 0.52. Here again, we discuss these differences in moderation at greater length below.

As noted above, a benefit associated with Peress's approach and retained in our method is the estimation of status quo locations. In Figure 4, we present the status quos targeted by legislators in

[10] Appendix B provides a Congress-by-Congress comparison of the outcomes of the bills in our sample to the population of bills introduced during the Congresses covered by our scores. Though our bills exhibit a similar rate of passage overall compared to the population of bills, the 114th Congress features far fewer bills that became law than other portions of our sample. The source of this difference is unclear, but it does not appear to have altered the static ideal points generated when all Congresses are pooled.

[11] Appendix B also presents a Congress-by-Congress comparison of the share of our bills originating in the House and Senate for each Congress in our sample.

[12] For reference, the median legislator in the dataset is located at 0.5195332

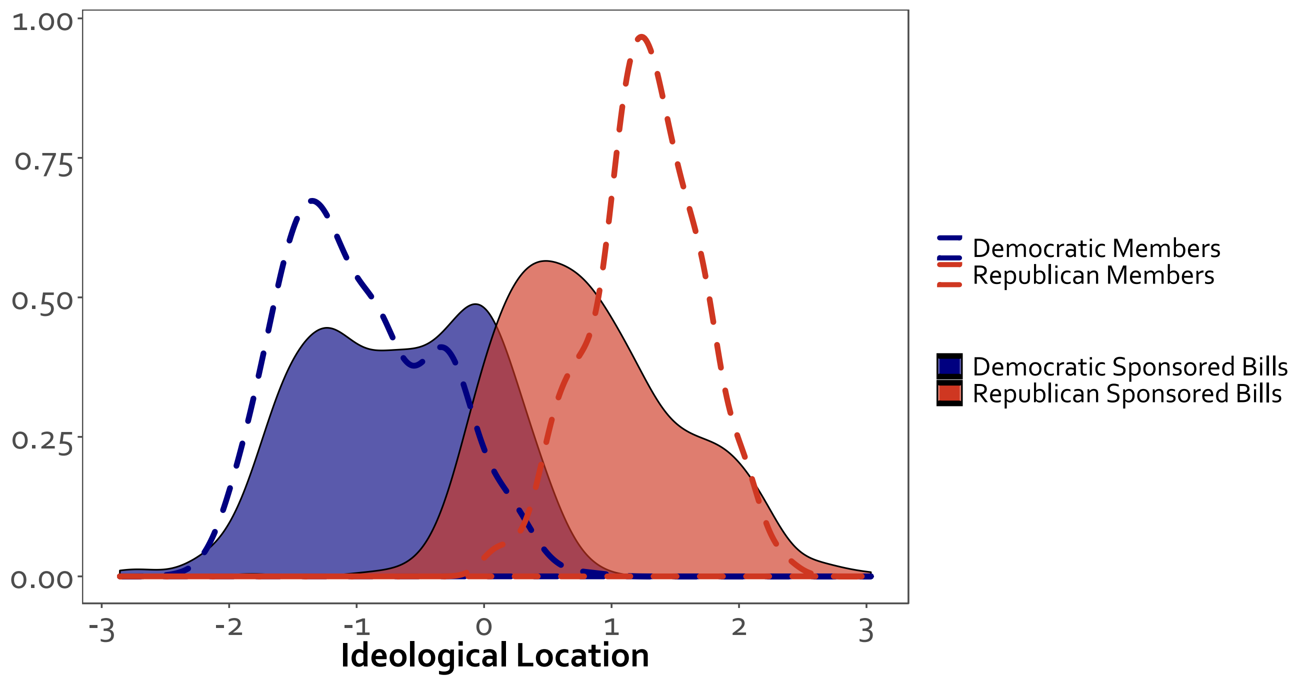

Figure 3: **Bill Proposal Locations and cIGscores, 110th - 114th Congresses**

Notes: *Solid densities depict distributions of proposal locations, while dashed densities depict cIGscores for all members who served in the 110th through 114th Congresses.*

the 110th through 114th Congresses, broken down by party. As the figure illustrates, Republicans generally—though not always—target left-leaning status quo policies, while Democrats typically attempt to address right-leaning status quos. Some interesting exceptions make sense, in light of contextual information about the bills in question. For example, despite the highly conservative (in this case, pro-security) status quo addressed by S. 356 (114th Congress), noted conservative Sen. Mike Lee (R - UT) joined 21 Democratic cosponsors[13] (compared to just 9 Republican cosponsors) to introduce the Electronic Communications Privacy Act Amendments Act. The bill aimed to protect U.S. citizens' privacy in electronic communications and appealed to Lee's libertarian proclivities (in contrast to the pro-security tendencies of much of his caucus). Similarly, in H.R. 2988 (113th Congress), Rep. Dan Lipinski (D - IL) introduced the Forty Hours Is Full Time Act, which would have shifted the definition of "full-time employee" (which is used to determine a small business's liability for providing health insurance coverage) from 30 hours per week to 40. In altering this definition—established under the Affordable Care Act—the bill would likely have prevented some Americans from receiving

[13]Technically, 20 Democratic cosponsors plus Sen. Bernie Sanders.

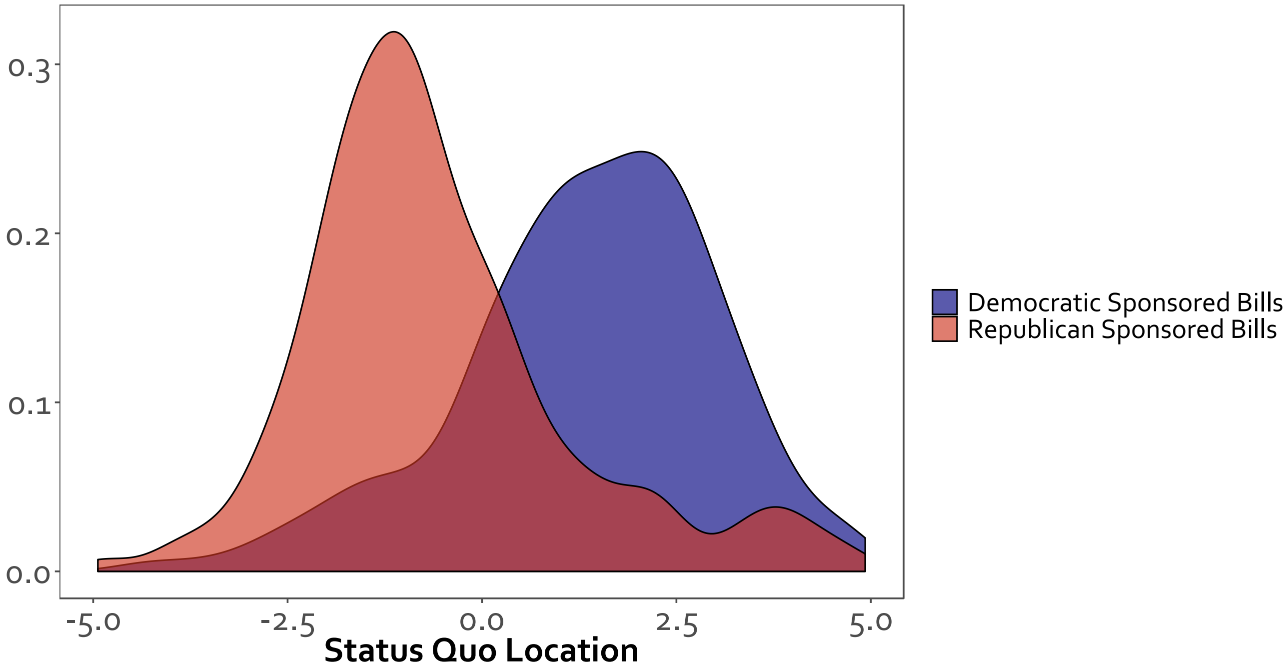

Figure 4: **Status Quo Locations for Introduced Bills**

Notes: *Status quo locations for scored bills, across Congresses 110 through 114.*

employer-provided health insurance. Nevertheless, Lipinski's record as a pro-small-business moderate in the House provides useful context for why a Democrat might target a left-leaning status quo.

Beyond basic descriptive information about proposal location and status quo targeting, of course, our scores enable both re-tests of previous findings and original empirical examinations about the legislative process. Thus, in the next section, we examine several patterns that emerge in our proposal-location data. In doing so, we not only lend further credibility to our estimates, but also demonstrate the usefulness of our data for future applications.

Replication of Previous Findings

As an exercise in nomological/construct validation (c.f. Adcock and Collier 2001), we next examine the extent to which our scores replicate findings from previous studies of bill introduction and agenda-setting. We focus on two sets of findings in particular. First, we examine individual lawmakers' bill introduction behavior, showing that legislators often introduce legislation that is not located at their ideal point. Often, these departures tend toward moderation. We further show that this tendency is pronounced among members of a chamber's majority party and committee leadership, in line with previous literature. Second, we show that proposals that ultimately move further through the legislative process are less likely to be ideologically extreme than those that do not—again, consistent with dozens of models of legislatures and bargaining more broadly. Collectively, these exercises lend credence to the measurement validity of our scores.

Legislator Ideal Points and Proposal Locations

While bills are, in theory, proposed changes to status quo policies, the vast majority of bills stand essentially no chance of being enacted. Given that members of Congress still introduce many bills, their behavior raises the question: what is legislation for? A substantial body of work, beginning with Mayhew (1974), has argued that legislators seek position-taking activities as means to secure reelection. Bill introductions would be an obvious and somewhat costly signal of a member's legislative positions, and thus one might expect bill introductions to be expressive of a legislator's policy preferences (perhaps as constrained by the preferences of their election constituency) and thus to fall on its sponsor's ideal point. Woon (2008), however, finds that members with higher agenda priority (being in the majority party, and particularly the chair of a committee) anticipate needing to satisfy pivotal moderate legislators, and so moderate their legislative proposals more than others do. Such members do so because their proposals are more likely to receive agenda space and therefore stand a greater chance at actually moving the status quo. Thus, if legislation is intended to pass, it should be more moderate among members with higher agenda priority, all else equal.

In Figure 5, we present scatter plots of members' estimated ideal points and the locations of their proposals, faceted by Congress. Were members introducing legislation at their ideal points, all points would fall on the diagonal. Clearly, this is not the case; there are many instances of proposals off the diagonal, and thus different from a member's ideal point. In particular, the overall pattern is that members introduce legislation that is substantially more moderate than their ideal point would suggest, with members to the right (left) of the median regularly introducing legislation discernibly to their left (right). This suggests that bill introductions are, for at least some members, not merely exercises in position-taking. Instead, we find evidence that *some* members are anticipating the need to satisfy moderate lawmakers, and are introducing more moderate legislation than their ideal points

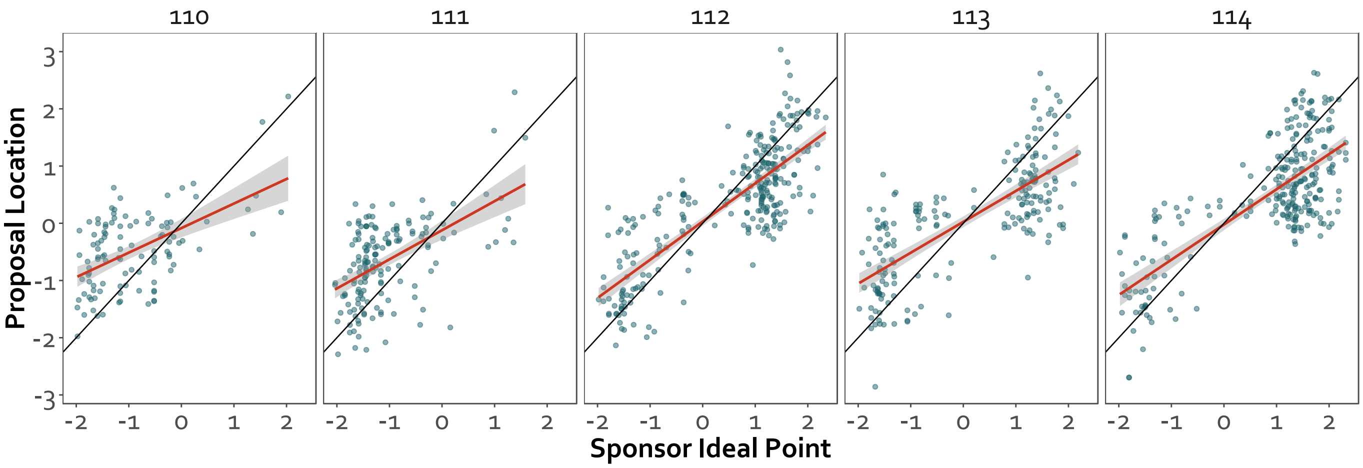

Figure 5: **Members Frequently Introduce Bills Not at their Ideal Point**

Notes: *Black line depicts perfect correlation between sponsor and proposal locations; red depicts actual association. Facetted by Congress. Overall correlation between sponsor and proposal location:* $\rho \approx 0.78$.

would imply.

As Woon (2008) argues, lawmakers in a position to exercise or benefit from agenda-setting powers should be the members most likely to moderate their proposals, as depicted in Figure 5. Bills written by these legislators is more likely to come up for consideration and thus will need to satisfy moderate lawmakers to pass. For our purposes, our measure is therefore further validated to the extent that it finds that proposals introduced by members with higher agenda priority are more likely to be moderate. To test our measure along this dimension, we compare the locations of bills introduced by members identified by Woon (2008) as having higher vs. lower agenda priority.

The first such comparison is between majority and minority members. As the majority party has substantial negative and positive agenda power in both chambers of Congress (Den Hartog and Monroe 2011; Peress 2013; Cox and McCubbins 2005), there is reason to expect that majority party members generally will have higher agenda priority. This leads us to expect that majority party members will offer more moderate proposals than minority party members, all else equal. The second comparison is between members who chair a committee or subcommittee and those who do not. Though there are constraints on chairs' agenda-setting ability, it is still the express power of committee leaders to determine which proposals come under their committee's consideration. Indeed, during markup of legislation in committee, the first amendment to a bill under consideration is often the committee chair's substitute, full-text replacement for the bill (the so-called "chair's mark"). Thus, committee chairs exercise meaningful agenda-setting ability and thereby have "agenda priority" for their own legislation. We therefore expect committee or subcommittee chairs' legislation to be more moderate than other members'.

Figure 6 overlays kernel densities of proposal estimates for bills authored by members of different agenda priorities, comparing proposals of high (yellow) and low (blue) levels of agenda priority. In top panel, members of the majority are compared to members of the minority, while the bottom panel compares committee leadership to non-chairs. In both cases, we would expect members with higher agenda priority to introduce more moderate legislation on average, reflected in proposal locations closer to the median legislator's ideal point. We find that both panels exhibit distributions in a manner replicating Woon (2008). In the upper facet, majority party members tend to introduce more moderate proposals on average, while minority party members' proposals are less moderate on average. In the lower facet, committee and subcommittee chairs more frequently introduce proposals near the median legislator. Thus, our measures of proposal location not only replicate previous findings that members introduce bills off of their ideal points, but also correctly replicate *which* members do and in what direction.

Proposal Locations the Lawmaking Process

As previous studies have amply documented, the legislative process in bicameral legislatures tends to favor moderate proposals. To advance through the such legislatures, a proposal must gain the support of the pivotal legislators in each chamber. Such pivotal voters are by definition more moderate (c.f. Krehbiel 1998) than many legislators within their chamber. Thus, proposals that would move a status quo to an extreme value risk being blocked by moderate pivotal actors. Moreover, to the extent that policy status quos are moderate, pivotal actors will prefer (and thus allow to pass) proposals that are more moderate. This is in part why political systems with many veto points in general, and bicameralism in particular, exhibit policy stability (Tsebelis 2002; Tsebelis, Money et al. 1997). Thus, on average, extreme bills should be winnowed out over the course of the legislative process—a feature that a valid measure of proposal locations should capture.

To examine legislative winnowing in the context of our scores, we compare the distribution of

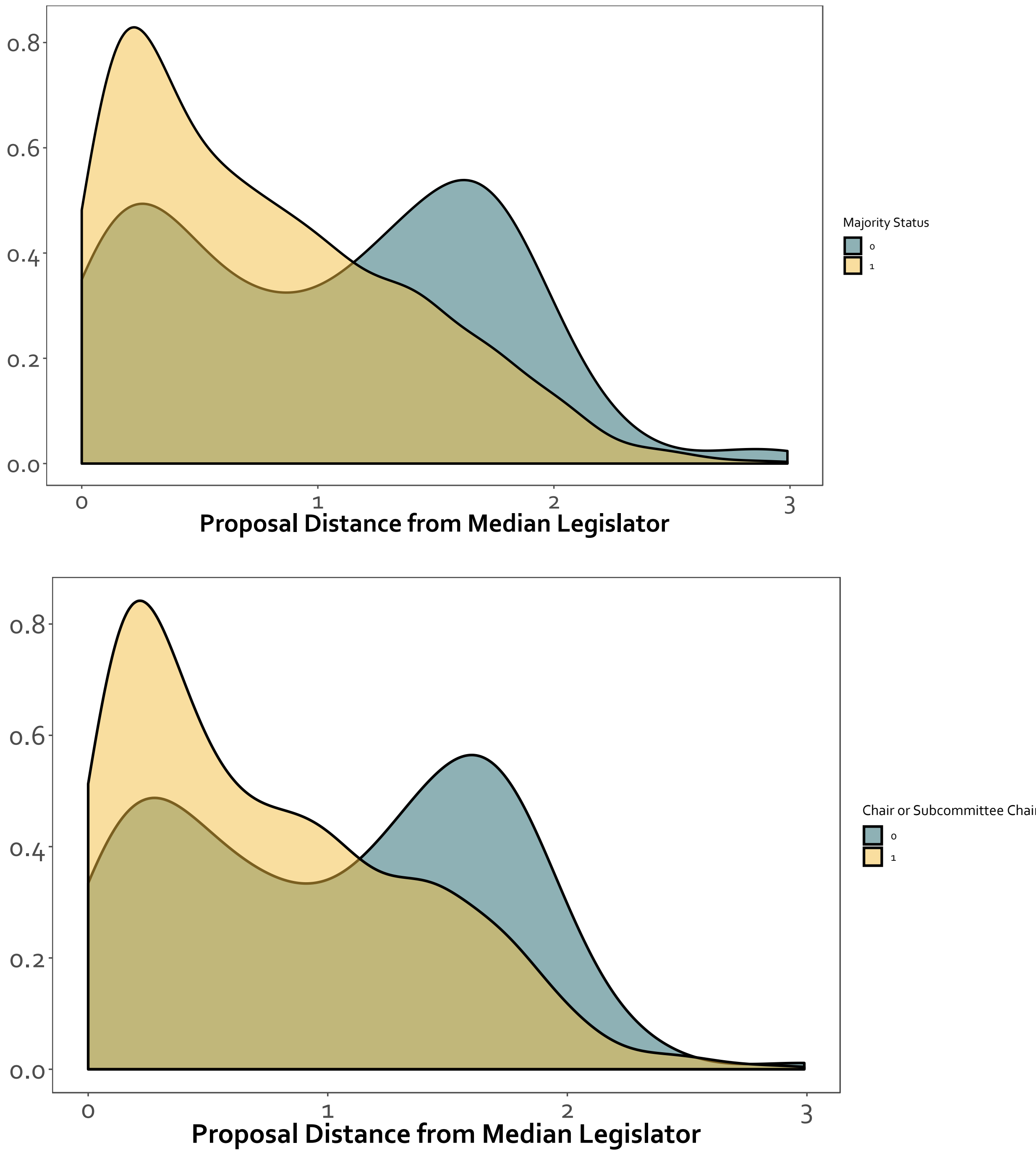

Figure 6: **Majority Party Members, Committee Leadership Introduce More Moderate Legislation**

Notes: *X-axis represents distance between legislator's proposed legislation and the median legislator ideal point in the dataset. Top panel compares majority members to non-majority members (N = 1007) and bottom panel compares committee and subcommittee chairs to committee and subcommittee ranking members (N = 772).*

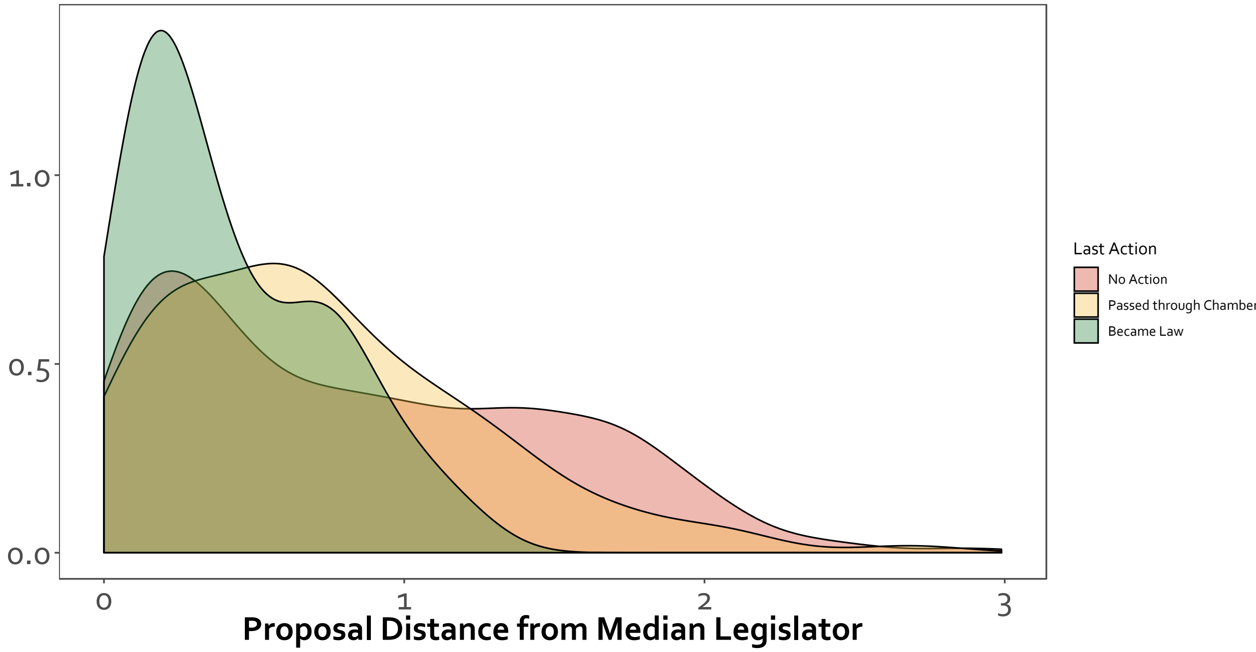

Figure 7: **The Legislative Process Winnows Out Extreme Proposals**

Notes: *Proposal distances from dataset's median legislator, by various outcomes in Congress. N = 853 for no action, N = 120 for passing through chamber, and N = 34 for becoming law.*

proposal locations for bills with (a) no advancement, (b) that passed one chamber, and (c) that became law. Based on the large body of formal models of the legislative process, we expect that bills further along the legislative process will tend to be more moderate than bills with less advancement. More precisely, proposals that advance further through the legislative process should be, on average, closer to the median legislator's ideal point.

Figure 7 demonstrates that our scores capture this winnowing dynamic. Bills that passed through their chamber of origin are generally more moderate than bills that failed to receive action, and bills that became law are similarly less extreme than those that did not. Thus, in line with theoretical predictions, moderate proposals tend to advance further in the legislative process than do more extreme pieces of legislation.

Application: Majority Party Agenda-Setting and Observed Party Unity

As noted throughout, a key feature of our measure lies in the fact that our approach generates scores for bills that never receive a roll call vote. Though examination of such legislation is useful for understanding a wide variety of phenomena in Congress, some of the clearest applications of these data relate to partisan agenda-setting in Congress. We therefore use our data here to examine some basic claims about partisan gatekeeping in the U.S. House and Senate. To be clear, we do not mean to argue that this examination supports or negates previous claims about partisan agenda-setting in Congress. Rather, the examination illustrates the value of our scores for better understanding observed *in*action in Congress—a phenomenon of central importance to topics like agenda-setting.

Much of the recent literature on Congressional institutions focuses on the ability of the majority party to shape the legislative agenda (e.g., Cox and McCubbins 2005; Den Hartog and Monroe 2011; Peress 2013; Aldrich and Rohde 2000). In doing so, the "procedural cartel" (c.f. Cox and McCubbins 2005) works to further the majority party's electoral interests. This goal should be particularly strong as the parties sort ideologically, polarize, and hold on to power less reliably (Lee 2016), as is the case in the period our data cover. Thus, we would expect that majority party leaders should prefer to allow onto the Congressional agenda bills that effectively differentiate between majority and minority party members.

To assess whether our scores reflect these dynamics, we set aside examining estimated proposal *locations* and instead focus on proposal *cutpoints*. If majority party leaders are strategically using the legislative agenda to draw distinctions between the majority and minority parties, we should expect to find that cutpoints for bills granted roll-call votes differentiate between members of the two party, i.e., near the median of the legislature. If the goal of the majority party is instead to fracture the minority party coalition, we would expect cutpoints within the minority party, i.e. to the right of the median when Democrats are the majority and to the left of the median when Republicans hold the majority.

Figure 8 consists of density plots of cutpoints for proposals granted a roll call versus not, faceted to separate Democratic- from Republican-controlled chamber-Congresses. As we predict, cutpoints of bills granted a roll-call vote generally cluster near the middle of the distribution, suggesting that proposals put onto the formal legislative agenda generally distinguish between members on either side of the ideological distribution and thus between the two parties—and not necessarily within the parties. However, this is equally true of proposals *not* granted a roll-call vote. Indeed, rather than partisan gatekeeping driving observed polarization, our cutpoints suggest that proposed legislation is

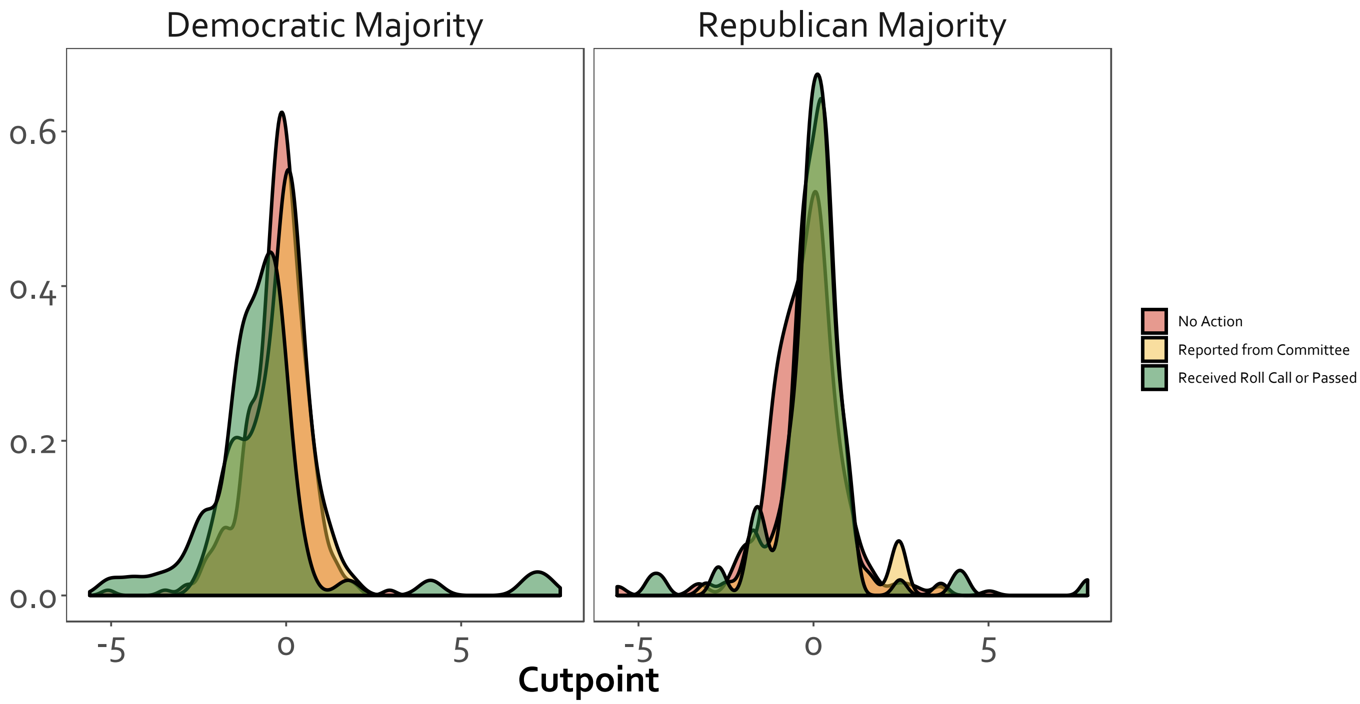

Figure 8: **Majority party agenda control neither blocks majority-dividing bills nor promotes minority-splitting bills**

Notes: *Bill cutpoints* ($-\frac{\beta_j}{\gamma_j}$) *under different majorities, by two sources of potential majority-party gatekeeping.* $N = 450$ *for bills introduced under Democratic Party control of the chamber of origin;* $N = 557$ *for bills introduced under Republican Party control.*

generally quite well-suited at distinguishing between Republicans and Democrats. In fact, evidence from our cutpoints is consistent with the assertion that members are themselves simply quite polarized in their preferences, which is then reflected in their general bill-introduction patterns.

In some ways, these findings diverge from prior work on the effects of majority party agenda-setting, some of which argues that partisan agenda-setting obfuscates the extent of ideological polarization prevalent in Congress. Rather than overstating polarization, however, our data suggest it is possible that partisan agenda-setting is inducing less bias in the Congressional agenda than previously posited. Given that our scores cover bills with terminal outcomes throughout the legislative process, we believe our data are well-suited to further examination of such agenda-setting patterns, allowing analysts to determine whether and to what extent partisan gatekeeping belies actual preference polarization.

Discussion and Conclusions

In this paper, we have introduced a new measure of bill proposal locations and their related status quos for over 1,000 pieces of Congressional legislation. In addition to the roll calls and cosponsorship information leveraged by previous efforts (most directly, Peress 2013), our measure incorporates positions taken by organized interest groups. Given that interest groups take positions throughout the legislative process, inclusion of such positions permit estimation of proposal and status quo locations for bills that did not receive a roll-call vote while also requiring weaker assumptions about the shape of legislators' utility functions. Together, our approach and the scores it generates possess important advantages over previous measures that can enable important substantive findings about proposal-making, agenda-setting, and other core applications within the study of Congress.

Limitations of our measure validation exercises remain. Most notably, given our Bayesian estimation approach, we are able to propagate the uncertainty around our proposal and status quo estimates into the presentation of our estimates.[14] Future iterations of this paper will incorporate this uncertainty into the validation exercises as well as the substantive interpretation of our scores. Moreover, though our scores cover more bills than many measures of bill proposal and status quo locations, future work will expand our estimates to Congresses earlier than the 110th and later than the 114th. Doing so will enable our scores to speak to broader, over-time questions about proposal patterns and agenda-setting behavior.

These limitations notwithstanding, we believe our scores enable several avenues of investigation into legislative behavior and lawmaking in Congress. Woon (2008) and Peress (2013) used their scores to examine the exercise of majority party power and adjudicate between macro-level models of policy change. As we show above, our scores replicate some of these findings but also present new ways of examining the influence of majority party power in Congress. For example, our data suggest that the exercise of majority party agenda-setting does not appear to successfully select for bills that especially distinguish between the majority and minority parties. This suggests that the agenda control exercised by majority parties either serves other purposes, is not as effective as previously theorized, is successfully anticipated by those developing legislative proposals, or is itself

[14]It is worth noting that previous measures cannot incorporate uncertainty in this fashion.

limited by the polarizing proposals introduced by members of Congress. In addition, these scores can bring clarity to long-standing debates about Congressional politics and legislative organization. Particularly when expanded to earlier time periods, our estimates can provide valuable information on the evolution of partisan gatekeeping, members' propensities to offer moderate proposals, and the trade-off between position-taking and policymaking within the bill-writing process. Regardless of the specific application, however, we believe our approach harnesses and builds upon strengths from several previous measures of bill proposal and status quo locations, generating bill-level data that provide legislative scholars flexibility for studying a wide range of features of the policymaking process.

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Appendix

A: Model Statement and Estimation Code

Below, we present the JAGS code used the generate our bill, legislator, and interest group scores. Code for generating, cleaning, and filtering the underlying is available upon request.

```
response <- m1
response_c <- m2



y <- response[,1:ncol(response)]
z <- response_c[,1:ncol(response_c)]

N <- nrow(response)
N

# set total number of items for the latent trait model
K <- ncol(y)
K



#
# -------------------------------------------------------------------- #
# Define JAGS model statement
View(groups1)
MODEL <- "

model{
for(i in 1:N){
for(j in 1:K){
y[i,j] ~ dbern(pi[i, j])
```

```
logit(pi[i,j]) <- beta[j]*theta[i] + alpha[j]

z[i,j] ~ dbern(qi[i,j])
logit(qi[i,j]) <-  (-w[i]-q[j] - rho*pow((p[j] - theta[i]), 2))
}
}

## Priors

# for identification purposes
theta[4645] ~ dnorm(0,1)T(,0)
theta[4655] ~ dnorm(0,1)T(0,)

for(i in 1:4644){
theta[i] ~ dnorm(0, 1)
}
for(i in 4646:4654){
theta[i] ~ dnorm(0, 1)
}
for(i in 4656:N){
theta[i] ~ dnorm(0,1)
}

for(i in 1:N){
w[i] ~ dnorm(0,1)
}

for(j in 1:K){
alpha[j] ~ dnorm(0, .04)  # priors the same as pscl::ideal
beta[j] ~ dnorm(0, .04)
q[j] ~ dnorm(0,1)
p[j] ~ dnorm(0,1)
}
```

```
rho ~ dunif(0,1)

}"

# ---------------------------------------------------------------------- #
# write the file as a temporary name to then read in
write(MODEL, file="MODEL.bug")


# ---------------------------------------------------------------------- #
# create initial values for the latent variable model


# use ML scores for priors
groups1 <- groups1[order(as.numeric(groups1$group_index)),]

inits.function <- function(chain){
  return(switch(chain,
                "1"=list(theta=groups1$scores, beta=results_betas$Discrimination.D1, q = rnorm(K), alpha=
                "2"=list(theta=groups1$scores, beta=results_betas$Discrimination.D1, q = rnorm(K), alpha=
                "3"=list(theta=groups1$scores, beta=results_betas$Discrimination.D1, q = rnorm(K), alpha=

  )
  )
}


save.image(file='jagsprep.RData')
# ---------------------------------------------------------------------- #
# generate variables to pass to JAGS
CHAINS <- 3
ADAPT <- 200
```

```
BURNIN <- 5000
DRAWS <- 50000
THIN <- 50

# set model file for JAGS model call
MODEL.FILE <- "MODEL.bug"


# ---------------------------------------------------------------------- #

m <- jags.model(file=MODEL.FILE,  data=list("y"=y, "z"=z, "N"=N, "K"=K), n.chains=CHAINS, n.adapt=ADAPT,

update(m, BURNIN)
M <- coda.samples(m, DRAWS, variable.names=c("theta", "alpha", "beta","q", "p", "rho", "w"), THIN)

save.image(file="postrun.RData")

# ---------------------------------------------------------------------- #
# process JAGS estimates

load("postrun.RData")

mat1 <- as.matrix(as.mcmc(M[[1]]))
mat2 <- as.matrix(as.mcmc(M[[2]]))
mat3 <- as.matrix(as.mcmc(M[[3]]))
posterior_estimates <- rbind(mat1, mat2, mat3)

parameter.mean <- apply(posterior_estimates, 2, mean)
parameter.sd <- apply(posterior_estimates, 2, sd)
```

B: Sample of Scored Bills

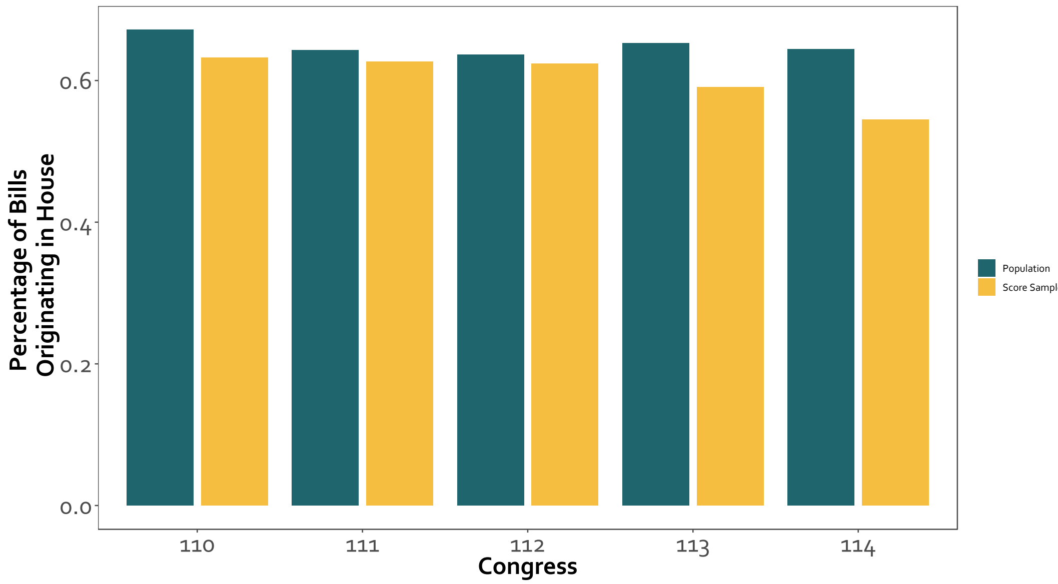

Figure 9: **Chamber of Origination, by Congress**

Notes: *Percentage of bills originating in the House, for all introduced bills (blue) and bills in our sample (yellow). Both overall and Congress-by-Congress percentages are similar between the population of bills and our sample.*

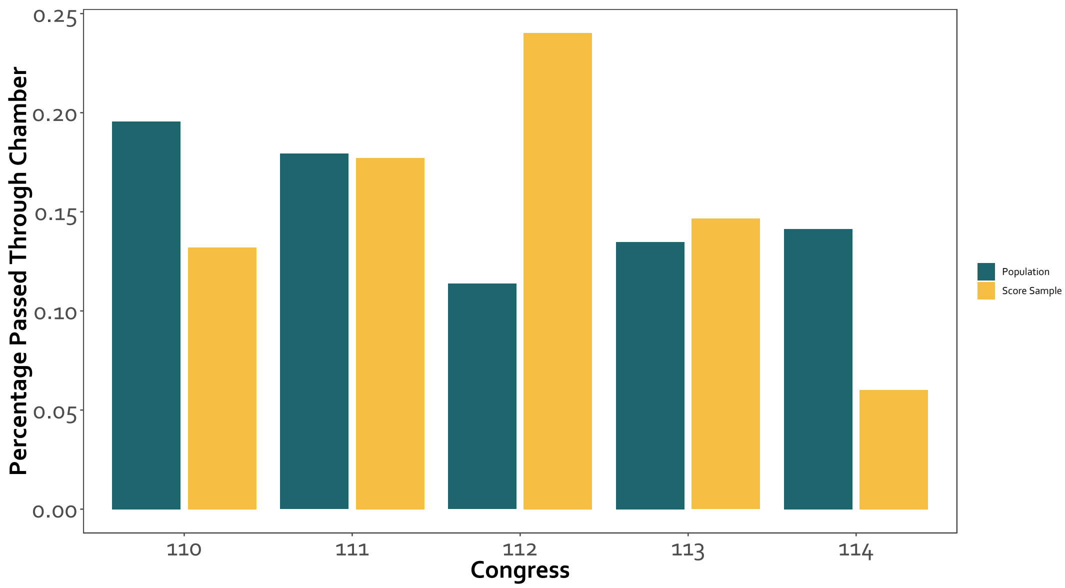

Figure 10: **Passage through Chamber of Origin, by Congress**

Notes: *Percentage of bills that passed through their chamber of origin. Percentages are inclusive of bills that progressed further than passage through the chamber (i.e., a bill that passed through both chambers and became law is counted both as passing through the chamber of origin.*

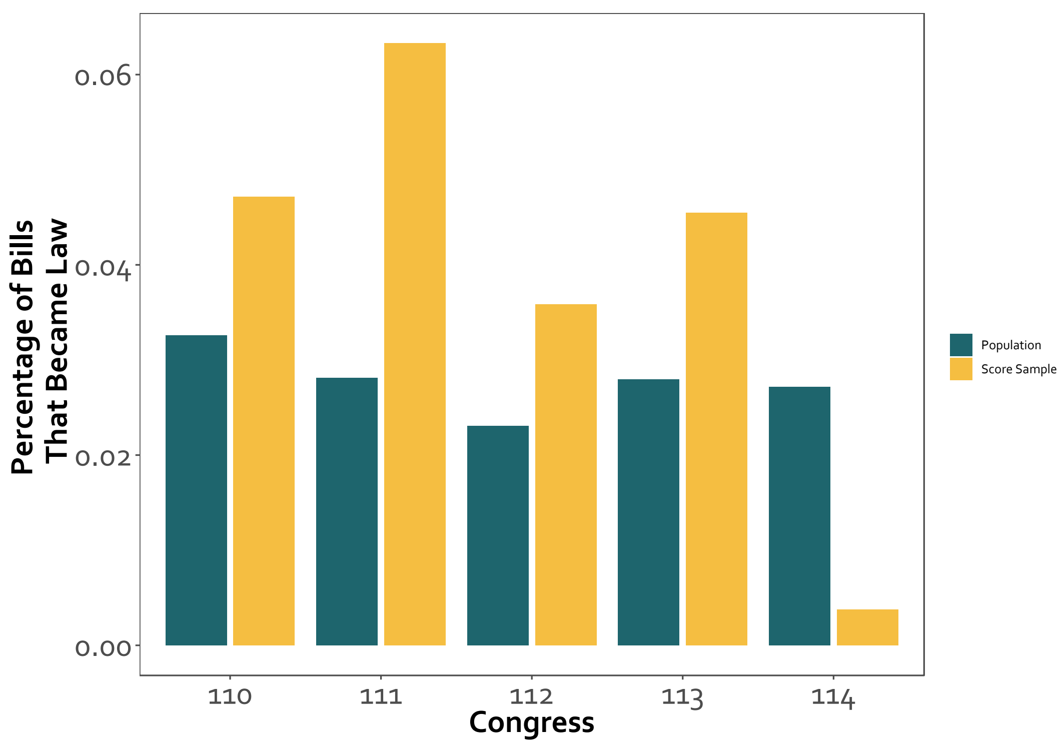

Figure 11: **Bill Passage, by Congress**

Notes: *Percentage of bills that that became law, for both the population of bills and those in our sample.*

C: Convergence

Below, we present Gelman-Rubin ($\widehat{R}$) statistics for Parameter Estimates. We omit traceplots and tables of individual parameter statistics, due to the sheer number of estimates included in our analysis. The Gelman-Rubin $\widehat{R}$ is a summary statistic that compares the ratio of the average variance within each chain to the overall variance in all chains. A ratio close to 1 indicates convergence for estimates, with below 1.10 seen as generally indicative of convergence. As the histogram indicates, the vast majority of our parameter estimates meet this criteria, though a handful do exceed 1.1. These include , γ, and θ parameters only and constitute less than 0.4 percent of all parameters. Still, in future iterations of the paper, we plan to increase the length of the chains, which we believe will further improve the $\widehat{R}$ statistics.

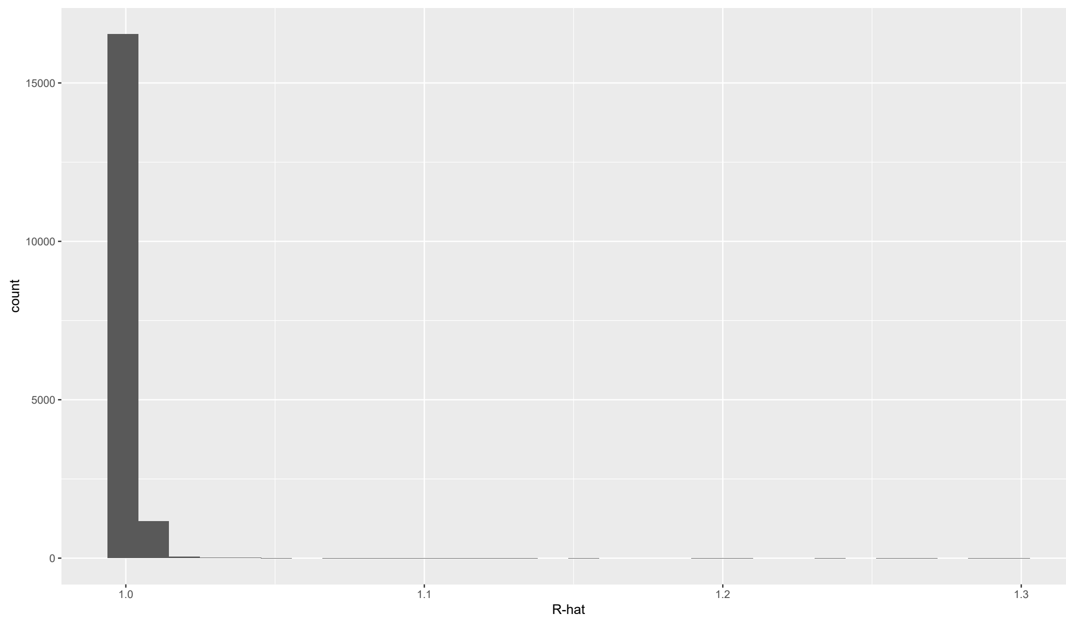

Figure 12: **Gelman-Rubin ($\widehat{R}$) Statistics for Parameter Estimates**