Ideological Bias in Legislator Contact? Evidence From Witness Slips in the Illinois General Assembly

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May 18, 2024

Abstract

Prior work suggests that representational gaps may arise due to biases in who contacts politicians. However, direct measures of legislator contact by members of the public are elusive. This paper leverages a unique data source: witness slips in the Illinois General Assembly, online forms individuals can use to support or oppose legislation before a committee hearing. Using these expressed positions, we place witnesses on the same ideological scale as legislators. We find that witnesses are located closer to the median Republican state legislator (both in Illinois and the nation as a whole) than the median Democrat; furthermore, conservative witnesses are disproportionately active in filing slips. Additional analyses demonstrate that legislators are more likely to vote for (against) a bill or amendment when witnesses support (oppose) the measure, particularly when slips come from donors or constituents.

Word Count: 3,947

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Responsiveness by legislators to constituency preferences requires knowledge of those preferences. However, recent research calls into question whether representatives accurately perceive their constituency's views, typically finding a right-leaning bias in perceptions (Broockman and Skovron 2018; Furnas and LaPira 2023; Hertel-Fernandez, Mildenberger and Stokes 2019; Kertzer and Kafura 2023; Pilet et al. 2023).

An oft-cited reason for these misperceptions is differential exposure in public interactions and outreach (e.g., Miler 2010); as Broockman and Skovron put it, "the citizens who legislators and candidates meet are clearly not a representative sample: politicians may more frequently come in contact with constituents who seek out contact with them" (2018, p. 557). Arnold (1990) emphasizes the influence of these individuals on political decision-making, referring to them collectively as the *attentive public*.

If constituent interactions shape the beliefs and actions of political elites, it is important to understand which citizens are engaged and what policies they support. There is surprisingly little evidence speaking to these questions, due in part to the lack of direct data on contact with elected officials. Instead, scholars often examine indirect sources, like mass surveys that ask respondents whether they have contacted their representative (Broockman and Skovron 2018; Pilet et al. 2023; Schlozman, Verba and Brady 2012) or surveys asking elites which organizations they interact with (Hertel-Fernandez, Mildenberger and Stokes 2019; Pereira 2021). Beyond the fact that self-reported survey responses may be susceptible to non-response bias, social desirability bias, and other forms of measurement error, these measures rarely identify specific policies or bills individuals support or oppose. As a result, it is difficult to attribute legislative action to differential contact.

While researchers do not typically have access to the phone calls, letters, and emails via which citizens contact legislators, this letter uses a unique data source: over 2,000,000 "witness slips" filed across over 20,000 distinct bills and amendments in the Illinois General Assembly over a ten-year period. Witness slips are online forms that any individual

can complete to testify in support or opposition to a bill (or amendment) being heard in committee. On the Illinois General Assembly website, when a committee hearing is posted, individuals can select a bill being considered by the committee, create a witness slip, and publicly express their position on the bill, as well as report any interest group affiliations.

These data provide a rare opportunity to examine direct contact between citizens and elected officials. Several advantages are worth highlighting. First, these witness slips help us characterize the voice of the attentive public across a wide range of issues, while most prior public opinion work examines only those policies that were the subject of survey questions (e.g., Lax, Phillips and Zelizer 2019; Warshaw and Rodden 2012). Second, because citizens take positions on the same bills lawmakers vote on, witnesses and legislators can be scaled on the same ideological dimension (Achen 1978; Matsusaka 2001). Finally, while prior work has analyzed data on interest group contact before (e.g., Butler and Miller 2022; Crosson, Furnas and Lorenz 2020; Thieme 2021), these new data allow us to also explore *mass* outreach to politicians. Because slips include information on the interest group affiliation of each witness, we can analyze witnesses affiliated with interest groups separately from those without any affiliation.[1]

After matching witness slips to committee votes and using ideal point scaling to estimate the ideology of witnesses alongside legislators, we find that a majority of witnesses are located closer to the median Republican state legislator (both in Illinois and the U.S. as a whole) than the median Democratic legislator. Furthermore, conservative witnesses file more slips than liberal ones, skewing the ideological distribution of witnesses further right when taking into account the volume of legislator contact.

[1]This dichotomy mirrors the description of attentive publics by Arnold. As he writes, "When important interests are at stake, [organized interests] communicate with their members in an attempt to create and mobilize larger attentive publics. Attentive publics can also arise when there are no organized groups at all...publicity, whether a natural product of the media covering the news or generated by some of the participants in policy making, can produce attentive publics even among the unorganized and unorganizable" (1990, p. 66).

In additional analyses, we examine how well legislators represent opinions expressed on witness slips, comparing how legislators vote when witnesses take positions on bills versus when they do not. In particular, we find that witness slip support predicts legislators' committee votes, an association that is even stronger for donors and constituents. These results suggest that ideological biases in legislator contact can be politically meaningful.

1 Measuring Witness Ideology

In the Illinois General Assembly, when a bill is heard by committee, individuals are given the opportunity to file "witness slips" in favor of or in opposition to the bill or specific amendments. Witness slips (post-2012) are online forms accessible through the my.ilga.gov website. Once a committee hearing is posted, individuals can click on a link to specific committee hearings, select a bill/amendment, and create a witness slip. On the slip itself, individuals input their biographical information (including interest group affiliation) and state their position (support or oppose).[2] All individuals' names, along with their positions, are published online.

These witness slips have, in part, become a tool used by interest groups seeking to persuade legislators. As an example, 3,273 witness slips were filed on HB 1438, the 2019 bill that legalized recreational marijuana in Illinois. Interest groups represented in the supporting column include the ACLU of Illinois, the SEIU, and the Juvenile Justice Initiative. Interest groups on the opposing side include the IL Drug Enforcement Officers Association, the IL Sheriffs Association, and members of various police departments. This group mobilization is intentional; some groups, like the ACLU, send mailers to their members to flag particular pieces of legislation, for the purposes of communicating the extent of mass agreement with the group's position to legislators. While some bills accrue thousands of witness slips because

[2]While witnesses are allowed to file a witness slip without taking a position, this is quite rare. In our data, only 0.85% of slips do not take a position.

interest groups actively mobilize support, approximately half (52.3%) of witness slips filed do not report any interest group affiliation.

1.1 Data and Methods

To characterize the ideological views expressed via this form of contact, we collect all witness slips filed between 2013 and 2022, consisting of 2,225,267 witness slips on 23,953 distinct bills and amendments. Appendix A presents key descriptive statistics on these witness slips.

Our procedure for estimating ideology takes advantage of the fact that witness slips identify the exact bill or amendment the witness supports or opposes, which is then voted on by legislators in committee. By observing *positions* (slips and votes) by both types of *actors* (witnesses and legislators), it is possible to map witnesses and legislators onto the same ideological space.

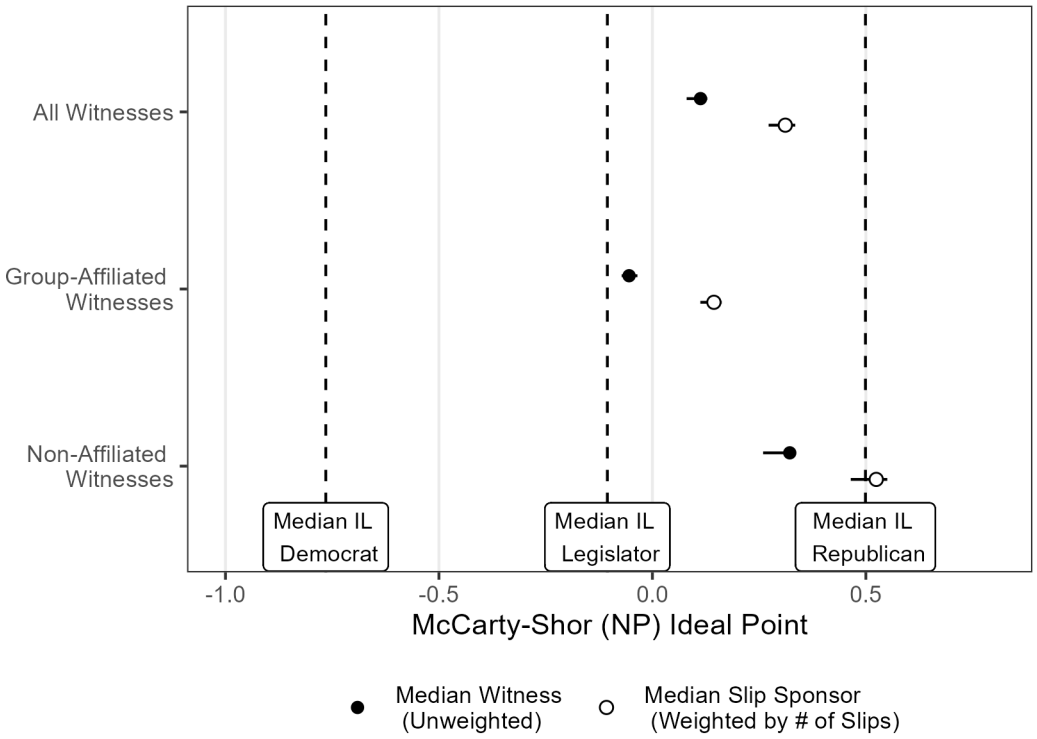
After converting these position data to a vote matrix, we estimate a unidimensional Bayesian item response theory (IRT) model (Clinton, Jackman and Rivers 2004). To make estimates comparable to existing research, we first anchor the ideal points for state legislators at their Shor and McCarty (2011; 2022) ideology score using a spike prior, and then use expressed positions to scale all witnesses that file slips on 20 or more distinct measures.[3] In Appendix D we validate the resulting ideal points by aggregating to the group level, showing that witnesses affiliated with known conservative organizations (e.g., the National Rifle Association) tend to be conservative, while witnesses affiliated with known left-leaning organizations (e.g., the American Civil Liberties Union) tend to be more liberal.

[3]Our scaling procedure is described in more detail in Appendix B. In Appendix C, we investigate whether our results are sensitive to using different thresholds for inclusion. Additionally, our results in the main paper take advantage of the fact that the Bayesian scaling procedure produces not just point estimates, but a full posterior distribution of ideal points for each witness. By randomly sampling across the posterior distribution, we are able to quantify (via Bayesian credibility intervals) the uncertainty in our main quantities of interest due to measurement error.

1.2 Results

We begin by comparing the ideology of witnesses to legislators. Here there are several potential quantities of interest. First, we estimate the ideal point *of the median witness*. Second, we estimate the ideal point *of the median slip sponsor*. In other words, if we weight each witness by number of slips filed, what is the 50th percentile ideal point?

Figure 1: Comparing Witness Ideology Estimates to Legislators



Note: Figure displays the estimated ideal point of the median *witness* as well as the estimated ideal point of the median *slip sponsor* (i.e., the median witness as weighted by the number of slips sponsored). Estimates are provided for witnesses as a whole as well as group- versus non-affiliated witnesses separately. Solid lines indicate 95% Bayesian credibility intervals. For reference, the figure shows the ideal point of the median IL legislator, Democrat, and Republican during this time period.

The top row of Figure 1 displays both of these median estimates for all witnesses, as well as the 95% Bayesian credibility intervals, which capture the uncertainty in each estimate resulting from measurement error.[4]

[4]The credibility intervals for each quantity of interest are calculated by taking the 2.5th and 97.5th

In line with theories of biased legislator contact, the figure reveals that witness slips skew conservative, even in a state such as Illinois with a predominantly Democratic and liberal electorate. The median Illinois state legislator during this time period has an ideal point of -0.106, while the estimated median witness ideal point is 0.097. To put this difference in more concrete terms, 56.3% of witnesses are estimated to have an ideal point closer to the median Illinois Republican than the median Illinois Democrat. This is not just an artifact of a moderate Illinois Republican Party (or an extreme left Illinois Democratic Party); because witness ideology is estimated in the ideological space of the McCarty-Shor ideological space, we can compare to Democratic and Republican state legislators across states. 53.9% of (Illinois) witnesses are ideologically closer to the median Republican state legislator nationwide than the median Democrat.[5]

Furthermore, as the figure shows, this bias is even more pronounced when we take into account how many slips each witness files. The estimated median slip sponsor ideal point is 0.311, well to the right of the median Illinois legislator. The witnesses who file the most slips thus also tend to be the most conservative.

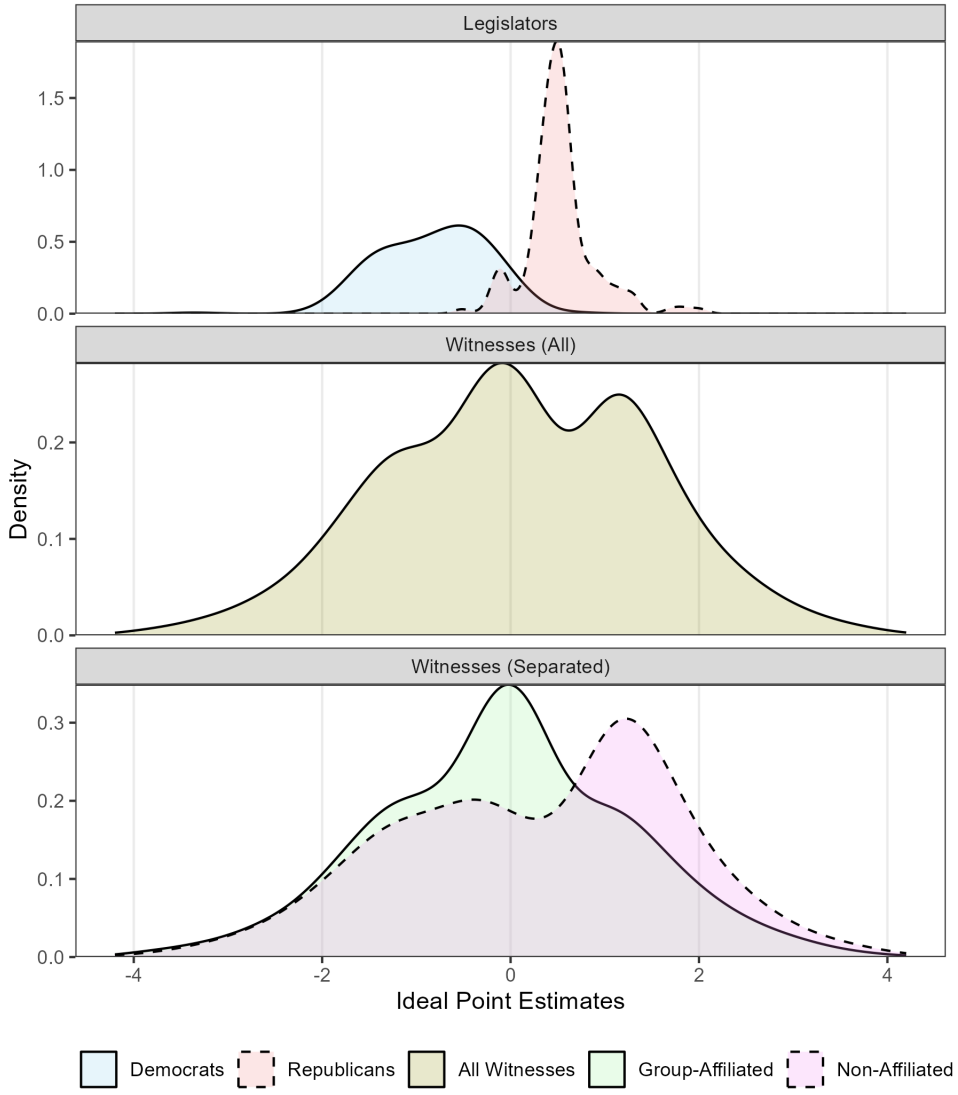
Below the top row in Figure 1, we separate witnesses that report being affiliated with an interest group on their witness slip and those that report no affiliation. Doing so reveals clear ideological differences between these two types of witnesses.[6] The group-affiliated witnesses are on average more liberal than the non-affiliated witnesses. For the latter, the median slip sponsor is statistically indistinguishable from the median Illinois Republican.

percentile estimate for the quantity across all 1,000 posterior samples. Note that, unlike a frequentist confidence interval, the Bayesian credibility interval need not be symmetric around the point estimate, particularly if the distribution is skewed (Dunn and Kruschke 2023, p. 342).

[5]The discussion until this point has treated legislator ideology as fixed, i.e., exogenous. However, as the following section explores, witness slips may influence legislators' votes. To the extent that this occurs, it should reduce the distance between legislator and witness ideal points. Via this logic, the difference between legislators' true underlying ideological preferences and witness ideology shown here may be an underestimate.

[6]It is possible, of course, that some witnesses choose not to disclose they are affiliated with an interest group, or that a witness reports an affiliation with an interest group they have no connection to. Thus the differences between group- and non-affiliated witness ideology should be interpreted with more caution than the comparison between legislators and witnesses as a whole.

Figure 2: Ideological Distributions of Legislators and Witnesses



Note: Figure uses density curves to display the distributions of ideal points for Illinois state legislators (both Republicans and Democrats) and witnesses (in aggregate, as well as group- group versus non-affiliated).

As a further evaluation of witness ideology, Figure 2 displays density curves for witness ideal points (both in aggregate as well as group- vs. non-affiliated) compared to Democratic and Republican Illinois state legislators. While the within-party distributions for state legislators are unimodal (i.e., single-peaked), witness ideology appears to be bimodal. The largest peak is at the center of the distribution, indicating relatively centrist witnesses, while

another peak appears to the right of the Republican Party. Once again, separating group- and non-affiliated witnesses provides additional clarity. The former are almost entirely responsible for the central mode; in other words, witnesses who take positions on both sides of the partisan divide are disproportionately likely to represent an interest group. In contrast, there is a large number of non-affiliated witnesses that typically take conservative positions.

As mentioned earlier, in Appendix D we extend this analysis to analyze witnesses at the interest group level (i.e., examining the ideology of witnesses affiliated with particular groups). Mirroring our finding above, while we observe interest groups across the ideological spectrum in our data, the most active groups in terms of slips filed (e.g., Illinois Gun Owners' Rights, Illinois Coalition for Informed Consent, Lincoln Lobby) tend to be conservative ones.

2 Witness Slips and Roll-Call Voting

2.1 Data and Methods

Are policies supported (opposed) by witnesses more likely to pass (fail)? To address this question, we examine how variation in the number of witness slips filed by members of interest groups across bills and amendments relate to the success of these measures. Doing so allows us to hold constant (via fixed effects and control variables) non-contact features of groups and legislators that make agreement more or less likely, such as ideological disagreement. Additionally, we can consider whether the contact-roll call vote relationship is stronger for certain types of groups than others.[7]

Specifically, we consider whether legislators are more likely to support measures when donating groups contact them. There is a large literature on interest groups in U.S. politics

[7]While this analysis focuses on slips from group-affiliated witnesses, in Appendix E, we conduct a similar analysis examining representation of constituents versus non-constituents on education-related bills, where witnesses often describe the school or school district they are associated with. Our analysis of these bills shows evidence that legislators are more likely to vote in favor of a bill if there is greater constituency support.

examining the question of whether campaign contributions lead to policy influence. Taken altogether, the empirical evidence in prior work has been mixed (for summaries of this work, see Ansolabehere, de Figueiredo and Snyder 2003 and Powell 2013).

Our witness slip data provide an opportunity to gauge whether donor groups are disproportionately well-represented on roll-call votes since we have a measure of interest group positions on bills across a wide range of issues. Our analysis focuses on the relationship between witness slip support and roll-call voting, to determine if the relationship is stronger for contributing groups, as theories of monetary influence suggest. This analysis should be viewed primarily as descriptive, as drawing causal inferences is challenging in a context like this. In particular, witness slip support may be correlated with other factors, like media coverage and broader public support, that may also influence roll-call voting. Nevertheless, if witness slip support by those who donate is more predictive of outcomes than witness slip support by those who do not, this is evidence consistent with theories of unequal influence.

For this analysis the data are structured at the legislator-group-vote level. For legislator i, interest group j, and vote k, the dependent variable is a binary indicator for whether the legislator voted for the measure. The key independent variable, *Net Number of Witness Slips*, represents the volume of witness slip support or opposition by witnesses reporting affiliation with the interest group:[8]

$$\text{Net Number of Witness Slips}_{jk} = \#\text{of slips filed by members of group } j \text{ in support of vote } k \\ -\#\text{of slips filed by members of group } j \text{ in opposition to vote } k.$$

This variable is then standardized (i.e., we subtract the mean and divide by the standard

[8]While this net measure takes into account any disagreement by witnesses affiliated with the same group, there is typically widespread agreement on specific issues. For all group-vote pairs, the average level of within-group agreement by witnesses was 98.9%.

deviation) to facilitate interpretation. We then estimate the following:

$$\text{Vote}_{ik} = \beta \text{ Net Number of Witness Slips}_{jk} + \alpha_i + \gamma_j + \delta_t + \epsilon_{ijk},$$

where Vote_{ik} is a binary indicator equalling 1 if legislator i votes in favor of measure k, and 0 otherwise. Here α_i, γ_j, and δ_t represent legislator, interest group, and legislative session fixed effects. We also estimate this equation using triadic legislator-group-session fixed effects instead of separate fixed effects, to control for all shared characteristics between group and legislator at a particular time. To evaluate whether legislators are more likely to vote with groups that donate more, we run additional specifications that include the amount donated by group k to legislator i, both as a separate variable as well as interacted with the witness slips variable. We also control for the ideological agreement between the group and the legislator.

Contribution data come from the National Institute of Money in State Politics and include the dollar amount of all campaign contributions made by the group to the particular legislator. Ideology is measured using CFscores (Bonica 2014), campaign finance-based measures of the ideology of groups and legislators on a common scale. Campaign contributions are measured on the log scale (by adding 1 and taking the logged dollar amount of total contributions), and ideological distance is simply the absolute difference between the CFscore of the interest group and the CFscore of the legislator.

2.2 Results

The results of this analysis are shown in Table 1. The first column presents the results from the specification described above, including solely the legislator, group, and session fixed effects for all groups matched to the campaign finance datasets. The Net Number of Witness Slips variable is positively correlated with Legislator Vote. A one standard deviation

increase in the Net Number of Slips (approximately 50 slips) is associated with an increase in the probability the legislator votes in favor of a measure of almost six percentage points. Column 2 reveals this estimate is robust to the inclusion of combined legislator-group-session FEs.

Table 1: Witness Mobilization and Committee Roll Call Votes

	DV: Legislator Vote (1 = Favor, 0 = Oppose)			
	(1)	(2)	(3)	(4)
Net # Slips	0.0588**	0.0622**	0.1037*	0.1057**
	(0.0168)	(0.0170)	(0.0405)	(0.0391)
Net # Slips x Log Contributions			0.0158*	0.0144+
			(0.0079)	(0.0076)
Net # Slips x Ideological Distance			-0.1485**	-0.1389**
			(0.0535)	(0.0495)
Log Contributions			0.0003+	
			(0.0002)	
Ideological Distance			0.0014	
			(0.0009)	
Num.Obs.	968,832	968,832	968,832	968,832
Legislator FEs	Y	N	Y	N
Group FEs	Y	N	Y	N
Session FEs	Y	N	Y	N
Legislator-Group-Session FEs	N	Y	N	Y

Standard errors clustered by bill shown in parentheses below coefficients from OLS
$^{+}$p<0.10; *p<0.05; **p<0.01

Columns 3 and 4 demonstrate that the relationship between slips and roll-call voting is conditional. As revealed by the positive coefficient on Witness Slip-Log Contribution interaction, witness slips are more predictive of roll-call votes when the slips come from groups that donate to the legislator, even after controlling for ideological distance between the legislator and group. A one-SD increase in supportive witness slips filed by group members is associated with an additional 15.8% probability that the legislator votes in favor, for every $1,000 contributed by the group to the legislator.

3 Conclusion

This paper provides a rare glimpse at contact between individuals and elected officials using data on witness slips in the Illinois General Assembly. These observed instances of legislator contact on a bill-by-bill basis allow us to characterize the ideology of the attentive public across a variety of issues, providing insight on which voices legislators hear as they draft, refine, and vote on public policy.

After scaling witnesses on the same ideological space as legislators, we find that the majority of witnesses are ideologically closer to Republicans (both in Illinois as well as nationwide) than Democrats. This is especially true for witnesses without any group affiliation, and for the witnesses who file the most slips. Additionally, we find evidence these witnesses are well-represented. Legislators are more likely to vote for (against) a bill or amendment when witnesses support (oppose) the measure, particularly when the witness represents a group that donate to the legislator or when they come from the district the legislator represents.

How generalizable are these results? While we draw conclusions based on a wide variety of different issue areas across 10 years, encompassing many more policies than prior work based on ballot initiatives, referenda, or survey questions has done, our evidence comes from one legislature that differs from others in dimensions such as partisanship, competitiveness, professionalization, and the organization of particular interest groups. For example, prior work suggests a strong, well-organized conservative presence in state politics specifically (Grossmann and Hopkins 2016; Hertel-Fernandez 2019). The ideological asymmetry shown here may be weaker in, for example, Congress where the organizational strengths of Democrats and Republicans are less lopsided. Future work that finds other opportunities to measure the ideological bent of legislator contact would better help us understand how ideological bias and the influence of legislator contact varies across differing contexts.

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Online Appendices

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Contents

A Descriptive Statistics on Witness Slips ii

B Description of Ideal Point Scaling Methodology v

C Addressing Measurement Error Concerns viii

D Exploration and Validation Using Interest Group Ideology xi

E Evaluating Responsiveness to Constituency Opinion on Education Bills xiv

A Descriptive Statistics on Witness Slips

Figure A1 presents trends in the number of witness slips (in 100,000's) filed over time. This figure shows that there are hundreds of thousands of witness slips filed in every legislative session, starting at around 230,000 witness slips in the 2013-2014 session and increasing to more than 630,000 slips in the 2021-2022 legislative session.

Figure A1: Number of Witness Slips Filed Over Time

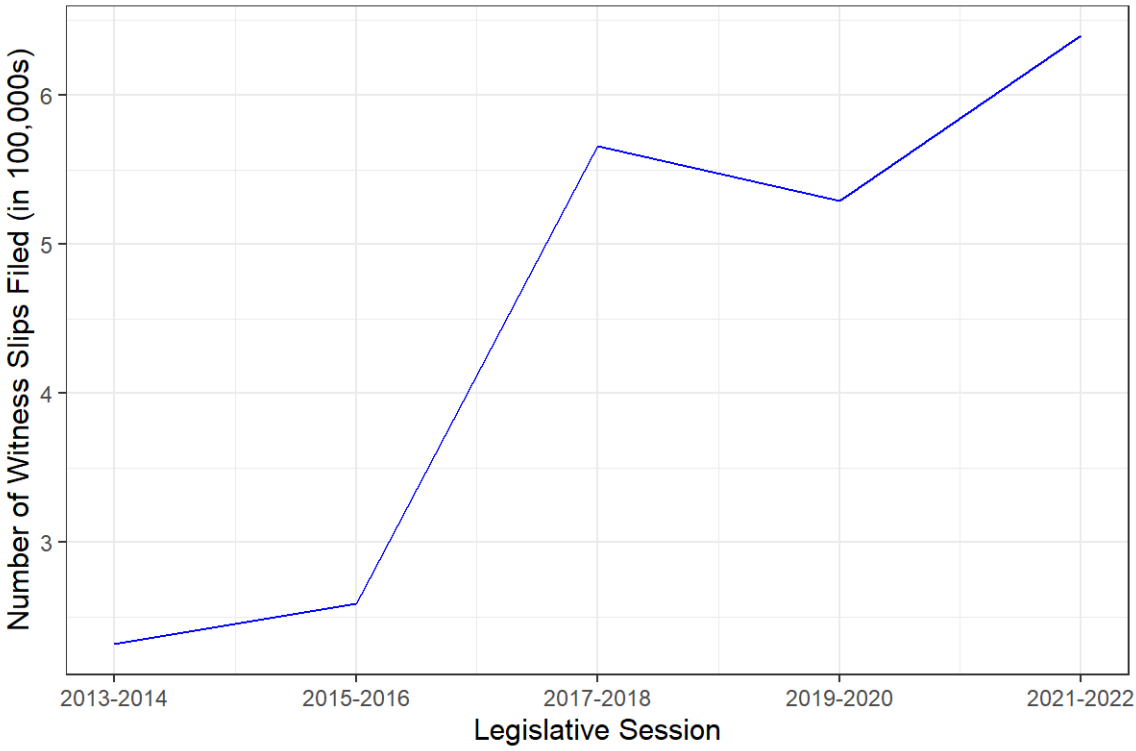
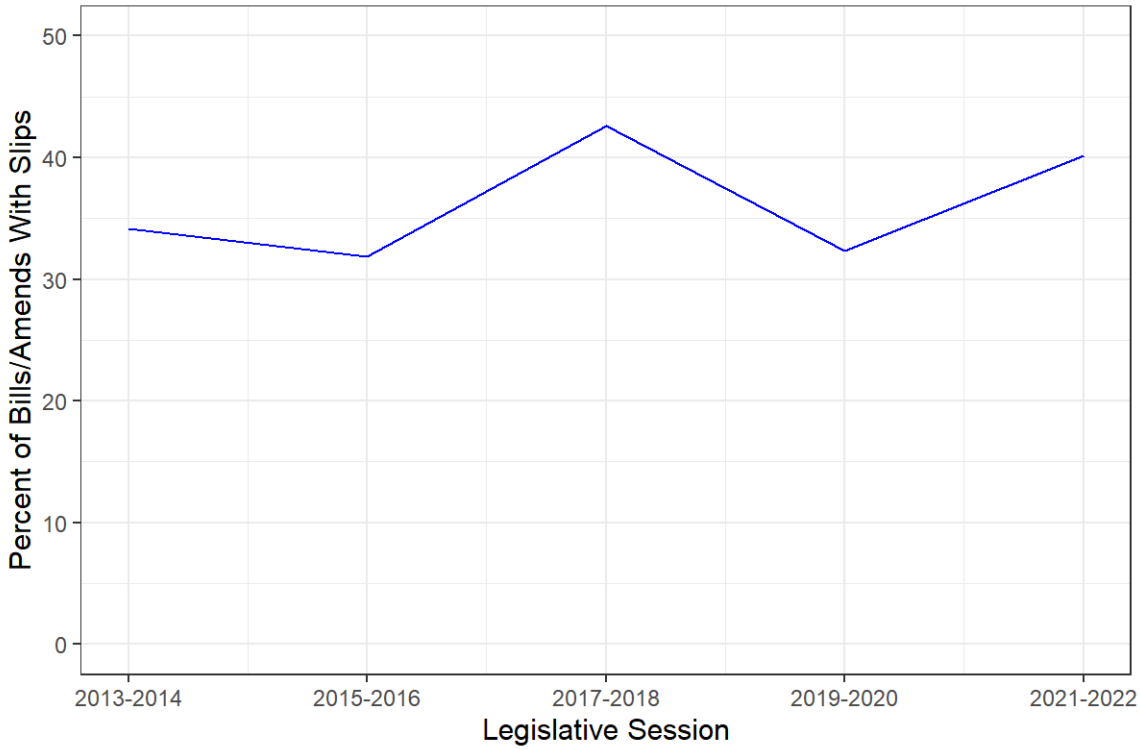


Figure A2 presents the percent of bills/amendments in each legislative session with witness slips. The percentage is roughly the same over time; between 30 and 40 percent of all bills/amendments filed carry some activity via witness slips.[9] This suggests a surprisingly high level of public attention on activities in the Illinois state legislature. Moreover, this also implies that this public attention is not restricted to a handful of bills; rather, there exist

[9]The total number of bills/amendments is around 13,000-14,000 per session. The raw number of bills/amendments with witness slips is approximately 4,000-5,000.

observers for even potentially obscure legislation.

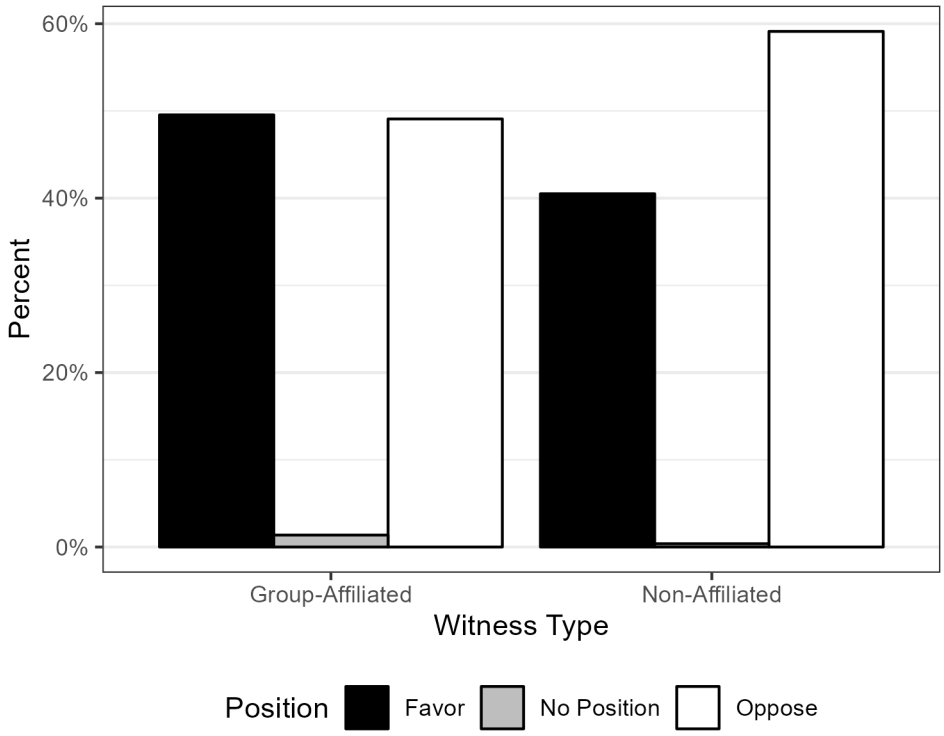
Figure A2: Percent of Bills/Amendments with Witness Slips Over Time



Finally, Figure A3 displays the percent of witness slips filed that support, oppose, or take no position on the measure in question, separating group-affiliated and non-affiliated witnesses to mirror the discussion in the text. As in other analyses, we observe differences between the two types of witnesses. Witnesses reporting a group affiliation are approximately equally as likely to support or oppose a measure when they file a slip. In contrast, non-affiliated witnesses are much more likely (59.1% versus 40.5%) to file a slip in opposition to a measure versus one in support. One explanation is that, as shown in the main text, slips from non-affiliated witnesses are much more likely to come from conservative witnesses. Given Democrats in Illinois control the chambers and committees, these conservative witnesses may be spending most of their time opposing legislation the majority party is proposing. Neither type of witness files many slips taking no position (1.3% of group-affiliated witness

slips versus 0.3% for non-affiliated witnesses).

Figure A3: Positions Taken on Slips by Witness Type



B Description of Ideal Point Scaling Methodology

Witness ideology is scaled in the same ideological space as legislators using the Bayesian IRT model introduced by Clinton, Jackman and Rivers (2004) and implemented using the `pscl` package in `R`. We begin by collecting all committee roll call votes taken in the Illinois General Assembly between 2013 and 2022 for scaling, including both House and Senate votes. These votes are used to assemble a vote matrix where each row represents a distinct vote on a bill or amendment, each column represents a legislator or witness, and each cell records the position taken (Yes or No) on the vote in question. If the legislator did not participate in the vote or the witness did not take a position on the vote via slip, it is coded as missing. Votes where legislators were unanimous (either for or against the bill) are excluded, as these votes do not allow for the ideological placement of witnesses relative to legislators. In other words, while many committee votes (approximately 85%) are unanimous, our ideological scaling procedures is driven exclusively by votes that feature voting disagreement. Witnesses that filed fewer than 20 slips on votes that meet this criteria are also excluded. To identify unique witnesses, we treat all slips with the same first name, last name, and interest group affiliation as representing the same witness. In cases where there are slips with the same first and last name, but some slips do not possess an interest group affiliation while others do, we impute the observed interest group affiliation. If there are multiple interest group affiliations for a single first and last name combination, we treat these as separate witnesses. This procedure produces 12,799 unique witnesses that we are able to scale.

One possible objection to this approach is that most legislators cast votes on most roll calls regardless of preference intensity, while witnesses typically only file slips on a small number of roll calls on specific issues they care strongly about. Such behavior could, for example, artificially inflate the extremism of witnesses' scaled ideal points. For our purposes, however, we care more about the preferences of witnesses on issues they reach out to legislators about,

rather than latent preferences they do not communicate. In other words, because theories of biased legislator contact posit that legislators received a distorted signal from individual outreach, we are more concerned with estimating the ideological position of that outreach than the latent, unexpressed preferences of witnesses themselves.

Another concern may be that legislators are voting on different final versions of bills than the ones witnesses file slips on, if legislators amend bills than vote on the amended bills. Typically amendments and final committee votes occur on different days (93.4%), while witness slips are typically filed close to the vote in question, meaning this should not affect the vast majority of included votes.

The vote matrix described previously is used as the input to the `ideal()` command. We specify a unidimensional model. The approach differs from the typical application in two ways. First, because we are interested in scaling witnesses and groups relative to legislators along a conservative-liberal dimension, for all state legislators that served in the General Assembly before 2021 we use their Shor-McCarty (2011) ideal point as a spike prior, effectively constraining their ideal point in our estimation to match their Shor-McCarty score. More specifically, the prior on the ideal point parameter for all legislators who serve prior to 2021 is a Normal prior with mean at their Shor-McCarty ideal point, and a precision of 1e12. For all other legislators and all witnesses, the prior on the ideal point parameter is set to mean 0 and a precision of 0.3. The precision of this prior is purposefully weak; even in cases where the data are sparse, the prior is weak enough to allow us to estimate an ideal point. In Appendix Section C, we evaluate the sensitivity of our ideal point scaling to measurement error in more depth.

Second, as recommended by Jessee (2016), all item parameters (i.e., the cutpoints on particular votes) are estimated using only the legislators' positions and not the witnesses. The massive imbalance of witnesses relative to legislators on many committee votes means that the former would wield disproportionate influence on the estimated cutpoints. Given

our goal of placing witnesses in the legislators' ideal point space and not vice-versa, we use the legislators' ideal points to estimate the item parameters, and then use these item parameters to estimate witness ideal points.

This model is then fit via Markov Chain Monte Carlo sampling. We run the MCMC procedure for 3,000 samples, using 1,000 samples for the burn in period. Trace plots indicate satisfactory convergence of all parameters.

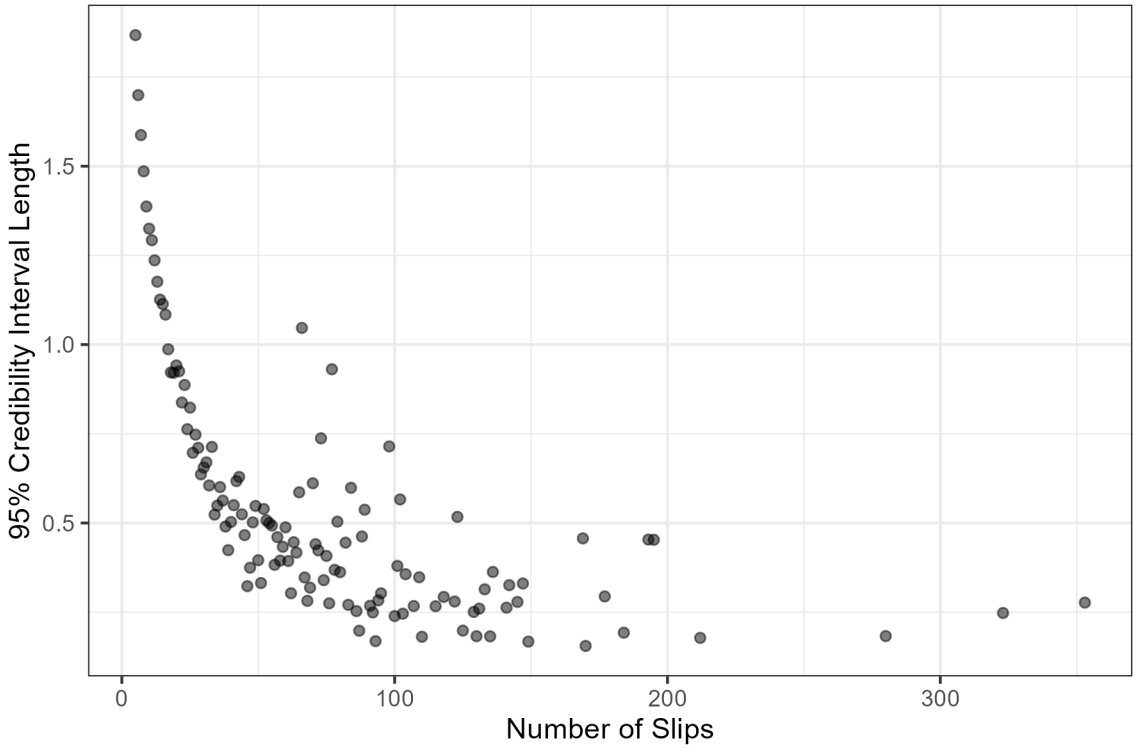
C Addressing Measurement Error Concerns

One potential concern with our scaling methodology is that the number of witness slips used to scale witnesses is in some cases quite low, given that we analyze witnesses with as few as 20 witness slips. On the other hand, some may be concerned that we are excluding too many witnesses by omitting those with fewer than 20 witness slips. The decision of which threshold to use presents a variance-bias tradeoff. Raising the threshold to require more votes for scaling would reduce measurement error for individual ideal points, and thus reduce variance, but could bias inferences about the population of witnesses if the ideology of those who file many slips differs from those who file few. Indeed, the difference in the estimated ideology of the median *witness* versus the median *slip sponsor* shown in Figure 1 reveals such differences do exist. On the other hand, lowering the threshold to include witnesses with even fewer votes could add cases where there is not enough meaningful data to accurately estimate witness ideology, adding unnecessary and unhelpful noise to the analysis.

To evaluate how this concern affects our analysis, we do two things. First, Figure C1 plots the average width of the 95% credibility intervals as a function of the number of slips used to scale each witness. We show the results from scaling witnesses with as few as 5 slips, a threshold one-quarter as large as that used to show the main results in the paper. At the high end, some witnesses have over 300 slips used in scaling. Unsurprisingly, when the number of slips is small, the typical credibility interval is wide. At 5 slips, the average 95% credibility is 1.86 (on an ideal point scale that ranges from approximately -5 to 5), enough to distinguish an extreme conservative from a moderate from an extreme liberal, but not much more. For this reason, including witnesses with fewer slips is unlikely to add more usable information on witness ideology. By 20 slips, the average credibility interval shrinks to 0.94, approximately half as wide.

In general, we would caution against using our estimates of witness ideology to reliably

Figure C1: Average 95% Credibility Length by the Number of Slips Used for Scaling

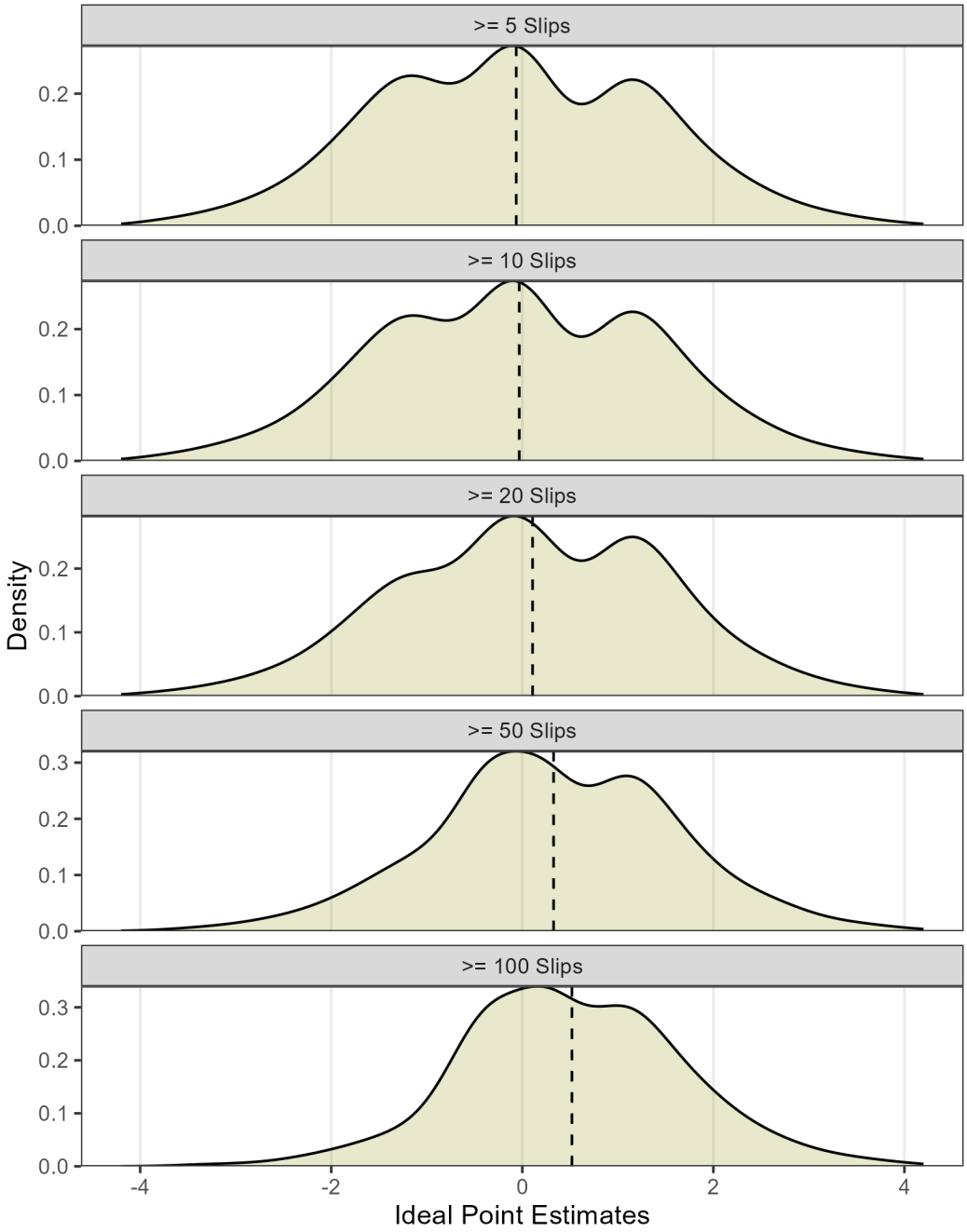


place *individual witnesses* when the number of slips is small. On the other hand, in aggregate, the measurement error for individuals tends to cancel out, as the narrow credibility intervals for the aggregate quantities shown in Figure 1 reveal.

To gauge how our conclusions would change if we used alternative minimum thresholds, the rows of Figure C2 replicate the distribution of witness ideology shown in Figure 2, but with minimum thresholds of 5, 10, 20, 50, and 100 slips respectively. Dashed lines indicate the ideology of the median witness for each differing threshold used.

As Figure C2 shows, raising the threshold moves both the median and the entire distribution rightward, an unsurprising result given the difference between the median witness and the median slip sponsor shown in Figure 1. However, even when the minimum threshold of 5 slips is used, the median witness ideal point (-0.10) is located to the right of the midpoints of the two party medians (-0.13).

Figure C2: Exploring Result Sensitivity to Varying Thresholds



Note: Figure shows the density curve of ideal points for witnesses using different minimum thresholds of witness slips using in scaling, ranging from a minimum of 5 slips (the threshold used in the analyses in the main paper) to a minimum of 100 slips. Dashed line indicates the ideal point of the median witness for each threshold.

D Exploration and Validation Using Interest Group Ideology

In this Appendix section, we examine the ideological distribution of interest groups as measured using the scaled ideology of witnesses reporting affiliation with the group. First, we calculate the average ideology of witnesses for each group, for each interest group with at least five affiliated, scaled witnesses.

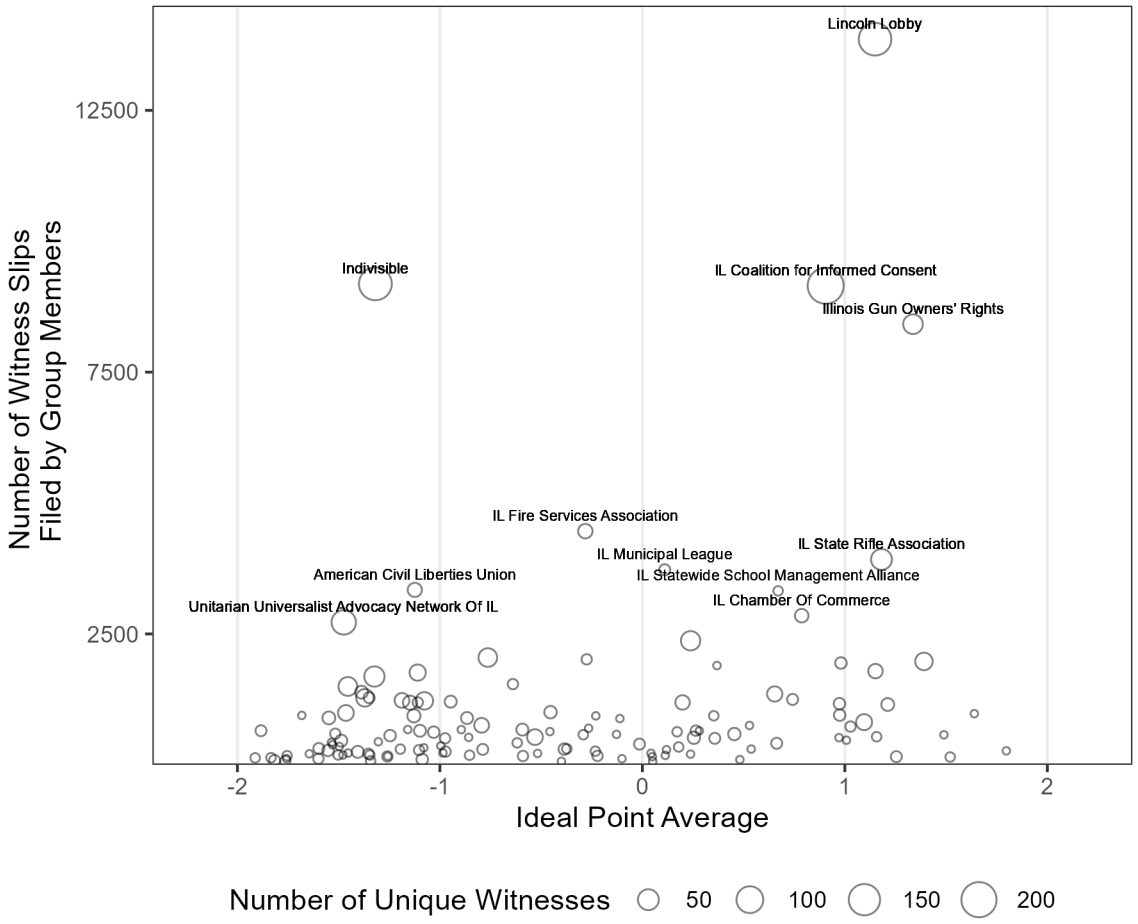
Figure D1 displays the estimated group ideology for all groups with at least five affiliated witnesses. Each group is indicated with a circle, with circle size scaled according to the number of witnesses affiliated with each group (which ranges from 5 to 228). The y-axis displays the total number of witness slips filed by members affiliated with the group, a variable that ranges from 65 to over 14,000.

The x-axis shows the average ideology of witnesses affiliated with the group, to illustrate the ideological distribution of interest groups. On the one hand, the interest group distribution is on average left-leaning. The median group ideal point is -0.66, well to the left of the center. Of these groups, 60.8% are located closer to the median Illinois Democrat state legislator during this time period than the median Illinois Republican.

On the other hand, and mirroring our finding that conservative witnesses are more active, the interest groups that file the most slips tend to be right-leaning. Of the top 8 most active groups, two are left-leaning (the ACLU and Indivisible, a progressive activist group), two are centrist (the IL Municipal League and the IL Fire Services Association), and four are right-leaning (the IL State Rifle Association, IL Gun Owners' Rights, the Coalition for Informed Consent, an anti-vaccine group, and the Lincoln Lobby, an anti-tax and anti-regulation group).

Finally, Figure D2 displays how heterogeneous witness ideology is for witnesses affiliated with the same group. The figure shows, for all groups with 25 or more scaled witnesses, the

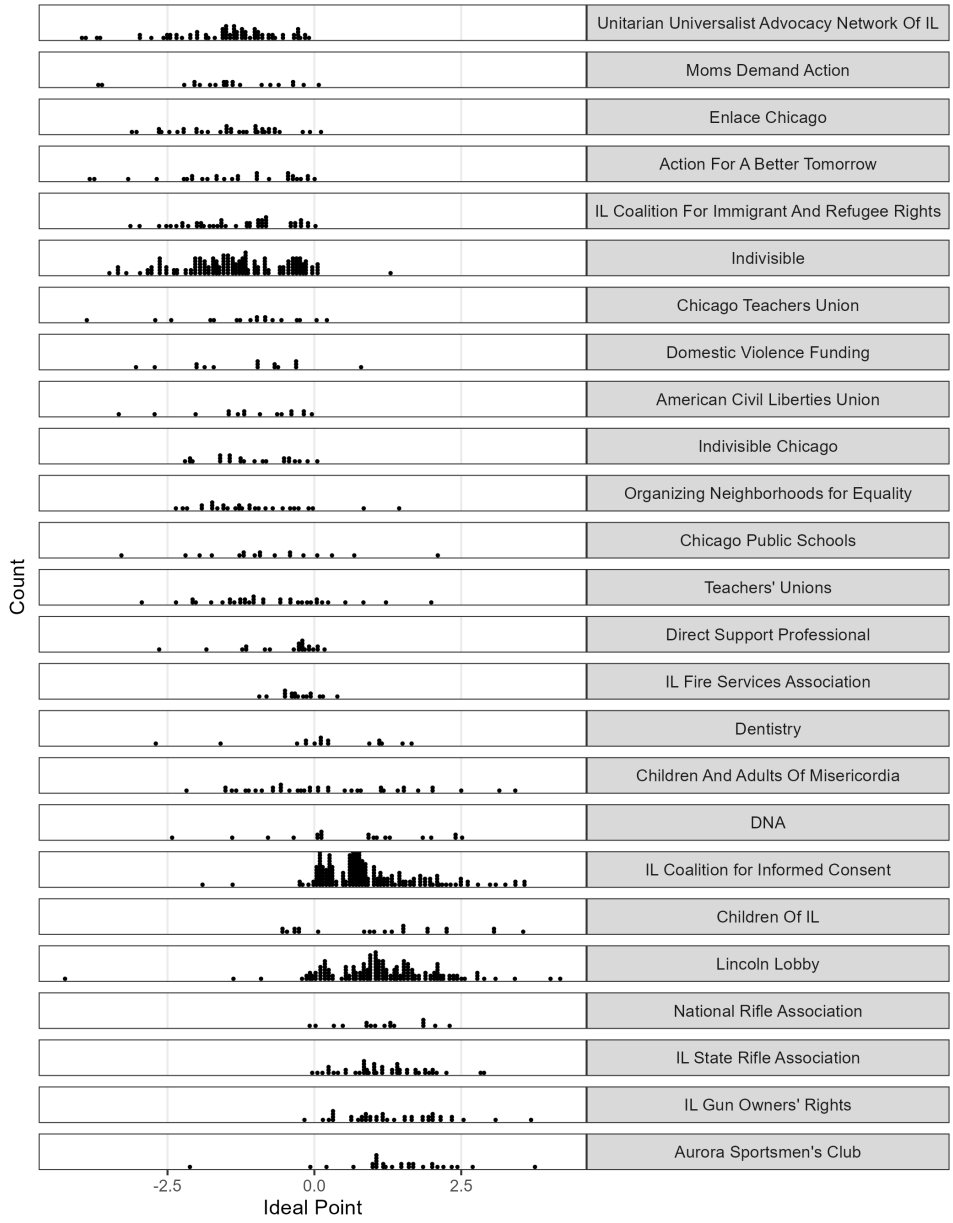
Figure D1: Witness Slip Involvement and Ideology, Interest Groups



Note: Figure displays the mean ideal point of all scaled witnesses affiliated with each group. The y-axis indicates the number of slips filed by affiliated witnesses, while size of circle indicates the number of scaled witnesses. Group names are displayed above circle for the most active groups.

ideology of each individual witness. As the figure shows, while there are clear differences in averages across groups, there is also considerable heterogeneity within groups.

Figure D2: Distribution of Witness Ideology Within Groups



Note: Figure displays the estimated ideal point of all witnesses affiliated with each group with 25 or more scaled witnesses. Each dot indicates the ideal point of one witness. As the figure shows, despite clear left-right tendencies for each group there is considerable heterogeneity in witness ideology within groups, suggesting witnesses have preferences connected to but not entirely dependent on group ideology.

E Evaluating Responsiveness to Constituency Opinion on Education Bills

Another form of representation we can measure is constituency representation. While legislators may engage in heuristic processing by identifying (and potentially adopting) the positions of like-minded groups, legislators may also take cues from their constituents. In the main text, we largely focus on interest group affiliations because these are easily identifiable in the data, and they can be found in hundreds of thousands of witness slips. However, there are some cases, which we explore here, in which witnesses disclose constituency information, either in the "employer" or "interest group" fields.

In particular, on education-related bills, witnesses often note the school district or school they attend (or are otherwise affiliated with). As an example, HB3428, which passed both chambers in 2015, was a bill that required institutions of higher education to accept Advanced Placement (AP) exams as credit for coursework. Many of the witness slips filed on this bill (which can be found at this link) are from teachers, students, and parents. Bills like these give us a chance to assess whether legislators represent constituency opinion. In particular, these education-related bills carry two important advantages. First, we can directly map schools and school districts to legislative districts. In particular, the Illinois State Board of Education conveniently provides a spreadsheet online detailing a deterministic mapping from school districts and schools to legislative districts. Second, these geographic identifiers are observable to the legislators reading the witness slips. As such, we have a greater expectation of finding evidence of representation in this case.

For this analysis, we structure the data at the witness-legislator-vote level. The dependent variable is equal to 1 if the legislator votes "yes" on the bill, and 0 otherwise. Abstentions or no-votes are counted as missing. For each witness i on vote k, the key independent variable is coded as follows:

$$\text{Support via Slips}_{ik} = \begin{cases} 1 & \text{filed slip in support} \\ -1 & \text{filed slip against} \\ 0 & \text{otherwise} \end{cases}$$

Note that duplicate slips filed by the same witness are dropped.[10] The results are shown in Table E1. In the first two columns, which vary in how the fixed effects are specified, legislator roll-call voting on committee votes is regressed on witness slip support, using witnesses from all districts. We fail to detect a relationship here. The next two columns show the same results, only including witness-legislator dyads where both the witness and legislator belong to the same district. Here, we find a relationship between witness slips and committee votes, which is similar no matter how we specify the fixed effects. If a witness from the same district as the legislator switches from indifference to supporting the bill, this is associated with a 6% increase, on average, in the probability the legislator supports the bill.

[10]These cases might be attributed to inadvertently submitting a slip twice for the same bill, a technological/clerical error, etc.

Table E1: Individual Witness Support and Committee Roll Call Votes

	DV: Legislator Vote (1 = Favor, 0 = Oppose)			
	All Dist.	All Dist.	Same Dist.	Same Dist.
Net # Slips	0.006	0.007	0.060*	0.059+
	(0.004)	(0.004)	(0.030)	(0.030)
Num.Obs.	29,066,117	29,066,117	161,852	161,852
Legislator FEs	Y	N	Y	N
Witness FEs	Y	N	Y	N
Session FEs	Y	N	Y	N
Legislator-Witness-Session FEs	N	Y	N	Y

Standard errors clustered by bill shown in parentheses below coefficients from OLS.
$^{+}$p<0.10; *p<0.05; **p<0.01