Express Yourself (Ideologically): Legislators' Ideal Points Across Audiences
Short title: Measuring Legislators' Ideal Points Across Audiences

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Abstract: Members of Congress face consistent pressure—and ample opportunity—to express their ideological positions. The most commonly measured outlet is congressional floor votes, but it is not the only one. This research develops three novel ideal point measures across different ideological expressions—votes, floor speeches, and tweets—to capture the understudied interaction between ideology, communication style, and audience. We find that legislators use speech and tweets to convey nuance in their ideological positions and to differentiate themselves from other members of their party in ways that voting does not allow. In general, Republicans use text-based opportunities, particularly Twitter, to express more conservative positions, while Democratic positioning is dependent on a legislator's district and personal attributes. In both theory and methods, this work engages the considerable literature on the measurement of ideology and congressional representation. This research contributes to our understanding of legislator behavior, ideological positioning, and introduces three replicable ideal point models to measure the ideology of members of the U.S. Congress.

Keywords: U.S. Congress, ideal point models, representation, ideology, text-as-data

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Replication files are available in the *JOP* Dataverse (https://dataverse.harvard.edu/dataverse/jop). The empirical analysis has been successfully replicated by the *JOP* replication analyst. Supplementary material for this article is available in the appendix in the online edition.

Introduction

Members of Congress spend a great deal of time and resources to convey their ideological position to the public and political elites. How a member presents themselves can have repercussions for constituent representation, electoral success, policymaking, and institutional behavior. As a result, ideological positioning is the focus of a large body of research, most commonly focused on positions taken in congressional floor votes. These votes are important statements by legislators about their positions and, collectively, they result in policy outcomes. But voting is not the only outlet for ideological positioning: Members have speaking opportunities on the chamber floor to discuss policy on the congressional record, and social media platforms like Twitter provides legislators with an opportunity to communicate their beliefs briefly and directly to the public. Not only do each of these three actions—votes, floor speeches, and tweets—allow members to express their ideological positions, but they allow members to tailor their ideological expression by audience and opportunity. Thus, there are strategic implications for how legislators express themselves, as well as how scholars measure ideological positions.

This research advances the study of ideology by introducing three separate, comparable ideal points for members of the U.S. House of Representatives based on a member's vote record, floor speeches, and tweets. These three ideal points allow us to examine the relative position of legislator ideology and how individual legislators shift their ideological presentation depending on the outlet and audience. We find that speech and text-based ideal points cover a wider range of ideological expression than vote-based scores alone can capture. Furthermore, these multiple measures allow us to examine how and when legislators can shift their ideological positioning, depending on the venue or potential audience of ideological communication. While some

legislators take similar positions in voting, speech, or tweets, others respond to changes in audience and medium to distinguish themselves as more liberal or more conservative than their voting positions indicate. In this way, expanding our measures of ideal points allows for new insights into both ideology in Congress and strategic legislative behavior.

This work also engages the literature on the measurement of ideology, paying particular attention to the demands of district and chamber responsibilities and considering the strategic opportunities that text-based expression provides. In doing so, we contribute to our understanding of the motivations behind legislative behavior, specifically the ways in which ideological positions differ by intended audience, as well as the growing literature on the use of natural language processing models in political science. Methodologically, we utilize an approach that allows researchers to scale the ideology of texts without prior model training, allowing for easy adoption to future research questions. Our models can infer ideological frames on discovered themes, addressing an ongoing challenge in computational text analysis and political science. We apply these models to develop three reliable estimates of ideology for members of the U. S. Congress: a vote-based ideal point and two text-based ideal points based on congressional speech and official tweets for all House members of the 115th and 116th Congress. We then use these three separate ideal points to rank the ideology of legislators across each venue, comparing how–and when– legislators shift their ideological position relative to their peers.

We find that members express different ideological positions across these different settings. Members utilize the freedom of text-based communication (floor speeches and Twitter) to express nuanced ideological positions, which allows them to differentiate themselves from their co-partisan peers in ways that their voting record often does not allow. In particular,

legislators express more ideologically extreme positions via social media as compared to their vote-based behavior. We also find interesting variation among legislators; notably that women are especially likely to use speeches and tweets to position themselves differently than their votes, which may reflect the ways in which roll-call votes fail to capture the views of those less represented in the institution. Additionally, while the Republican party overall is more united in both vote and speech compared to the Democratic caucus, on an individual level, we find that Republican members are also more likely to use speech as a way to differentiate from their votebased ideology. This reveals not only differences in the two parties' legislative activity, but also in how they present themselves to their various constituencies. Ultimately, legislators' ability to adjust their relative ideological position allows them to express themselves, reflect their districts, and develop their own identity, even in an environment of strong partisanship. Thus, the development of multiple measures of ideology has important implications for assessing ideological congruence and representation in Congress.

Approaches to Ideology

There is a large congressional literature on the meaning, role, and measurement of ideology (e.g., Bishin 2003; Clinton et al. 2012; Hill 2001; Jackson and Kingdon 1992; Krehbiel 1993). Legislators' ideology is generally described as their position along the liberalconservative spectrum that reflects the policies they would implement if they could (e.g., Clinton et al. 2004; Poole and Rosenthal 1985, 1991). Put differently, legislators' ideology is seen as their expressed policy preferences measured by observable actions.

However, expression can be strategic. As Mayhew (1974) famously noted, members of

Congress are reelection-minded, and use numerous opportunities beyond votes to communicate their ideological positions to their constituents. Members utilize constituent communication to share information about legislative activities (Blum, Cormack, Shoub 2023; Curry 2015; Hall 1987; Hunt and Miler, forthcoming), constituent services (Grimmer 2013; Parker and Goodman 2009) and partisan messages (Jacobson and Carson 2019). Members are eager to promote not only their legislative accomplishments and policy positions, but provide ideological reasoning for these decisions, too (Cormack 2016; Russell 2017; Smith and Russell 2022).

Changes in communications and technology have created new opportunities for messaging, and the public audience is not limited to legislators' geographic district, but can also include a more national audience. Constituents no longer rely solely on newspapers and nightly news for updates on their member of Congress—anyone can go online and find the roll-call outcome of any vote, on any bill or amendment. The advent of C-SPAN and the near-constant television presence on the floor and in committees has made floor speeches accessible to constituents, even if not widely watched. And of course, over the past decade social media has also become a prominent form of congressional communication. Today, every member of Congress has a dedicated Facebook page or official Twitter account, and the majority of members even have an official Instagram account (Quorum Analytics).

Members also communicate internally with one another and other political actors. Classic studies underscore that legislators look to their colleagues for cues (e.g., Kingdon 1989; Matthews and Stimson 1975) and public-facing actions can be used to signal one's position to congressional peers. For instance, votes can serve as a signal to party leaders that have control over the agenda while floor speeches and social media allow members to add more depth to their ideological expression, and differentiate themselves from colleagues. And of course, votes

provide more than messaging opportunities–they possess very real policy implications that other forms of constituent communication do not. However, votes are limited in their subject-matter: not every issue relevant to members of Congress comes up for a vote, and rank-and-file members have increasingly little say in the floor vote agenda. Furthermore, as Congress increasingly relies on omnibus-style legislation, members are often left voting for large packages that capture some–but not all–of their preferred policy positions (Curry and Lee 2020). Thus, it is important to consider alternative measures of ideological expression that allow all members to either differentiate from their party's voting record, or take a position on an issue that was not subjected to roll-call voting at all.

Given the variation in logistics and audience, it only makes sense that these communication outlets offer distinct opportunities for legislators to express their ideological position. Yet our traditional conceptualization and measurement of ideology often focuses on roll call votes and leaves complementary text-based forms of expression largely underexamined. As a result, scholars and congressional observers believe that legislators strategically accommodate different audiences, but we do not know much about how they do this, or what types of legislators are more likely to do so. This research takes up that challenge by measuring shifts in legislators' ideal points to understand the dynamics that lead to this movement.

Existing measurements of ideology

Political science has tackled the measurement of ideology in several ways. The most common and widely accepted application are spatial models that rely on roll call votes (ex: Poole and Rosenthal 1991). These models establish a continuum, from liberal to conservative, that allow researchers to orient individual legislators or groups on an ideological spectrum. Roll call vote models have been applied to understand the ideology of members of the U.S. Congress as

well as state legislatures (Shor and McCarty 2011) and allow for scholars to examine legislative positions over time and across chambers. As with any measure, there are also limitations to this approach, most notably that they draw exclusively on votes. While votes are uniquely important behaviors because they are positions with direct policy consequences, they are binary (yes or no) choices, which means that smaller differences in legislators' positions are harder to observe. Additionally, although rank-and-file legislators maintain opportunities for legislative contributions, often via amendments or committee work, it is increasingly the case that not all issues come to a vote in Congress, in large part due to the agenda-setting role of party leadership and the rise of omnibus legislation (Curry and Lee 2020; Reynolds and Hanson 2023). Today, legislation is immense, multi-faceted, and negotiated with an intent of gaining party-wide support for passage. As a result, relying on vote-based measures alone does not allow scholars to fully capture nuanced policy preferences or ideological positions (Duck-Mayr and Montgomery 2022; Lee 2009). Regardless of any limitations, these scores are well-established and provide a clear framework and theoretical model make the measure applicable and replicable. The success of this approach has inspired similar spatial models in the study of ideology, such as external relationships via campaign donations (Bonica 2013) or interest group ratings (Berry et al. 2010).

As the accessibility of computational text analysis has increased, spoken and written words have also been used to establish ideology, sometimes in tandem with legislative votes (Barbera et al. 2019; Eady et al. 2020; Lerner and Shaffer 2020; Wu et al. 2023). Text allows researchers to consider policy positions beyond floor votes, and contributes to an expanded understanding of ideology, particularly for policies that do not come to roll call votes. Spatial models using text have been applied to the U.S. Congress to provide more nuanced understanding of legislators' positioning (e.g., Diermeier et al. 2012; Ebanks et al. 2022; Gerrish

and Blei 2011; Grimmer and Stewart 2013; Vafa et al. 2020). Language has also been used in conjunction with vote behavior to give a more holistic view of legislative dynamics (Davoodi et al. 2020; Nguyen et al. 2015).

Text-based analysis has proven especially valuable in establishing ideology in institutions such as the judicial branch, in which quantifiable measures such as votes or campaign donations are limited (e.g., Bonica and Sen 2021; Hausladen et al. 2020; Lauderdale and Clark 2014), as well as in electoral contexts such as debate reactions (Argyle et al. 2021) and the ideological positions of executive branch officials (Bertelli and Grose 2011; Treier 2010). The application of text-analysis ideal points also is not limited to the U.S. context as scholars have examined party platforms and legislative speeches in numerous countries (e.g., Benoit and Laver 2012; Laver et al. 2003; Lowe et al. 2011).

Ideology and representation

Scholars' enduring interest in legislators' ideological positioning in part reflects the importance of questions about congressional representation, and the promise of ideal points to measure the extent to which members of Congress reflect the preferences of their constituents (Miller and Stokes 1963). A great deal of research is dedicated to understanding how, or if, members accurately represent the ideology of their constituents, particularly given the rise in partisanship among elites and voters (e.g., Ansolabehere and Jones 2010; Battista et al. 2022; Broockman 2016; Carson et al. 2010; Tausanovitch and Warshaw 2013). While there is some evidence that voters punish legislators whose preferences are out of line with the preferences of the district (Ansolabehere et al. 2001; Canes-Wrone et al. 2002), the electoral penalty for being out of step may be declining (Bonica and Cox 2018; Highton 2019), and there is evidence that legislators are more extreme than the public (Bafumi and Herron 2010; Eady et al. 2020).

The lack of a clear relationship may reflect the fact that studies of ideological representation generally look at vote-based ideal points, which may not be the behavior we expect to be most reflective of constituents. Put differently, the audience for positions taken by roll call votes also includes colleagues, party leaders, and political actors such as donors and interest groups. Additionally, issues where the public and legislators have preferences, but there is not legislation that receives a roll-call vote are necessarily omitted from such measures of ideological position. There are also strategic benefits for lawmakers in expressing some ideological positions without casting a vote, because floor speeches and social media may not hold the same policy implications as a roll-call vote—thus, ideology expressed through words provides lawmakers with additional opportunities to appeal to constituents or differentiate from their peers. The expanded breadth of measurement of legislative ideal points put forth here facilitates a re-examination of both legislators' strategic positioning and representation.

The Case for Multiple Measures of Ideology

Legislators make choices about how to present themselves and communicate their actions across audiences (e.g., Blum et al. 2023; Fenno 1978; Grimmer 2013; Mayhew 1974; Wu et al. 2023), and this behavior extends to how they express their ideological positions. Building on work by Vafa et al. (2020), we develop three new, comparable ideal point models across three forms of behavior: votes, legislative speech, and social media expression. We then examine the shifts in an individual legislators' ideal points across venues and consider the dynamics that motivate these ideological positions.

Given the variation in logistics and audience, we expect members will present different ideological stances across these three mediums. Since floor votes are determined by party leaders, we expect that vote-based ideal points will be shaped mainly by party and chamber

dynamics, and will be the most polarized ideal points across parties, but the most unified within each party. Floor speech-based ideal points are shaped by a combination of institutional and constituent motivations, introducing more variation across legislators' ideal points. For example, party and chamber responsibilities, like seniority and leadership positions, may lead some members to reflect a more unified, party-centered message. However, the public-facing nature of floor speeches also allows members to appeal to their district as well as relevant interest groups and attentive publics. Additionally, while floor speeches allow for greater ideological variation, they still face time and scheduling restrictions subject to the congressional schedule, as well as content limited by chamber rules.[1] Lastly, given the outward-facing nature of Twitter, tweetbased ideal points should reflect a legislator's positioning for a more national audience. Given previous scholarship on extremism on social media, some legislators' tweet-based ideal points are likely to be more ideologically extreme, while other legislators may deliberately take more moderate positions (Ballard et al. 2022; Banks et al. 2020; Barberá et al. 2015; Conover et al. 2011; Hemphill and Shapiro 2019). Social media also has the fewest limitations in terms of content and timing, but a short word count limits what members can say, particularly on Twitter. Notably, Twitter provides individual members with an equal opportunity to speak directly to a national audience, and several current rank-and-file members have easily surpassed the attention and audience of the formal leaders of their party.

Data and Methods

We build on Vafa et al.'s (2020) Text-Based Ideal Points (TBIP) approach to create stable, easily applicable models that automatically infer ideal point estimates from text alone. By

[1] Party leaders control the floor schedule, including when members are able to speak on the floor. Furthermore, in the House, the majority of speeches are limited to one minute.

extending existing work on more traditional vote-based ideal points as well as TBIP, our approach reliably infers ideological frames, as confirmed by subject-matter experts (see Appendix). Crucially, the TBIP model requires only the collection of text documents and who the author is for each document—it does not need party or any other labels for either the documents or the authors. Furthermore, topic selection does not require human guidance–rather the model fuses a difference in counts of terms, and ensures that ideal points are not driven by topic emphasis, but by-word selection. As a result, the unsupervised setup allows for easy adoption across different datasets and contexts. This means the model can be applied to large text collections, as well as large collections of shorter texts (like tweets). More information can be found in the Appendix, and our codebase is publicly available for future researchers.

To build these ideal points, we utilize votes, congressional records, and tweets from the official accounts of House members from the 115th and 116th Congress (2017-2020). We create an original dataset with these three TBIP measures for each member ($n = 452$[2]) alongside biographical information, including gender, race, and party, we include chamber status such as seniority (the number of terms they have served in the House), whether they are in a position of party or committee leadership or on a high-ranking committee (Appropriations, Energy and Commerce, and Ways and Means), and if they are a member of a major intra-party caucus.[3]

[2] This includes members who have an ideal point for all three ideological expressions–vote, speeches, and tweets. Some members do not speak or Tweet enough to generate a robust ideal point. Prior to this preprocessing step, the data consisted of 52% Republican legislators and 48% Democratic legislators, and the data after removing legislators with few speeches is 51% Republican and 49% Democratic. More information about ideal point creation and thresholds can be found in the Appendix.

[3] This includes the Problem Solvers Caucus, Republican Study Committee (RSC), Freedom Caucus, Blue Dog Democratic Caucus, New Democratic Coalition, and Progressive Caucus. Caucus information was collected via archival research using the Congressional Yellow Books (Gaynor 2021). While most representatives' membership spans across both congressional sessions, legislators are coded as being a member of the caucus if they were a member at any time in the dataset—i.e., the 115th *or* the 116th Congress.

Incorporating information about a legislator's role in the House sheds light on the multiple audiences that may motivate their positions. This data is also paired with district information to capture the electoral and representational motivations that may impact legislators' ideological positioning, including the percentage of minorities in the district, the district unemployment rate,[4] a categorical variable for district density that indicates the urban, suburban, or rural nature of the district,[5] and electoral information on both the House member (percent of the vote received in the most recent general election) and the percent of the vote received by the 2016 Republican presidential candidate, which reflects citizens' national political preferences (Tausanovitch and Warshaw 2013).

Preparing Text Data

We extract speech text using the Congressional Record parser made available by Judd (2017). For tweet data, we acquire the Twitter user IDs for House representatives and download the accounts' text using Python package "tweepy" (Roesslein 2020). We scrape roll-call vote data using the public domain data collectors for US Congress, primarily maintained by the Sunlight foundation and OnTrack. Using the text processing settings described in Vafa et al. (2020) as our guide, legislators with a low number of speeches or tweets are removed. From the text itself, we also remove the names of cities, states, and representatives, as well as common English stopwords and corpus-specific stopwords such as ceremonial terms that are unlikely to be relevant or useful in distinguishing documents and speakers (ex: "Madame Speaker"), and omit terms spoken by only a few representatives. Other major processing decisions along with

[4] Census Bureau's American Community Survey data, 2016.
[5] We use a simplified measure of the CityLab Congressional Density Index. Rural = pure rural, rural-suburban mix; Suburban = sparse suburban, dense suburban; Urban = urban-suburban mix, pure urban.

the final vocabulary size, number of documents, and number of legislators are found in the Appendix. For tweets, we engaged in the standard pre-processing for text, retaining hashtags. The original number of downloaded non-empty tweets was about 2.67 million, which was not computationally tractable to run with the TBIP model, and therefore, we randomly sampled about 300,000 Tweets, maintaining the original distribution of number of tweets per author.

Formal Development of the Text Based Ideal Points

In general, Bayesian ideal point models consider legislators' voting yea or nay on a shared set of bills, and posit that a legislator's vote can be modeled in terms of a per-legislator scalar latent variable and per-bill scalar latent variable, resulting in an ideal point of the legislator indicating their polarity on a political spectrum. The resulting single-dimension spatial output should be familiar to congressional scholars: when lawmakers share the same sign, we can assume they are more likely to vote in a similar way. When lawmakers differ in their spatial direction, they are less likely to vote together (Poole and Rosenthal 1991; Vafa et al. 2020). For our three ideal points, we are not constraining each legislator to a single ideal point: we estimate separate models for votes, another for speech text, and another for tweets, resulting in three distinct ideal points.

The ideal point models for tweets and speech are a generative model of text, where individual word probabilities are adjusted by author and topic specific latent variables according to the word's polarity. A corpus of textual documents is very different from votes, which are generally two-dimensional and associated with specific bills. Language data is highly dimensional, unstructured, and ambiguous. The meaning and significance of a word is dependent on its context in multiple ways and may not even be relevant to political ideology. TBIP counteracts this challenge by running a generalized topic model step using Poisson factorization,

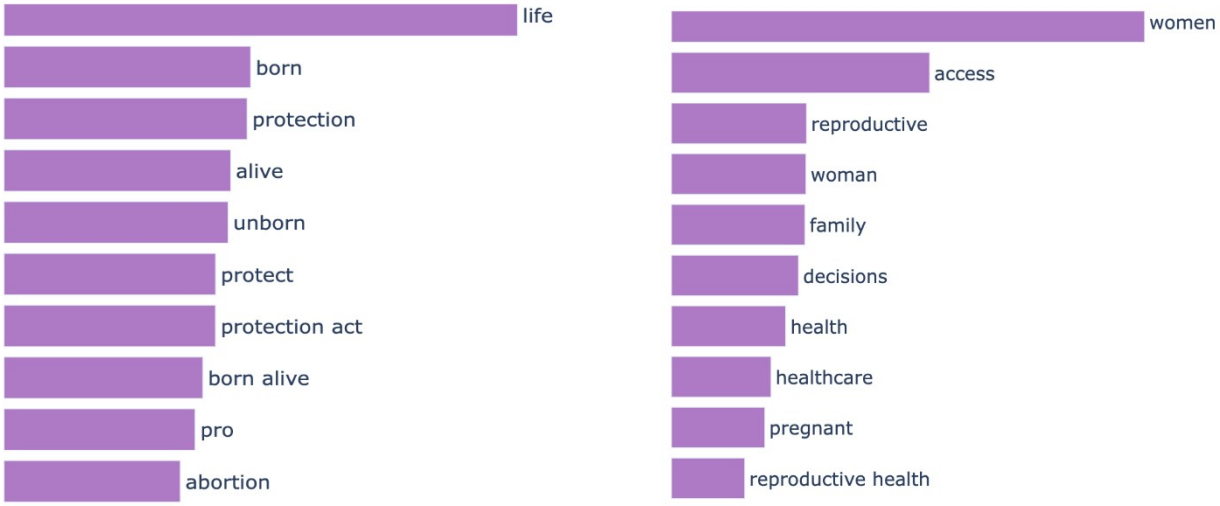
which allows us to develop an ideological score that spans all topics, not just a selected few (Wu et al. 2023). Applying this score to topics modifies their semantic content such that it becomes more representative of the kinds of speeches (or tweets) on the given subject spoken by legislators holding a similar score.

Formally, the TBIP model is initialized with a topic-word distribution β and document topic distributions θ that are estimated using Poisson factorization-based topic modeling. However, the outputs of models estimated with variational inference, like Poisson factorization, are less interpretable and stable than those provided by Latent Dirichlet Allocation (LDA) estimated with Gibbs sampling (Hoyle et al. 2021). In order to enable this initialization, we introduce a procedure that makes the original TBIP procedure more flexible and adaptable by allowing the use of a different topic model of the practitioner's choice to get initial topic estimates.[6] An advantage of using MALLET's LDA implementation to initialize topics is that the topics are relatively stable (Hoyle et al. 2022), which is an important consideration for content analysis and empirical research with text data.

During inference, latent variables capture the topic-specific polarity of individual words. For example, for a topic concerning abortion, the words "women", "unborn", and "child" will likely have larger absolute values than for a topic about the environment. A conservative author may use words like "life" or "unborn" with higher frequency than those who refer to abortion as a medical procedure (see Figure 1a). Conversely, a liberal author will use these words less frequently when discussing the same topic, while using terms like "women" or "reproductive health" more (see Figure 1b). If we assume that estimation assigns conservatives a positive ideal point (>0), and liberals a negative one (<0), then "unborn" will have a positive sign and

[6] Further details can be found in the online appendix.

"women" a negative one. This neatly ties together with the concept of framing which selects some particular perspectives within an issue to make more salient in discussions on that issue (Chong and Druckman 2007; Entman and Rojecki 1993; Nelson et al. 1997).



1a) Conservative word usage **1b) Liberal word usage**

Figure 1: Illustration of "Conservative" and "Liberal" Word Usage on Abortion

In addition, we utilized subject-matter experts to validate the coherence and polarization of the computational models' outputs. Two political science graduate students independently reviewed the topics produced by the text-based models, and first analyzed whether the computational model topics, top documents, and words representative of the topics represented an easily identifiable category or meaningful concept.[7] This process allowed us to remove any non-coherent topics if necessary and validate the computational outputs of our TBIP models. The overwhelming majority of topics were coherent, and performed as expected along ideological lines — the topics were polarized (or not) as expected, and the words identified as liberal or conservative by the models were validated by our independent coders.

[7] Full details of the validation process can be found in the online appendix.

In order to compare the three, separate ideal points, we normalize each ideal points to compare the members across congressional sessions, allowing us to easily compare across ideological measures.[8] As discussed in greater detail below, we then order members from conservative to liberal, for each of the three scores, and document the rate of change in ideological position. Given our multi-faceted approach, including the additional step of subject matter expert evaluation, we find the model is very stable in its ideal point estimation, and even with different, random initializations, the texts (and legislators) converge to similar values. Additionally, we check that the model is not defaulting to differences in members' topic selection in its ideal point estimation (see discussion in Appendix, and visualization in Figures A6-A7); this suggests that ideal point values are driven by framing and not merely the degree of attention to various issues.

Ideal Point Measures

The result of this data collection and modeling are three ideal points—one for votes, floor speeches, and tweets from members of the 115th and 116th Congresses. Consistent with convention, negative scores are more "liberal" ideal points, and positive, higher scores are more "conservative." The three ideal point measures capture different dynamics across the parties. Figure 2 shows the distribution of member ideal points using roll-call votes, floor speeches, and tweets. As expected, for roll call votes, the two parties are highly polarized, and within the two parties, vote-based ideal points are the most condensed of the measures.

The distribution of speech-based ideal points reveals that although the two parties are polarized, there is notable overlap of members with more "moderate" ideal points. The median

[8] Of note, results are robust using un-standardized ideal point measures (see online appendix, Tables A7-A12).

speech-based ideal point for both parties is also less extreme than when measured by votes. Not only are the two parties closer together ideologically, but there is also greater variation in speech ideal points within each party, indicating greater variation in how co-partisans position themselves ideologically in their speech as compared to votes. In other words, speech-based ideal points reveal that there are Democrats who present themselves as more conservative and Republicans who present themselves more liberally than their vote-based presentation (as indicated by the overlap seen in Figure 2 for speech ideal point compared with the lack of overlap in vote ideal point).

Lastly, the distribution of tweet-based ideal points illustrates two polarized parties, but with more within-party variation than was captured with vote-based ideal points, and less variation than was revealed with the speech-based ideal points. This is consistent with Twitter as both having the potential to allow for more personalized expression because it is outside the partisan structures of Congress, but also prone to more extreme appeals to a national polarized audience.

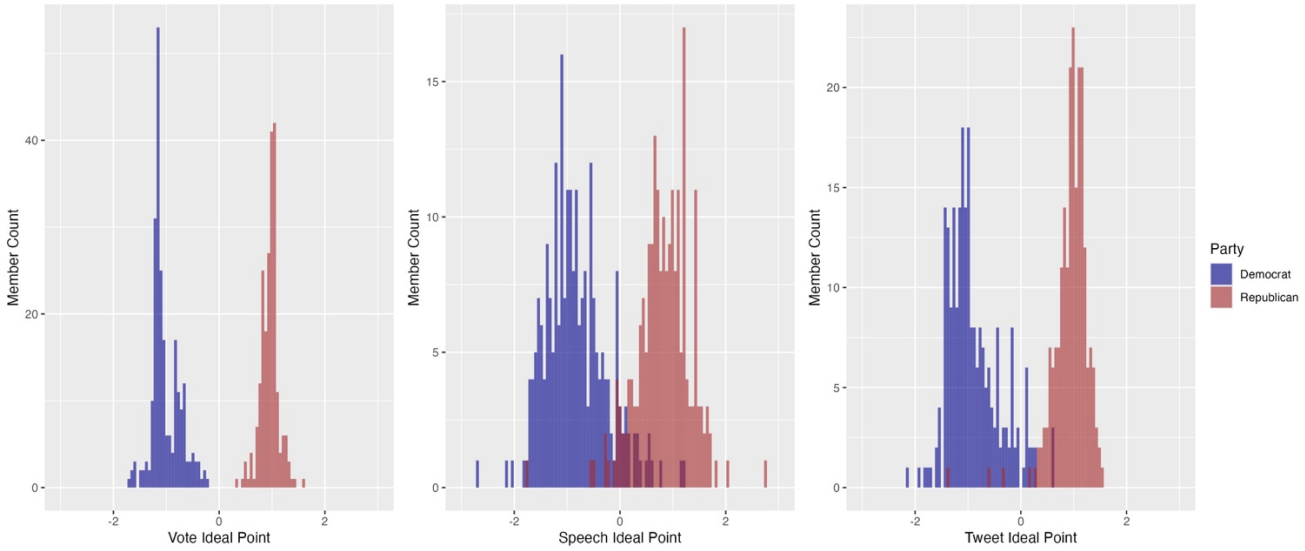


Figure 2: Member Distribution of Vote Ideal Points, 115th- 116th Congress
Note: Given that all members vote, but only some give floor speeches or Tweet, there is difference in the scale of the y-axis, "Member Count." For the Vote Ideal Point, the Democratic

median is -1.109, range of 1.483, and Republican median is 0.962, range of 1.856. For the Speech Ideal Point, Democratic median is -0.867, range of 4.143, and Republican median is 0.794, range of 5.572. For the Tweet Ideal Point, Democratic median is -0.994, range of 2.912, and Republican median is 0.984, range of 3.371.

Altogether, our vote-based ideal points look like what scholars have come to expect of Congress: polarized parties with tight intraparty cohesion and little overlap between the parties (see Appendix for further data visualization comparisons of the three ideal points). Floor speech-based ideal points offer more space for ideological expression and show a Congress that is polarized, but with wide distributions of preferences within parties and space for moderates in both parties. Twitter-based ideal points present a Congress that also allows for more ideological expression, but that shows more partisan polarization than floor speech.

Understanding shifts in legislators' ideological expression

Given these chamber-wide trends across the three measures of legislative ideal points indicate ideological differentiation, we now examine whether individual legislators shift their ideological positioning.[9] There are numerous reasons to expect that they will, most notably that legislators have multiple audiences to attend to, and floor speeches and tweets allow legislators to strategically differentiate themselves from their party and to take a more personalized position or take an ideological position with less policy consequence than voting. They also allow legislators to take positions outside of voting, which can be appealing if a vote is not forthcoming, yet legislators still want to engage an issue. The motivations for such fine-tuning of ideological position may be rooted in constituency representation and the electoral incentives, personal preferences, legislators' position (or aspirations) within the institution, or the pressures of a national audience. Our arguments and analyses allow for all of these motives to play a role.

[9] See the online appendix for additional OLS regression analysis of TBIP scores across legislators.

In order to evaluate individual-level shifts in ideological positions across venues, we first address comparability across the three ideal point measures. Since the ideal point estimates are each generated using independent models, they are not directly comparable. We remedy this by comparing legislators' relative positioning on the scale for each measure. For each type of ideal point measure, we rank legislators by their ideal point estimates, which produces an ordinal ranking for members in order of liberal to conservative position for that given ideal point. This means that each legislator has three rankings that were determined separately: a vote-based ideal point rank, a floor speech-based ideal point rank, and a tweet-based ideal point rank. We use these rankings to evaluate which members are more or less conservative (or liberal) in how they talk or tweet, compared to how they vote. For example, Rep. Kevin Brady (R-TX), Republican chair of the Ways and Means Committee is ranked as one of the more conservative and party loyal voters in the chamber (368), but in his floor speeches to his peers he invokes his role as Ways and Means Chair to discuss the details of policy development, and he is ranked far more moderately (329). Yet when he addresses his national audience on Twitter, he discusses national issues like immigration and the economy in a highly partisan way, resulting in a more conservative ideological position (ranked at 451).

To more easily depict the degree of relative movement in ideal point positions, we generate a categorical variable that captures how far an individual member shifted in their ideological presentation. Members who shifted more than 0.5 standard deviations (45-88 spots), are coded as 1 (or a one-unit shift in a liberal or conservative direction). Members who shift one standard deviation (89-132 spots) are coded as 2, or a two-unit shift in a liberal/conservative direction, and so on. Overall, we find that many members stay put ideologically—their text-

based ideal points are similar to their vote-based ideal points.[10] Even with this conservative metric, there is still a great deal of variation in ideological presentation among members. Legislators from both parties use the opportunity to speak on the floor to express more nuanced positions, and often to a moderating degree: Republican members are more likely to move in a liberal direction, while Democratic members in a conservative one. Conversely, Twitter is used more often by Republicans to take more conservative ideological positions. Overall, Republicans are more likely to use speeches and tweets to present an ideological position different than their vote, both in a liberal and conservative direction. We illustrate these shifts in individual legislators' relative ideological positioning in the Appendix.[11] Lastly, we present these categories as a negative shift as a more liberal movement, and a positive shift as a more conservative movement, for a more intuitive interpretation.

To examine why legislators shift their ideological position, we estimate the change in legislators' relative ideological rank within their party and compare vote-based ideal point rankings to each alternate measure: speech-based ideal points and tweet-based ideal points. For each model, we evaluate the impact of individual-level factors such as legislators' identity and seniority in the chamber, district considerations such as electoral security, partisanship, and composition of the district, and institutional considerations such as leadership positions, membership on top committees, and party caucus affiliations to determine the conditions under which legislators are more liberal or more conservative compared to vote behavior. The results of

[10] We note that even a "zero" ranking likely captures a slight shift (<44), but we consider this relatively stable, particularly given the normal distribution of our categories. While slightly fewer than half of legislators (45-47%) do not shift their ideological positions more than .5 standard deviations from their vote-based ideal point, approximately one-quarter of legislators position themselves more liberally on speech (26%) or Twitter (25%) or more conservatively in speech (28%) or Twitter (28%).

[11] See the online appendix, specifically Figures A4 and A5 for individual-level uncategorized shifts, and Table A1 for regression analyses of ideological shift as continuous variables. The results are consistent across specification.

these analyses are presented in Table 1 and reveal how legislators use behaviors other than voting to adjust their ideological position within their party.

Overall, when it comes to how legislators present themselves ideologically through floor speech as compared to their votes, Republicans and Democrats behave similarly, shifting ideological positions primarily in response to the nature of their district. This is consistent with the general norm that when in the chamber, members' primary role is as the official representative of their district, and the belief that constituents are a significant part of the audience for their Washington behavior (e.g., Fenno 1978; Mayhew 1974). However, when it comes to Twitter, Republican legislators tend to position themselves more distinctively as compared to their votes than do Democrats. Republicans' shift from their vote-based ideal points to tweet-based ideal points are again driven by constituency considerations, but we also see evidence that members in leadership and in the various party factions use Twitter to distinguish themselves in ways that votes alone do not allow. Most often, Republicans take more conservative positions on Twitter than in their votes, which is consistent with work on the importance of social media like Twitter to the political right as well as a more nationalized audience (Russell 2018, 2020; Hemphill and Shapiro 2019). In contrast, Democratic legislators exhibit much more consistent ideal points across votes and tweets, and when legislators' positions do diverge it is primarily the result of women and junior legislators taking more liberal positions than their votes convey.

Table 1: Changes in Ranked Ideal Point Position, 115th – 116th Congress

	Democrats		**Republicans**	
	Shift Vote to Speech	Shift Vote to Tweet	Shift Vote to Speech	Shift Vote to Tweet
Female MC	-0.651**	-0.486*	0.137	-0.034
	(0.288)	(0.283)	(0.418)	(0.555)
Non-White MC	0.050	-0.331	-0.358	-0.834
	(0.362)	(0.329)	(0.658)	(0.793)

Number of terms served	0.093**	0.126***	-0.088***	0.177***
	(0.039)	(0.050)	(0.039)	(0.043)
Vote in last election	-0.008	0.007	-0.028*	-0.027
	(0.143)	(0.015)	(0.015)	(0.023)
District vote for Trump	-0.124	-0.004	-0.011	0.004
	(0.237)	(0.023)	(0.027)	(0.027)
Suburban district	-1.283***	-0.468	-0.769**	-0.304
	(0.368)	(0.427)	(0.376)	(0.3170)
Urban district	-0.954**	-0.820	-0.379	-2.074
	(0.486)	(0.542)	(0.815)	(1.531)
District percent white	-0.011	-0.008	0.031**	0.049***
	(0.012)	(0.012)	(0.016)	(0.015)
District unemployment rate	0.054	-0.013	0.585***	0.883***
	(0.215)	(0.236)	(0.178)	(0.170)
Problem Solvers Caucus	0.750**	0.336	0.374	0.937**
	(0.337)	(0.331)	(0.468)	(0.456)
Progressive Caucus	-0.418	-0.536		
	(0.332)	(0.387)		
New Democratic Coalition	-0.150	-0.182		
	(0.359)	(0.387)		
Blue Dog Caucus	0.365	-0.113		
	(0.358)	(0.270)		
Republican Study Cmte			-0.335	0.213
			(0.298)	(0.348)
Freedom Caucus			-1.581***	-1.063***
			(0.378)	(0.407)
Party leader	-0.563	-0.592	-0.416	-0.703**
	(0.401)	(0.587)	(0.518)	(0.343)
Committee chair	0.939*	0.030	-0.351	0.736*
	(0.554)	(0.847)	(0.615)	(0.413)
Top committee member	-0.431	-0.081	0.008	0.782***
	(0.270)	(0.277)	(0.323)	(0.320)
Observations	236	236	216	216
Wald $Chi^2(16)$ Pseudo	42.42***	32.69***	68.20***	124.17***
R^2	0.07	0.06	0.08	0.15

*Note: This includes members from the 115th and 116th Congress. Ordered logit regression. Negative coefficient indicates shift in more liberal direction, positive coefficient indicates shift in more conservative direction. *p<0.1; **p<0.05; ***p<0.01.*

Taking a closer look, the data show that the type of district a legislator represents is important in determining how that legislator will position themselves through floor speeches and

tweets. Notably, we find consistent evidence that legislators of both parties from more urban and suburban districts express relatively more liberal positions on the House floor than captured by vote-based ideal points. This is consistent with cities generally leaning more liberal and Democratic, but the dynamics of the suburbs is very much a contested political landscape and both recent academic and journalistic accounts suggest movement in the liberal direction (Samuels 2022; Tam Cho et al. 2013). This liberal shift means that Democrats in urban and suburban districts shift towards the ideological extreme of their party, but when Republicans represent suburban districts, the shift means a more moderate position or movement towards the ideological center. It is interesting to note that the type of district a legislator represents does not explain shifts in position on Twitter, which is consistent with social media having a more national audience.

For Republicans, the racial composition and economic conditions of their district also shape how they position themselves when comparing votes to speech and tweets. Republican members who represent districts with a higher percentage of white residents, as well as those from districts with higher unemployment rates talk in ways that communicate a more conservative ideological position relative to their colleagues than their voting behavior would indicate. This shift is consistent with the rise of populist messaging on the political right and the use of racist undertones in some conservative politics. While normatively problematic, this shift is expected given the different–and increasingly partisan–audiences across the three venues. The effect of unemployment rates on the likelihood of conservative messaging also echoes a well-established relationship between Republicans and economic anxiety, genuine or not (Hacker and Pierson 2005; Pierson 2017). It is also consistent with the institutional constraints on roll-call voting, including leaders' agenda setting powers and the Hastert rule, that can limit extreme

ideological expression through voting and therefore contribute to the need for legislators to stake out an ideological position that votes alone do not capture.

A second dynamic we find is that legislators' own lived experience and their role in the chamber affects how they use language to differentiate their position from their votes. More senior legislators of both parties use floor speeches to position themselves more moderately than their voting behavior. This dynamic likely reflects long-standing (but arguably declining) norms of the chamber, including civility, institutional loyalty, and coalition-building (Hanges et al. 2020; Matthews 1959). This moderating effect of seniority is repeated among Democrats when comparing their vote-based ideal points with their tweet-based ideal points. However, more senior Republicans actually take more conservative positions through their tweets than their votes.

Among Democrats, we find that women consistently shift their ideological position in the more liberal direction when comparing speech or tweet-based ideal points to vote-based ideal points. This finding is consistent with work on legislative ideology and gender (Osborn et al. 2019; Reingold 2008; Thomsen and Sanders 2019). The data is suggestive of a similar trend for non-white Democrats, but not at conventional levels of statistical significance, which may reflect heterogeneity among the large number of nonwhite legislators in the Democratic party. In contrast, among Republicans neither women nor minority legislators are distinctive in their use of floor speeches or twitter to take ideological positions different from their voting records. For Democratic women, and perhaps minority members, the findings suggest that votes do not allow for the full expression of their ideological positions. Consequently, these legislators use the opportunities presented by speaking on the floor or via social media to convey their positions, potentially including on issues that do not come to a vote in Congress. Another consideration for

women and minority lawmakers is that they may see themselves as surrogate representatives who represent a national demographic beyond the confines of their district (Kalaf-Hughes 2019; Mansbridge 1999, 2003; Miler 2018). In this case, Twitter in particular provides a valuable opportunity to speak to that type of national constituency.

Lastly, institutional position, including party caucuses and leadership posts, helps to explain why some legislators shift their ideological positions. For Democrats, there is evidence that members of the Problem Solvers Caucus lean into their identity as more centrist Democrats by positioning themselves more moderately on the House floor than their voting records capture. This may reflect an effort to express to the audience in chamber, including constituents, colleagues and political insiders attune to floor speeches, their commitment to bipartisan problem-solving even though they may vote with their party. Interestingly, this dynamic does not carry over to their ideological expressions on Twitter, nor do we see evidence that members of other intra-Democratic party caucuses are more likely to shift their ideological positions. In contrast, membership in the Problem Solvers Caucus does not have a moderating effect for Republicans who position themselves as more conservative on Twitter than their vote-based ideal points. While inconsistent with the goals of the Problem Solvers Caucus, again, the national audience of Twitter may create incentives for Republican members to establish more conservative positions for an audience outside of Congress even while espousing principles of bipartisanship within the chamber.

Additionally, partisan caucuses are predictors of shifts in legislators' relative ideological positions, and this is more pronounced for Republicans than Democrats (Gaynor 2021). Republicans who belong to the House Freedom Caucus, considered to be the most conservative caucus in the chamber, exhibit slight shifts in their ideological positioning across votes, floor

speeches, and tweets. Interestingly, these legislators' positions moderate in their speech as they take relatively more liberal positions than their votes convey. This finding is somewhat unexpected given the reputation of conservative House members for engaging in ideologically extreme rhetoric, but may in part reflect the fact that Freedom Caucus legislators already take the most ideologically conservative positions based on their voting behavior, and thus have little room to shift further right in speech. In contrast, many of their Republican colleagues with less extreme vote-based ideal points shift to the right in tweets and speech.

Institutional position in terms of party leadership, committee leadership, and membership on top committees also helps to explain what type of legislators are more likely to shift their ideological positions, especially on Twitter. Most striking is that among Republicans, those in elevated positions like leadership and key committees, are significantly more likely to express a more conservative ideological position on Twitter than conveyed by their votes. This likely reflects the contrast between the institutional constraints of being in positions of authority and responsibility within the chamber, which fosters a less conservative vote-based ideal point, and the considerable freedom to address a more national and more partisan audience on Twitter.

Taken together, the analyses presented in Table 1 illustrate how legislators take different ideological positions across votes, floor speeches, and tweets. As expected, the more restricted nature of voting means that sometimes votes cannot capture all the nuance of legislators' ideological expression. Legislators, therefore, use other opportunities such as floor speeches or communicating on Twitter to express their ideological positions, often deviating from their vote-based positions. This deliberate adjustment in their relative ideological position reflects legislators' incentives to adapt to different audiences, and the factors that explain why some

legislators shift, highlighting the importance of constituency considerations and institutional position.

Conclusion

To many observers of Congress, the conclusion that legislators behave differently across different settings is neither surprising nor controversial. Indeed, what these data reveal is conventional wisdom on Capitol Hill. However, the academic study of legislative ideal points has sometimes assumed a more fixed view of ideology where vote-based ideal points capture the singular underlying position of a legislator. There is no doubt that vote-based ideal points are an important reflection of legislators' ideological position, but when considered alongside a legislator's speech and tweet-based ideal points, they present a more nuanced picture of how legislators express their preferences. The addition of text-based ideal points expands scholars' ability to evaluate ideological representation, as well as examine ideological positions of those who do not have voting records such as first-term members of Congress or even congressional candidates.

These novel measures reveal that members of Congress strategically shift their ideological position depending on constituent or chamber pressures. While legislators do not all move in the same direction, nor do they shift to the same degree, there are underlying dynamics common to these individual-level adjustments. First, when lawmakers shift their positions, they are often catering to their district. Lawmakers representing urban and suburban areas express more liberal positions in speech and tweets. Thus, for Republicans representing these types of districts, speeches and tweets have a moderating effect when compared to their voting records. Also, for Republicans, the demographic and economic makeup of their district impacts their ideological expressions: Republican members that represent majority white and areas of high

relative unemployment are more conservative in how they speak to their constituents—a likely reflection of the populist direction of the Republican Party.

Second, we uncover evidence that institutional expectations and the rise of social media impact ideological positioning. Senior lawmakers moderate their (likely party-line) votes when speaking to their peers, but still use Twitter to express more conservative positions. This is similar to Republican members of congressional caucuses, including the bipartisan Problem Solvers Caucus, whose floor speeches are more moderate than their votes, but who still use Twitter to express more conservative positions than their voting record allows. Taken together, these findings juxtapose the staying power of norms within the chamber against the increased importance for Republicans to cater to the national base.

Lastly, the extent to which legislators shift ideologically varies according to their partisan identities. Democratic women consistently express more liberal positions on the House floor and on Twitter than in their votes, and the data is suggestive, but not statistically conclusive, of a similar dynamic for non-white Democrats. This illustrates a limitation of relying solely on rollcall votes to express ideological positions, and suggests that what is brought to a vote insufficiently captures the positions that women legislators want to convey to their multiple audiences.

Overall, these results indicate that the two parties utilize opportunities like speaking and tweeting in different ways. For Democratic members, there is variation in directionality of moderation and liberalism, driven by both chamber and institutional factors. This mixed strategy perhaps reflects the more heterogenous nature of Democratic audiences at the level of the district, national public, and political elites. Conversely, there is consistent evidence that Republican members are more likely to use these outlets, particularly Twitter, to express

conservative positions. While Republican legislators also express ideological positions on the House floor reflective of moderating and conservative forces, their expression on Twitter indicates a much more universally conservative audience in that space. This is consistent with existing work on asymmetrical polarization between the two parties, however future work should build on this finding, particularly considering the relationship between text-based ideological presentation and interest group appeasement (Grossmann and Hopkins 2016). In particular, as social media becomes more impactful and important in the political dialogue of elites and constituents alike, understanding how lawmakers are using these outlets to encourage ideological extremism could become as important as understanding their votes.

Of even broader interest, we believe, is the applicability of these new ideal points. From a methodological perspective, the ideal points developed here rely on more data points (over 435 House members versus 100 Senators), over a longer time span (two congressional sessions versus one), and across all policy topics, compared to prior work. Importantly, our approach presents cohesive and replicable topics across speakers, and even for short, social-media posts, we derive reliable estimates of ideology. In addition to measuring modeling stability computationally, we also assess the reliability of the text-based ideal point method via original, extensive human annotation and validation efforts. Ultimately, our models automatically infer high-quality ideal point estimates by legislator. The automated discovery of topics and frames across ideology is a notable and open challenge in computational text analysis and computer science research more generally. These models, and the ideal-point outputs they produce can easily be applied to other questions of ideology, especially the important relationships between ideology, representation, and communication. The potential for application throughout the field is

significant, and our hope is that these models offer researchers an easily applicable, broader approach to measuring ideology.

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