Congressional Responsiveness to Public Opinion

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Abstract

A rich literature examines the correlation between public opinion and policy outcomes—so-called responsiveness. To be sure, such aggregate outcomes are important to understanding how democratic institutions respond to the will of the people, but the behavior of individual legislators is an essential and understudied piece of the responsiveness puzzle. Here, we examine the extent to which members of Congress vote in response to their constituencies’ opinions. We estimate public opinion via multilevel regression and poststratification (MRP) and use these estimates to predict votes on stem cell legislation (H.R. 810) in the 110th Congress for both the House and the Senate. We find that members of the House are highly sensitive to their district’s public opinion—even when accounting for party and ideology—and vote accordingly. On the other hand, Senators seem to pay little attention to public opinion in their state when deciding how to vote. We close with a discussion of possible extensions, both substantive and methodological.
1 Introduction

1.1 Background

Representative democracy is built upon the idea that the behavior of elected officials should be responsive to the preferences of their constituencies. As such, political scientists have worked to better understand the relationship between legislative outcomes and public opinion for decades. This literature often focuses on how policy enactment corresponds with public opinion on specific issues at the state level (e.g. Lax and Phillips 2012). However, an aggregated dependent variable such as policy enactment—which requires the votes of many legislators—obscures the link between each legislator’s behavior and the will of their constituency. Furthermore, the small literature that does examine the direct link between Congressional roll call votes and public opinion falls short in many ways. Some studies do not use individual-level analyses (Ansolabehere, Snyder, and Stewart 2001; Clinton 2006), or do not use constituency opinions on specific issues (Erikson and Wright 2000). Other research does not examine both chambers, focusing solely on individual-level analyses for the House (Warshaw 2012). In this paper, we fill these gaps by investigating the relationship between public opinion and individual votes on stem cell research in Congress for both the House and the Senate, and comparing the responsiveness of each chamber. We find that House members’ votes on stem cell research were driven in large part by the opinions of their constituents. By contrast, Senate votes were driven almost exclusively by their ideology.

The extent to which elected officials vote according to the issue-specific opinions of their constituents is a central issue in American politics, and one that has not gone unnoticed by scholars. Existing studies have found that roll call votes are correlated with the ideological preferences of each member’s constituency. Yet the literature on the subject is still lacking. One reason for this is that some existing literature has focused on predicting roll call votes with district partisanship rather than issue-specific opinions (e.g. Ansolabehere, Snyder, and Stewart 2001). However, issue-specific opinion has been linked strongly to roll call votes in a number of areas, such as defense (Bartels 1991) and LGBT issues (Haider-Markel 1999).

Illuminating the link between individual roll call votes and constituency public opinion has been problematic largely for methodological reasons, specifically that the way we measure public opinion at the district-level has only made huge advances in recent years. Previously, issue-specific public opinion was most commonly estimated via disaggregation, which pools national polls until each
unit of observation (e.g. state, district) has enough respondents to generate a reasonably accurate estimate (e.g. Erikson, Wright, and McIver 1993). However, this technique is quite limited. First, polling firms do not often ask relevant policy items often enough to generate public opinion estimates for sparsely populated states and district. Second, the issues that are asked about are limiting; because space on surveys is a scarce resource, the good data available to political scientists only asks about the most salient issues. This has led to the use of left-right ideology as a predictor of responsiveness on specific issues, which is problematic because “we do not know the latent mapping from the diffuse measure to actual policy choice” (Lax and Phillips 2012, 149). In other words, ideology is a high-level concept, often comprised of more detailed and complex opinions on specific issues.

The most compelling of these advances have come from Andrew Gelman and colleagues, who developed multilevel regression with poststratification (MRP; Gelman and Little 1997). MRP allows for more accurate estimates than disaggregation without the latter’s strict data constraints. As such, MRP is a popular way to estimate public opinion on issues at the state- and district-level when national survey data that allows for comparison at such a fine-grained level is often lacking. MRP was first used to estimate state-level, policy-specific public opinion by Park, Gelman, and Bafumi (2006). MRP has two stages, a hierarchical logistic regression, and poststratification:

- Multilevel regression: Survey responses of individuals are modeled as a function of demographic and geographic typology via a hierarchical logistic regression

- Poststratification: Opinion estimates for each state are weighted by the percentages of each demographic-geographic type in the actual state populations using census data

This process was originally motivated by unrealistic, high-variance policy support estimates for small states that were often obtained from the disaggregation method. The hierarchical model borrows information across states, which curbs overly high variance of small-n units while at the same time shrinking unrealistic policy support estimates toward the population mean. However, the hierarchical model is only a partial solution to the problems of estimating district- and state-level opinion from national surveys enumerated above. Poststratification according to demographic-geographic within-unite (district, state) typologies allows for a good approximation of the mapping of public ideology onto policy support. Together, these steps form a method that “has been shown to produce highly accurate estimates even within a single national poll and simple demographic-geographic models”
2 Expectations

This paper is a pilot test using MRP data to predict roll call votes on a single issue—federal dollars to support stem cell research—which was voted on in the House and Senate in 2006 (H.R. 810). We chose stem cell research because of the potential disconnect between the relatively high levels of public support (no state-level opinion below 50%, median district-level opinion of 59%) and the partisan split in Congress on the issue (on the original vote, 76% of Republicans in the House voted no, 92% of Democrats voted yes). Thus, this issue should provide evidence of whether MCs listen to their constituents or blindly follow their party.

Simply put, we expect that MCs will generally vote in accordance with the preferences of their constituency, even in the face of strong pressure from the party. This follows previous research which has consistently found links between constituency characteristics (issue-specific opinion, ideology, presidential vote share) and roll call votes. Furthermore, this line of thinking is consistent with the theories of both modern political scientists and the Founding Fathers. We know that legislators are interested in being re-elected, and that their constituents may hold them accountable for their voting behavior at the ballot box (Mayhew 1974; Rohde 1991; Aldrich 2011). Then it is a simple decision for MCs to increase their chances of re-election by voting with the opinions of their constituencies.

Indeed, in *Federalist #51*, Madison says of incentivizing MCs to cater to the interests of their voters “Ambition must be made to counteract ambition.”

However, the differences in the constituencies of the House and Senate may produce interesting results. For instance, Congressional districts often have fine-grained, more homogeneous interests, which force members of the House to be more particularized in casting their votes. In contrast, Senators are beholden to entire states, often with more diverse interests. As such the incentivized connection between constituency opinion and voting behavior seems lessened for Senators. Thus, while we expect a general pattern of responsiveness to public opinion, we expect this relationship to be stronger for members of the House than for Senators.
3 Methods

3.1 Data

It follows from the above discussion that we will require data from a number of sources in order to complete our analysis. First, we need state- and district-level opinion estimates for stem cell research near our chosen vote (H.R. 810, 109th Congress, summer 2006). For this, we turn to recent work using MRP; our state-level estimates come from data provided by Lax and Phillips (2011) and our district-level estimates come from replicating Warshaw and Rodden (2012).

We also gathered roll call data for the House and Senate votes on H.R. 810.\(^1\) We merged these sources into a single dataset that also includes important covariates such as member party ID and member ideology. Our ideology measures are DW-NOMINATE scores. Including donor ideology gives us a way to measure whether MCs vote more with those who gave them money than their constituency as a whole.

3.2 Statistical Model

Because our dependent variable of interest—roll call votes—is a binary outcome, we have chosen to model votes with a logistic regression. Because their may be important differences in the House by state, we are using a random intercept model for state with our House data. For both chambers, our model estimates the probability of voting to fund stem cell research based on our MRP based estimates of either district level opinion or state level opinion.

Our basic framework for generating opinion estimates is similar to that of Warsaw and Rodden, but we did so in an explicitly Bayesian manner. We did so with the idea that Bayesian models, even with uninformative priors, are both more flexible and more capable of capturing the heterogeneity introduced by the embedded hierarchies that are part-and-parcel with multilevel models. Our hierarchical model is a logistic regression model, which implies a binary response variable \(y_{ij}\), where \(i = \) Individual and \(j = \) Congressional District (CD). \(Pr(y_{ij} = 1)\) is the probability that an individual \(i\) in CD \(j\) supports stem cell research, which can also be written:

\[
y_{ij} = \begin{cases} 
1, & \text{Support} \\
0, & \text{Not Support}
\end{cases}
\]

\(^1\)There were two votes, as President George W. Bush vetoed the original bill; the veto override did not pass.
\[ Pr(y_{ij} = 1) = \logit^{-1}(x_{ij}^T \beta + w_j^T \alpha_j) \]

\[ x_{ij} = (\text{race} * \text{gender}, \text{age}, \text{education}, \text{age} * \text{edu}, \text{year}) \]

\[ w_j = (\text{region}, \text{previous vote}, \text{religion}) \]

Here, \( \beta \) denotes the coefficients for the individual-level predictors \( x_{ij} \), and \( \alpha_j \) are the coefficients for the CD-level predictors \( w_j \). Thus, our fully-specified model can be written as

\[ y_{ij} = x_{ij}^T \beta + w_j^T \alpha_j + \epsilon_{ij}; \epsilon_{ij} \sim N(0, \sigma^2) \]

However, as we want to make inference on the posterior distribution

\[ P(\beta, \alpha_j | y_{ij}, x_{ij}, w_j) \propto \mathcal{L}(y_{ij} | x_{ij}, w_j, \beta, \alpha_j) \pi(\beta) \pi(\alpha_j) \]

We must assign prior distributions to \( \beta, \alpha_j \), and their prior hyperparameters. We assign multivariate Normal priors to \( \beta, \alpha_j \):

\[ \beta \sim N_p(\mu_\beta, \Sigma_\beta); \alpha_j \sim N_p(\mu_\alpha, \Sigma_\alpha) \]

Additionally, we must assign priors to \( \sigma^2, \Sigma_\beta, \Sigma_\alpha, \mu_\beta, \) and \( \mu_\alpha \). We assign an inverse-Wishart distribution \( W^{-1}(\Psi, \nu) \) to each of the variance hyperparameters \( \sigma^2, \Sigma_\beta, \) and \( \Sigma_\alpha \). Lastly, we let \( \mu_\beta = \mu_\alpha = 0 \) to ensure identifiability.

After running our Bayesian hierarchical model described above to estimate the probability of support by demographic-geographic typology, we stratify the estimates of each model by the demographic-geographic typology data in each Congressional District, according to the census, added to the average random intercept for each state. The results of this analysis were not substantially different from the frequentist approach in this case. But, since hierarchical models already internalize much of the same logic as Bayesian models, it is generally the better practice to go the extra mile to make the technique fully Bayesian (Gelman and Hill 2006; Gelman et al 2014).

We ran two models for each chamber. The first is a bivariate logistic regression where the independent variable is our MRP-estimated constituency support for funding stem cell research. In the second model, we included member DW-NOMINATE scores—as a proxy for their ideology—and a dummy variable for party as institutional covariates. Again, for the House models, we used random
intercepts for state to account for any state-level heterogeneity.

4 Results

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<th>Table 1: Stemcell Responsiveness Models</th>
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*Note:* *p<0.1; **p<0.05; ***p<0.01

The results of our models are displayed in Table 1. We can see that, in the bivariate case, both Representatives and Senators are responsive to localized public opinion. The effect is a rather large one, but without the presence of covariates, it is hard to tease out what is going on here. Adding in DW-NOMINATE scores and party changes the results in interesting ways. While the effect of party is not significant in either the House or the Senate, DW-NOMINATE scores are strong predictors of a MC’s vote on stem cell research. And, interestingly enough, the responsiveness that the MC has to their constituents varies based on chamber; House members are highly responsive to their district’s opinion on stem cell research, while Senators seem to be almost entirely unaffected by state-level opinion.

We then generated predicted probability graphs of voting in favor of stem cell research funding
by public stem cell support in the relevant area. For these graphs, we held party constant (both are for Republicans, since they were in the majority in both the House and Senate in the 109th Congress), and DW-NOMINATE scores were held at the chamber median. These are displayed in Figure 1. What we see immediately is that there is very little relationship between state-level public support for stem cell research and the voting behavior of Senators; the slightly negative slope of the graph is indicative of the real lack of a relationship between the two. The opposite is true in the House, as the gap between 55% and 65% public support changes the probability of voting for stem cell research from right around 30% to right around 50%. This also highlights another interesting aspect of the relationship between public support and probability of voting yes in the House, is the fact that the point at which the probability for voting yes goes above 50% is at 65% public support, which is much higher than one would expect in a truly representative legislative body.
5 Discussion

5.1 Substantive Conclusions

The biggest conclusion we can draw from this (admittedly limited) study is that, while neither the Senate or the House appear to vote based on strict 50% public support threshold, it does seem that the House responds to changes in public support, while the Senate does not. Indeed, the absence of an effect of localized public opinion on Senate voting behavior is a remarkably stark finding, and it suggests that Senators act more independently of public opinion than Representatives do, which would be a validation of the Framer’s vision of the Senate as being more shielded from the capriciousness of the public. Seemingly, then, the House and the Senate correspond more closely to their original conceptualization than would have previously been expected. While the ubiquity of MC ideology as a determining factor of voting behavior remains strong, the varying effects of localized public opinion is definitely an interesting result, to say the least.

5.2 Future Work

The most obvious extension of our current project is to expand our analysis to include many different votes. A substantive hook also seems necessary; while Warshaw (2012) also provides a surface investigation of Congressional responsiveness to public opinion, he also explores how issue salience affects representation. To expand this project, we would like to similarly show how mediating factors affect how well elected officials vote with the will of their district. Possible factors are donor opinions on issues, estimations of subpopulation opinion within districts, and party agenda factors.

We also would like to more directly test Fenno’s concentric circles of constituency studies of representation; we would like to establish what we expect the inner circles of a given MC’s constituency opinion to be on a variety of issues, and weigh the impact that has on their decision to vote on certain bills in comparison to the effect overall district opinion has (Fenno 2002). Linking MRP based estimates of localized public opinion and Bonica’s donor based estimations of ideology would be the next, most profitable step.

This paper is in essence the beginning of a larger project on measuring how Congressional responsiveness relates to district level and donor specific issues. We hope to do more linking estimates of district ideology, district level support of a handful of issues, and donor beliefs/supports in future papers, and will bring together many different “big data” sources to map these. Exciting advances in
Bayesian scaling methods, information sharing techniques, and machine learning based approaches will allow for a better navigation through these various sources of Congressional support.
References


Federalist Paper #51.


