

Economic Inequality and Representation in the U.S.
House
A New Approach Using Population-Level Data

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Are elected officials equally responsive to all of their constituents, or do they provide the most political representation to the wealthy? In recent years, this question has been the subject of considerable empirical controversy. Working independently, Gilens (2005), Bartels (2010), and Jacobs and Page (2005) provided early evidence that political elites were more responsive to their wealthier constituents. However, a subsequent set of studies raised questions about these conclusions. Using different data and methods, these studies (Soroka and Wlezien (2008) Ura and Ellis (2008) Erikson and Bhatti (2011)) found limited differences either in policy attitudes or in representation across income groups.

Reviewing the divergent views about the relationship between economic inequality and political representation, Stimson (2011) declared acerbically that “between the two positions it is hard to imagine that objective research could produce such discrepant conclusions.” Given that the two sets of findings lead to very different conclusions about the health of contemporary American democracy, the impasse is troubling indeed. We believe that a principal reason for the divergent findings of recent studies is the way in which the reliance on survey data has limited the scope of inquiry on this topic. For the purposes of studying the relationship between economic inequality and political representation, existing survey datasets suffer from two serious problems: (1) small samples that include few, if any, truly wealthy Americans; and (2) coarse measures that fail to distinguish between the truly wealthy and the merely well-to-do (Page (2009)). These limitations force scholars to conduct analyses at very high levels of aggregation, ignoring important representational contexts such as congressional districts and state legislative districts; and require analysts to employ extremely coarse income groupings that may obscure the true political influence of the wealthy. Given these limitations, research findings are likely to be highly sensitive to the data and methods employed in each study (Erikson and Bhatti (2011), Stimson (2011)). To make matters worse, small sample sizes and coarse measures of wealth prohibit rigorous testing of prominent hypotheses about mechanisms (skewed voter registration rates (Shefter (1994)), unequal

participation in primary or general elections (Soss and Jacobs (2009)), or large campaign contributions (Bartels (2010))) linking wealth and unequal political representation, raising additional questions about the adequacy of existing research findings.

This paper advances our understanding of the relationship between economic inequality and political representation in several ways, drawing on a new database provided by Catalist, a political data vendor that sells detailed registration and micro-targeting information to the Democratic Party, unions, and progressive interest groups. Whereas the survey samples employed in previous studies include demographic and political information on thousands, or tens of thousands, of persons (but many fewer wealthy ones), the Catalist database contains individual-level data on over 265 million persons. Notably, the Catalist database contains granular measures of individuals' wealth (particularly among the wealthiest groups), and permits analyses at low levels of aggregation such as congressional and state legislative districts, allowing us to overcome problems that have hampered previous studies. Catalist also has unique properties - described in detail below - that can be leveraged to test common hypotheses about the mechanisms linking wealth and political representation.

In this paper, we focus on the relationship between economic inequality and political representation in the U.S. House of Representatives, examining how well individual legislators represent constituents of different wealth levels within their districts. Overall, we find that members of Congress are much more responsive to the wealthy than to their poor constituents. However, when we estimate separate models for Democratic and Republican representatives, these findings largely disappear for Democrats, and become especially stark for Republicans. We also evaluate several hypotheses about mechanisms linking wealth and representation, including claims that the wealthy receive disproportionate representation due to (1) higher registration rates, (2) more extensive participation in elections, and (3) greater propensity to make political donations. We find that campaign donations, but not voter registration or participation in primary or general elections, may help explain the

disproportionate influence of the wealthy among Republican representatives.

Our analysis proceeds as follows. First, we review the existing debate about the relationship between economic inequality and political representation, and identify problems with survey data that present challenges to the analysis of this relationship. We then introduce the Catalist database, providing a detailed description of its characteristics, and explaining why it is well-suited to analyzing the relationship between wealth and representation. We also describe our analytic strategy, and discuss the variables used in our analysis. Next, we present our results, first evaluating the association between economic inequality and political representation in the House; then testing several hypotheses about the mechanisms linking wealth and responsiveness. We conclude by considering what our results suggest about the practice of American democracy today.

Economic Inequality and Political Representation

Scholars have long debated whether wealthy citizens receive more political representation than their less fortunate peers. Criticizing influential pluralist views of American politics (Truman (1951)), which held that the openness of the American political system provided citizens of all classes with opportunities for influence, Schattschneider (1960) tartly observed that “the flaw in the pluralist heaven is that the heavenly chorus sings with a strong upper-class accent.” However, the dramatic rise of economic inequality over the past four decades (Piketty and Saez (2003)) encouraged scholars to take a new look at this important topic. Working independently, Martin Gilens, Lawrence Bartels, and Lawrence Jacobs and Benjamin Page provided early evidence that political elites were more responsive to wealthier constituents than to poorer citizens. Drawing on a database of nearly 2,000 public opinion polls over a two-decade period, as well as an assessment of major policy decisions over that time span, Gilens (2005) found that when the rich prefer policies different from ones that

the poor or middle class prefer, policy change corresponds most closely with the preferences of the rich. Bartels' (2010) analysis of roll-call voting in the United States Senate in the late 1980s and early 1990s demonstrated that senators' roll call behavior best reflected the ideological self-identification of the wealthy citizens in their districts (and hardly reflected the views of the poor at all). Examining foreign policy decision-making, Jacobs and Page (2005) discovered that business leaders exerted much more influence than the general public over the foreign policy attitudes of elected officials. Surveying this literature, Gilens (2009:335) recently concluded that "more privileged subgroups of Americans have greater - sometimes dramatically greater - sway over government policy."

Influential as they were, these early studies generated considerable empirical controversy. Several scholars, including Christopher Wlezien, Stuart Soroka, Christopher Ellis, and Joseph Ura, challenged the findings of Gilens, Bartels, and Jacobs and Page by questioning both whether ideology and policy attitudes differed much across income levels, and whether representatives were most responsive to high-income groups. Using time-series data from the General Social Survey, these scholars presented evidence that citizens in different wealth groups possess similar ideologies and policy attitudes, and that the attitudes of these groups tend to move together over time (Soroka and Wlezien (2008), Wlezien and Soroka (2011), Ura and Ellis (2008)). They also found that when legislative outputs and federal government spending levels are examined, citizens of different income levels receive similar levels of representation in most policymaking domains. Although Wlezien and Soroka found that there are some modest differences in responsiveness in a few policy domains, such as welfare, education, the environment, and crime, these differences did not always favor the wealthy (Wlezien and Soroka (2011)). "From this perspective," Kelly and Enns (2010) explain, "the democratic system in the United States is responsive to both the rich and the poor, in large part because the preferences of both groups track each other over time."

The divergent conclusions of these studies are noteworthy. To be sure, as Stimson (2011)

has suggested, these differences could be influenced by the different datasets and methods employed in each study. We believe, however, that uncertainty surrounding the relationship between wealth and representation is determined in significant part by common limitations in the survey datasets used to estimate the ideological and policy preferences of different wealth groups. These limitations require scholars to adopt analytic strategies that make evaluating the link between wealth and representation problematic.

Limitation 1: Small Overall Sample Sizes

While analysts have sought to obtain the largest datasets possible, the survey samples used in existing studies are actually fairly small for the purposes of studying the relationship between economic inequality and political representation. Bartels' (2010) study includes a pooled sample of slightly more than 9,000 respondents; Rigby and Wright's (2011) analysis is based on a pooled sample of nearly 140,000 individuals; Ura and Ellis's (2008) research is based on a pooled General Social Survey sample of about 55,000 records. Although these sample sizes appear large in relation to the average survey, they are limited in a number of respects. First, even these seemingly large samples reduce to fairly small samples when disaggregated to important representational contexts such as states, congressional districts, or state legislative districts. In the best-case scenario, a few thousand respondents may be available at the state level; but many fewer are available at the level of congressional or state legislative districts. Equally important, these small samples almost certainly suffer from an inadequate number of truly wealthy citizens. To see why this is so, consider the data from the 2011 Cooperative Congressional Election Study. The 2011 CCES survey interviewed 20,150 respondents, 17,977 of whom were willing to report their family income. However, of this unusually large sample of American adults, only 822 reported family incomes in excess of \$150,000 and just 38 reported a family incomes of over \$500,000. Clearly, even unusually large survey sample sizes provide no guarantee that high-income groups will be

well-represented (Page (2013)).

Small sample sizes make the aggregation of income groups' preferences and legislators' responsiveness imprecise in relatively large districts, such as Senate districts or states. To make matters worse, the small sample sizes (and the small number of truly wealthy individuals) prohibit analysis of the relationship between wealth and representation in small districts, such as congressional and state legislative districts. Indeed, existing studies usually examine representation as the aggregate policy responsiveness of the entire federal government (Gilens (2005), Soroka and Wlezien (2008), Kelly and Enns (2010)) or state government (Rigby and Wright (2011), Flavin (2012)) in order to preserve sufficient statistical power for their analyses. We have not found a single study where the unit of analysis is the congressional or state legislative district, and the relationship of interest is the association between public opinion, by wealth category, within the district and the representative's legislative behavior. (Bartels (2010) examined the responsiveness of individual senators, but in this case the "district" was the entire state.) Given the centrality of this form of responsiveness in both popular and scholarly understandings of representation, we think this is a significant limitation. In a representative democracy, we would like to know whether - and to what extent - legislators actually represent the constituents who elected them (Achen (1978)).

Moreover, when small sample sizes lead researchers to examine policy responsiveness at the government level, it becomes impossible to determine whether important legislator-level characteristics - especially party affiliation - mediate the amount of representation received by different wealth groups. This strategy is problematic because it removes the question of unequal representation from the broader context of party politics and partisan polarization that is clearly related both to economic inequality and political inequality (McCarty et al. (2006), Hacker and Pierson (2011)). Indeed, there are both theoretical and empirical reasons to believe that partisan affiliation affects representatives' responsiveness in important ways. At the theoretical level, we might expect Democrats to be more responsive to

lower-income groups than Republicans, because lower-income groups such as union members, service workers, and racial and ethnic minorities have historically been a more central part of the Democratic coalition, while the Republican Party has a reputation of catering primarily to middle-and-upper-class Americans. At the empirical level, Bartels' (2010) findings indicate that party affiliation played an important role in mediating the relationship between wealth and representation among United States senators during the late 1980s and early 1990s: as Bartels shows, Republican senators were especially responsive to wealthy constituents.

To date, however, small sample sizes have prevented an assessment of whether party affiliation affects individual legislators' responsiveness to constituents of various wealth levels in the House of Representatives. Thus, whether Bartels' findings apply to contemporary members of the House - who have smaller constituencies and face more regular elections, and thus may have stronger incentives to represent lower-wealth groups - is unknown.

Limitation 2: Limited Representation of Truly Wealthy Individuals

Small overall sample sizes have additional adverse consequences for the study of the relationship between economic inequality and representation. Because existing survey samples include small numbers of truly wealthy individuals, analysts are forced to rely on relatively coarse measures of individual wealth that lump truly wealthy people together with individuals with more modest resources in order to obtain income groupings large enough to preserve sufficient statistical power for their analyses (Page (2013)). This is exacerbated by conventional survey practices which "top-code" income and wealth at a relatively modest level (e.g. \$150,000 or \$500,000) (Page (2009)). Most commonly employed is a three-fold categorization scheme that breaks the income distribution into very broad "lower class," "middle class," and "upper class" categories (Bartels (2010), Soroka and Wlezien (2008), Erikson and Bhatti (2011), Flavin (2012)).

Consequently, although interest in the relationship between wealth and representation is motivated in significant part by the concern that rising economic inequality places excessive political power in the hands of the super-rich (Winters and Page (2009)), the coarse wealth categories used in existing analyses likely obscure the real influence of the truly wealthy by lumping these individuals together with much less wealthy individuals (Page (2009)). While it is useful to know whether representatives are more responsive to the top third of income earners, it is arguably even more important from the perspective of gauging the health of American democracy to know whether they are even more responsive to the very wealthiest individuals, such as those making hundreds of thousands, or millions, of dollars (Hacker and Pierson (2011)). Unfortunately, existing analyses cannot tell us whether the very wealthy have disproportionate political influence.

Limitation 3: Modest Insight on Causal Mechanisms

Finally, while we would ideally like to understand the mechanisms linking wealth and representation, “empirical investigation of this topic remains startlingly limited” (Flavin (2012)), in large part due to limitations of existing survey datasets. For example, Bartels (2010) attempts to test several hypothesized mechanisms linking economic inequality and political representation, including higher turnout in elections among wealthier individuals, inequalities in political participation and political knowledge favoring the wealthy, and the disproportionate propensity of wealthy citizens to provide donations to political campaigns. While Bartels’ data allows him to raise questions about the adequacy of the turnout, participation, and knowledge hypotheses, they do not allow him to directly test the donation hypothesis, due to the absence of appropriate survey questions. (In truth, because the number of political donors in a given survey sample is usually very small, it is unlikely that Bartels could have tested this hypothesis in any case.) Notably, other prominent survey-based studies of economic inequality and political representation have speculated about causal mechanisms

(Gilens (2005): 789-92), but have not tested them directly. “As a result,” Flavin (Flavin (2012) :46) concludes, “we still have an inadequate understanding and little concrete evidence about the precise mechanisms by which economic inequality is reproduced as political inequality.” This dearth of evidence about mechanisms raises questions about the explanatory adequacy of research finding evidence of unequal representation.

Using the Catalist Database to Study the Relationship between Wealth and Representation

We now introduce the Catalist database and explain why its characteristics make it ideal for studying the relationship between economic inequality and political representation. Catalist is a private political data vendor that sells detailed voter information to the Democratic Party, Democratic candidates, and progressive interest groups. The database is comprised of detailed records of more than 265 million American adults. The Catalist database begins with voter registration data from all states and counties, which is cleaned and standardized. Then, Catalist appends hundreds of variables to each record. Using registration addresses, Catalist appends Census data describing the characteristics of the neighborhood in which each individual resides. Catalist also contracts with other data vendors to incorporate data on the consumer habits of each household. Finally, Catalist generates an array of imputed variables from the other variables it has gathered, validating its imputation models against survey data that has been merged into its database and matched with relevant records.

The Catalist database was created to help the Democratic Party, Democratic candidates, and liberal interest groups improve their micro-targeting and get-out-the-vote efforts. To help users exploit the information in the database in order to identify individuals and groups most amenable to Democratic messaging and mobilization, Catalist has created a powerful data management interface, known as the Q-Tool. The Q-Tool is a query-based system that

allows users to generate data frames containing desired combinations of geographic, Census-level, and individual-level variables, in order to pin-point individuals or groups of interest. Users have great flexibility in designing queries: users can not only specify any combination of variables, but can also generate complex query patterns in order to isolate cases of particular interest. To give just one illustrative example, one can use the Q-Tool to query for all white female 2012 general election voters who are teachers residing in Massachusetts' First Congressional District, and examine the distribution of household wealth among members of this group.

While Catalist was originally designed for electioneering purposes, the Catalist database is also available to academic researchers via subscription (academic users do not have access to identifying information such as individuals' names or addresses). The data and tools developed to help Democratic strategists and candidates can be redeployed by researchers to investigate questions of scholarly interest. Additionally, while subscribers gain access to the Catalist database and the Q-Tool, they can also obtain additional data services, for a small fee. Most important for our purposes, Catalist can upload publicly available, identifiable data (such as Federal Election Commission donor data), match it with existing records in the database, and return (de-identified) matched data to users. Once the data are appended to Catalist's records, they become another variable appearing in the Q-Tool that can be applied by users to queries. In this way, subscribers can customize the Catalist data to make them more useful for their own research purposes.

The Catalist database has features that facilitate the study of the relationship between economic inequality and political representation. Unlike the surveys used in previous studies in this area, the Catalist data are not constrained by the limited pool of truly wealthy individuals because the the database provides a more fine-grained measure of wealth (estimated at the household level) for most of the 265 million individuals in the database. In this paper,

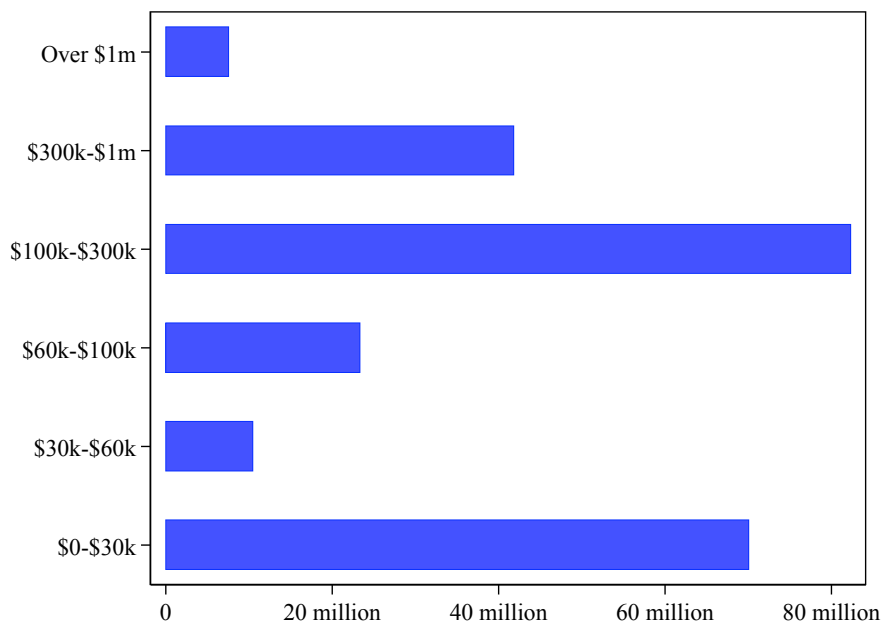
we use Catalist’s household wealth measure, which is available for most individuals.¹ We use household wealth, rather than income, as our indicator, both because wealth is a more stable measure of economic power than income, and because wealth is more unequally distributed. The household wealth measure is a composite variable using a group of other indicators of consumer behavior gathered by InfoUSA, a marketing data vendor. In essence, the composite measure estimates household wealth based on individuals’ consumption of luxury goods such as expensive watches, boats, automobiles, and homes. The household wealth measure has six categories - \$0-30,000; \$30,001-60,000; \$60,001-100,000; \$100,000-300,000; \$300,000-1,000,000; and over \$1,000,000 - allowing us to create a much more granular measure that distinguishes very wealthy individuals (and wealth groups) from less wealthy individuals (and wealth groups).² Figure 1 shows the distribution of American adults across levels of household wealth based on the Catalist database. Note that a large share of Americans (approximately 70 million) are estimated to have a household wealth below \$30,000. The modal wealth category is \$100,000 - \$300,000, with just over 80 million adults living in a household with wealth in that range. Finally, note that just 7.5 million Americans have a household wealth in excess of \$1 million; this represents just 3% of the records for which wealth estimates are available in the Catalist database. Thus, Catalist clearly provides us with the ability to isolate a relatively small share of individuals at the very top of the nation’s wealth distribution.

Because Catalist collects extensive data about each individual’s political geography - including records of each individual’s congressional district, state legislative district, school district, and so forth - it is easy to disaggregate the data to the analyst’s level of choice. With 265 million records, small sample sizes are not a problem: consequently, it is possible to use

¹There are 45.2 million individuals for whom household wealth estimates are not available.

²The original wealth estimate used by Catalist has 20 categories, with the highest category capturing wealth in excess of \$1.8 million, but the categories are collapsed to 6 in the Q-tool. In future work, we will be able to draw on a 1% sample of the Catalist database and make use of all 20 wealth groups in our analyses.

Figure 1: The distribution of American adults by Wealth



Note: Figure based on estimates of wealth accessed through the Catalist database on 30 January 2013.

Catalist to investigate the relationship between wealth and representation with considerable precision in districts (such as congressional districts and state legislative districts) previously inaccessible to researchers.

The Catalist database can also be leveraged to test hypotheses about the mechanisms linking wealth and representation. For example, because Catalist collects official information on every individual's registration status and participation in elections, the analysis can easily be limited to registered voters, mid-term election voters, and so on in order to investigate whether differential registration or turnout rates account for differences in representation among wealth groups (Shefter (1994), Soss and Jacobs (2009)). Likewise, by merging in Federal Election Commission data on individuals' contributions to political campaigns, it is possible to investigate the relationship between wealth and representation only among political donors to see if donations allow wealthy individuals to secure additional representation (Bartels (2010)).³

Before proceeding, we address potential concerns about the quality of the Catalist data. A reasonable question is how well Catalist matches individuals with their voting records, commercial information, and federal data. One reason for confidence in Catalist's matching ability is its impressive performance in the 2011 MITRE name-matching challenge, an independent name-matching competition gauging the performance of commercial name-matching services (Catalist finished second among forty participants in the 2011 challenge). Additionally, Ansolabehere and Hersh (2012) have independently validated Catalist's matching procedures and concluded that they are highly successful. These independent validations provide us with considerable confidence in the accuracy of Catalist's matches. We would

³Finally, because Catalist maintains data locating individuals in both their pre- and post-2010 redistricting constituencies, we can exploit the exogenous shock to the makeup of representatives' districts to assess the causal relationship between wealth and representation: if continuing legislators are highly responsive to changes in the ideology of wealthy groups following redistricting, but are not responsive to changes in the ideology of less wealthy groups, we can conclude that economic inequality has a causal impact on political inequality. We intend to use this leverage in future work.

also like to have confidence in the quality of Catalist’s imputed variables - in particular, their imputed measure of individuals’ political ideology, which is employed in the analysis that follows. While the details of the model used to estimate individual ideology are proprietary, we know that the model is built as a series of linear regressions using variables from the database to predict the values of a liberal/conservative ideology index, with the index based on a wide range of questions selected from national polls and merged into the database. (Catalist’s individual ideology scores have a value between 0 and 100, with 0 being the most conservative and 100 being the most liberal.) We also know that Catalist has performed a validation of its ideology model, using the model to predict self-reported ideology and issue positions among individuals for whom matched survey data was available. The results suggest that Catalist’s ideology model accurately captures individuals’ self-reported ideology and positions on salient public issues. See Appendix 1 for an additional test of the ideology measure compared to other approaches to measuring ideology.

Data and Methods

Our unit of analysis is the congressional district and our primary interest is in estimating the association between constituents’ ideology by wealth group and legislators’ roll call voting behavior. Using Catalist’s ideology measure, we created measures of the median ideology within each wealth group in each congressional district. Because Catalist reports its ideology measures in 5-point bins via the Q-tool, our measure of median ideology for each wealth group is actually the mid-point of the bin in which the middle observation falls. Thus, our measure of median ideology can theoretically vary from 2.5 (most conservative) to 97.5 (most liberal). However, most scores fall in a narrower range. Specifically, the two congressional districts with the most conservative low wealth individuals registered with a median ideology of 32.5 and the five districts with the most liberal low-wealth adults had a median ideology

of 67.5. There was more variance in the distribution of the median voter for the highest wealth group across the 435 congressional districts. For this group, three districts registered a median ideology score as low as 17.5 while 2 had a median ideology of 77.5. We present additional descriptive information about ideology and wealth in the following section.

We use two different approaches to measuring legislators' roll call voting behavior. First, we employ NOMINATE scores (McCarty et al. (2006)), which provide a summary measure of legislators' ideology based on all of their roll-call votes in a given Congress. The properties of this measure of legislator ideology are well-known, and have been used in previous studies of representatives' responsiveness to different wealth groups (Bartels (2010)). While this summary ideology measure is very useful, we also aim to examine how legislators vote on issues for which wealth disparities may be more important; specifically, economic issues. To do this, we turn to the National Journal's congressional vote ratings data. Each year, the National Journal collects data on votes "that show ideological distinctions among members," and computes scores summarizing how frequently the member voted in a liberal or conservative direction on those votes. What is most useful for our purposes is that the National Journal separately analyzes roll call voting in three broad areas – economic, social, and foreign policy issues. In this analysis, we use the Journal's summary scores for the economic votes cast in 2011.⁴

We evaluate the association between representatives' roll call votes and the ideology of different wealth groups in several ways. First, to permit visual comparison of legislators' responsiveness to groups of different wealth levels, we present scatter-plots illustrating the relationship between each wealth group's ideology and the legislator's ideology. If legislators are similarly responsive to groups of different levels of wealth, then the slopes of the lines summarizing the data should be similar for the scatter-plots for each wealth group. To

⁴This score is based on 55 votes cast in 2011 in the House of Representatives. The votes used and the raw data can be found at <http://www.nationaljournal.com/2011voteratings>.

account for potential differences in responsiveness based on party affiliation, we generate separate plots for Democrats and Republicans.

We then estimate statistical models of representatives' roll call voting behavior, using the different wealth groups' ideologies as predictor variables. If legislators are similarly responsive to groups of different wealth levels, then the coefficients for different wealth groups should be statistically significant and of similar magnitude. Our approach generally follows Bartels' (2008) analysis of senators' responsiveness to constituents of different wealth levels. Like Bartels (2010): 258, we recognize that our initial model "falls far short of being a realistic causal model of legislative behavior." In particular, this model does not account for other factors that may contribute to legislators' behavior; and it does not necessarily indicate a causal influence of constituents' preferences on legislators' behavior. However, like Bartels, we contend that "the relationship between constituency opinion and legislative behavior in this simple model reflects an important feature of the policy-making process in any democratic political system, regardless of whether that relationship is produced by conscious political responsiveness on the part of legislators, selective retention of like-minded legislators by voters, shared back grounds and life experiences, or other factors." While we present a pooled model for all representatives, we also separately analyze responsiveness among Democrats and Republicans to account for possible differences in representation based on party affiliation.

Our preliminary analysis examines the association between representatives' roll call votes and the ideology of adults in different wealth groups in order to ascertain whether representatives are more responsive to the wealthy. Next, we estimate some more focused models to test several hypotheses about mechanisms linking economic inequality and political inequality (as with the previous analyses, we also probe for differences based on party affiliation). Scholars have hypothesized that wealthy individuals may enjoy greater representation from elected officials in part because they are disproportionately likely to participate in politics.

In order to test the hypothesis that higher levels of political participation help explain the responsiveness of elected officials to the wealthy, we replicate the analysis described above twice, first limiting our analysis to only registered voters and then further limiting our analysis to only mid-term election voters. If political participation is an important factor linking wealth and representation, then we should see relatively consistent associations between roll call voting and the ideology of different wealth groups once the analysis is limited to frequent voters.

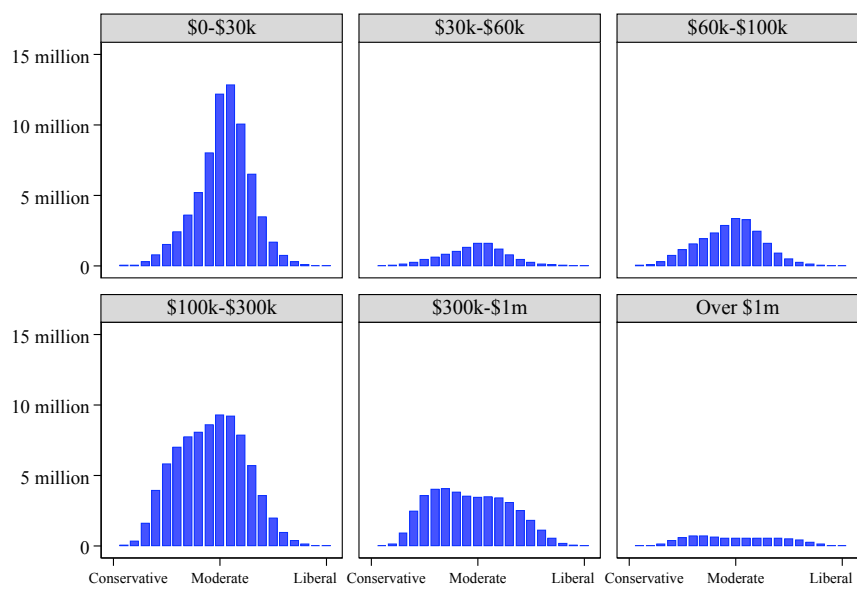
We also test the hypothesis that representatives are more responsive to the wealthy because wealthy individuals provide the lion's share of political contributions. To do this, we downloaded the FEC's publicly-available contributor file; conveyed the data to Catalist to match with its existing data stores; and, using the (de-identified) information about individuals' contribution histories, limited the analysis to contributors. We then used this information to determine whether the roll call votes of legislators were more strongly associated with the ideology of their constituents or their donors.

The Landscape of Wealth and Ideology Across Congressional Districts

Figure 2 portrays the distribution of ideology in the United States among different wealth groups according to the Catalist database. Note that the y-axis is measured in terms of total people and as we saw in Figure 1, some wealth categories have many more individuals in them compared to others. What stands out from Figure 2 is the extent to which individuals in lower wealth categories are centered near the middle of the ideological scale but as wealth increases, the distribution flattens out considerably. In other words, at higher levels of wealth, there is substantially greater variation in ideological views.

Aggregated at the national level, there are not enormous ideological differences between

Figure 2: The distribution of ideology of American adults by Wealth



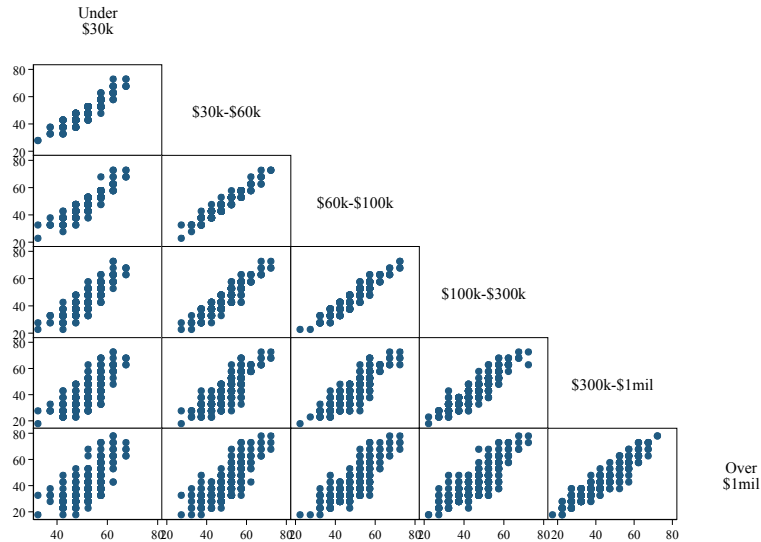
Note: Figure based on Catalist ideology model. 0 is most conservative and 100 is most liberal.

the least wealthy and the most wealthy groups: the median ideology score among all American adults in the lowest wealth category is 50.2 while the median ideology among those in the wealthiest group is 46.3. This indicates that the wealthiest group of American adults is about 4 points more conservative (on the 100 point scale) than the least wealthy group. This is not surprising since, as we noted above, several scholars have pointed out that the ideology of low income groups is often highly correlated with the ideology of those with higher incomes.

Yet, because the variance in ideology is considerably greater among more wealthy Americans, there are more opportunities for divergence in the preferences of these groups across 435 congressional districts. Figure 3 shows the relationship between median ideology for each of the wealth groups in each of the 435 congressional districts. It is clear from these plots that ideology is often highly correlated across wealth groups. This is particularly true when wealth groups are adjacent. For example, there is a .92 correlation between the median ideology among the lowest and the second lowest wealth groups. Similarly, there is a .93 correlation between the top two wealth groups.

Nevertheless, the correlation in ideology does diminish as differences in wealth increase. In fact, median ideology among millionaires is correlated at just .685 with median ideology among those with wealth of less than \$30,000. This frequently amounts to substantial differences in the ideology among the poorest and wealthiest in a particular congressional district. For example, in 149 congressional districts there is at least a 20 point difference between the ideology of the poorest and wealthiest constituents. This is one-fifth of the entire range of the ideological scale. As we proceed with the analyses that follow, it is important to keep in mind how ideology is correlated among these wealth groups.

Figure 3: Plots of median ideology by wealth groups in Congressional Districts



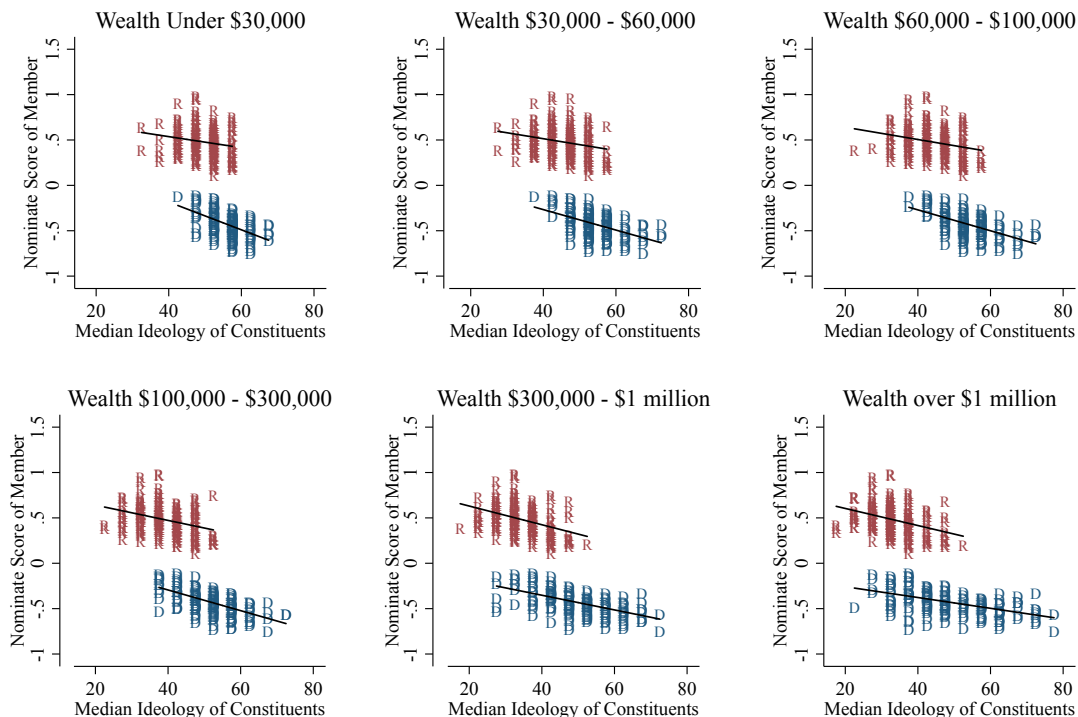
Note: Figure based on Catalist ideology model. 0 is most conservative and 100 is most liberal.

Wealth and Representation in Congress

Are members of the House of Representatives similarly responsive to constituents of different wealth levels, or do they provide greater representation to their higher wealth constituents? Figure 4 plots the relationship between the median ideology in each congressional district in each wealth group with the member's NOMINATE score for the 112th Congress. The figure also include bivariate regression lines calculated separately according to the party of the member. This initial exploration into the relationship between constituent ideology and wealth reveals some noteworthy patterns. In particular, the top left plot indicates that there is a clear relationship between the ideology of low-income constituents for Democratic members of Congress. Specifically, in districts where the median ideology of low wealth individuals is more liberal, Democratic members of Congress tend to vote more liberally as well. However, for Republicans, the regression line is relatively flat; the roll call voting

Figure 4: Relationship between ideology of adults (by wealth) and member's NOMINATE score, 112th Congress

DW-NOMINATE Scores



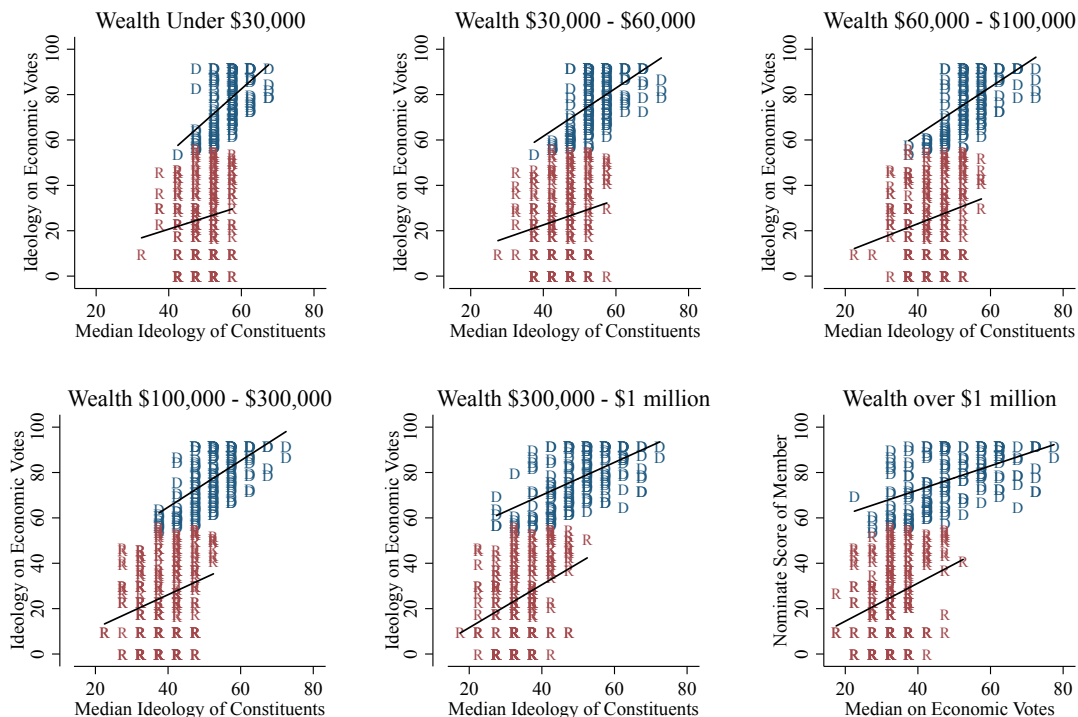
behavior of Republican members of Congress is not strongly associated with the median ideology of their low wealth constituents. In fact, the slope for the Democratic line is three times larger than that for the Republicans.

As wealth increases, the pattern witnessed in the first panel gradually shifts. The bottom right plot shows the relationship between the ideology of the wealthiest adults in each district and their representatives' NOMINATE scores. In this plot, the relationship between ideology and NOMINATE scores is less pronounced for Democratic members and more pronounced for Republicans. In fact, the slope of the regression line for Republicans is nearly twice as large as the slope for the Democratic line.

While NOMINATE scores provide a useful summary of each member's roll call voting

Figure 5: Relationship between ideology of adults (by wealth) and member’s NOMINATE score, 112th Congress

Liberal Support on Economic Votes



behavior across all issues during the 112th Congress, it may also be instructive to examine a subset of important economic issues where unequal representation might be most evident. Accordingly, Figure 5 presents scatterplots similar to those in Figure 4 except that in this figure we use the *National Journal's* measure of the percentage of votes on economic issues on which each member voted liberally.

The scatterplots generated using the variable for liberal support on economic votes look somewhat different from the NOMINATE plots. In particular, there is more variance in the distribution of members on this measure. Nevertheless, the general patterns from Figure 4 are also present in this figure. Liberal support among Democratic members of Congress appears to be most strongly associated with the ideology of the lowest income group while

Republican values on this variable appear to be least associated with the ideology of this group. Additionally, Democratic voting on these measures is less associated with ideology for the wealthier adults while Republican voting on these issues is more strongly associated with ideology for these wealthier groups.

While the plots we have presented to this point are instructive, we now turn to examining whether legislators' roll call votes are more closely associated with the views of the poorest or wealthiest Americans. To do this, we estimate simple OLS regression models where the dependent variable is each legislator's voting behavior in Congress (either through NOMINATE scores or National Journal ratings) and the independent variables are the median ideology for the highest and lowest wealth groups. As we showed above, ideology in congressional districts is highly correlated across wealth groups. However, the lowest and highest wealth groups have the lowest correlation and our primary interest here is to see which group receives more representation from their members of Congress.

Table 1 presents the estimates from six regression models. The estimates in the first three columns are those relating to the association between ideology and a member's NOMINATE score. In the first model, which includes all members of Congress, both coefficients are statistically significant and in the expected direction. While the coefficient for millionaire ideology is slightly larger than the coefficient for the lowest wealth group, the difference in these coefficients is not statistically significant. Thus, the general pattern we see in the first column of Table 1 is that the roll call voting behavior of members of Congress is associated with the ideological pre-dispositions of both the highest and lowest wealth groups. This finding seems consistent with recent research indicating that different wealth groups receive similar levels of representation.

However, some evidence of unequal representation emerges when we estimate separate models for Democratic and Republican members. The next two columns in Table 1 show responsiveness to these disparate wealth groups among Democratic and Republican legis-

Table 1: OLS Regression Estimating Relationship Between Ideology and Member’s Roll Call Voting

Variables	NOMINATE Scores			NJ Econ. Ratings		
	All members	Democrats	Republicans	All members	Democrats	Republicans
Wealth <\$30k	-0.0184* (0.0038)	-0.0087* (0.0023)	-0.0009 (0.0021)	1.1025* (0.2514)	0.8596* (0.2061)	0.0102 (0.2580)
Wealth >\$1 mil	-0.0226* (0.0018)	-0.0039* (0.0009)	-0.0087* (0.0017)	1.3786* (0.1193)	0.3338* (0.0766)	0.8337* (0.2074)
Intercept	1.9470* (0.1568)	0.2459* (0.1072)	0.8159* (0.0918)	-64.9059* (10.546)	12.4482 (9.7042)	-2.6549 (11.3505)
N	433	195	243	423	189	234
R ²	0.5357	0.3263	0.1341	0.5046	0.3424	0.0841

lators. For Democrats, both coefficients are statistically significant and in the expected direction. But the coefficient for the lowest wealth group is more than twice the size of that for millionaires indicating that the NOMINATE scores of Democratic members of Congress are more strongly associated with the ideology of the least wealth constituents than with the wealthiest group. For Republicans, the coefficient for the variable measuring ideology among the lowest wealth group is very small and lacks statistical significance. On the other hand, the coefficient for the highest wealth group is much larger.

The last three columns in Table 1 estimate the same models except with the *National Journal* ratings on economic votes as the dependent variable. The patterns in these models are similar to those in the first two. Democratic voting on economic issues is most strongly associated with the ideology of the least wealthy residents in their districts while Republican voting on these issues appears to be associated mostly with the views of the wealthiest individuals. When members of both parties are pooled together, however, roll call votes are strongly associated with the views of both wealth groups.

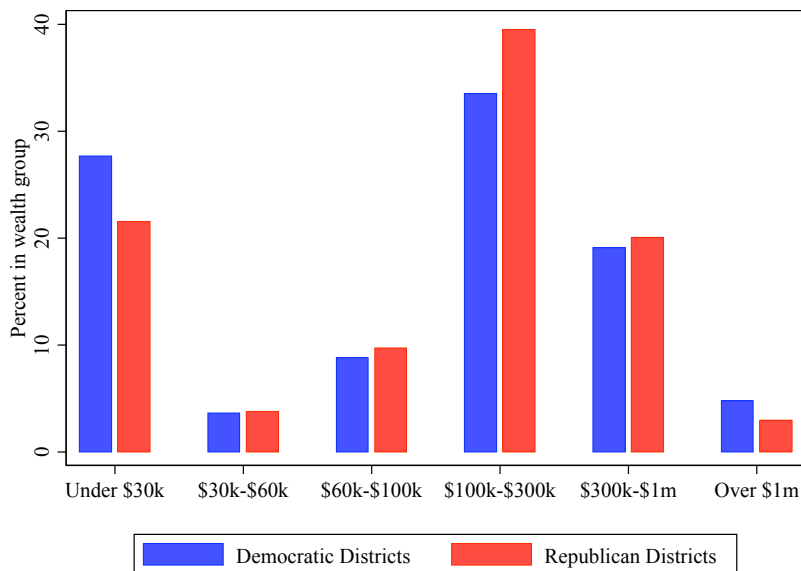
While the results in Table 1 provide us with a way of determining which end of the wealth distribution receives more representation in Congress, we caution against drawing inferences about causal relationships from these results. One possible limitation with the relationships pictured in Figure 4 is that the scatterplots do not account for the fact that different districts

have a different mixture of wealth groups. For example, some districts may have very few low wealth individuals and in those districts it would make little sense for representatives to be responsive to the low wealth group. Indeed, according to Catalist, the median number of adults in a district from the lowest wealth group is 82,318. However, the 7th district in New Jersey has just 17,028 individuals with a wealth under \$30,000 while New York's 15th district has 266,235 individuals in that same wealth category.

Compounding this issue is the fact that the median ideologies of adjacent wealth groups are often very highly correlated. As a result, while the roll call voting of Republicans appears to be more strongly associated with the views of millionaires in their districts, this result does not necessarily occur because Republicans are being most responsive to the concerns of millionaires. Recall from Figure 1 that a large share of Americans fall in the \$100,000 - \$300,000 wealth group. Additionally, ideology among the \$100,000 - \$300,000 wealth group is more highly correlated with ideology among the millionaire group than it is with ideology among those with wealth under \$30,000. Thus, millionaires may receive more representation from Republican members of Congress because they are responding to the interests of the rather sizable share of adults whose wealth is in the \$100,000 to \$300,000 range.

Indeed, we see important evidence to support the notion that both parties may simply be responding to groups that make up a significant share of their constituencies. As a first piece of evidence, Figure 6 compares the average percentage of constituents in each wealth group according to the party of the member of Congress. What this Figure shows is that Democratic members of Congress have, on average, a larger percentage of their constituents in the lowest wealth group compared to their Republican counterparts. Republicans, however, have a larger share of their constituents in the \$100,000 - \$300,000 wealth group compared to Democrats. Thus, it may simply be the case that Democrats are more representative of the lowest wealth group because that group tends to be a larger part of their constituencies while Republican roll call voting may be strongly associated with the highest wealth group

Figure 6: The Distribution of Wealth in Districts Represented by Democrats and Republicans



because that group’s ideology tends to be highly correlated with ideology among the \$100,000 - \$300,000 group and that group tends to comprise a larger share of their constituencies.

Of course, the difficulty in testing responsiveness to all wealth groups simultaneously is that a model that includes the ideological midpoints for each of the wealth groups will suffer from high multicollinearity.⁵ Because multicollinearity increases the standard errors of regression estimates for collinear variables, this condition could make it especially difficult to discern responsiveness to lower wealth groups (Stimson (2011)). Thus, Table 2 presents results from a set of regression models that include ideology measures for three of the six wealth groups – under \$30,000, between \$100,000 and \$300,000, and over \$1 million. We select these three groups because they include the two end points of the wealth spectrum and the group in the middle that includes the highest proportion of adults. These are also the three wealth groups for which we observe the biggest differences across Democratic and

⁵The variance inflation factor for a regression model including the median ideology of all six wealth groups is 13.72.

Table 2: OLS Regression Estimating Relationship Between Donor/Voter Ideology and Member's Roll Call Voting

	All members	Democrats	Republicans
Median ideology for wealth under \$30k	0.0042 (0.0050)	-0.0051 (0.0030)	0.0038 (0.0032)
Median ideology weighted by size for wealth under \$30k	-0.0193* (0.0032)	-0.0021 (0.0015)	-0.0024 (0.0034)
Median ideology for wealth \$100k-\$300k	-0.0258* (0.0043)	-0.0077* (0.0024)	-0.0102* (0.0033)
Median ideology weighted by size for wealth \$100k-\$300k	-0.0155* (0.0051)	0.0004 (0.0024)	0.0031 (0.0049)
Median ideology for wealth over \$1 million	-0.0085* (0.0023)	-0.0015 (0.0010)	-0.0064* (0.0022)
Median ideology weighted by size for wealth over \$1 million	-0.0065 (0.0078)	0.0044 (0.0032)	0.0138 (0.0112)
Intercept	1.8609* (0.1625)	0.3389* (0.1142)	0.8647* (0.1237)
N	433	192	241
R ²	0.6386	0.4203	0.1802

Note: Weighted variables are produced by multiplying the median ideology for the wealth group by the proportion of the district's population who are in that wealth group.

Republican districts in Figure 6. In addition to variables capturing the median ideology for each wealth group, we add to the model variables that multiply the median ideology of that wealth group by the proportion of the district's constituents who are in that wealth group. For example, if the median ideology for a particular wealth group is 40 and that group comprises 25% of the district's adult population, then the weighted variable takes on a value of 10. The coefficients for the variables that are simply the median ideology for that wealth group will indicate whether (and to what extent) a member's roll call votes are associated with that group's ideology regardless of the size of that group. The weighted variables, on the other hand, will indicate whether the degree to which each group is represented is a function of how large (or small) the group is in a particular district.

The first column in Table 2 shows the results for all members of Congress. Keep in mind that for each variable we expect a negative coefficient, indicating that more liberal constituent ideology leads members to vote less conservatively. Notably, for the first pair

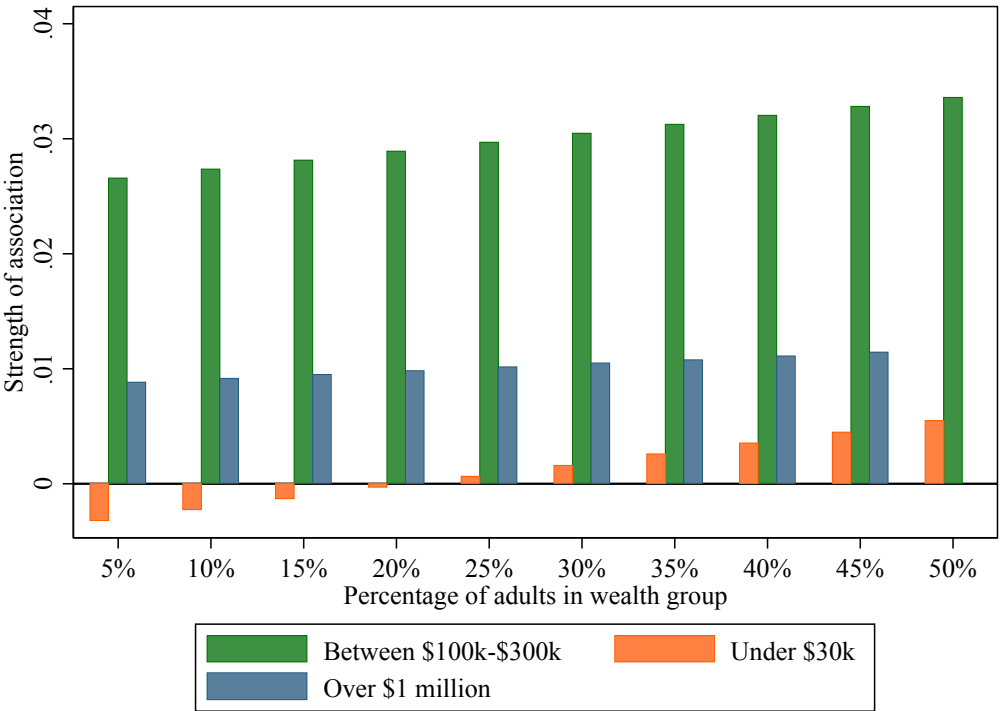
of coefficients, those associated with the lowest wealth group, the coefficient for median ideology is small and positive while the coefficient for ideology weighted by population is in the expected direction and statistically significant. What these results indicate is that the extent to which the lowest wealth group receives representation in Congress is entirely a function of the size of that group in a member's district. The same is not true for the other two wealth groups in the first model. Remarkably, the median ideologies of both the \$100,000-\$300,000 wealth group and the millionaire group have an effect on legislator ideology that is independent of group size (though members of the \$100,000-\$300,000 group also receive a boost in representation as the size of their group within the district increases)!

A useful way to see how this works in practice is to plot the combined size of the association between the ideology of each wealth group and the roll call voting of their member of Congress based on the percentage of the district's population that is comprised of members of that group. Figure 7 plots this information to make it easy to see how much representation each of these three wealth groups is receiving depending on the percentage of adults who are in each wealth group. For example, the first green bar shows what a one point change in the \$100,000-\$300,000 wealth group's ideology would mean for a change in the member's NOMINATE score when that wealth group comprised just 5% of the district's population. Higher values mean that the group is receiving more representation.

This figure clearly shows several patterns worth noting. Perhaps the clearest of these is the fact that adults whose household wealth is valued between \$100,000 and \$300,000 appear to receive the most representation from their members of Congress regardless of how much of the district's population they comprise. The association between this group's ideology and the members' NOMINATE scores is approximately three times larger than the association for millionaires. And the amount of representation received by the \$100,000 - \$300,000 group dwarfs that received by the lowest wealth group (those with wealth under \$30,000).

While the middle wealth group receives much more representation than the other two

Figure 7: Strength of association between ideology of different wealth groups and members' NOMINATE scores depending on the size of that group in the district



Note: Bars based on combining coefficients for each wealth group from the first model in Table 2.

wealth groups, it is also worth noting from Figure 7 that millionaires still appear to receive more representation than the lowest wealth group. This is true regardless of the size of either of these wealth groups. In fact, according to our model, the poorest citizens only appear to see some responsiveness from their legislators once they comprise one-quarter of the adult population in their districts (before that, the relationship is in the opposite direction). Even then, the strength of the association between their ideological midpoints and the members' NOMINATE scores is quite weak compared to the associations estimated for the other two wealth groups. Indeed, millionaires receive about twice as much representation when they comprise just 5% of the district's population than the poorest wealth group does when it makes up 50% of the district.

The second and third column of results in Table 2 repeats the same analysis separately for Democrats and Republicans, respectively. In general, these models reveal familiar patterns from our earlier analyses. Specifically, Democrats appear responsive to the lowest wealth group, and that responsiveness is enhanced as that group becomes a larger part of the constituency. But Democrats are not particularly responsive to millionaires, and this responsiveness does not increase when millionaires become a larger share of adults in their district. Democrats are, however, representative of the \$100,000-\$300,000 wealth group and this representativeness occurs regardless of the size of that group. For Republicans, there is no real representation of the lowest wealth group, even as that group increases in size. However, the NOMINATE scores of Republican members of Congress are associated with the views of the middle and upper wealth groups, and these relationships only diminish slightly as those groups increase in size.

So far, our analysis has revealed several important insights regarding wealth and representation in the House of Representatives. First, and perhaps most importantly, citizens in the lowest wealth bracket receive relatively little representation when compared to individuals in higher wealth brackets. This occurs even when that lower wealth group makes

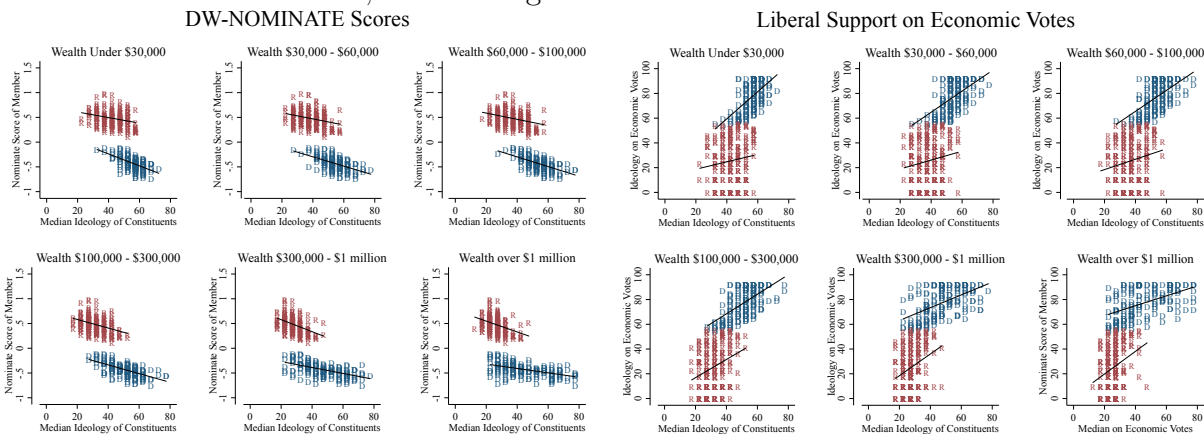
up a larger share of the district's population. Second, we uncovered some important cross-partisan differences in legislators' responsiveness to groups of different wealth levels. In particular, the roll call voting behavior of Republican members of Congress tends to be more strongly associated with the ideological predispositions of individuals in higher wealth brackets while the behavior of Democratic members of Congress tends to be less associated with the views of those wealthier individuals. Members of both parties tend to be most responsive to the views of those in the \$100,000 - \$300,000 wealth bracket, but even once we account for that group, millionaires receive more representation from Republicans while low-wealth individuals receive more responsiveness from Democrats.

Explaining unequal representation

While our analysis indicates that wealthy constituents receive more representation than those with less wealth, we would also like to understand the process that allows wealthy individuals to secure this advantage. As we noted above, there are several reasons that legislators may be more responsive to wealthier individuals. One such explanation is that wealth tends to be correlated with participation in elections. In other words, elected officials might be more responsive to wealthier constituents because those individuals are more likely to be regular voters. Fortunately, the Catalist database makes it relatively easy to test this possibility. To do so, we generated a second dataset which included the median ideology for each wealth group among three different sets of groups: those who are registered to vote, those who voted in 2008, and individuals who voted in 2010. For ease of presentation, we present only the results from the most restrictive group; specifically, those who voted in the 2010 midterm election. However, these findings were consistent regardless of how we restricted the universe of voters.

Figure 8 presents the scatter plots where the x-axis is the median ideology among midterm voters in each wealth category. If the different patterns of representation we documented

Figure 8: Relationship between ideology of midterm voters (by wealth) and member's NJ Economic Liberalism scores, 112th Congress

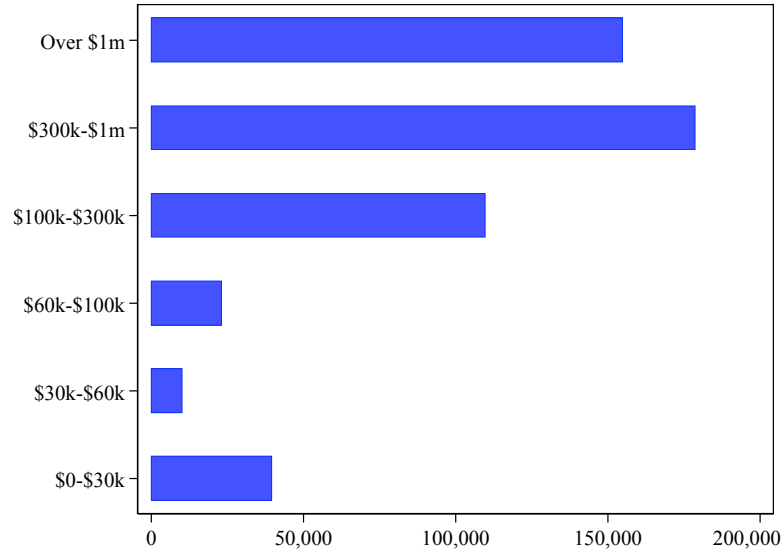


in Figure 4 were caused by the fact that wealthier individuals are more likely to be voters, then we would expect to see more consistent representation across wealth categories once when we limited the analysis to midterm voters. The results in Figure 8 do not fit such a pattern. As with our initial plot that included all adults, Democratic members of Congress appear to be more responsive to less wealthy constituents while Republicans become more responsive to the wealthier groups. When we repeated the regression analyses from Tables 1 and 2, the results were remarkably similar as well. Thus, even when we limit the analysis to the approximately 30% of American adults who vote in midterm elections, members of Congress still appear to be more responsive to some wealth groups than they are to others.

Another plausible explanation for differential responsiveness is that representatives have strong incentives to be responsive to the wealthiest individuals because these persons are most likely to provide the campaign contributions representatives need to attain and keep their jobs. To make this determination, we matched to the Catalist database the list of federal donors FEC records for the 2010 election cycle.⁶ This exercise allows us to identify the characteristics of donors available through Catalist, including the ideological score for

⁶The FEC database only includes individuals who donated more than \$200 to a campaign, thus this analysis excludes small donors.

Figure 9: The Wealth of Federal Donors



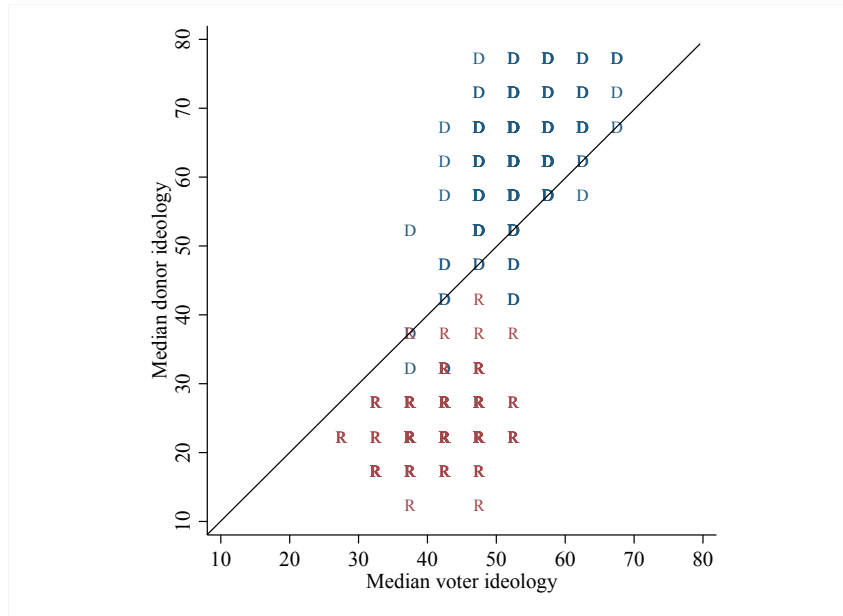
each donor.

Figure 9 presents the distribution of federal donors among the six wealth categories. Note that the distribution of donors is quite different from the distribution of American adults. Very few donors have a household wealth below \$100,000 and the overwhelming majority of donors are in the top two wealth categories. Thus, if members of Congress are more responsive to donors, then this would explain a greater responsiveness to wealthier constituents.

Are members more representative of their voters or of their donors? To answer this question, we use the FEC records to match each member of Congress to his/her disclosed donors. To be clear, for each member of Congress, we are able to determine the median ideology of all individuals who donated to his or her 2010 campaign - including those who reside outside the representative's district.⁷ This is important to keep in mind because

⁷Actually, we had a 70% match success rate when matching the FEC lists into Catalist; donors for whom a successful match could not be made were excluded from this analysis.

Figure 10: The Median ideology of the donors and constituents for members of Congress



so-called "outside donors" (donors who reside outside the representative's district) - while not constituents of the representative - may be able to acquire influence through campaign contributions.

Before embarking on an analysis of the groups to which representatives provide the greatest representation, we first briefly describe the relationship between donor and voter ideology. Figure 10 shows a scatter plot of the median ideology for the donors to each member of Congress compared to the median ideology of registered voters in each member's district. The diagonal line is drawn for convenience; districts falling above that line are those where the member's donors are more liberal than his constituents. Districts falling below the line are those where the member's donors are more conservative than her constituents.

Note, first, that the variance in median donor ideology is much greater than the variance in median voter ideology. The donor mid-points range from a low of 12.5 to a high of 77.5 while voter mid-points only range between 27.5 and 67.5. Second, note that it is almost

always the case that a member's donors are more ideologically extreme than her voters. Indeed, most of the Democratic districts fall above the diagonal line, indicating that the median donor is more liberal than the median voter, while most Republican districts fall below the line, indicating that Republican donors are more conservative than voters. Finally, it is worth noting that the correlation between the median ideology of a member's donors and her voters is not particularly high within the parties. Specifically, for Democratic members of Congress, donor ideology is correlated at .54 with voter ideology; for Republicans, the correlation is just .28.

Keeping this in mind, we now turn to examining whether the voting behavior of members of Congress is associated more with the median ideology of voters in the district or with the median ideology of their donors. Table 3 presents the results from three regressions estimating the effect of voter and donor ideology on the roll call voting behavior of all members of Congress and then Democratic and Republican members separately. In the first column, both coefficients are statistically significant and in the expected direction, but the coefficient for the donor variable is larger than the variable for voter ideology. This suggests that the roll call voting of members of Congress may be more strongly associated with the views of their donors (including outside donors) than with those of their voting constituents. Given that donors hail overwhelmingly from the highest wealth groups, this finding seems to indicate considerable inequality in responsiveness.

The next two columns of results in Table 3 are the estimates of the effects of these two variables on Democrats and Republicans analyzed separately. In the model for Democratic members, the coefficient for voter ideology is statistically significant and in the expected direction while the coefficient for donor ideology is much smaller and fails to approach conventional levels of statistical significance. Thus, the results in this column indicate that the NOMINATE scores of Democratic members of Congress are much more strongly associated with the views of their constituents than they are with their donors.

Table 3: OLS Regression Estimating Relationship Between Donor/Voter Ideology and Member’s Roll Call Voting

	All members	Democrats	Republicans
Median ideology of registered voters	-0.0103* (0.0017)	-0.0141* (0.0016)	-0.0097* (0.0018)
Median ideology of member’s donors	-0.0185* (0.0007)	-0.0006 (0.0010)	-0.0083* (0.0022)
Intercept	1.3231* (0.0617)	0.3576* (0.0716)	1.0847* (0.0807)
N	424	188	236
R ²	0.8694	0.4034	0.2012

Finally, the third column includes the estimates for the model focusing on Republican legislators. These coefficients tell a different story. Both coefficients in this model are statistically significant and in the expected direction, and both coefficients are of relatively similar size (though the coefficient for voter ideology is slightly larger). Thus, the results in this model indicate that Republican roll call voting is strongly associated with the views of both their voters and their donors. It may, therefore, be this responsiveness to donors that causes Republican legislators to be more responsive to the wealthiest constituents in their districts.

Conclusion

The dramatic increase of economic inequality over the past three decades has sparked concern that American democracy may have given way to a more oligarchical system in which the wealthy exercise disproportionate influence (Winters and Page (2009)). To date, however, empirical research testing the “unequal democracy” hypothesis (Bartels (2010)) has produced mixed results. Efforts to determine how wealth affects representation have been hampered by data limitations - in particular, small overall sample sizes and limited numbers of truly wealthy constituents - which have required researchers to employ sub-optimal

analytic strategies. Research to date has also provided limited insight on the mechanisms linking wealth and representation, hindering efforts to understand how rising inequality has shaped the practice of American democracy.

This paper exploits population-level data from the Catalist database to provide fresh insight on the relationship between economic inequality and political inequality. Catalist's unique characteristics allow us to investigate how wealth affects representation at the congressional district level, and to examine whether legislators' responsiveness is affected by their party affiliation. Catalist also provides a powerful platform for testing a variety of hypotheses about the mechanisms linking wealth and representation.

Our results indicate that, while ideology is highly correlated across wealth groups, wealthier citizens, especially those with wealth between \$100,000 and \$300,000, receive more representation from members of the House of Representatives than the least wealthy. Strikingly, while the representation that low-wealth constituents receive from their congresspersons depends heavily on how much of the district's population they comprise, the representation that higher-wealth constituents receive does not. In consequence, citizens in the lowest wealth bracket receive relatively little representation when compared to individuals in higher wealth brackets, even when the lower wealth group makes up a larger share of the district's population. At the extreme, we estimate that millionaires receive about twice as much representation when they comprise about 5% of the district's population than the poorest wealth group does when it makes up 50% of the district.

However, all representatives are not equally unresponsive to low wealth constituents: Democrats and Republicans provide very different levels of representation to lower wealth groups. Our results suggest not only that Democrats are responsive to both their lower-wealth and higher-wealth constituents, they may also be more responsive to lower-wealth citizens. Indeed, our findings indicate that Democrats are not particularly representative of millionaires in their districts. In contrast, Republicans are generally unresponsive to their

lower-wealth constituents once the ideology of their higher-wealth constituents is taken into account. They are also especially responsive to millionaires. These findings hold even once we take into consideration the widely varying wealth makeups of Democratic and Republican districts.

In addition to finding considerable evidence of unequal representation, we also tested several hypotheses about the mechanisms linking economic inequality and political inequality. We found no evidence that disproportionate participation in elections among the wealthy accounts for the advantage in representation they receive. However, our results indicate that political donors, who tend to be both wealthier and more ideologically extreme than the average voter, do enjoy an advantage in representation, especially from Republican representatives. Our findings suggest that wealthy individuals' much greater propensity to contribute to political campaigns likely plays an important role in explaining why high wealth groups enjoy greater responsiveness from members of the House of Representatives.

All in all, our research strongly suggest that American democracy is, indeed, unequal. Members of the House of Representatives, especially Republicans, are much more responsive to their wealthier constituents than they are to their low-wealth constituents. With this in mind, finding ways to reinvigorate the practice of American democracy so that it is more responsive to less-fortunate Americans should be a high priority for scholars and advocates. The question is whether this is possible in a polity in which wealthy citizens possess so many political advantages.

Appendix 1: Validation of Catalist Ideology Measure

The Catalist ideology model is created to determine the ideology of each individual in the database. The model was created using survey data that was connected to individuals in the Catalist database. For those individuals for whom survey data was available, a measure of ideology was created using both the ideological self-identification question, but also an array of issue questions. Catalist used measures that were available for most individuals in its database to predict ideology for these individuals for whom survey data was available. Catalist then uses this model to make predictions for all other individuals in the database; that is, those individuals for whom there is no direct measure of ideology. Notably, Catalist is able to make an ideology prediction for all but a very small share of American adults. Specifically, fewer than 1 million Americans lack a score for ideology, compared to 280 million for whom there is a prediction.

Catalist has conducted its own proprietary validations of its ideology model using out of sample predictions. We are still working with Catalist to gain more clarity on the results from these validations. We conducted our own rudimentary validation of the Catalist ideology model by aggregating the ideology scores at the state level and comparing those measures to a similar measure of state-level ideology generated from the 2010 Cooperative Congressional Election Study. Specifically, our CCES based measure constructs a measure of ideology based on each respondent's positions on a variety of issue questions. The 2010 CCES includes over 50,000 respondents, so it has a large enough sample size to create meaningful scores at the state level. Thus, we take the state-by-state means for this measure of ideology and compare it to the mean ideology in each state based on the Catalist model. The two measures are correlated at .84 in this analysis, indicating a reasonably high level of agreement between the two approaches.

Appendix 2: Robustness Checks

In this appendix, we outline several alternative approaches we took to estimating the analyses presented above with the aim of demonstrating the robustness of the results.

Accounting for Measurement Error in Measures of Constituent Ideology

In estimating a regression model, one must be attentive to potential errors in the independent variables used in that model. Even random error in an independent variable in an OLS model can cause coefficients to be biased toward zero, therefore underestimating the effects of the variable. Since the ideology model produced by Catalist is based on a prediction from a model, there is clearly measurement error associated with that variable. One solution for coping with measurement error in independent variables is to use an errors-in-variables estimator. However, to utilize such an approach, one must have an estimate of the reliability of the independent variables.

We re-estimated all of the models presented in this paper using an errors-in-variables estimator. To do so, we used the correlation coefficient from our state-by-state ideology validation as our estimate of the reliability of the ideology variables in our models. In every case, the substantive findings presented above were robust to this alternative approach.

Extending the Analysis to Previous Congresses

We were also concerned that our results might be context sensitive, and that similar patterns may not have presented themselves in previous Congresses. To ensure that the patterns we uncovered were not specific to the 112th Congress, we conducted similar analyses on the roll call voting behavior of members of Congress in the 111th and 110th congresses as well. Table A1 presents the results from regression models estimating the extent to which ideology of the lowest and highest wealth groups is correlated with the roll call voting behavior of Democrats

and Republicans in each of these three congresses. Notably, the patterns are quite consistent across congresses, even though majority control of the House shifted from the Democrats to the Republicans between the 111th and 112th Congresses. Thus, this extension of our analysis provides strong evidence that the patterns we uncover for the 112th Congress are consistent with patterns in other recent years as well.

Examining associations over multiple congresses also provides us with a way of evaluating the robustness of our findings regarding different patterns for members of different parties. Consider, for example, that following the 2010 elections, there was a historic partisan shift in House seats as 63 Democratic members of Congress were replaced by Republicans. Thus, in 63 districts, we can examine the extent to which roll call voting was associated with the ideology of different wealth groups when that same district was represented by a Democrat compared to when it was represented by a Republican. Additionally, these 63 districts represent a particularly useful set to examine because the correlations in median ideology across wealth groups are not nearly as high in these districts as they are in the entire pool of congressional districts. Indeed, the correlation between the median ideology of the lowest and highest wealth groups is just .43 for these 63 districts that changed hands in 2010.

Table A1: OLS Regressions of Nominate Scores on Median Ideology Among Lowest/Highest Wealth Groups (110th-112th Congresses)

	Democrats			Republicans		
	112th	111th	110th	112th	111th	110th
Under \$30k	-0.0077* (0.0022)	-0.0114* (0.0020)	-0.0104* (0.0020)	-0.0013 (0.0021)	0.0031 (0.0025)	0.0024 (0.0022)
Over \$1m	-0.0041* (0.0008)	-0.0044* (0.0008)	-0.0038* (0.0008)	-0.0087* (0.0017)	-0.0086* (0.0020)	-0.0078* (0.0019)
Intercept	0.2074* (0.1031)	0.4610* (0.0857)	0.3700* (0.0855)	0.8319* (0.0907)	0.7511* (0.1087)	0.7292* (0.0955)
N	205	269	247	253	189	211
R ²	0.3220	0.4329	0.4049	0.1334	0.0892	0.0807

Table A2: OLS Regressions of Nominate Scores on Median Ideology Among Lowest/Highest Wealth Groups in Districts that Changed Parties in 2010

	111th Congress	112th Congress
Under \$30k	-0.0069 (0.0035)	-0.0054 (0.0038)
Over \$1m	-0.0001 (0.0026)	-0.0060* (0.0028)
Intercept	0.1317 (0.1600)	0.9439* (0.1727)
N	63	63
R ²	0.0751	0.1597

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