

Geography, Uncertainty, and Polarization*

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Abstract

Using new data on roll-call voting of U.S. state legislators and public opinion in their districts, we explain how ideological polarization of voters within districts can lead to legislative polarization. So-called “moderate” districts that switch hands between parties are often internally polarized: the ideological distance between Democrats and Republicans within these districts is often greater than the distance between liberal cities and conservative rural districts. We present a theoretical model in which intra-district ideological polarization makes candidates uncertain about the ideological location of the median voter, thereby reducing their incentives to offer moderate policy positions. We then demonstrate that among districts with similar median voter ideologies, the difference in legislative behavior between Democratic and Republican state legislators is greater in more ideologically heterogeneous districts. Our findings suggest that accounting for the subtleties of political geography can help explain the coexistence of a polarized legislature and a moderate mass public.

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Introduction

One of the central puzzles in the study of American politics is the coexistence of an increasingly polarized Congress with a more centrist electorate (Fiorina 2010). Because it has been difficult to find a reliable link between polarization in Congress and the polarization of voter policy preferences, researchers have generally abandoned explanations of congressional polarization that rely on changes in the ideology of the mass public and focus instead on institutional features like primaries, agenda control in the legislature, and redistricting (Fiorina and Abrams 2008; Barber and McCarty 2013).¹

This paper brings attention back to the distribution of ideology in the mass public with new data and an alternative theoretical approach. Previous explanations for polarization focus, quite naturally, on variation across the nation as a whole, or on the average or median traits of citizens in each district (e.g., Clinton 2006; McCarty, Poole and Rosenthal 2006; Jacobson 2004; Levendusky 2009). This work follows from a long literature on representation that builds on Anthony Downs's (Downs 1957) argument that two-candidate competition should lead to platforms that converge on the preferences of the median voter. The great majority of scholarship on this question, however, finds that the median voter is an inadequate predictor of candidate or legislator positions (Ansolabehere, Snyder and Stewart 2001; Bafumi and Herron 2010; Clinton 2006; Miller and Stokes 1963). Moreover, polarization in Congress (McCarty, Poole and Rosenthal 2006, 2009) and state legislatures (Shor and McCarty 2011) has been primarily a reflection of increasing differences in the way Republi-

¹Scholars have generally recognized that the policy positions of partisan identifiers have diverged over the past several decades, but argue that this is the result of better ideological sorting of voters into partisan camps. Rather than driving elite polarization, such voter sorting may be its consequence (see Levendusky 2009).

cans and Democrats represent otherwise similar districts. Consequently, it is unlikely that polarization can be explained purely by changes in the distribution of voter ideology across districts.

We take a different approach. We build upon a literature that focuses on the distribution of voter preferences *within* districts rather than the distributions of voter medians or means across districts (e.g., Bailey and Brady 1998; Gerber and Lewis 2004; Harden and Carsey 2012; Levendusky and Pope 2010; Stephanopoulos 2012). This paper is the first to our knowledge to use a large-scale national dataset of the votes of more than a thousand legislators and the policy views of hundreds of thousands of constituents to test hypotheses about ideological heterogeneity. In addition, we link these hypotheses to a parsimonious theoretical model. Our theory builds on the work of Calvert (1985) and Wittman (1983) who argue that policy-motivated candidates might adopt divergent positions in the face of uncertainty about voter preferences.

Specifically, our argument is based on a model in which candidates with ideological preferences choose platforms in the presence of uncertainty over the preferences of the median of the voters who show up on election day. When candidates are uncertain about the ideological location of the median voter, they shade their platforms toward their or their party's more extreme ideological preferences. Our key insight is that uncertainty about the median of the voters that turn up on election day is driven in part by the ideological distribution of preferences in the district. The intuition is that when there is a large mass of voters around the district median, even volatile turnout and substantial preference shocks result in a median election-day voter with preferences close to those of the median eligible voter. Consequently, candidates deviate from the expected median at their peril. In contrast,

when voters are more evenly or bimodally distributed throughout the ideological spectrum, there is more uncertainty about the identity of the median position of those who show up for the general election. This implies weaker incentives for the candidates to strategically suppress their ideological leanings, or those of their party's primary voters or campaign contributors, in pursuit of victory in the general election.

After presenting our argument, we turn to an empirical analysis of the roll call voting behavior of state legislators. Existing research on polarization in the United States focuses primarily on attempting to explain the dramatic growth of polarization in the United States Congress (Poole and Rosenthal 1997; McCarty, Poole and Rosenthal 2006). The small empirical literature that examines how the distribution of voters' preferences within districts affects legislators' roll call behavior has likewise focused on the U.S. Congress (Bailey and Brady 1998; Bishin, Dow and Adams 2006; Harden and Carsey 2012; Jones 2003). The notable except is Gerber and Lewis (2004) who use data from the California Assembly and Senate.

Unfortunately, Congressional polarization has moved in tandem with many potential explanatory variables. Thus, the literature's exclusive focus on Congress undermines efforts to test competing hypotheses. Moreover, most of the increase in polarization occurred prior to the years for which reliable estimates of voter ideology can be created at the district level. In this paper, we turn away from the traditional analysis of change over time in the U.S. Congress, focusing instead on the considerable cross-sectional variation in state legislative polarization. We draw on estimates of legislators' ideal points in all fifty states produced by Shor and McCarty (2011) and the estimates of constituent policy preferences produced by Tausanovitch and Warshaw (2013).

Our primary focus is on state legislative upper chambers, or state senates. This is a calculated choice because it gives us an optimal combination of substantial statistical power (several thousand observations of unique state legislators), along with good measures of district heterogeneity (hundreds of individual survey respondents within each state Senate district). Congressional districts provide the latter without the former, while state lower chamber (state house or assembly) districts provide even more power, but substantially poorer measures of heterogeneity, based as they are on only a few dozen observations within each district. Nevertheless, we have run our models for both US House and state lower chambers, and have found substantially identical results. These estimates are detailed in the appendix.

Building on the work of McCarty, Poole and Rosenthal (2009), we match upper chamber districts that are as similar as possible with respect to ideology, showing that 1) as in the U.S. Congress, there is considerable divergence in roll-call voting across otherwise identical districts controlled by Democrats and Republicans, and 2) this inter-district divergence is a function of within-district ideological polarization as well as more direct proxies for uncertainty over the identity of the district median voter. Given the panel structure of our data, we also have a set of observations of within-district switches in party control. We find that the change in legislator ideal point associated with such a switch is substantially larger in heterogeneous districts.

We conclude with a discussion of the implications of these findings for the polarization literature. Based on our findings, we find it quite plausible that the rise of polarization in the U.S. Congress has been driven in part by increasing within-district polarization associated with demographic and residential transformations in recent decades. Moreover, our

results suggest skepticism about redistricting reforms aimed at creating more ideologically heterogeneous districts as a cure for legislative polarization (McCarty, Poole and Rosenthal 2009; Maskett, Winburn and Wright 2012). Finally, the utility of these results for explaining polarization suggests that future research on representation should take seriously the idea that the distribution of preferences within districts may be important for determining the positions of legislators, who must balance competing strategic considerations as well as their own preferences in deciding what policy positions to uphold (Fiorina 1974).

Polarization in the Mass Public and State Legislatures

We begin by reviewing some of the stylized facts and research findings that motivate the remainder of the paper. First, we examine the geographic distribution of ideology within states. One of the obstacles to previous research on this topic is that scholars have lacked good measures of the mass public's ideology at the individual level in each state. Existing research primarily relies on measures of ideological self-placement on relatively small national surveys (Bishin, Dow and Adams 2006; Jones 2003), economic and demographic characteristics (Bailey and Brady 1998; Stephanopoulos 2012), or state-level survey responses (Kirkland 2014; Harden and Carsey 2012) to measure preference distributions.² However, Tausanovitch and Warshaw (2013) demonstrate how to estimate the ideal points of survey respondents from their policy views on several surveys and project them onto a common scale, allowing for vastly greater granularity and sample size. Based on this approach, we bridge together

²The notable exceptions are Gerber and Lewis (2004), who estimate ideal points using ballot measures in California, and Levendusky and Pope (2010), who calculate congressional-district level heterogeneity estimates from survey responses, but with a much smaller sample than ours.

the ideal points of survey respondents from eight recent large-sample surveys using survey responses on a battery of policy questions. The resulting dataset has a measure of the ideological preferences of over 350,000 respondents on a common scale.³ These data enable us to increase dramatically the size of survey samples for small geographic areas, which makes it possible to characterize not only the mean or median position, but also the nature of the overall distribution of ideological preferences within states and legislative districts.

These data enable a new approach to what is becoming a classic question in American politics: is the mass public responsible for ideological polarization in legislatures? The current literature answers with a tentative “no,” based on time series analysis of the U.S. Congress, where legislative polarization has grown but the ideological distance between Democratic and Republican voters began growing much later and has not grown at the same rate. As discussed above, Shor and McCarty (2011) have estimated ideal points of members of state legislatures from a large data set of roll-call votes covering several years. Combining the data on ideological distributions of voters and positions of state legislators provides the opportunity to take a first look at the relationship between district heterogeneity and legislative polarization.

If legislative polarization is a function of ideological polarization of voters across districts, we would expect to see the familiar bimodal distribution of legislator ideal points mirrored in the distribution of district-level median ideal points of voters.

³We use survey data from the 2000 and 2004 National Annenberg Election Surveys and the 2006-2012 Cooperative Congressional Election Studies.

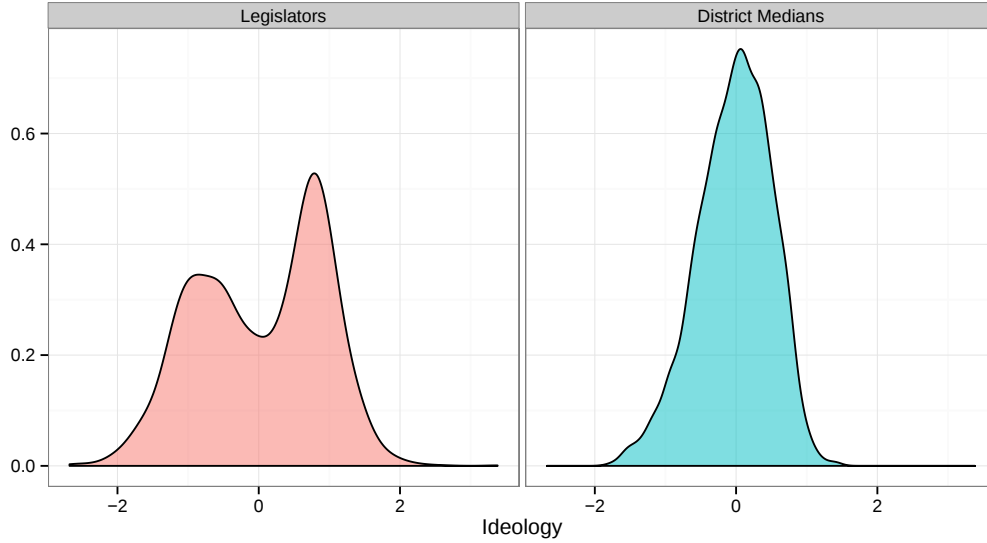


Figure 1: Distributions of Legislator and District Median Ideal Points

Figure 1 displays kernel densities of both measures across all state upper chambers: there is sharp divergence between the roll-call votes of Democrats and Republicans, but the distribution of ideology across districts has a single peak. The disjuncture is even more extreme when one examines these distributions separately for each state. Thus Fiorina’s (2010) puzzle reappears at the district level: there is a large density of moderate districts, but in many states the middle of the ideological distribution is not well represented in state legislatures (Shor 2014). The same is true for the U.S Congress (Rodden 2015).

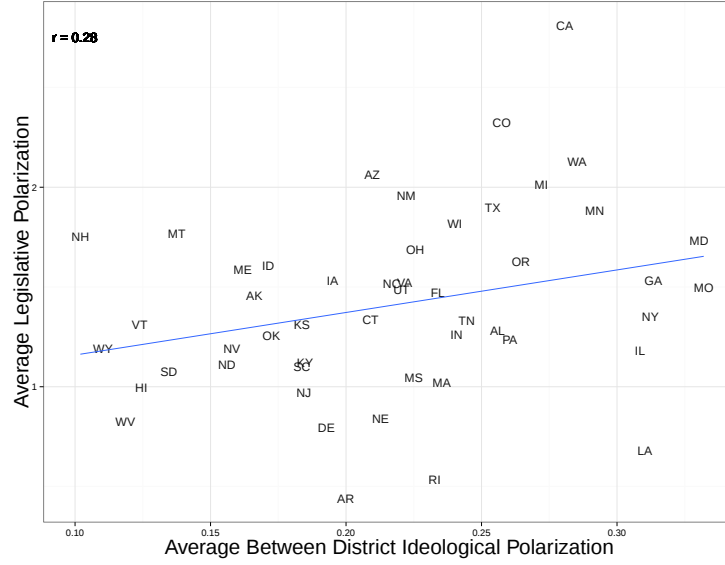
Next, we examine the cross-state variation in the polarization of legislatures that we measure as the distance in ideal point estimates between state legislative Democratic and Republican medians (averaged across chambers). A commonly held view is that polarization reflects the way in which voters are allocated *across* districts. If this were the case, we would expect to see our measure of legislative polarization correlate strongly with the variation of district medians within each state. In the top panel of Figure 2, we examine this

hypothesis by plotting the degree of legislative polarization against across-district ideological polarization in the mass public for each state (measured as the standard deviation of the district-level ideology estimates). Indeed, we find a correspondence between across-district polarization and the polarization of the legislature.

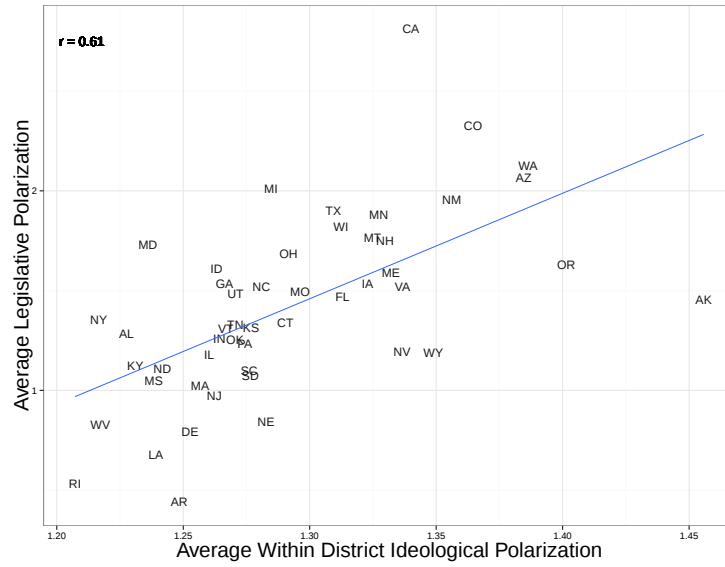
This relationship, however, leaves a large part of the variance unexplained. In the bottom panel of Figure 2 we test a different proposition—that polarization *within* districts correlates with legislative polarization. The horizontal axis captures the average within-district standard deviation of our ideological scale for district opinion. Again we find a systematic relationship, stronger indeed than that for between-district polarization. Not only is legislative polarization correlated with across-district ideological polarization, but the states with the highest levels of within-district polarization, such as California, Colorado, and Washington, are also clearly those with the highest levels of legislative polarization. In the states like Illinois and Louisiana—where public opinion is not very polarized within districts, despite large divergence across districts—the parties in the legislature are much more alike.

If district heterogeneity impacts polarization, it is important to understand what sorts of districts have this feature. More specifically, what is the relationship between ideology—how conservative or liberal a district is on average—and that district’s heterogeneity? Figure 3 plots our measure of the standard deviation of public ideology for each state senate district on the horizontal axis, and our estimate of mean ideology of the district on the horizontal axis. The left side of the inverted u-shape of the lowess plot in Figure 3 shows that the far-left urban enclaves are ideologically relatively homogeneous. The same is true for the conservative exurban and suburban districts on the right side of the plot.⁴

⁴One might be concerned that the inverted u-shape in Figure 3 is driven by the truncation of the ideology



(a) Between-district ideological polarization



(b) Within-district ideological polarization

Figure 2: Legislative polarization and ideological polarization

The most internally polarized districts are those in the middle of the ideological spectrum.

scale. For example, a district with an extreme conservative average must have a low variance because it can have no voters with a conservatism score above the maximum. However, the truncation would only affect the standard deviations of districts with averages close to the extremes. But it is clear in Figure 3 that the relationship is not driven by extreme values, and the lowess plot peaks in the middle of the distribution, well beyond the point at which truncation could reasonably have an effect.

In other words, the districts with the most moderate ideological means—the so-called “purple” districts where the presidential vote share is most evenly split—tend to be places where the electorate is most heterogeneous. These are the districts that switch back and forth between parties in close elections and determine which party controls the state legislature. Reformers often idealize such moderate districts because it is believed that they are most conducive to the political competition that is supposed to produce moderate representation. But as we will show, the fact that such districts are more likely to be heterogeneous ironically mitigates their ability to elect moderate legislators. A takeaway from Figure 3 is that state senate districts come predominately in three flavors: “liberal,” “conservative,” or “moderate but heterogeneous.” Our argument is that *none* of these are very good at delivering centrist representation.

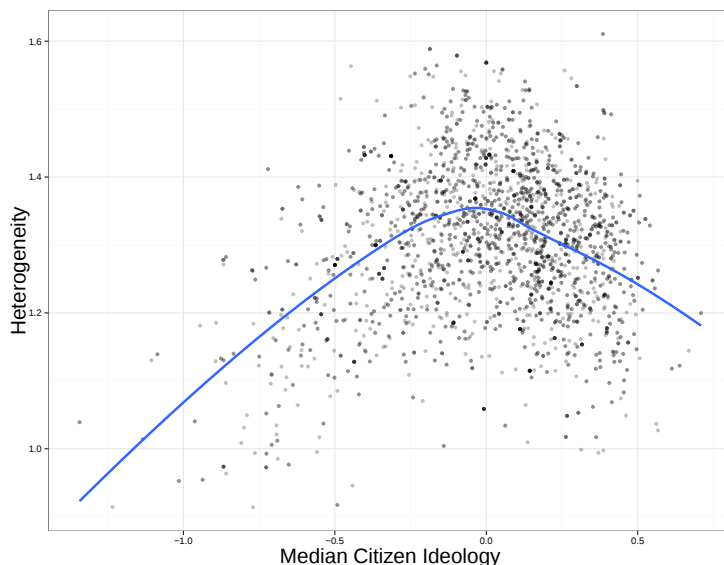


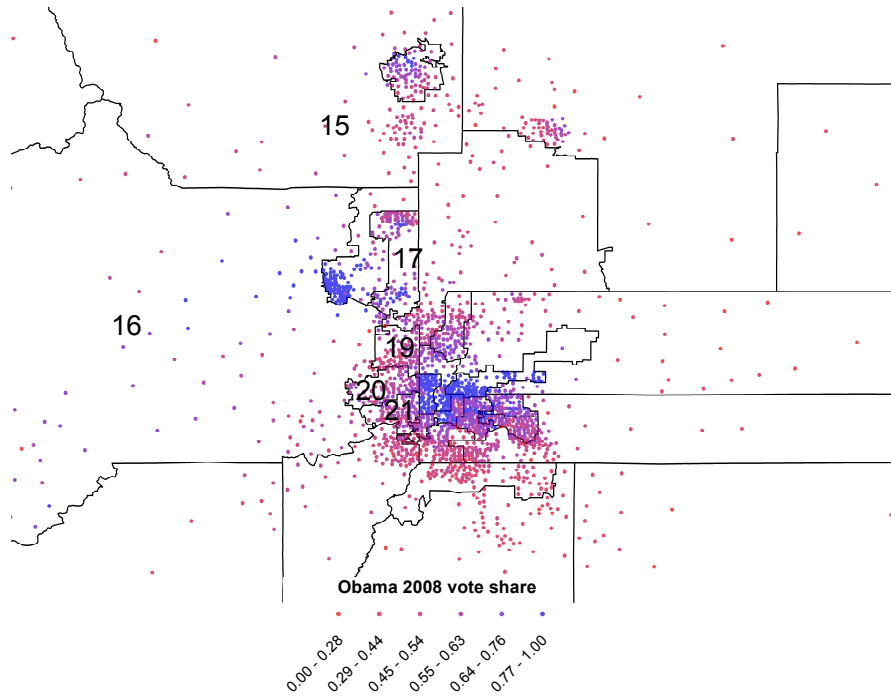
Figure 3: Average District Ideology and Within-District Polarization

To better understand why moderate districts are so often heterogeneous, it is useful to take a closer look at an example of the distribution of ideology in Colorado, a highly polarized

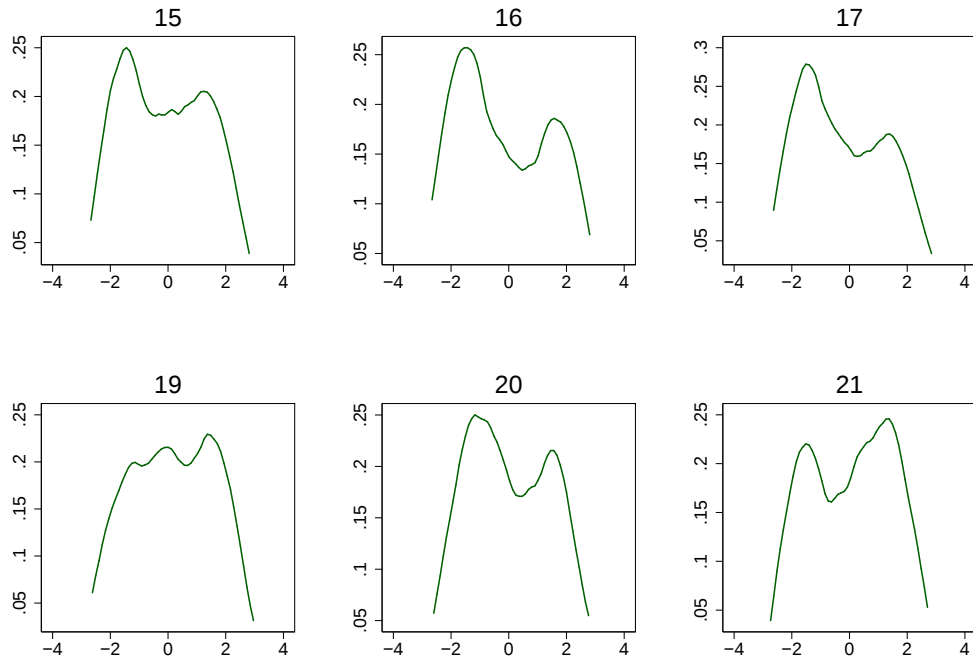
state. The top portion of Figure 4 zooms in on the pivotal “purple” Denver-Boulder suburban corridor, representing the centroids of precincts with colored dots. The identification numbers of the districts with the most ideologically moderate means are displayed on the map, and the bottom portion of Figure 4 presents kernel densities capturing the distribution of our ideological scale within each corresponding district.

The kernel densities show that these “moderate” districts are very heterogeneous internally. Several of these are relatively compact formerly white districts in the suburbs that have experienced large inflows of Hispanics in recent years. These districts contain a mix of Democratic, Republican, and evenly divided precincts. Another type of internally polarized district is exemplified by Districts 15 and 16— sprawling, sparsely populated districts that contain rural conservatives and concentrated pockets of progressives.

Throughout the United States, our estimates of within-district ideology tell a similar story. Districts in the urban core of large cities are homogeneous and liberal. Yet many of their surrounding suburban districts are quite ideologically heterogeneous— a phenomenon that is driven in large part by the growing racial, ethnic, and income heterogeneity of American suburbia (Orfield and Luce 2012). As for “rural” districts, some are overwhelmingly white, sparsely populated, and conservative, but in many cases, they also include countervailing concentrations of progressive voters centered on colleges, resort communities, mines, 19th century manufacturing outposts, or Native American reservations.



(a) Precinct-level 2008 Obama vote share



(b) Within-district distribution of ideology, pivotal districts

Figure 4: Within-district distributions of votes and ideology, selected Colorado Senate districts

These initial findings motivate the remainder of the paper: in the middle of each states' distribution of districts lies a set of potentially pivotal districts that are ideologically moderate on average, but where voters are often polarized within. Moreover, this within-district ideological polarization is a good predictor of polarization in state legislatures.

But given the logic of the median voter, why would electoral competition in these pivotal but polarized districts generate such polarized legislative representation? The remainder of the paper develops a simple intuition: a heterogeneous internal distribution of ideology combined with turnout fluctuations creates uncertainty over the spatial location of the median voter in general elections. When a district is internally polarized, a moderate shift in voting or turnout—perhaps driven by national or statewide trends—can lead to a substantial shift in the location of the median voter. Relative to a district with a large density of moderates in the middle of the internal distribution, candidates in such polarized districts face weaker incentives for platform convergence.

The Model

Following Wittman (1983) and Calvert (1985), we assume that there are two political parties who have preferences over a single policy dimension. Let $\theta_L < \theta_R$ be the ideal points of party L and R respectively. We are agnostic about the parties' internal decision making procedures, but can interpret these ideal points as representing some combination of the preferences of party leaders, activists, and primary constituencies.

The preferences of party L are given by a concave utility function $u_L(x)$ where u_L is maximized at zero for $x = \theta_L$ and decreasing in $x > \theta_L$. Similarly, the utility of party R is

given by $u_R(x)$ which is maximized at $x = \theta_R$ and increasing for $x < \theta_R$.⁵

We assume that the parties are uncertain about the distribution of preferences among voters who will turn out in a general election. They may have access to polling and marketing data, but they always face uncertainty about the ideological composition of those who show up to vote. Moreover, there is significant uncertainty about partisan electoral tides which is not resolved until after candidates are selected.⁶

The parties share common beliefs that the ideal point of the median (and decisive) voter m is given by probability function F . We assume that the median voter has preferences that are single-peaked and symmetric around m .

Prior to the election, parties L and R commit to platforms x_L and x_R .⁷ Voter m votes for the party with the closest platform. Therefore, party L wins if and only if $m \leq \frac{x_L + x_R}{2}$.

Therefore, we may write the payoffs for the parties as follows:

$$U_L(x_L, x_R) = F\left(\frac{x_L + x_R}{2}\right) u_L(x_L) + \left[1 - F\left(\frac{x_L + x_R}{2}\right)\right] u_L(x_R) \quad (1)$$

and

$$U_R(x_L, x_R) = F\left(\frac{x_L + x_R}{2}\right) u_R(x_L) + \left[1 - F\left(\frac{x_L + x_R}{2}\right)\right] u_R(x_R) \quad (2)$$

⁵Outcomes outside the interval $[\theta_L, \theta_R]$ involve dominated strategies.

⁶The 2010 Senate elections provide an especially vivid example where the Republicans nominated many extremely conservative candidates in anticipation of a large party swing. While the Republicans did benefit from a large tide, it was one not large enough to carry its most extreme candidates to victory which in turn probably cost the Republicans control of the Senate.

⁷In equilibrium, it must be the case that $x_L \leq x_R$ otherwise each party would prefer to lose to the other.

The first order conditions for optimal platforms are⁸

$$F\left(\frac{x_L + x_R}{2}\right) u'_L(x_L) + \frac{1}{2} \left[F'\left(\frac{x_L + x_R}{2}\right) \right] (u_L(x_L) - u_L(x_R)) = 0 \quad (3)$$

$$\left[1 - F\left(\frac{x_L + x_R}{2}\right) \right] u'_R(x_R) + \frac{1}{2} \left[F'\left(\frac{x_L + x_R}{2}\right) \right] (u_R(x_L) - u_R(x_R)) = 0 \quad (4)$$

It is straightforward to establish that convergence is not an equilibrium. Suppose $x_L = x_R$, then the first-order conditions become

$$\frac{1}{2} u'_L(x) = 0 \quad (5)$$

$$\frac{1}{2} u'_R(x_R) = 0 \quad (6)$$

But since $\theta_L < \theta_R$, these equations cannot hold simultaneously. It is also easy to see that $x_L = \theta_L$ and $x_R = \theta_R$ is never an equilibrium. In this case, the first-order conditions would become

$$-\frac{1}{2} \left[F'\left(\frac{\theta_L + \theta_R}{2}\right) \right] u_L(\theta_R) = 0 \quad (7)$$

$$\frac{1}{2} \left[F'\left(\frac{\theta_L + \theta_R}{2}\right) \right] u_R(\theta_L) = 0 \quad (8)$$

But these equations cannot hold as the left-hand side of the first expression is strictly positive and the left-hand side of the second is strictly negative. Thus, party L gains from moving its position to the right and party R gains by moving its position to the left.

The only candidate equilibrium is one where $\theta_L < x_L^* < x_R^* < \theta_R$. Thus, when there is uncertainty about the median voter, the candidates diverge in equilibrium. Conversely, if

⁸The second-order conditions will be met so long as F is not too convex.

the median voter is known with certainty, then candidates converge as predicted by Downs.

Now, we can establish the direct relationship between uncertainty and polarization by re-writing the first-order conditions as:

$$\frac{F' \left(\frac{x_L + x_R}{2} \right)}{F \left(\frac{x_L + x_R}{2} \right)} = \frac{-2u'_L(x_L)}{u_L(x_L) - u_L(x_R)} \quad (9)$$

$$\frac{F' \left(\frac{x_L + x_R}{2} \right)}{1 - F \left(\frac{x_L + x_R}{2} \right)} = \frac{2u'_R(x_R)}{u_R(x_R) - u_R(x_L)} \quad (10)$$

The left-hand sides on both equations get larger as the candidates converge (as convergence reduces the denominator). So the level of divergence depends on two features of the distribution of m , $\frac{F'}{1-F}$, and $\frac{F'}{F}$ at the cutpoint between platforms. These ratios are the known as the hazard rate and the reverse hazard rate of the distribution, respectively. For a very large family of distributions, these hazard rates are decreasing in the variance of m when evaluated near the center of the distribution. For the uniform distribution, the hazard rates are decreasing in the variance across the entire domain.⁹ For the normal distribution, the hazard rates are decreasing in the variance except in the extreme tails. This fact is illustrated in Figure 5 which plots the hazard and reverse hazard rates for a normal distribution with mean zero for two different values of the standard deviation s . Clearly, the hazard rates are higher for $s = 1$ than for $s = 2$ except for the region where the random variable has an absolute value greater than 1.5. So as long as the cutpoint between the platforms is not in the tail of the distribution, we can expect divergence to increase in the uncertainty about the median voter. Because we are primarily interested in the level of divergence in moderate

⁹If m is distributed uniformly on the interval $[-a, a]$ then $\frac{F'}{1-F} = \frac{1}{a-m}$ and $\frac{F'}{F} = \frac{1}{a+m}$. Since the variance of m is $\frac{a^2}{3}$, the hazards are clearly decreasing in the variance.

districts, we expect this will be the case.

For more precise predictions about such moderate districts, we focus on a symmetric case where the expected median voter lies at the midpoint between the two party ideal points.

Proposition 1. *Let the parties have quadratic preferences with ideal points $-\theta$ and θ and F be a symmetric distribution function with mean and median 0. Then*

(a) *there exists a symmetric Nash equilibrium such that $x_L = -\theta + \epsilon$ and $x_R = \theta - \epsilon$ where*

$$\epsilon = \frac{2F'(0)\theta^2}{1 + 2F'(0)\theta}$$

(b) *the level of divergence is $2\theta - 2\epsilon$ and is decreasing in $F'(0)$.*

Proof. If $x_L = -\theta + \epsilon$ and $x_R = \theta - \epsilon$, then both first-order conditions 9 and 10 become:

$$\frac{F'(0)}{F(0)} = \frac{4\epsilon}{(2\theta - \epsilon)^2 - \epsilon^2}$$

$$\frac{F'(0)}{1 - F(0)} = \frac{4\epsilon}{(2\theta - \epsilon)^2 - \epsilon^2}$$

Using algebra and the fact that the median of $F(0) = .5$, both of the conditions become

$$2F'(0) = \frac{4\epsilon}{\theta^2 - \theta\epsilon}$$

The desired result is obtained by solving for ϵ . Part (b) is can be verified through differentiating $2\theta - 2\epsilon$ with respect to $F'(0)$. □

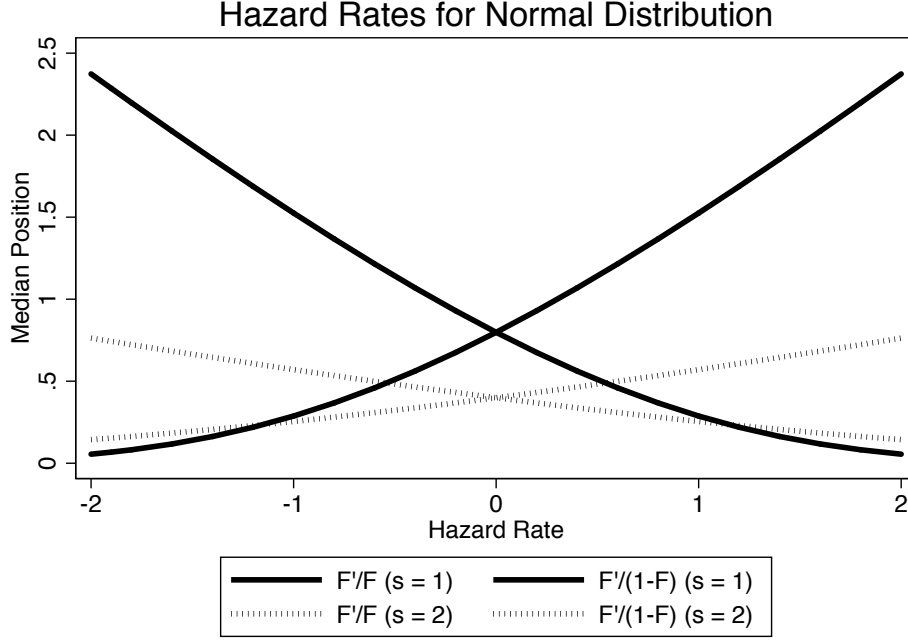


Figure 5: Hazard Rates of Normal Distribution Function

Corollary 1. *In the symmetric Nash equilibrium described in Proposition 1, the equilibrium level of divergence is increasing in the variance of m .*

Proof. From Proposition 1, we know that the level of divergences is decreasing in $F'(0)$. Since F is symmetric with mean and median 0, the variance of m is decreasing in $F'(0)$. $\square$

To illustrate the proposition and corollary, consider a couple of examples. First, assume that m is distributed normally with mean 0 and standard deviation s . In this case, $\epsilon = \frac{\sqrt{2}\theta^2}{\sqrt{2\theta+s}\sqrt{\pi}}$. Therefore, the equilibrium level of divergence is increasing in s . Similarly assume that m is distributed $u[-a, a]$, $\epsilon = \frac{\theta^2}{\theta+a}$. Therefore, divergence is increasing in a and therefore the variance of m .

So far our results establish that uncertainty about the median voter can contribute to candidate divergence in moderate districts. The next step is to connect uncertainty about

the median voter to the underlying preference heterogeneity of the district. To establish this connection, we focus on the role of variations in turnout in generating uncertainty about the preferences of the median voter.

Let $G(x)$ be the distribution function for voter ideal points. Let $x = 0$ be the median ideal point and σ^2 be the variance of ideal points – our measure of heterogeneity. If turnout is completely random and N voters participate, a standard result from sampling theory suggests that the variance of the median s^2 is given by

$$s^2 = \frac{1}{4(N+1)(G'(0))^2}$$

Therefore, the variance of the median ideal point on Election Day is a decreasing function of the density of median voter in the district. Thus, given enough data to precisely estimate the density of the median of each district, we could use those estimates as predictors of the level of divergence between the candidates in the district.

Unfortunately, while we have a relatively large number of observations per district, precise estimation of these densities remains formidable. But we can however, use the variance of the distribution in each district as a proxy. For example, if the distribution of voter ideal points is normal, we can directly relate the variance of the realized median to the variance of the overall median:

$$s^2 = \frac{\sigma^2 \pi}{2(N+1)}$$

For other distributions, the relationship between $G'(0)$ and σ^2 is less direct. But there is

a large class of parametric distributions for which the density at the median is lower when the variance is larger. Any symmetric distribution such as the t-distribution, uniform and others symmetric beta family must have this property. Non-symmetric distributions with this property include the log-normal, Pareto, exponential, and Weibull.

This leads to our main hypothesis that greater levels of district level heterogeneity in voter preferences will lead candidate positions to diverge.

Research Design

Our formal model suggests the following empirical strategy. We would like to estimate the model:

$$divergence_i = \beta \text{var}(m_i) + \gamma z_i + \epsilon_i \quad (11)$$

where $divergence_i$ is the distance between the two-candidates in district i , $\text{var}(m_i)$ is the variance of the median voter in district i , and z_i is a set of control variables. The theoretical model suggests that $\beta > 0$. Unfortunately, we only observe the winning candidates of the elections. Therefore, we follow the approach of McCarty, Poole and Rosenthal (2009), who decompose partisan polarization into roughly two components. The first part, which they term *intradistrict divergence* is simply the difference between how Democratic and Republican legislators would represent the same district. The remainder, which they term *sorting*, is the result of the propensity for Democrats to represent liberal districts and for Republicans to represent conservative ones.¹⁰

To formalize the distinction between divergence and sorting, we can write the difference

¹⁰This concept is closely related to what we refer to above as between-district polarization.

in party mean ideal points as

$$E(x|R) - E(x|D) = \int \left[E(x|R, z) \frac{p(z)}{\bar{p}} - E(x|D, z) \frac{1-p(z)}{1-\bar{p}} \right] f(z) dz$$

where x is an ideal point, R and D are indicators for the party of the representative, and z is a vector of district characteristics. We assume that z is distributed according to density function f and that $p(z)$ is the probability that a district with characteristics z elects a Republican. The term $\bar{p}$ is the average probability of electing a Republican. The average difference between a Republican and Democrat representing a district with characteristics z , $E(x|R, z) - E(x|D, z)$, captures the intradistrict divergence, while variation in $p(z)$ captures the sorting effect.

Estimating the AIDD is analogous to estimating the average treatment effect of the non-random assignment of party affiliations to representatives. There is a large literature discussing alternative methods of estimation for this type of analysis. For now we assume that the assignment of party affiliations is based on observables in the vector z . If we assume linearity for the conditional mean functions, i.e., $E(x|R, z) = \beta_1 + \beta_2 R + \beta_3 z$, we can estimate the AIDD as the OLS estimate of β_2 .

Our claim is that the average intradistrict divergence (AIDD) is a function of uncertainty over the location of the median voter within districts which we have proxied by the variance of the voter's ideal points. We use two empirical strategies to examine whether the AIDD is greater in more heterogeneous districts. First, we use OLS-based regression models of the form:

$$x_i = \alpha + \beta_1 \text{var}(m_i) + \beta_2 \text{Party}_i + \beta_3 \text{var}(m_i) x \text{Party}_i + \gamma z_i + \delta_{j[i]} + \epsilon_i \quad (12)$$

where x_i is the ideological position of the incumbent in district i , $Party_i$ is an indicator that equals 1 if the incumbent is a Republican and -1 if she is a Democrat, γ is a vector of district-level covariates, and δ is a random effect for each census division or state. If $\text{var}(m)$ has a polarizing effect, $\beta_3 > 0$ as it moves Republicans to the right and Democrats to the left.

One complication is that there may be unobserved factors that lead to across-state variation in polarization (i.e., the distance between parties within each state). For instance, variation in primary type or other institutions could affect polarization. As a result, we subset the data and estimate the model separately for each party. This allows us to use census division and state-level random coefficients to account for any time invariant, unobserved factors that lead to across-state variation in polarization within parties. Thus, our regression models show the relationship between legislators' ideal points and the position of the median voter and the amount of heterogeneity *within each state*. This specification also allows β and other coefficients to vary across parties.

Second, because the functional forms used in our OLS models are somewhat restrictive, we also use matching estimators to check the robustness of our main results. Intuitively, these estimators match observations from a control and treatment group that share similar characteristics z and then compute the average difference in roll-call voting behavior for the matched set. Ho et al. (2007) make the case that matching reduces model dependence and provides more accurate causal inferences compared to standard ordinary least squares methods. We use the bias-corrected estimator developed by Abadie and Imbens (2006) and implemented in R using the **Matching** package (Sekhon 2013).¹¹ Unlike the regression

¹¹We match on the position of the median voter in each district.

models, however, we are not able to estimate the AIDD as continuous function of district heterogeneity. Therefore, following McCarty, Poole and Rosenthal (2009) and Shor and McCarty (2011) we use matching techniques to estimate the *average district divergence* for districts with different levels of $\text{var}(m_i)$. Specifically, we use matching to estimate the AIDD for districts with “high” and “low” levels of heterogeneity. We define districts with “high” levels of heterogeneity as those that are above the national median, and those with “low” levels of heterogeneity as those that are below the national median.

We estimate the position of the median voter in each district using the approach described in Tausanovitch and Warshaw (2013). Specifically, we combine our super-survey of 350,000 citizens’ policy preferences with a multi-level regression with post stratification (MRP) model. Previous work has shown that MRP-based models yield accurate estimates of the public’s preferences at the level of state (Park, Gelman and Bafumi 2004; Lax and Phillips 2009) as well as congressional and state legislative districts (Warshaw and Rodden 2012; Tausanovitch and Warshaw 2013). As a robustness check, we also run all of our models using presidential vote share in each district as a proxy for the position of the median voter.

Finally, we use the standard deviation of preferences in the electorate of each district (Gerber and Lewis 2004; Levendusky and Pope 2010; Harden and Carsey 2012) as a proxy for the variance of the median voter in district i . We estimate this measure for every state senate district in the country using the large dataset of citizens’ ideal points from Tausanovitch and Warshaw (2013). In the online appendix, we also use an alternative measure of the uncertainty over the median voter in each district. Our results are substantively similar using both definitions of the variance of the median voter in each district.

Results

In this section, we present our main results on the link between the variance of the median voter in each senate district and polarization in legislators’ roll call behavior.¹² Before reporting on the multi-level and matching models, we first present some graphical evidence for our argument. Figure 6 shows how legislator ideology changes with district opinion. The three panels represent terciles of district heterogeneity, with the leftmost (or “first”) the least heterogeneous, and the rightmost (“third”) the most heterogeneous. Each dot represents a unique legislator serving some time between 2003 and 2012, colored red for Republicans and blue for Democrats. Both parties are responsive to district opinion, with more conservative districts being represented by more conservative legislators. Nevertheless, a distinct separation between the parties is quite evident. More central to our point, that divergence is largest for the most heterogeneous districts.

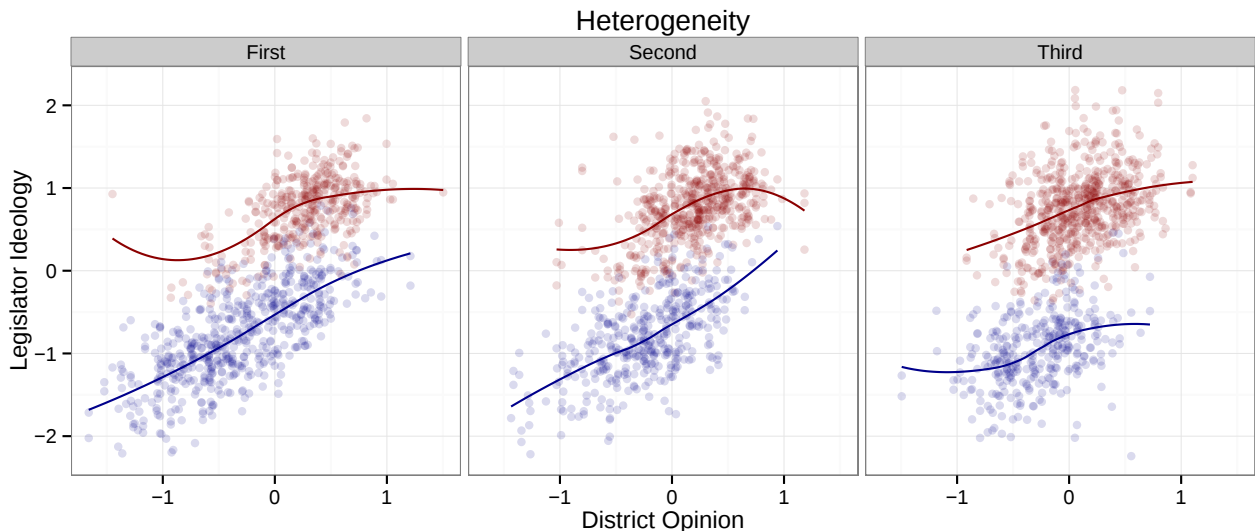


Figure 6: Scatterplot of Legislator Ideology and District Opinion, by Heterogeneity Tercile

¹² In the online appendix, we show substantively similar findings in both state houses and the U.S. House.

We now turn to our multilevel analyses which are presented in Table 1. The unit of analysis is the unique legislator in Shor and McCarty (2011)’s data that served at some point between 2003 and 2012. The two columns show results of a simple multilevel model with varying intercepts for census divisions.¹³ The results indicate that both Democratic and Republican state legislators take substantially more extreme positions in more ideologically heterogeneous districts. Average intradistrict divergence (AIDD) is clearly a function of ideological heterogeneity in the district. Controlling for mean district ideology, the difference between the roll-call voting behavior of Democrats and Republicans within states is largest in districts that are most heterogeneous, and smallest in the most homogeneous districts.¹⁴ Suggestively, the effect for Republicans appears somewhat higher than that for Democrats (though the difference is not significant at conventional levels). We also find substantively similar results using the more direct measure of uncertainty over the median as our main independent variable.¹⁵

To get a better idea of the size of the effect, consider the first two columns of Table 1. A shift from one-half of a standard deviation below the mean in our heterogeneity measure to one-half of a standard deviation above the mean (from 1.25 to 1.36), while keeping district opinion constant at its mean, is predicted to make Republican legislator ideal points 0.05 units more conservative and Democratic ideal points 0.04 units more liberal. This total 0.09 point shift in AIDD due to an increase of one standard of heterogeneity is approximately

¹³In the online appendix, we show that we obtain similar results using varying intercepts for each state.

¹⁴While the theoretical model suggests that we should control for the expected median, we instead use estimates of the mean voter position that we obtain from multilevel regression with poststratification estimates. Using presidential vote by district returns the same results.

¹⁵The details of our analysis using this alternative measure of uncertainty are discussed in the online appendix.

Table 1: Heterogeneity - Legislator Score Models (Multilevel)

	<i>Dependent variable:</i>	
	Legislator Score	
	R	D
	(1)	(2)
Heterogeneity	0.44*** (0.10)	−0.32*** (0.10)
Citizen Ideology	0.84*** (0.06)	0.85*** (0.04)
Constant	0.05 (0.15)	−0.30** (0.15)
Observations	1,501	1,322
Log Likelihood	−607.87	−510.19
Akaike Inf. Crit.	1,225.74	1,030.38
Bayesian Inf. Crit.	1,252.31	1,056.31
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

24.2% of the mean standard deviation of state legislator ideology by state.¹⁶ Figure 7 shows these effects more vividly. A district with heterogeneity less than 1.0 can expect to be represented by a moderate, regardless of party. In contrast, districts with heterogeneity of 1.4 or more can expect to be represented by a legislator who is from the extremes of their party.

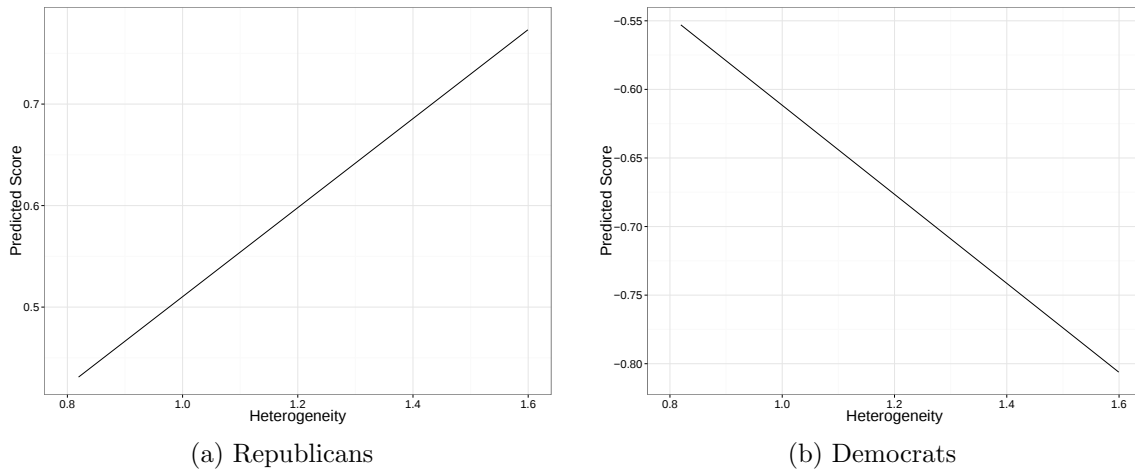


Figure 7: Predicted values of Republican and Democratic ideal points as a function of district heterogeneity

Finally, as discussed above, we use matching estimators to check the robustness of our main results. The matching approach tells a similar story to the OLS models. Average intradistrict divergence is substantially greater among matched districts that are more heterogeneous than in those that contain more homogeneous electorates. Table 2 shows that the AIDD in heterogeneous districts is 25% greater than in the more homogeneous districts.

Clearly, the use of random effects and matching cannot eliminate all concerns about omitted variable bias. To better account for this possibility, we also examine the subset of

¹⁶The interquartile range is associated with an increase in divergence of 0.11, or 30.4% of the mean standard deviation of state legislator ideology by state, while comparing the 95th percentile heterogeneity district to a 5th percentile district is predicted to increase divergence by 0.28, or 77.6% of this benchmark.

	N.Obs	N.Rep	AIDD	SE
Overall	3396	1784	1.27	0.02
High Heterogeneity	1409	864	1.45	0.04
Low Heterogeneity	1414	637	1.15	0.04

Table 2: Matching Estimates of the AIDD (Average Treatment Effect)

districts that have been represented by both parties. We do this in two ways. First, we isolate those districts that have elected members from both parties at some point in this decade. Then we measure within-district party divergence as the difference in the average ideal point score of these Democrats and Republicans. Our second approach cuts an even finer distinction. Here, we look at districts that have elected members from both parties *within the same year*. This would be the case for multimember districts,¹⁷ or in the context of a within-year transition from one party to the other due to a special election or appointment because of resignation or death. Figure 8 plots divergence as a function of district opinion heterogeneity in either set of districts. The results are striking; district heterogeneity and legislator partisan divergence are quite strongly related.¹⁸

¹⁷This is analogous to comparing two US Senators from the two parties, taking advantage of the fact of their common constituency.

¹⁸The obvious remaining concern is that the districts that have switched party control are not a random sample of all districts. But such districts represent exactly those properties that we expect of moderate districts – high levels of party competition and legislative turnover. So the fact that we find a strong association of divergence and heterogeneity in such districts bolsters our broader point.

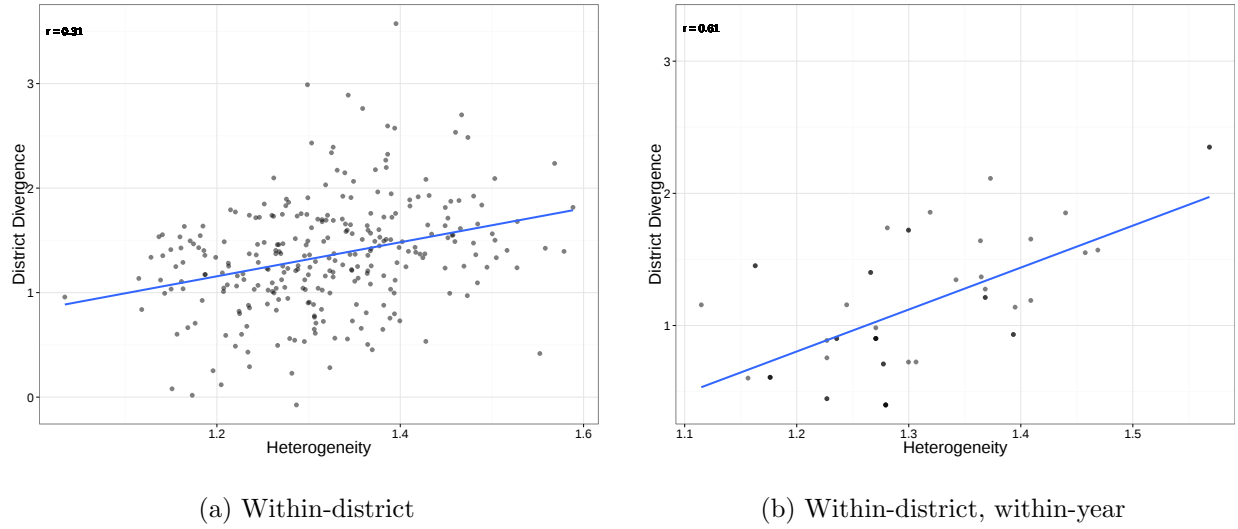


Figure 8: Scatterplot of District Heterogeneity and Partisan Divergence. Left panel compares the difference between the average ideology of Republicans and Democrats representing a single district anytime from 2003 to 2013. Right panel compares the differences between the two parties for districts with multiple representatives for a given year, due either to multi-member districts or mid-year replacement.

Discussion and Conclusion

Our key findings can be summarized as follows. Partisan polarization within state legislatures emerges in large part from the fact that Democrats and Republicans represent districts with similar mean characteristics very differently. We have discovered that these differences are especially large in districts that are most internally polarized. Further, we have discovered that these internally polarized districts are especially prevalent in the ideologically “centrist” places that most frequently change partisan hands in the course of electoral competition.

In other words, the mass public indeed contains large numbers of moderates, but they are not always efficiently clustered in districts where they can dominate. We have identified a class of districts that are moderate on average without containing large densities of mod-

erates. When candidates compete in these internally polarized districts in heterogeneous suburbs and spatially diverse non-metropolitan areas, they face weak incentives to adopt moderate platforms and build up moderate roll-call voting records. Rather, they can cater to primary constituents, donors, activists or other forces that pull the parties away from the ideological center. We have attempted to capture this logic with a relatively general theoretical model focusing on the candidates' uncertainty about the ideology of the median voter on election day when the district does not contain a large density of moderates. Aggregating up to the level of states, we have shown that the states with the highest levels of within-district ideological polarization are also those with the highest levels of partisan polarization in the legislature.

Our analysis suggests several avenues for further research. First of all, we have focused primarily on cross-sectional variation because of the limited time frame covered by our survey data. A next step is to examine whether within-district heterogeneity has risen over time, and whether this can be connected to the rise of polarization in the U.S. House, Senate, and state legislatures.

We have noted above that many of the ideologically heterogeneous districts are in suburbs that have experienced rapid population change. To visualize this trend, we have collected census tract-level data on race, and measured the distance of the centroid of each tract from the city center in each of the 100 largest metro areas in the United States. Using all of the tracts across 100 cities, Figure 9 displays population shares of African Americans, Latinos, and whites against the distance from the relevant city center, first in 1970 and then in 2010.

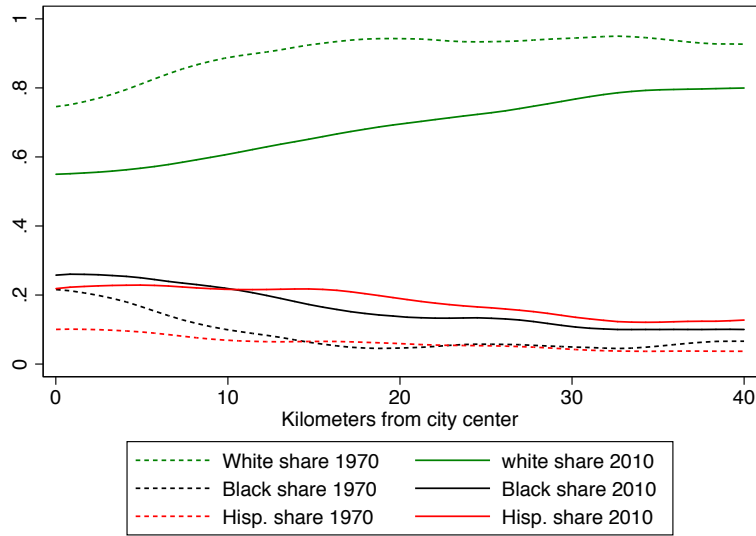


Figure 9: Race, Ethnicity, and Distance from City Center

Figure 9 illuminates a major demographic transformation that political scientists have largely ignored. If we define suburbia as beginning around 8 kilometers from the city center, we see that inner suburbs were around 85 percent white in 1970, but on average they are barely over 50 percent white today. While falling with distance from the city center, racial heterogeneity extends well out into the middle and more distant suburbs as well. Latinos and especially African Americans were once clustered in city centers, but they are now spread throughout the suburban periphery.

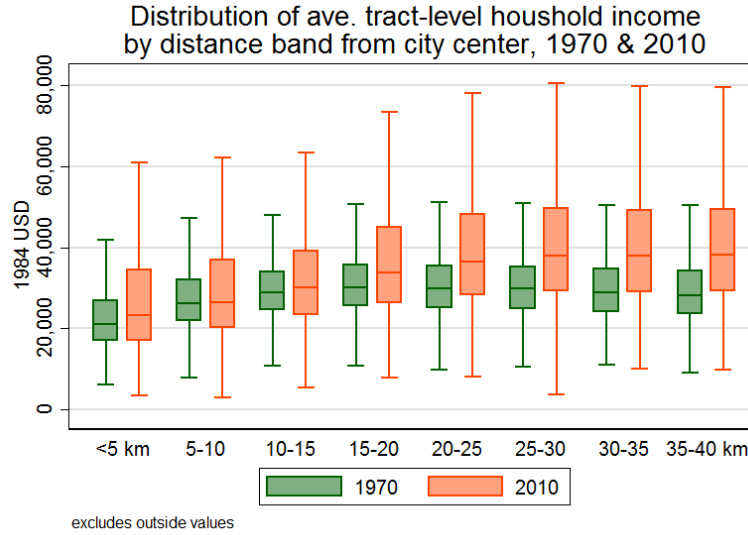


Figure 10: Income and Distance from City Center

The geography of income has also transformed during the same period. Figure 10 displays box plots of average inflation-adjusted tract-level household income by distance from the city center, first in 1970 and then in 2010. It shows that the heterogeneity of income has grown dramatically throughout metro areas, especially in the suburbs. When legislative districts are drawn in the suburbs, they are likely to encompass an increasingly diverse group of voters with respect not only to race, but also income.

As employment opportunities have decentralized in American cities, suburbs and exurbs have gained population relative to cities and rural areas. While Democrats and Republicans seem to prefer different types of neighborhoods, Nall and Mummolo (2015) show that concerns like jobs, home prices, and school quality are vastly more important than partisan preferences in determining neighborhood choice. Even when suburban conservatives and progressives are spatially segregated, legislative districts are often sufficiently large as to encompass clusters of both.

Some of the most internally polarized districts are those with the most rapidly growing and changing populations. This is true not only of suburbs, but also of expanding small cities and towns where conservative rural areas have seen an influx of liberals. Likewise, some of the most polarized states are those that have experienced the most rapid population growth and demographic change in recent decades, for example in the West and Sun Belt.

Finally, our analysis has implications for debates about legislative districting reform. A common claim is that polarization emerges because districts have become too homogeneous, as like-minded Americans have moved into similar communities and politicians have drawn incumbent-protecting gerrymanders. Some reformers advocate the creation of more heterogeneous districts, like California’s sprawling and diverse state senate districts, in order to enhance political competition and encourage the emergence of moderate candidates. This paper turns this conventional wisdom on its head. When control of the legislature hinges on fierce competition within internally polarized winner-take-all districts, candidates and parties do not necessarily face incentives for policy moderation.

Moreover, given the strong residential clustering of citizens with similar social, economic, and political profiles, the creation of heterogeneous districts requires creating what legal scholar Nicholas Stephanopoulos (Stephanopoulos 2012) calls “spatially diverse” districts. Spatial diversity refers to the variation of individual attributes (e.g. income, race, education) across geographic space. For example, a spatially diverse district might be one where conservative, wealthy white neighborhoods are combined with low income, liberal, minority neighborhoods. Stephanopoulos argues that spatially diverse districts tend to perform poorly on many indicators including voter engagement, participation, and representation.

The upshot of the combination of our findings with those of Stephanopolous is that the

costs of creating heterogeneous districts should be taken seriously. In many settings, drawing districts that are more competitive, in the sense that vote shares in general elections are close to 50 percent, may produce the opposite of the moderate, compromise-oriented representative envisioned by reformers.

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Online Appendix

In this online appendix, we present several robustness checks for the results reported in the main paper. First, we examine several alternative empirical strategies for the relationship between the variance of the median voter in *state senate* districts and legislators’ ideal points in these districts. Next, we examine the relationship between the variance of the median voter in *state house* districts and legislators’ ideal points in these districts. Finally, we examine the relationship between the variance of the median voter in *U.S. House* districts and legislators’ ideal points in these districts. All three analysis yield results that are substantively similar to the results in the main body of the paper. In all three contexts, the average intradistrict divergence (AIDD) is clearly a function of ideological heterogeneity in the district. The difference between the roll-call voting behavior of Democrats and Republicans is largest in districts that are most heterogeneous, and smallest in the most homogeneous districts.

A Robustness Checks for State Senate Results

In this section, we present several robustness checks for the results in the main paper using state senate districts. First, we show that our results are robust to the usage of an alternative measure of the variance of the median voter in district i . A limitation of the measure of heterogeneity that we present in the main results is that it potentially commingles uncertainty over the median voter and sampling error in our super-survey. As a result, we developed an alternative measure of uncertainty over the median voter that holds constant sampling error across districts. Specifically, we bootstrapped 20 different samples from each district and fixed the number of respondents at 40 in each district. This allows us to hold variation in sampling error fixed across districts. In each simulation, we estimated the median ideal point in each district. Then, across all the simulations, we estimated the standard deviation of the median. This measure captures uncertainty over the median voter in each district. However, we were only able to calculate this measure of uncertainty for districts where had more than 40 respondents in our data, which forced us to drop about 50% of state senate districts, and substantially reduces our statistical power.

Nonetheless, Table A.1 (using random effects for each census division) shows that the results using this alternative measure of the variance of the median voter in district i yields substantively similar results to those in the main paper.

Second, because the functional forms used in our OLS models are somewhat restrictive, we also use matching estimators to check the robustness of our main results. Following McCarty, Poole and Rosenthal (2009) and Shor and McCarty (2011) we use matching techniques to estimate the *average district divergence* for districts with different levels of $var m_i$. Specifically, we use matching to estimate the AIDD for districts with “high” and “low” levels of uncertainty. We define districts with “high” levels of heterogeneity as those that are above the national median, and those with “low” levels of uncertainty as those that are below the national median. The matching approach tells a similar story to the OLS models, as seen in Table A.2. Average intradistrict divergence is substantially greater (about 16%) among matched state senate districts that are more heterogeneous than in those that contain more homogeneous electorates.

Table A.1: Uncertainty - Legislator Score Models (Multilevel)

	<i>Dependent variable:</i>	
	Legislator Score	
	R	D
	(1)	(2)
Uncertainty	0.44*** (0.10)	-0.43*** (0.11)
Citizen Ideology	0.81*** (0.06)	0.84*** (0.04)
Constant	0.52*** (0.07)	-0.61*** (0.09)
Observations	1,501	1,322
Log Likelihood	-607.02	-508.40
Akaike Inf. Crit.	1,224.04	1,026.81
Bayesian Inf. Crit.	1,250.61	1,052.74
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

	N.Obs	N.Rep	AIDD	SE
Overall	3396	1784	1.27	0.02
High Uncertainty	1410	865	1.43	0.03
Low Uncertainty	1413	636	1.22	0.05

Table A.2: Matching Estimates of the AIDD (Average Treatment Effect)

Third, we show that the results in the main paper are robust to using a multi-level model with random effects for each state, rather than each census division. The point estimates shown in Table A.3 are all smaller than the results in the main paper. Nonetheless, the average intradistrict divergence (AIDD) is still clearly a function of ideological heterogeneity in the district. Controlling for mean district ideology, the difference between the roll-call voting behavior of Democrats and Republicans is largest in districts that are most heterogeneous, and smallest in the most homogeneous districts.

Table A.3: Heterogeneity - Legislator Score Models (Multilevel)

	<i>Dependent variable:</i>	
	Legislator Score	
	R	D
	(1)	(2)
Heterogeneity Citizens	0.20** (0.10)	−0.17** (0.09)
Citizen Ideology	0.57*** (0.06)	0.77*** (0.03)
Constant	0.40*** (0.14)	−0.49*** (0.12)
Observations	1,501	1,322
Log Likelihood	−432.75	−340.20
Akaike Inf. Crit.	875.50	690.41
Bayesian Inf. Crit.	902.07	716.34
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

B State House Results

In this section, we replicate the analysis in the main paper using state house chambers. We have relatively small samples of survey respondents in each state house district. As a

result, our estimates of the heterogeneity of each district are measured with a great deal of uncertainty, which attenuates the estimated relationship between heterogeneity and roll call behavior. Nonetheless, the results are substantively similar to the results in the main body of the paper for state senates.

We begin with plotting the overall distribution of legislator ideal points and lower chamber district medians. In Figure B.1, we see that, just as with the upper chamber, the lower chamber district medians are bell-shaped around a moderate middle.



Figure B.1: Distributions of Legislator and District Median Ideal Points

Second, we examine cross-state variation in the polarization of legislatures that we measure as the distance in ideal point estimates between state legislative Democratic and Republican medians (averaged across chambers). A commonly held view of polarization is that it reflects the way in which voters are allocated across districts. If this were the case, we would expect to see our measure of legislative polarization correlate strongly with the variation of district medians within each state. In the top panel of Figure B.2, we consider this hypothesis by plotting the degree of legislative polarization against across-district ideological polarization in the mass public for each state (measured as the standard deviation of the district-level ideology estimates). Similarly to our results in the main body of the paper, we find a correspondence between across-district polarization and the polarization of the legislature.

In the bottom panel of Figure B.2 we test a different proposition—that polarization *within* state house districts correlates with legislative polarization. The horizontal axis captures the average within-district standard deviation of our ideological scale. Again we find a systematic relationship. Not only is legislative polarization correlated with across-district ideological polarization, but the states with the highest levels of within-district polarization, like California, Colorado, and Washington, are also clearly those with the highest levels of legislative polarization. In the states like West Virginia and Louisiana—where public opinion is not very polarized within districts—the parties in the legislature are much more alike.

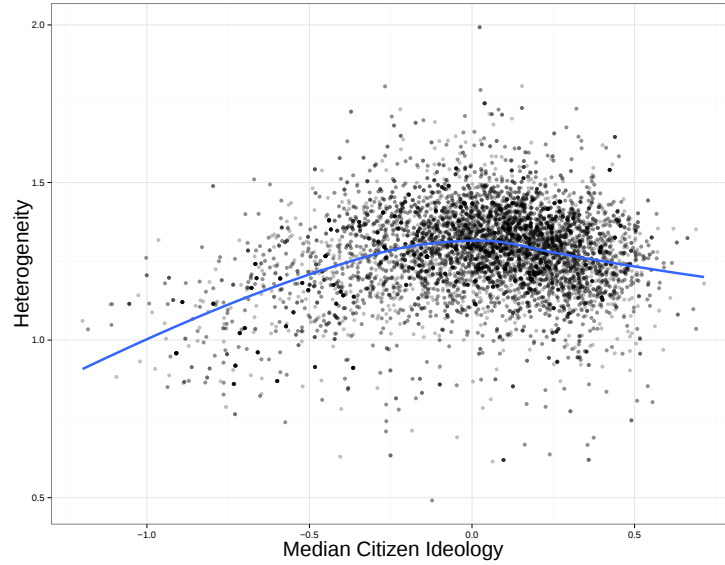
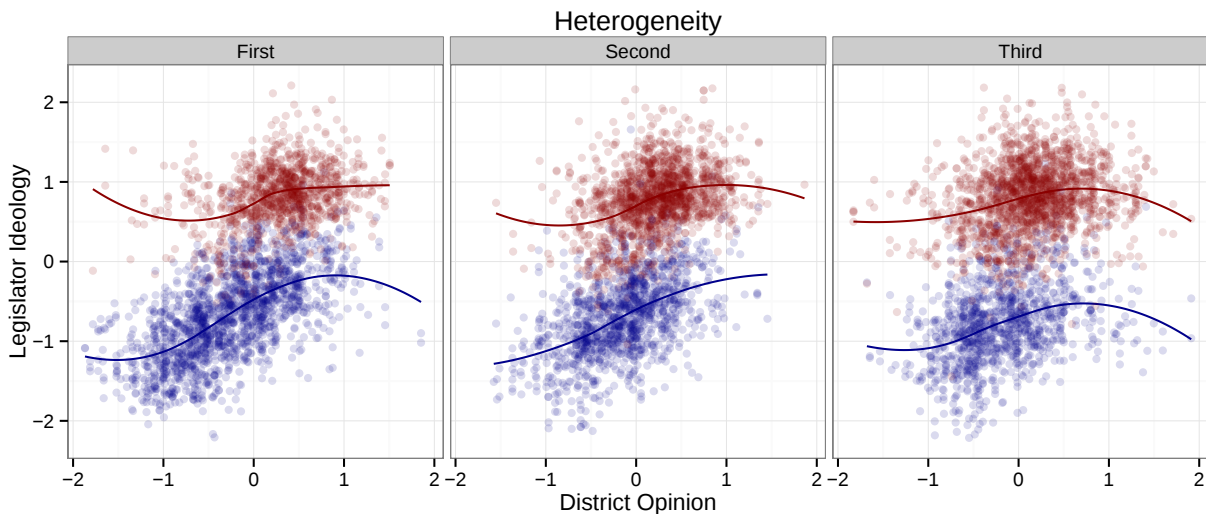


Figure B.3: Average District Ideology and Within-District Polarization

Next, we examine the relationship between district ideology and legislators' roll call behavior in sets of state house districts with different levels of heterogeneity. Figure B.4 shows how legislator ideology changes with district opinion. The three panels represent terciles of district heterogeneity, with the leftmost (or "First") the least heterogeneous, and the rightmost ("Third") the most heterogeneous. Each dot represents a unique legislator serving some time between 2003 and 2013, colored red for Republicans and blue for Democrats. Both parties are responsive to district opinion, with more conservative districts being represented by more conservative legislators. Nevertheless, a distinct separation between the parties is quite evident. Moreover, this divergence is largest for the most heterogeneous districts.

Figure B.4: Scatterplot of Legislator Ideology and District Opinion, by Heterogeneity Tercile



We can also examine the subset of state house districts that have been represented by both parties at some point in this decade. We measure within-district party divergence as the difference in the average ideal point score of Democrats and Republicans who have served in the same district across the decade. The left hand side of Figure B.5 plots this divergence as the function of district opinion heterogeneity. The results are quite obvious; district heterogeneity and legislator partisan divergence are quite strongly related. Similarly, the right hand panel compares the differences between the two parties for districts with multiple representatives for a given year, due either to multi-member districts or mid-year replacement. Again, there is a strong relationship.

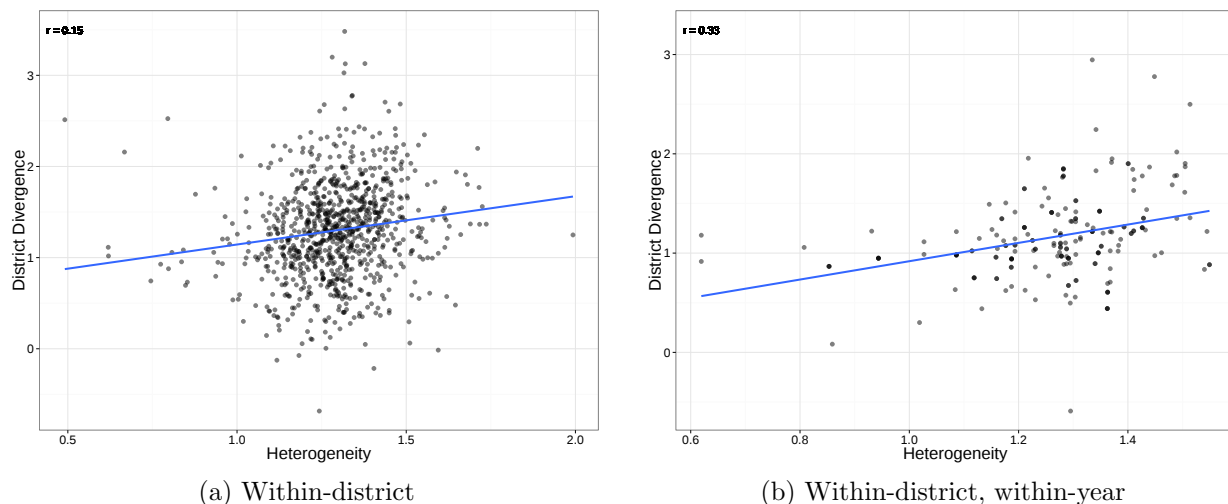


Figure B.5: Scatterplot of District Heterogeneity and Partisan Divergence. Left panel compares the difference between the average ideology of Republicans and Democrats representing a single district anytime from 2003 to 2013. Right panel compares the differences between the two parties for districts with multiple representatives for a given year, due either to multi-member districts or mid-year replacement.

Next, we use two empirical strategies to examine more formally whether the AIDD is greater when there is more heterogeneous districts. First, we use OLS models similar to the ones in the main paper. The unit of analysis is the unique state house member that served at some point between 2003 and 2012. We use Shor and McCarty (2011)’s estimate of the ideal point of each legislator as the dependent variable.

Table B.1 shows the results of these simple OLS models. The results indicate that Democratic state house members take substantially more extreme positions in more ideologically heterogeneous districts. There is some evidence that Republican members also take more extreme positions in ideologically heterogeneous districts, but the results are not statistically significant, perhaps due to the relatively high level of measurement error in our estimates of the heterogeneity of voters preferences at the level of state house districts. Similarly to our main results, the average intradistrict divergence (AIDD) is clearly a function of ideological heterogeneity in the district. Controlling for mean district ideology, the difference between the roll-call voting behavior of Democrats and Republicans is largest in districts that are

most heterogeneous, and smallest in the most homogeneous districts.

Table B.1: Heterogeneity - Legislator Score Models (Multilevel)

	<i>Dependent variable:</i>	
	Legislator Score	
	R	D
	(1)	(2)
Heterogeneity	0.06 (0.05)	-0.17*** (0.04)
Citizen Ideology	0.64*** (0.03)	0.87*** (0.02)
Constant	0.59*** (0.08)	-0.44*** (0.09)
Observations	4,264	4,069
Log Likelihood	-1,783.52	-1,697.76
Akaike Inf. Crit.	3,577.04	3,405.53
Bayesian Inf. Crit.	3,608.83	3,437.08
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

Second, we repeat the matching exercise described earlier for state house districts, with similar results. Table B.2 shows that AIDD is substantially greater among matched state house districts that are more heterogeneous than in those that contain more homogeneous electorates.

	N.Obs	N.Rep	AIDD	SE
Overall	8334	4264	1.26	0.02
High Heterogeneity	4166	2502	1.35	0.02
Low Heterogeneity	4167	1762	1.17	0.03

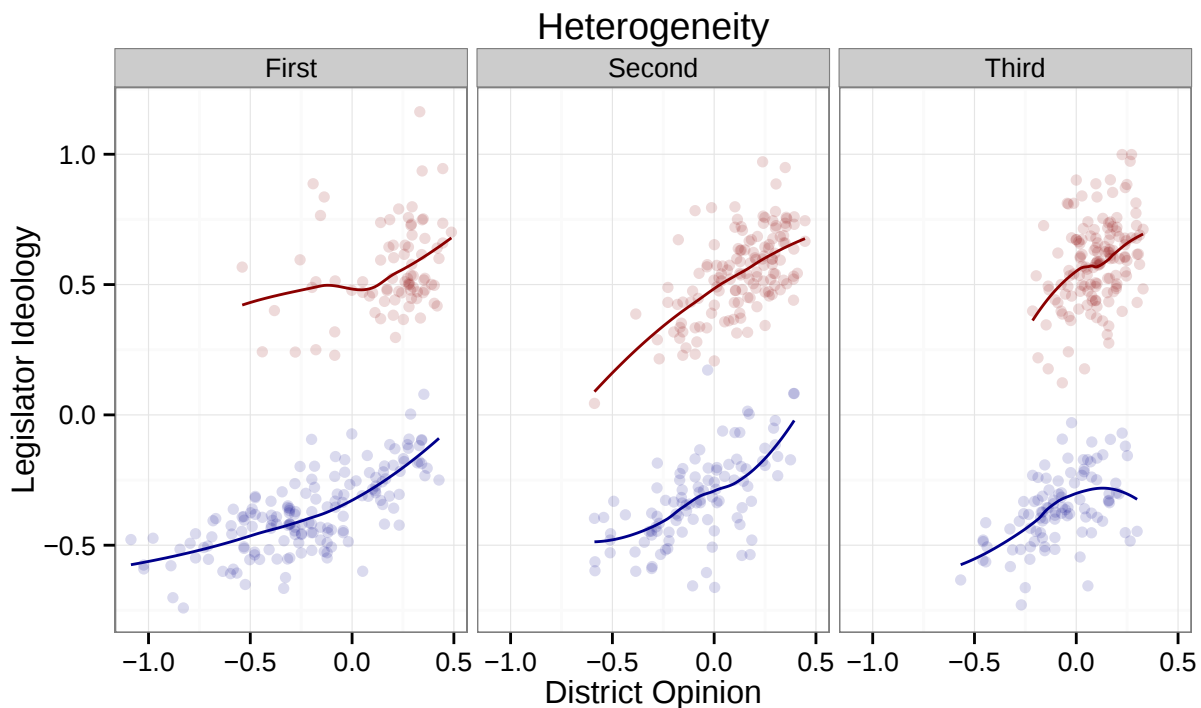
Table B.2: Matching Estimates of the AIDD (Average Treatment Effect)

C U.S. Congress Results

In this section, we replicate the analysis in the main paper for the U.S. Congress. We have substantially less statistical power in this context. Nonetheless, the results are substantively similar to the results in the main body of the paper for state senates.

Figure C.1 shows how legislator ideology changes with district opinion. The three panels represent terciles of district heterogeneity, with the leftmost (or “First”) the least heterogeneous, and the rightmost (“Third”) the most heterogeneous. Each dot represents a unique legislator serving some time between 2003 and 2012, colored red for Republicans and blue for Democrats. Both parties are responsive to district opinion, with more conservative congressional districts being represented by more conservative legislators. Nevertheless, a distinct separation between the parties is quite evident. Even more central to our point, that divergence is somewhat larger for the most heterogeneous districts.

Figure C.1: Scatterplot of Representative Ideology and District Opinion, by Heterogeneity Tercile



Next, use two empirical strategies to examine more formally whether the AIDD is greater when there is more heterogeneous districts. First, we use OLS models similar to the ones in the main paper. The unit of analysis is the unique representative that served at some point between 2003 and 2012. We use DW-Nominate scores for each legislator as the dependent variable.

Table C.1 shows the results of these simple OLS models. The results indicate that both Democratic and Republican representatives take substantially more extreme positions in more ideologically heterogeneous districts. Similarly to our main results, the difference between the roll-call voting behavior of Democrats and Republicans is largest in congressional districts that are most heterogeneous, and smallest in the most homogeneous districts. Similarly to the results for state senate districts, the effect for Republicans appears somewhat

higher than that for Democrats.

Table C.1: Heterogeneity - Congress Models (OLS)

	<i>Dependent variable:</i>			
	Legislator Score			
	(R)	(R)	(D)	(D)
Intercept	−0.23 (0.16)	0.16 (0.17)	−0.06 (0.10)	0.45*** (0.11)
Heterogeneity	0.55*** (0.12)	0.52*** (0.13)	−0.19** (0.08)	−0.25*** (0.07)
Mean Ideology	0.42*** (0.04)		0.37*** (0.02)	
2008 Dem. Presidential Vote		−0.64*** (0.09)		−0.79*** (0.05)
Observations	360	358	357	353
R ²	0.21	0.14	0.41	0.45
Adjusted R ²	0.21	0.14	0.41	0.45
Residual Std. Error	0.15 (df = 357)	0.15 (df = 355)	0.12 (df = 354)	0.11 (df = 350)

Note:

*p<0.1; **p<0.05; ***p<0.01

Second, because the functional forms used in our OLS models are somewhat restrictive, we also use matching estimators to check the robustness of our main results. Following McCarty, Poole and Rosenthal (2009) and Shor and McCarty (2011) we use matching techniques to estimate the AIDD for districts with different levels of $var m_i$. Specifically, we use matching to estimate the AIDD for districts with “high” and “low” levels of heterogeneity. We define districts with “high” levels of heterogeneity as those that are above the national median, and those with “low” levels of heterogeneity as those that are below the national median.

	N.Obs	N.Rep	AIDD	SE
Overall	733	370	0.79	0.02
High Heterogeneity	358	214	0.84	0.02
Low Heterogeneity	359	146	0.75	0.02

Table C.2: Matching Estimates of the AIDD (Average Treatment Effect)

The matching results in Table C.2 are substantively similar to the OLS models. Average intradistrict divergence is greater among matched districts that are more heterogeneous than in those that contain more homogeneous electorates. Table C.2 shows that the AIDD in heterogeneous districts is roughly 12% greater than in more homogeneous districts.

Overall, we find that members of the U.S. House from both parties are more extreme when they represent heterogeneous districts. Republican representatives in heterogeneous districts are substantially more conservative than Republicans in homogeneous districts.

Likewise, Democrats in heterogenous districts are substantially more liberal than Democrats in homogeneous districts.

D Survey Questions

Table 10 shows the complete list of survey questions that we used to jointly scale respondents from the 2000-2004 National Annenberg Election Studies and the 2006-2012 Cooperative Congressional Election Studies. The questions are a mix of items from the common content and modules that we created.

Table D.1: Survey Question Text

Variable	Survey	Question Text
cbb05	NAES 2000	Favor cutting taxes or strengthening soc. sec.
cbb10	NAES 2000	Fed gov't should reduce top bracket taxes
cbb13	NAES 2000	Fed gov't should adopt flat tax
cbc01	NAES 2000	Amount of spending on social security
cbc05	NAES 2000	Favor social security in stock market
cbd01	NAES 2000	Favor school vouchers
cbd02	NAES 2000	Fed gov't should give school vouchers
cbe02	NAES 2000	Favor spending on health care for uninsured
cbe04	NAES 2000	Fed gov't should spend on Medicare
cbe05	NAES 2000	Position on prescription coverage for seniors
cbe08	NAES 2000	Favor universal health care for children
cbe14	NAES 2000	Favor right to sue HMOs
cbe21	NAES 2000	Fed gov't should spend on Medicaid
cbf02	NAES 2000	Fed gov't should restrict abortion
cbf03	NAES 2000	Fed gov't should ban abortion
cbg01	NAES 2000	Favor death penalty
cbg05	NAES 2000	Favor handgun licenses
cbg06	NAES 2000	Fed gov't should restrict gun purchases
cbh01	NAES 2000	Fed gov't should limit contributions to parties
cbh02	NAES 2000	Favor soft money ban
cbl01	NAES 2000	Favor gays in military
cbl05	NAES 2000	Make effort to end job discrimination - gays
cbm01	NAES 2000	Make effort to end job discrimination - blacks
cbm02	NAES 2000	Make effort to end job discrimination - women
cbp02	NAES 2000	Fed gov't should reduce income differences
cbp03	NAES 2000	Spend on aid to mothers w/ young children
cbs01	NAES 2000	Fed gov't should protect environment
cbt01	NAES 2000	Fed gov't should eliminate business regulations
cbt03	NAES 2000	Fed gov't should allow school prayer
ccb13	NAES 2004	Favor reducing taxes
ccb33	NAES 2004	Favor eliminating estate tax
ccb34	NAES 2004	Favor eliminating estate tax
ccb35	NAES 2004	Favor eliminating estate tax
ccc24	NAES 2004	Favor re-importing drugs
ccc25	NAES 2004	Favor re-importing drugs
ccc17	NAES 2004	Favor Medicare prescription law
ccc18	NAES 2004	Favor Medicare prescription law
ccb71	NAES 2004	Favor making union organizing easier
ccb72	NAES 2004	Favor making union organizing easier
ccd67	NAES 2004	Patriot Act is good for country
ccb82	NAES 2004	Favor more trade agreements
ccc02	NAES 2004	Favor spending more on health insurance
ccc03	NAES 2004	Favor gov't health insurance for children
ccc04	NAES 2004	Favor gov't health insurance for children
ccc05	NAES 2004	Favor gov't health insurance for workers
ccc06	NAES 2004	Favor gov't health insurance for workers
ccc32	NAES 2004	Favor social security in stock market
ccc33	NAES 2004	Favor social security in stock market
ccc39	NAES 2004	Favor school vouchers
ccc40	NAES 2004	Favor federal assistance to schools
ccc41	NAES 2004	Fed gov't should reduce income differences
ccd82	NAES 2004	Favor restricting immigration
cce01	NAES 2004	Favor banning all abortions
cce05	NAES 2004	Favor banning late-term abortions

Survey Text D.1 Continued from previous page

Variable	Survey	Question Text
cce06	NAES 2004	Favor banning late-term abortions
cce07	NAES 2004	Favor stem cell funding
cce08	NAES 2004	Favor stem cell funding
cce09	NAES 2004	Favor stem cell funding
cce17	NAES 2004	Favor federal marriage amendment
cce18	NAES 2004	Favor federal marriage amendment
cce19	NAES 2004	Favor federal marriage amendment
cce20	NAES 2004	Favor federal marriage amendment
cce21	NAES 2004	Favor federal marriage amendment
cce24	NAES 2004	Favor state allowing same-sex marriage
cce25	NAES 2004	Favor state allowing same-sex marriage
cce26	NAES 2004	Favor state law allowing civil unions
cce31	NAES 2004	Favor gun control
cce32	NAES 2004	Favor extension of assault weapons ban
cce33	NAES 2004	Favor assault weapons ban
cce34	NAES 2004	Favor assault weapons ban
ccb65	NAES 2004	Favor increasing minimum wage
cag07	NAES 2004	Favor limiting malpractice awards
v2072	CCES 2006	Raise minimum wage to \$7.25
v2092	CCES 2006	Should we take action on climate change?
v2103	CCES 2006	Amendment banning gay marriage
v3019	CCES 2006	When should abortions be allowed?
v3022	CCES 2006	Climate change is real
v3024	CCES 2006	Social security privatization
v3027	CCES 2006	Affirmative action for discriminatory companies
v3060	CCES 2006	Ban late-term abortion
v2102	CCES 2006	Expand funding for stem cell research
v3063	CCES 2006	Expand funding for stem cell research
v2101	CCES 2006	Path to citizenship or strict enforcement
v3069	CCES 2006	Citizenship opportunity for illegal immigrants
v3072	CCES 2006	Favor/oppose raising minimum wage
v3075	CCES 2006	Extend capital gains tax cuts
v3066	CCES 2006	Withdrawing troops from Iraq
v3078	CCES 2006	Free trade agreement with Central America
q34	CCES 2006	Support state voter ID laws
cc06_v2072	CCES 2007	Raise minimum wage to \$7.25
cc06_v2092	CCES 2007	Should we take action on climate change?
cc06_v2103	CCES 2007	Amendment banning gay marriage
cc06_v3019	CCES 2007	When should abortions be allowed?
cc06_v3022	CCES 2007	Protect environment over jobs/economy
cc06_v3024	CCES 2007	Social security privatization
cc06_v3027	CCES 2007	Affirmative action for discriminatory companies
cc06_v3060	CCES 2007	Ban late-term abortion
cc06_v3063	CCES 2007	Expand funding for stem cell research
cc06_v3075	CCES 2007	Extend capital gains tax cuts
cc46	CCES 2007	Withdrawing troops from Iraq
cc06_v3078	CCES 2007	Free trade agreement with Central America
cc34	CCES 2007	Expand SCHIP - health care for children
cc38	CCES 2007	Surveillance of foreigners in US
cc12x_5	CCES 2007	Build a wall between US and Mexico
cc310	CCES 2008	When should abortions be allowed?
cc311	CCES 2008	Protect environment over jobs/economy
cc312	CCES 2008	Social security privatization
cc313	CCES 2008	Affirmative action for discriminatory companies
cc316b	CCES 2008	Raise minimum wage to \$7.25
cc316c	CCES 2008	Expand funding for stem cell research
cc316e	CCES 2008	Fund health insurance for children
cc316a	CCES 2008	Withdrawing troops from Iraq
cc316f	CCES 2008	Support/oppose amendment banning gay marriage
cc316g	CCES 2008	Federal assistance for housing crisis
cc316d	CCES 2008	Eavesdrop overseas without court order
cc316h	CCES 2008	Extend NAFTA to Peru & Columbia
cc316i	CCES 2008	U.S. government bank bailout
cc417	CCES 2008	Government guaranteed health insurance
cc422	CCES 2008	Carbon tax to reduce emissions

Survey Text D.1 Continued from previous page

Variable	Survey	Question Text
cc419_6	CCES 2008	Require photo ID to vote
cc09_51	CCES 2009	Take action against global warming
cc09_54	CCES 2009	Amendment banning gay marriage
cc09_53	CCES 2009	When should abortions be allowed?
cc09_55	CCES 2009	Affirmative action for discriminatory companies
cc09_59a	CCES 2009	Lilly Ledbetter Fair Pay Act
cc09_59b	CCES 2009	Hate Crimes Act - include LGBT
cc09_59c	CCES 2009	American Recovery & Reinvestment Act
cc09_59d	CCES 2009	Expand SCHIP - health care for children
cc09_59e	CCES 2009	Renewable energy funding, carbon caps
cc09_59f	CCES 2009	Require health insurance
cc09_59g	CCES 2009	Appoint Sotomayor to Supreme Court
sta302_1	CCES 2010 Module	Increase funding for job training programs
sta302_2	CCES 2010 Module	Reduce government regulation
sta302_3	CCES 2010 Module	Employers should offer childcare
sta302_4	CCES 2010 Module	Increase minimum wage
sta302_5	CCES 2010 Module	Support workers right to unionize
sta302_6	CCES 2010 Module	Eliminate federal unemployment programs
sta302_7	CCES 2010 Module	Include sexual orientation in anti-discrimination laws
sta302_8	CCES 2010 Module	Include gender in anti-discrimination laws
sta303_1	CCES 2010 Module	Universal healthcare
sta303_2	CCES 2010 Module	Expand tax-free medical savings accounts
sta303_3	CCES 2010 Module	Allow importation of prescription drugs
sta303_4	CCES 2010 Module	Expand Medicare prescription drug coverage
sta303_5	CCES 2010 Module	Tax credits to offset insurance costs
sta303_6	CCES 2010 Module	Expand child healthcare programs
sta303_7	CCES 2010 Module	Providing healthcare is not responsibility of government
sta304a	CCES 2010 Module	Allow same-sex marriage
sta304c	CCES 2010 Module	Funding for stem cell research (existing)
sta304d	CCES 2010 Module	Funding for stem cell research (new embryos)
sta304e	CCES 2010 Module	Affirmative action for federal contractors
sta304f	CCES 2010 Module	Continue federal affirmative action programs
sta305_1	CCES 2010 Module	Private social security accounts
sta305_2	CCES 2010 Module	Increase payroll tax to ensure social security viability
sta305_3	CCES 2010 Module	Decrease benefits to retirees to ensure social security viability
sta305_4	CCES 2010 Module	Increase social security benefits with cost of living
sta305_5	CCES 2010 Module	Raise the retirement age to ensure social security viability
sta306_1	CCES 2010 Module	Require welfare recipients to work
sta306_2	CCES 2010 Module	Federal block grants for welfare
sta306_3	CCES 2010 Module	Housing assistance for welfare recipients
sta306_4	CCES 2010 Module	Abolish federal welfare programs
307a	CCES 2010 Module	Public health insurance option
307b	CCES 2010 Module	Monetary limits in malpractice lawsuits
307c	CCES 2010 Module	Require balanced federal budget
307d	CCES 2010 Module	Government funds to stimulate economy
sta312	CCES 2010 Module	Free trade agreement with Central America
sta314	CCES 2010 Module	Expand funding for stem cell research
sta315	CCES 2010 Module	Citizenship opportunity for illegal immigrants
sta317	CCES 2010 Module	Affirmative action for discriminatory companies
sta319	CCES 2010 Module	Path to citizenship or strict enforcement
sta320	CCES 2010 Module	Increase minimum wage
sta321	CCES 2010 Module	Extend capital gains tax cuts
sta322	CCES 2010 Module	Amendment banning gay marriage
sta360a	CCES 2010 Module	Eliminate the minimum wage
sta360b	CCES 2010 Module	Government guarantee standard of living
sta360c	CCES 2010 Module	No taxes for low-income families
sta360d	CCES 2010 Module	Prohibit incomes above \$1 million
sta360e	CCES 2010 Module	Eliminate food subsidies for children
sta360f	CCES 2010 Module	Tax rate the same for rich and poor
sta360g	CCES 2010 Module	No government assistance for low-income
sta360h	CCES 2010 Module	Government should provide universal jobs
sta360i	CCES 2010 Module	Rich should pay higher tax rate than poor
sta360j	CCES 2010 Module	Minimum wage should be \$15/hour
sta361a	CCES 2010 Module	Ban some high-fat foods from restaurants
sta361b	CCES 2010 Module	Government standards for prescription drugs

Survey Text D.1 Continued from previous page

Variable	Survey	Question Text
sta361c	CCES 2010 Module	All public buildings accessible to handicapped
sta361d	CCES 2010 Module	Government-enforced nutrition standards
sta361e	CCES 2010 Module	No limits on pollution from businesses
sta361f	CCES 2010 Module	Government-enforced advertising standards
sta361g	CCES 2010 Module	All motorcyclists required to wear helmets
sta361h	CCES 2010 Module	Ban sale of energy-inefficient appliances
sta361j	CCES 2010 Module	Privatize the Post Office
sta361k	CCES 2010 Module	Military burden shifted to private contractors
sta361l	CCES 2010 Module	Government takeover of bad companies
sta361m	CCES 2010 Module	Require power plants to reduce emissions
sta361n	CCES 2010 Module	Require residential carbon monoxide detectors
sta362a	CCES 2010 Module	Hold BP executives liable for oil spill
sta362b	CCES 2010 Module	Require public schools to teach creationism
sta362c	CCES 2010 Module	Limit ATM fees to \$1
sta362d	CCES 2010 Module	Eliminate Environmental Protection Agency
sta362e	CCES 2010 Module	Deport all illegal immigrants
sta362f	CCES 2010 Module	Grant all illegal immigrants citizenship
sta362g	CCES 2010 Module	End subsidies for green energy
sta362h	CCES 2010 Module	Government-funded high-speed railroad
sta362i	CCES 2010 Module	Felons should have right to vote
sta362j	CCES 2010 Module	Prohibit construction of 9-11 site mosque
sta362k	CCES 2010 Module	Ban late-term abortion procedures
sta370a	CCES 2010 Module	Require business-provided health insurance
sta370b	CCES 2010 Module	Require all people buy health insurance
sta370c	CCES 2010 Module	Limit damages in malpractice lawsuits
sta370d	CCES 2010 Module	Medical experts decide which tests insured
sta370e	CCES 2010 Module	Patients pay more for "ineffective" treatments
sta370f	CCES 2010 Module	Public insurance entity for low-cost insurance
sta380a	CCES 2010 Module	Government funds to insure all children
sta380b	CCES 2010 Module	Right of patients to sue HMO
sta380c	CCES 2010 Module	Make it harder to obtain abortion
sta380d	CCES 2010 Module	Allow the death penalty for some crimes
sta380e	CCES 2010 Module	Require license to purchase handgun
sta380f	CCES 2010 Module	Allow gays to serve in military
sta380g	CCES 2010 Module	Federal law to allow school prayer
sta380h	CCES 2010 Module	Flat tax law for all Americans
sta381a	CCES 2010 Module	Eliminate regulations for businesses
sta381b	CCES 2010 Module	Protect environment/natural resources
sta401a	CCES 2010 Module	Government help insure all children
sta401b	CCES 2010 Module	Government help employers pay for insurance
sta401c	CCES 2010 Module	Eliminate the estate tax
sta401d	CCES 2010 Module	Social Security privatization
sta401e	CCES 2010 Module	Easier for labor unions to organize
sta401f	CCES 2010 Module	Federal funding for stem cell research
sta401g	CCES 2010 Module	Extend federal ban on assault weapons
sta402	CCES 2010 Module	Same-sex marriage in your state
sta403a	CCES 2010 Module	Increase the minimum wage
sta403b	CCES 2010 Module	Government reduce income inequality
sta403c	CCES 2010 Module	Government reduction of federal taxes
sta403d	CCES 2010 Module	Government vouchers for private school
sta403e	CCES 2010 Module	Amendment banning gay marriage
sta405a	CCES 2010 Module	Increase federal funding to public school
sta405b	CCES 2010 Module	Government-funded universal health care
sta406a	CCES 2010 Module	Should the government restrict immigration?
sta406b	CCES 2010 Module	Should the government restrict gun sales?
sta411c	CCES 2010 Module	Health insurance for low-income children
sta411d	CCES 2010 Module	Assist homeowners facing foreclosure
sta411e	CCES 2010 Module	Extend NAFTA to Peru & Columbia
sta411f	CCES 2010 Module	U.S. government bank bailout
sta412	CCES 2010 Module	Carbon tax to reduce emissions
sta413	CCES 2010 Module	Guaranteed universal health insurance
sta430a	CCES 2010 Module	Housing vouchers for homeless
sta430b	CCES 2010 Module	Maintain welfare-to-work requirements
sta430c	CCES 2010 Module	Provide food stamps to legal immigrants
sta430d	CCES 2010 Module	Continue Medicaid for welfare-to-work

Survey Text D.1 Continued from previous page

Variable	Survey	Question Text
sta430e	CCES 2010 Module	Federal poverty aid through religious orgs.
sta430f	CCES 2010 Module	Additional funding for state Medicaid
sta430g	CCES 2010 Module	Tax credits for businesses with childcare
sta430h	CCES 2010 Module	Federal aid for states with more immigrants
sta430i	CCES 2010 Module	Prohibit state laws denying immigrations services
sta430j	CCES 2010 Module	Increase quota for skilled immigrants
sta430k	CCES 2010 Module	Collect fingerprint data from visa applicants
sta450	CCES 2010 Module	Federal income tax level
sta451	CCES 2010 Module	Support same-sex marriage
sta460a	CCES 2010 Module	Path to citizenship for immigrants
sta460b	CCES 2010 Module	Increase border security with Mexico
sta460c	CCES 2010 Module	Drivers licenses for undocumented immigrants
cc324	CCES 2010	When should abortions be allowed?
cc325	CCES 2010	Protect environment over jobs/economy
cc326	CCES 2010	Amendment banning gay marriage
cc327	CCES 2010	Affirmative action for discriminatory companies
cc332a	CCES 2010	American Recovery & Reinvestment Act
cc332b	CCES 2010	Expand SCHIP - health care for children
cc332c	CCES 2010	Renewable energy funding, carbon caps
cc332d	CCES 2010	Require health insurance
cc332e	CCES 2010	Appoint Kagan to Supreme Court
cc332f	CCES 2010	Financial Reform Bill
cc332g	CCES 2010	End Don't Ask, Don't Tell
cc332h	CCES 2010	Overseas surveillance of foreigners
cc332i	CCES 2010	Federal funding for stem cell research
cc332j	CCES 2010	U.S. government bank bailout
cc321	CCES 2010	Belief in climate change
cc341a	CCES 2011	American Recovery & Reinvestment Act
cc341b	CCES 2011	Expand SCHIP - health care for children
cc341c	CCES 2011	Renewable energy funding, carbon caps
cc341d	CCES 2011	Require health insurance
cc341e	CCES 2011	End Don't Ask, Don't Tell
cc341f	CCES 2011	Overseas surveillance of foreigners
cc341g	CCES 2011	Federal funding for stem cell research
cc341h	CCES 2011	U.S. government bank bailout
cc354	CCES 2011	Affirmative action for discriminatory companies
cc353	CCES 2011	Amendment banning gay marriage
cc352	CCES 2011	When should abortions be allowed?
cc351_1	CCES 2011	Citizenship opportunity for illegal immigrants
cc351_2	CCES 2011	Increase patrols of U.S.-Mexico border
cc351_3	CCES 2011	Allow police to question suspected immigrants
hsu301	CCES 2011 Module	Guaranteed universal health insurance
hsu302	CCES 2011 Module	Protect right of workers to unionize
hsu303	CCES 2011 Module	Government reduce income inequality
hsu304	CCES 2011 Module	Reduce regulation of private sector
hsu305	CCES 2011 Module	Raise minimum wage to \$10
hsu306	CCES 2011 Module	Allow corporations unlimited campaign contributions
hsu310	CCES 2011 Module	Allow same-sex marriage
hsu311	CCES 2011 Module	Allow LGBT to legally form civil unions
hsu312	CCES 2011 Module	Ban or limit contraceptive use
hsu313	CCES 2011 Module	Ban sex between persons of same gender
hsu314	CCES 2011 Module	Require 24-hour waiting period for abortion
hsu320	CCES 2011 Module	Raise taxes a few hundred dollars
hsu321	CCES 2011 Module	Raise taxes on rich (\$250,000+/year)
hsu322	CCES 2011 Module	Reduce tax break for homeowners
hsu323	CCES 2011 Module	Make retirees pay for Medicare
hsu324	CCES 2011 Module	Increase capital gains taxes
hsu325	CCES 2011 Module	Increase taxes on corporations
hsu326	CCES 2011 Module	Reduce Medicaid benefits for low-income
hsu327	CCES 2011 Module	Eliminate student loan subsidies
hsu328	CCES 2011 Module	Reduce federal worker pensions
hsu329	CCES 2011 Module	Make deep cuts in defense spending
hsu330	CCES 2011 Module	Increase retirement age to 68
hsu360	CCES 2011 Module	Fine businesses that hire illegal immigrants
hsu361	CCES 2011 Module	Allow states to deport illegal immigrants

Survey Text D.1 Continued from previous page

Variable	Survey	Question Text
hsu362	CCES 2011 Module	Allow police to ask for immigration documents
hsu363	CCES 2011 Module	Deport all illegal immigrants
hsu364	CCES 2011 Module	Remove fence on border with Mexico
hsu365	CCES 2011 Module	Same treatment of Mexican & Canadian immigrants
hsu367	CCES 2011 Module	Allow states to admit immigrants
hsu370	CCES 2011 Module	Federal government should protect environment
hsu371	CCES 2011 Module	Require power plants to reduce emissions
hsu372	CCES 2011 Module	Eliminate the Environmental Protection Agency
hsu373	CCES 2011 Module	Require 10% electricity renewable statewide
hsu374	CCES 2011 Module	Require 25% electricity renewable statewide
hsu375	CCES 2011 Module	Government should protect endangered species
hsu376	CCES 2011 Module	States should set pollution limits
hsu377	CCES 2011 Module	States should keep waterways clean
hsu378	CCES 2011 Module	Support coal plant within 25 miles of home
hsu379	CCES 2011 Module	Support wind power plant within 25 miles of home
hsu380	CCES 2011 Module	Support oil/gas drilling within 25 miles of home
hsu381	CCES 2011 Module	Power plants near home should be regulated
cc350	CCES 2011	Should we take action on climate change?
ucm301	CCES 2012 Module	Guaranteed universal health insurance
ucm302	CCES 2012 Module	Protect worker right to unionize
ucm303	CCES 2012 Module	Government reduce income inequality
ucm304	CCES 2012 Module	Reduce regulation of private sector
ucm305	CCES 2012 Module	Raise the minimum wage to \$10
ucm306	CCES 2012 Module	Allow corporations unlimited campaign contributions
ucm307	CCES 2012 Module	Allow drilling in Alaskan Wildlife Refuge
ucm321	CCES 2012 Module	City should provide health benefits to same-sex partners
ucm322	CCES 2012 Module	Reduce greenhouse gas emissions in city
ucm323	CCES 2012 Module	Subsidize mass transit for low-income in city
ucm324	CCES 2012 Module	Subsidies for residential solar energy in city
ucm325	CCES 2012 Module	Ban smoking in local bars/restaurants in city
ucm326	CCES 2012 Module	Require local residents to recycle in city
ucm327	CCES 2012 Module	Reduce pension for government employees in city
ucm328	CCES 2012 Module	Tax breaks to incentivize businesses to move in city
ucm329	CCES 2012 Module	Limit how much landlords can raise rent in city
ucm330	CCES 2012 Module	Offer subsidized housing to homeless in city
ucm331	CCES 2012 Module	Eliminate tenure for school teachers in city
ucm332	CCES 2012 Module	Close city parks to save money
ucm333	CCES 2012 Module	Close city libraries to save money
ucm370	CCES 2012 Module	Require parental permission for teen abortion
ucm371	CCES 2012 Module	Require 24-hour waiting period for abortion
ucm372	CCES 2012 Module	Require photo ID to vote
ucm373	CCES 2012 Module	Legalize casino gambling in states
ucm374	CCES 2012 Module	State law capping property taxes
ucm375	CCES 2012 Module	Take away union right to bargain
ucm376	CCES 2012 Module	Allow LGBT to legally form civil unions
ucm377	CCES 2012 Module	Allow same-sex marriage
ucm378	CCES 2012 Module	In-state tuition for illegal immigrant graduates
ucm379	CCES 2012 Module	If your state opted out of Medicaid expansion
ucm380	CCES 2012 Module	Allow death penalty for convicted murderers
ucm381	CCES 2012 Module	Require waiting period for gun purchases
ucm382	CCES 2012 Module	Raise the minimum wage to \$8
ucm401	CCES 2012 Module	Set limits on CO2 emissions
ucm402	CCES 2012 Module	Require 10% electricity renewable statewide
ucm403	CCES 2012 Module	Require 25% electricity renewable statewide
ucm404	CCES 2012 Module	State gasoline tax less than \$0.25/gallon
ucm405	CCES 2012 Module	Renewable energy tax on electricity bill
ucm406	CCES 2012 Module	Require more efficient use of electricity
ucm407	CCES 2012 Module	Set limits on CO2 emissions
ucm408	CCES 2012 Module	State should prepare for climate change
cc321	CCES 2012	Should we take action on climate change?
cc324	CCES 2012	When should abortions be allowed?
cc325	CCES 2012	Protect environment over jobs/economy
cc327	CCES 2012	Affirmative action for discriminatory companies
cc326	CCES 2012	Amendment banning gay marriage
cc332a	CCES 2012	House Budget plan - cut Medicare/Medicaid

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Variable	Survey	Question Text
cc332b	CCES 2012	Simpson-Bowles plan - 15% cuts
cc332c	CCES 2012	Middle Class Tax Cut Act
cc332d	CCES 2012	Tax Hike Prevent Act
cc332e	CCES 2012	Religious exemption for birth control coverage
cc332f	CCES 2012	Free trade agreement with Korea
cc332g	CCES 2012	Repeal Affordable Care Act
cc332h	CCES 2012	Approve Keystone XL pipeline
cc332i	CCES 2012	Support ACA - required health insurance
cc332j	CCES 2012	Allow Gays in the Military
cc322_1	CCES 2012	Citizenship opportunity for illegal immigrants
cc322_2	CCES 2012	Increase patrols of U.S.-Mexico border
cc322_3	CCES 2012	Allow police to question suspected immigrants
cc322_4	CCES 2012	Fine businesses that hire illegal immigrants