**Measuring Constituent Policy Preferences in
Congress, State Legislatures and Cities**

**Online Appendix B:
Heterogeneity and Representation**

One of the primary advantages of our super-survey is that it enables us to examine the effects of

the shape of the distribution of citizens' policy preferences. For example, a frequent hypothesis

about the distribution of district preferences is that greater heterogeneity in district preferences

should weaken the link between the median voter and representatives (Bailey and Brady 1999;

Gerber and Lewis 2004). There are two commonly cited reasons for this. One is that legislators

are more responsive to their co-partisan constituents, and that in districts where co-partisans

deviate from the district median, so will the legislator. In other words, as voters become

ideologically dispersed, legislators adopt more extreme positions to mobilize their core group of

voters (Ensley 2010). Another reason, which focuses on heterogeneity *per se*, is that legislators

may have some latitude for picking their "reelection constituency," but that this will only alter

their behavior if there are a variety of such constituencies to choose from (e.g. Fiorina 1978).

Thus, greater district heterogeneity gives legislators more flexibility in their position-taking,

which enables them to stake out more extreme positions than their compatriots in more

homogeneous districts.[1]

A variety of papers have found that heterogeneity weakens the link between voters and

their legislators. At the state legislative level in Los Angeles County, Gerber and Lewis (2004)

find that greater district heterogeneity makes legislators less responsive to the median voter.

Bailey and Brady (1999) find that heterogeneity weakens representation on issues pertaining to

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[1] As Gerber and Lewis (2004) point out, it may also be the case that heterogeneity increases
electoral competition, and therefore increases representative responsiveness to the median voter.

protectionism and free trade in the Senate. Finally, Ensley (2010) and Levendusky and Pope (2010) find that legislators are more ideologically extreme in heterogeneous districts.

Several recent papers have developed rough estimates of the heterogeneity of states and congressional districts (Ensley 2010; Levendusky and Pope 2010). But these estimates are generally based on relatively small samples in each state and congressional district. Thus, they are likely to have significant measurement error. Moreover, we are not aware of any extant paper that has developed estimates of the heterogeneity of smaller geographic units, such as state legislative districts. Yet, these estimates would be very useful in a wide variety of substantive applications.

In this appendix, we use our super-survey to estimate the ideological heterogeneity of each state, congressional district, state legislative district, and many large cities. Second, we validate our estimates of the heterogeneity of states and congressional districts against estimates from Levendusky and Pope (2010). Third, we demonstrate a simple substantive application of these estimates to assess whether heterogeneity moderates representation in Congress.

A. Measuring Heterogeneity

We measure the heterogeneity of states, congressional districts, state legislative districts, and large cities using the variance, σ_m^2, in the policy preferences of citizens in each geographic constituency (m). This metric is similar to the approach taken by Ensley (2010) and Gerber and Lewis (2004). Ensley (2010) measures heterogeneity as the standard deviation of citizens' self-identified ideology (5-point scale). Gerber and Lewis (2004) measures heterogeneity as the variance in citizens' binary vote choices in local elections.

On our website, we provide our estimates of the heterogeneity of states, congressional districts, state legislative districts, and large cities.

B. Validation

We validate these estimates of the heterogeneity of each congressional district by comparing them to estimates produced by Levendusky and Pope (2010). We find our estimates of heterogeneity are correlated with Levendusky and Pope (2010)'s state-level estimates at about 0.64 and their congressional district-level estimates at approximately 0.55. Note that Levendusky and Pope's estimates are based on just 36,000 responses to the 2006 CCES survey. Therefore, they are likely to contain significant measurement error, especially at the district level. Given this high level of measurement error, we believe that these correlations provide a strong indication that our estimates are consistent with previous measures of ideological heterogeneity. However, we believe that our measures are superior to Levendusky and Pope (2010) and other previous measures since they are based on a much larger sample of citizens' preferences.