

Research Statement

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1 Introduction

My research agenda includes work in both quantitative methodology and American politics. In methodology I am broadly interested in developing and evaluating tools that researchers can apply to their own data to conduct more transparent and rigorous tests of their hypotheses. This includes research on model selection, robust regression methods, multilevel/clustered data, and the use of Monte Carlo simulation to better understand issues that arise in applied analysis. My American politics work broadly focuses on how citizens and elites view their own and each other's roles in the American political system. This includes specific interests in political representation, mass/elite linkages, public opinion, state politics, and the population ecology of interest groups. Taken together, my research offers insight into the relationship between American citizens and their elected officials using a wide range of methodological tools.

2 Dissertation Research: The Dimensions of Representation

Several generations of representation scholars show that the relationship between constituent issue opinions and elite policy behavior in American politics is not as strong as would be expected in an ideal democracy. This contrasts sharply with the observation that many legislators still have long, successful careers in office. My dissertation, *Multidimensional Democracy: The Supply and Demand of Political Representation*, sheds light on this puzzle by showing that there are more ways of providing representation to constituents than addressing policy concerns. The research centers on four unique dimensions of representation—policy, service, allocation, and descriptive—and makes the case that examining all four together is critical to understanding the concept. In the project, which is currently supported by a Doctoral Dissertation Research Improvement Grant from the National Science Foundation, I develop and test a supply-and-demand theory of representation, focusing on both citizen preferences for (demand) and legislators' priorities over (supply) those dimensions. I show that, depending on constituent demand for representation, a legislator who follows policy opinion may not actually be providing it, while one who does not focus on constituent policy views may still be highly regarded. The fundamental question of whether citizens are represented in government cannot be answered unless the type of representation they want is made clear.

The first empirical chapter examines citizen demand for representation through survey experiments administered to a sample of American adults. Beginning with the assumptions that citizens are self-interested and see government as a means of fulfilling their interests, I posit that demand for representation is driven by how citizens expect government to play a role in their lives. Building on past work, I measure these expectations through several observable characteristics: economic factors, ideology, and gender and race. For example, I hypothesize that economically-disadvantaged constituents expect government to provide more social assistance through “district-centric” representation (service and allocation), while the economically-advantaged have more at stake in policy matters, and thus prefer policy responsiveness. Results show support for the theory; I find that poor and unemployed citizens rate allocation representation as more important, while the wealthy, employed, and educated citizens rate policy representation higher. Moreover, results show that expectations about government's role also affect preferences for different legislator role orientations within certain components of representation, such as delegates versus trustees (policy) and legislators

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who bring home pork barrel funding versus securing the district's "fair share" of funding (allocation). In short, this aspect of the project demonstrates that from citizens' perspectives, representation is not just voting according to constituent policy preferences. Instead, representation means bringing government to the areas of citizens' lives where it can be most relevant and helpful. This paper is currently under review at *American Journal of Political Science*.

The second empirical chapter focuses on legislators' priorities over the four dimensions of representation. I posit that legislators emphasize the different dimensions in a strategic manner to further the goal of re-election. Given the constraints of limited resources and costs of time and energy associated with each component of representation, legislators must choose their representational focus based on perceived electoral benefits. Using data from survey experiments administered to 1,175 state legislators, I find that institutional, district, and individual-level traits alter these resources, costs, and benefits, thereby driving legislators' strategic representational behavior. For example, professional legislators, who have more time, staff, and other resources, prioritize service more highly than do citizen legislators. In contrast, those in multimember districts place less emphasis on service. I contend that the presence of additional representatives in the district provides incentive to avoid the high per-constituent cost of case work. Finally, I find evidence of a strategic element in descriptive representation. Black legislators in majority-black districts are substantially more likely to consider descriptive representation to be a part of their job compared to white legislators and even compared to other black legislators in majority-white districts. A draft of this paper is currently being revised for submission this fall.

The third and final empirical chapter also assesses legislators' representational priorities, but with data from a new archive of approximately 2,800 state legislators' websites from 2010. With help from research assistants, I am currently coding this archive to measure legislators' emphasis on the four dimensions of representation. This will produce indicators for the presence of each one, measures of which dimension is most prominently visible on the site, measures of the amount of detail for each dimension, and measures of the proportion of each site devoted to each dimension. I plan to model these outcomes with variables representing the theoretical framework outlined above: state institutions, district-level characteristics, and individual-level factors. This paper will be completed by Spring 2012.

2.1 Future Plans

To date, I have completed two of three main empirical chapters of the dissertation. I plan to defend it in March 2012. I am also planning additional projects beyond the dissertation that will involve connecting these original data sets with one another. For example, I plan to use my survey data and district demographic data to measure district-level preferences for the dimensions of representation. I will then merge those data with the legislator data sets to assess whether there are electoral consequences for "multidimensionally out-of-step" legislators—those whose representational priorities do not match constituent demand.

3 Quantitative Methodology

My research to date in methodology focuses on developing and comparing new and competing methods to provide applied researchers with practical guidance for better analyzing their own data. This includes four published articles, two papers in the "revise and resubmit" stage, and one paper currently in preparation. My specific areas of interest include model selection, robust regression methods, multilevel/clustered data, and Monte Carlo simulation.

3.1 Model Selection

Several of my published and current projects make contributions to the literature on model and estimator selection. In one set of papers, my former UNC graduate student colleague Bruce Desmarais (now Assistant Professor at the University of Massachusetts–Amherst) and I demonstrate the wide applicability of cross-validation as a means of comparing competing statistical models. Cross-validation is a general method

that uses out-of-sample prediction to evaluate models, which is beneficial because the approach guards against overfitting the model to a particular sample of data. In a forthcoming *Political Analysis* article, we use the cross-validation methodology to evaluate competing estimators of the Cox proportional hazards model (Desmarais and Harden 2012). Another article, forthcoming in *State Politics & Policy Quarterly* (Harden and Desmarais 2011), applies cross-validation to the choice between ordinary least squares (OLS) and median regression. Finally, we compare cross-validation to several other model selection tests in the context of the choice between a standard count model and zero-inflated count model in a working paper (Desmarais and Harden N.d.).

My work in model selection also includes collaborations with Ken Bollen (UNC, Sociology), Surajit Ray (Boston University, Statistics), and Jane Zavisca (University of Arizona, Sociology). A paper that is conditionally accepted (pending minor revisions) at *Sociological Methods & Research* (Bollen, Ray, Zavisca, and Harden 2012) develops two new Bayes factor approximations, and conducts a simulation-based comparison of several competing methods. We show that the new approximations provide better guidance in model selection than more common methods under a wide range of conditions. Another paper, which has been invited for revision and resubmission to *Sociological Methodology* (Bollen, Ray, Zavisca, and Harden N.d.), extends our Bayes factor approximations to structural equation models (SEM). That paper demonstrates that they considerably outperform commonly-used measures of SEM model fit. The common theme running through all of this work is the development of theoretically-sound and practical methods to help researchers make more educated model/estimator selections.

3.2 Robust Regression/Handling Outliers

My work with Bruce Desmarais has produced a secondary agenda on robust regression methods and handling outliers. In Harden and Desmarais (2011), we compare OLS, which models the conditional-mean of the dependent variable as a function of the independent variables, to median regression (MR), which models the conditional-median. We demonstrate that by building the increased chance of observing extreme values into the model's assumptions, MR performs better in the presence of outliers because it is only minimally affected by them, whereas OLS can be greatly influenced by extreme values. As noted above, we also develop a test that researchers can use to determine which estimator better fits their samples of data.

We address the problem of outliers in event history models in the *Political Analysis* article mentioned above (Desmarais and Harden 2012). That research introduces to political science a robust estimator of the Cox regression model that downweights observations whose observed durations are considerably longer than the standard Cox model predicts. We show that problems such as measurement error or omitted variables can produce these outliers, and that the robust estimator can reduce the resulting bias to the coefficient estimates compared to those of the standard Cox model. As before, we also provide a test that researchers can use to select between the two methods in analyzing their own data. The overall goal of this work on robust regression is to provide researchers with tools for addressing outliers that are more principled than common approaches, such as arbitrarily deleting observations.

3.3 Multilevel/Clustered Data

I am also interested in methods for making inferences with multilevel/clustered data. In a paper published in *State Politics & Policy Quarterly* (Harden 2011), I show that a common method for adjusting standard errors with clustered data—robust cluster standard errors—can underestimate true coefficient variability. I then demonstrate that a bootstrap method that resamples entire clusters of observations performs notably better. In an extension of this work that has been revised and resubmitted to *Statistics, Politics, and Policy* (Harden N.d.), I show that this bootstrapping method can improve inference from multilevel and generalized estimating equation models. My goals with this work are to emphasize the importance of properly accounting for the unique structure of multilevel data, and to provide researchers with better means to do so.

3.4 Monte Carlo Simulation

A key component of my methods research employs Monte Carlo simulation to evaluate competing statistical methods. Though simulation is no substitute for analytics, it can be useful in illustrating results to a wider audience, when no analytic solution is available, and in assessing the consequences of different data characteristics in more detail. For example, beyond simply stating that a given estimator is biased or inefficient, simulation can be used to assess the magnitude of that bias or inefficiency, and how it changes as a function of different conditions commonly found in actual data. Tom Carsey and I are formalizing this work in a book project, tentatively titled *Monte Carlo Simulation and Resampling Methods for Social Scientists*.

3.5 Future Plans

I also have several future projects planned as part of my methods agenda. For example, Bruce Desmarais and I are in the preliminary stages of a book project on using cross-validation in social science research. We also plan to examine other methods for model selection in future research, such as bootstrap model averaging, which incorporates uncertainty about competing specifications by using resampling to weight candidate models based on the observed data. Our central goal with this future work is the continued development of methods that help applied researchers evaluate their models of social science processes.

4 American Politics

My research to date in American politics centers primarily on political representation and the linkages between citizens and elites. This includes my dissertation, described above, and two published articles with Tom Carsey focusing on citizen preferences and policy responsiveness. I also have a secondary research agenda with Virginia Gray and Dave Lowery on the population ecology of interest groups.

4.1 Citizen Preferences and Policy Responsiveness

In a recent *State Politics & Policy Quarterly* article (Carsey and Harden 2010), Tom Carsey and I contribute to the representation literature by constructing measures of U.S. state partisan identification, self-reported ideology, and policy mood using the National Annenberg Election Survey (NAES) and Cooperative Congressional Election Study (CCES). These measures improve on existing methods for estimating state-level citizen preferences because the surveys provide larger samples without pooling across years.

Tom and I then use these measures in a forthcoming *Public Choice* article (Harden and Carsey 2011). In that work we develop and test a theory explaining how legislators balance the (sometimes) rival pressures of constituency and party based on the diversity of ideological preferences in the district. Specifically, greater heterogeneity in constituent ideology weakens the impact of the average constituency views (i.e., the median voter) on roll-call behavior while strengthening the impact of party. We show support with data from the U.S. Senate, and conclude that the relative dispersion of preferences of legislative districts helps to determine the degree to which the delegate model of representation might characterize a legislative body as opposed to a model of responsible party government.

4.2 The Population Ecology of Interest Groups

My secondary research agenda in American politics, in collaboration with Virginia Gray and Dave Lowery (among others), centers on the population ecology of interest groups in the American states. For example, a forthcoming article in *Social Science Quarterly* (Lowery, Gray, Kirkland, and Harden 2012) conducts a direct test of the “competitive exclusion” hypothesis. Using data on state Chambers of Commerce, we show that generalist organizations—those that represent a wide array of members—in heavily populated interest systems struggle to secure members and lobby on fewer issues compared to their counterparts in less densely populated ones. A current project (Lowery, Gray, Shor, and Harden N.d.) demonstrates that party polarization in state legislatures corresponds with an increase in the density of state interest communities.

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