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Policy Ideology and Local Ideological Representation in Canada

Jack Lucas[1]* (iD) and David A. Armstrong II[2]

[1]Department of Political Science, University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4, Canada and [2]Department of Political Science, Western University, London, ON N6A 5C2, Canada
*Corresponding author. E-mail: jack.lucas@ucalgary.ca

Abstract

To enable new research on local ideology and representation in Canada, we construct a latent measure of the policy ideology of 37,500 Canadian Election Study respondents using 56 policy-relevant questions and then use multilevel regression and poststratification to estimate the average ideological position of each of Canada's 338 federal electoral districts and 250 largest municipalities. We use these local ideology estimates to examine ideological representation in Canadian municipal politics. Combining our municipal ideology estimates with elite survey data from more than 900 Canadian municipal politicians, we find evidence of a strong relationship between mass and elite ideology. This relationship is consistent across differing municipal population sizes and institutional structures. We conclude with additional detail on our publicly available individual and aggregate measures and describe their potential uses for future research on ideology and representation in Canadian politics at all levels.

Résumé

Pour permettre de nouvelles recherches sur l'idéologie et la représentation locales au Canada, nous construisons une mesure latente de l'idéologie politique de 37 500 répondants de l'Étude sur l'élection canadienne à l'aide de 56 questions pertinentes, puis nous appliquons la régression multiniveau et la post-stratification pour estimer la position idéologique moyenne de chacune des 338 circonscriptions électorales fédérales et des 250 plus grandes municipalités du Canada. Nous utilisons ces estimations pour examiner la représentation idéologique dans la politique municipale canadienne ; en combinant nos estimations de l'idéologie municipale avec les données d'enquête auprès de l'élite provenant de plus de 900 politiciens municipaux canadiens, nous trouvons des preuves d'une forte relation entre l'idéologie de masse et l'idéologie d'élite. Cette relation est cohérente quelle que soit la taille de la population municipale et les structures institutionnelles. Nous concluons par des détails supplémentaires sur nos mesures individuelles et agrégées accessibles au public et décrivons leurs utilisations potentielles pour les recherches futures sur l'idéologie et la représentation dans la politique canadienne à tous les niveaux.

Keywords: ideology; Canadian politics; municipal politics; representation; measurement

Mots-clés : idéologie; politique canadienne; politique municipale; représentation; mesure

1. Introduction

In recent years, political scientists have begun to zoom in on their political maps, moving inside the classical boundaries of countries and continents to explore spatial variation at much finer scales. This new interest has both theoretical and methodological origins. Theoretically, conversations about the nationalization of political disagreement (Hopkins, 2018), place-based social identities (Cramer, 2012) and the quality of local political representation (Schaffner et al., 2020) have motivated researchers to dig deeply into the fine-grained geographies of political attitudes and preferences. Methodologically, public opinion surveys of unprecedented size, combined with new tools with which to build local public opinion estimates from national survey data, have allowed researchers to explore public opinion in previously inaccessible local geographies. Together, these theoretical motivations and methodological innovations have produced an exciting new literature on local public opinion, policy responsiveness and representation.

This emerging interest is clearly evident in Canada, where comparative municipal election studies (McGregor et al., 2016; Lucas and McGregor, 2020), neighbourhood-level voting research (Doering et al., 2020) and a renewed interest in the local determinants of federal election outcomes (Stevens et al., 2019) all illustrate a desire to explore Canadian politics at a scale below the regions and provinces that have long captured Canadian political scientists' attention. However, while Canadian researchers are leaders in large-scale survey data collection (Loewen et al., 2018; Stephenson et al., 2020), they have yet to take full advantage of the opportunities for detailed geographic analysis that these datasets provide. The raw material, in the form of large national surveys, is now available. The next step is to sculpt that material into local estimates that are useful and publicly available to the Canadian political science community.

In this article, we use 56 policy-relevant survey questions from the 2019 Canadian Election Study (CES) to build a new measure of the latent ideological position of nearly 38,000 Canadians. We then use multilevel regression and poststratification (MRP), a tool for estimating public opinion within smaller local geographies, to estimate the average ideological position of each of Canada's 338 federal electoral districts and 250 largest municipalities. While these new estimates will be valuable for a variety of purposes, they are especially helpful for scholars of municipal democracy and local representation, where local ideology estimates from public opinion data have never before been available in Canada. We combine these local estimates with novel data from surveys of more than 900 Canadian municipal politicians to explore the size and strength of ideological representation in Canadian politics for the first time.

Our aim in what follows is to make three contributions to the study of Canadian federal and local politics. First, we extend past research on ideology in Canada with a new measurement approach, and we make this measure publicly available for each 2019 CES respondent to allow other researchers to easily use the measure in their own work.[1] Second, we use this new measure to build local ideology estimates for every federal electoral district and 250 municipalities; these estimates are also publicly available for other researchers. Finally, we contribute to scholarship on urban politics and democracy by providing a first Canadian test of ideological

responsiveness—a relationship between the ideological positions of local constituents and their elected representatives—in hundreds of Canadian municipalities. We conclude by discussing how researchers might employ our individual and aggregate ideological measures in a wide variety of research on Canadian political geography and representation.

2. Local Ideology and Political Representation

While Canadian political scientists spent years debating the presence or absence of ideological disagreement in Canada's party system (Brodie and Jenson, 1988), few doubt that ideological divides now play an important role in Canadian politics. In 2015, building on both sophisticated theoretical foundations and novel methodological techniques, Christopher Cochrane's *Left and Right* provided clear evidence that Canadian politics has been ideologically structured for decades (Cochrane, 2015). The federal elections that have occurred since the publication of Cochrane's book give no indication that this ideological disagreement is diminishing.

Given the importance of ideology in contemporary Canadian politics and elections, we see two important ways that Canadian scholarship stands to benefit from recent conceptual and methodological research on ideology. First, despite Cochrane's persuasive claim that there is no single "central" commitment with which we can define left-right ideology—ideological positions are instead a complex but recognizable "family resemblance" among beliefs (Rheault and Cochrane, 2020)—many applied researchers continue to assume that a small set of survey questions reliably captures the "core" elements of an individual's ideological position. While recent developments in Bayesian measurement models now enable researchers to use a large number of indicators to allow family resemblances to emerge from relationships within the data, researchers have not yet employed these techniques in Canada. Our measurement model uses the full population of policy-relevant survey questions in the 2019 CES to measure an individual's latent ideological position while making fewer assumptions about the issue positions that are "central" to contemporary policy ideology. Moreover, as we explain in more detail below, our measurement model also enables us to communicate the uncertainty in our estimate of individuals' ideological positions, helping researchers avoid the false precision that can occur when we ignore the measurement uncertainty in the indices we construct (Treier and Jackman, 2008).

Canadian scholarship also stands to benefit from innovation in the estimation of *local* public opinion from national surveys. MRP, a technique that combines national survey data with local demographic information to produce local public opinion estimates, offers the promise of more accurate and precise local estimates than had previously been possible (Lax and Phillips, 2009; Tausanovitch and Warshaw, 2013). However, this technique has been employed very little in Canada (Briggs, 2020; Mildenberger et al., 2016) and has never been used to produce systematic, pan-Canadian ideological estimates. Local estimates of this sort have enabled important new research in other contexts (for example, Tausanovitch and Warshaw, 2014), and we believe that Canadian political scientists equally stand to benefit from the availability of similar quantities for Canadian local geographies.

2.1 Municipal ideological representation

Local public opinion estimates have been especially valuable for scholars of urban politics and representation, helping to resolve a long-standing debate about the presence and role of ideological disagreement in local elections. For years, many urban political scientists held that local elections are distinctively non-ideological, especially outside big cities, animated instead by unpredictable local controversies and assessments of the managerial competence of incumbents (Oliver, 2012). This absence of ideological disagreement in municipal elections originated, it was argued, in some combination of local socio-demographic homogeneity, the technical and non-redistributive policy domains in which municipalities legislate, and the disciplining forces of inter-municipal competition and mobile capital (Peterson, 1981).

While most scholars continue to acknowledge that municipal jurisdictional limits and inter-municipal competition do constrain municipal attempts at redistributive policy making, a large body of evidence suggests not only that ideology plays an important role in municipal vote choice (Holman and Lay, 2021; Sances, 2018) but also that there is a clear relationship between municipal residents' ideological positions and the policies that their municipalities enact (Tausanovitch and Warshaw, 2014; Einstein and Kogan, 2016). Moreover, this evidence consistently shows that ideological voting and policy responsiveness are equally apparent across municipalities of all population sizes (Sances, 2018; Schaffner et al., 2020). Canadian findings have closely resembled those in the United States, with clear evidence of ideological voting in Canadian city elections (Cutler and Matthews, 2005; McGregor, 2017; Lucas and McGregor, 2020) and aggregate evidence of partisan and ideological representation in municipalities of all population sizes and institutional types (Lucas, 2020).

Having found little evidence to support the persistent argument that municipal politics is uniquely non-ideological, urban political scientists have now turned from the question of *if* to the question of *how*—how, and in what ways, ideological disagreement shapes local elections and representation (Anzia, 2021; Warshaw, 2019). One important branch of this new research has focused on responsiveness: the relationship between the ideological complexion of local municipal publics and the policies that their governments produce (Einstein and Kogan, 2016; Sances, 2021; Tausanovitch and Warshaw, 2014). A second, more recent branch of research has explored what Schaffner et al. (2020) call "ideological congruence representation"—the relationship between constituents' attitudes and those of the politicians who represent them. This research, which grows out of a larger body of research on the ways politicians resemble (or fail to resemble) their constituents (Sheffer et al., 2018) and understand (or misunderstand) local public opinion (Broockman and Skovron, 2018), has recently been undertaken in the United States using voter file data (Schaffner et al., 2020) and in Canada using surveys of municipal political elites (Lucas, 2020).

Our analysis in this article extends this recent research by providing Canada's first direct comparison of mass and elite ideology in municipal government (in fact, it is, to our knowledge, the first direct comparison of mass and elite ideology at any level of government in Canada). We combine our MRP estimates of

Canadian municipal ideology with novel survey data on the ideological positions of more than 900 Canadian municipal politicians to understand the size and character of the relationship between politicians' ideological positions and those of their constituents. Our findings support a growing consensus on ideological representation in the urban political science literature, suggest new paths for further research on local representation and provide a practical model for the study of ideological representation at other levels of government in Canada.

2.2 A note on terminology

Before we turn to our data and methods, it is worth pausing to clarify a few key terms. Traditionally, most political scientists outside the Marxian tradition have understood *ideology* to refer to an interconnected system of beliefs and preferences about the scope, actions and priorities of government (Converse, 2006). More recently, however, scholars have emphasized that an individual's ideological self-understanding—conservative, libertarian, progressive, and so on—is also a form of social identity, one that is related to, but not necessarily determined by, their policy preferences (Kinder and Kalmoe, 2017; Mason, 2018; Stimson, 2004). As a result, most political scientists now distinguish between *symbolic ideology*, which captures the social identity component of ideological self-placement, and *operational* or *policy ideology*, which captures the structure of an individual's actual policy attitudes (Jessee, 2012). This latter concept is the quantity we seek to estimate in what follows, and in keeping with other recent work (Caughey et al., 2019), we refer to it as *policy ideology*. This term usefully distinguishes policy ideology from symbolic ideology and also serves to remind readers that our measure is fundamentally about the structure and character of Canadians' policy preferences.

3. Data and Methods

Generating accurate and reliable measures of public opinion in small geographic areas is a serious practical challenge.[2] One possible approach is to undertake large, representative public opinion surveys within many electoral districts or municipalities. While this approach has been employed in Canada for both municipal elections (McGregor, 2017) and federal elections (Loewen et al., 2018), large representative surveys of anything more than a small number of local geographies is often prohibitively expensive and practically challenging.[3] A second approach is to use available aggregate data on districts or municipalities as an indicator of public opinion; for example, Conservative party vote share might be used to indicate a city's local ideological complexion. While this approach remains useful for some purposes (see, for example, Lucas, 2020), it too suffers from important weaknesses, the most obvious of which is that the complexity of the Canadian party system makes it difficult to draw clear inferences about the policy preferences or ideological complexion of a local community on the basis of its voting patterns.

To overcome these difficulties, political scientists have developed techniques that combine large national surveys with detailed knowledge of the demographic makeup of smaller local communities to construct public opinion estimates even within quite small geographies. For the purposes of measuring local policy ideology,

this procedure involves two distinct steps. First, we need to build a model with which to measure each individual's latent ideological position from that person's stated attitudes on a large number of policy issues. We then use these ideological positions to estimate aggregate local ideology values using MRP. We now describe each of these steps in more detail, along with the data that we use in each step.

3.1 Measuring policy ideology

As we discussed above, we have two main desiderata for a measure of individual policy ideology. First, following Cochrane (2015), we would like a measure that avoids defining specific policy positions as the core elements of an individual's ideological position. Ideally, an ideology measure will capture the family resemblance character of ideological agreement, such that two individuals may disagree on any particular issue but still hold a larger set of policy attitudes that is recognizable to their allies and opponents as having a distinctly left or right character. To this end, our model relies on publicly available data from the 2019 CES (Stephenson et al., 2020), a multiwave survey of nearly 38,000 Canadians undertaken during and after the 2019 Canadian federal election. We began by identifying every policy-relevant question in the survey—defined as a question about an individual's attitude on an issue for which a government could or should take action—producing an overall list of 56 survey items. Because of the modular structure of the CES survey, the number of responses to these questions ranges from less than 1,000 to the full sample; however, our measurement model allows us to incorporate information about individual ideological positions even from questions that were answered by a small subset of the overall sample. We provide additional detail on the survey items in our measurement model, along with descriptive statistics, in the supplementary material (SM1).

Second, we would like a measure that helps us both reduce measurement error and accept the inevitable uncertainty involved in complex political-psychological phenomena—reducing measurement error by aggregating data across many survey questions (Ansolabehere et al., 2008) while also accepting measurement uncertainty by including some estimate of precision alongside the measured ideology values. To construct this measure, we fit the following Bayesian latent measurement model:

$$y_{ik} = \beta_k \xi_i + e_{ik}$$

where $y_{i,k}$ are the values for observation i on each of the k survey questions. The β_k are the coefficients relating the latent variable to the observed indicators. ξ_i is each individual's policy ideology. The indicators (detailed in the supplementary materials) are mostly (44/56) five-point Likert-type items. Of the remaining 12 items, 9 are three-point ordinal measures and 3 are binary. While some of these variables would not ordinarily be amenable to linear modelling, Kamata and Bauer (2008) have demonstrated an equivalence between traditional factor analysis and the item response theory model; moreover, our goal is to recover the latent variable rather than make inferences about the nature of the underlying relationship. For these reasons, we are comfortable using a Bayesian analog to the common factor model to estimate the latent variable of interest on standardized versions of $y_{i,k}$.

We note that our measurement model takes a unidimensional approach to policy ideology. We do so for two reasons. First, while the structure of citizens' policy attitudes is complex, past research in the United States has demonstrated that unidimensional measures can meaningfully summarize opinions even for large batteries of policy questions (Tausanovitch and Warshaw, 2014; Fowler et al., 2021). Recent studies in Canada have also demonstrated that elite discourse is clearly structured by a single left-right dimension with the sole exception of questions regarding Quebec sovereignty (Rheault and Cochrane, 2020).[4] Second, a unidimensional approach is empirically supported by CES responses themselves, which are related to one another across economic, social and immigration policy attitudes (an inter-item correlation plot and further analysis is available in supplementary material SM5); our preliminary analysis suggested that higher-dimensional solutions, including those that pre-organize survey questions into "economic" and "social" items (along the lines of Caughey and Warshaw [2018] and Caughey et al. [2019]), added complexity without meaningfully changing our findings. Thus, without denying that we have much to learn from higher-dimensional analyses, our unidimensional measure provides a useful and valid summary of the structure of Canadians' issue attitudes.

We implement our model using automatic differentiation variational inference (ADVI) (Blei et al., 2017) to find the posterior distribution of the model parameters. There are some important caveats with VI, in general, and with ADVI, in particular—namely, that strong independence assumptions are made. This makes measurement models (particularly common factor models) good candidates, as they are models that assume conditional independence. Standardizing variables removes the model intercept, leaving, at least in one dimension, a single coefficient for each indicator. These coefficients are unlikely to be highly correlated across indicator variables. We note that variational inference offers exciting possibilities for measurement of very large datasets and multidimensional latent measurement problems that would be very computationally intensive using Markov chain Monte Carlo (MCMC) sampling (Imai et al., 2016).

We assume the latent variable to have a standard normal prior and impose zero mean and unit variance in the posterior by standardizing each draw from the latent variable. This identifies the centre and scale of the latent variable distribution. This identifies the model up to a reflection, but since ADVI finds the most likely posterior mode, it will identify one side of the reflection and allow us to sample from that posterior. This could produce a result such that the coefficients and latent variable all need to be multiplied by −1 to make it substantively meaningful; for example, we could have individuals with recognizably left policy attitudes on the right side of the scale, and vice versa. In this circumstance, multiplying everything by −1 will put the observations on their appropriate side of zero. We also assume the coefficients relating the latent variable to the observed variable to have standard normal priors. The residual variances for each of the 56 indicators have half-Cauchy priors with $\beta = 1$. We ran the ADVI optimizer for 30,000 iterations, at which point the trend in the loss function evened out; we then sampled 1,500 observations from the joint posterior of all of the model parameters—latent variables, coefficients and residual variances. The results below are a function of these values.

3.2 Estimating local ideology

We use MRP to translate our individual ideological measures, described above, into aggregate local estimates. MRP can itself be divided into two substeps. First, we model individual ideology as a function of an individual's demographic characteristics (age, sex and education level), their local residence (in a municipality or a federal electoral district) and their region. We fit this model in a Bayesian multilevel setup, with varying intercepts for demographics, local community (municipality or electoral district) and region.[5] This approach allows us to pool information about demographic predictors of an individual's ideology from the full dataset while also drawing information from respondents' local contexts when sufficiently informative data are available. We thus model the ideological position of individual i as follows:

$$Y_i = \theta_0 + \alpha_{j[i]}^{age.sex.edu} + \alpha_{k[i]}^{local} + \alpha_{l[i]}^{region}$$

In this model, we assume that age-gender-education intercepts are drawn from a normal distribution with mean zero:

$$\alpha_j^{age.sex.edu} \sim \mathcal{N}(0, \sigma^2_{age.sex.edu})$$

We model intercepts for local communities—municipalities or federal electoral districts—as predicted by regional intercepts as well as a set of aggregate predictors for each municipality or district: population density, 2019 Conservative party vote share,[6] median income, proportion with university education, and proportion visible minority:

$$\alpha_k^{local} \sim \mathcal{N}(\mu_k^{local}, \sigma^2_k)$$
$$\mu_k^{local} = \alpha_{l[i]}^{region} + \gamma_1 density_k + \gamma_2 vs.con_k + \gamma_3 income_k$$
$$+ \gamma_4 educ_k + \gamma_5 race_k$$

Finally, we assume that region intercepts (British Columbia, Prairies, Ontario, Quebec and Atlantic Canada) are drawn from a normal distribution with mean zero:

$$\alpha_l^{region} \sim \mathcal{N}(0, \sigma^2_{region})$$

Using the results of this model, we predict ideology values for every possible demographic, municipal/district and regional combination, and we weight the resulting predictions on the basis of each subgroup's proportion of the overall municipal/district population. We use data from the Canadian census to construct these poststratification proportions. The result is an estimate of the average ideological position of each electoral district and municipality.[7]

We then use the model parameters to estimate municipal ideology. For each municipality (which is itself nested in a region), there will be 12 different

age-sex-education intercepts—one for each combination of age group (1 = 18–34; 2 = 35–54; 3 = 55 +), sex (1 = male; 2 = female) and education (1 = no university degree; 2 = holds university degree). From the Canadian census, we use the proportion of observations within municipality j that falls in each of the $m = \{1, \ldots, 12\}$ combinations mentioned above; call this $p_{j,m}$. For each posterior draw, we calculate ideology$_j^{(t)} = \sum_{m=1}^{12} \alpha_m^{age.sex.edu} p_{j,m} + \alpha_{l[j]}^{region} + \alpha_j^{local}$ where j is an index for municipality and $l[j]$ indicates the region into which municipality j falls. The superscript (t) indicates that this is a single draw from the posterior distribution of the ideology measure. We then summarize these posterior draws, calculating the posterior mean, standard deviation and 95 per cent credible intervals.

3.3 Municipal ideological representation

Our analysis of ideological representation in Canadian municipalities not only requires that we have an estimate of each municipality's ideological position—which we construct using the procedure described above—but also requires information on the politicians who are elected in those municipalities. We draw the latter information from the Canadian Municipal Barometer (CMB), an annual survey of mayors and councillors in every Canadian municipality above 9,000 population. We use two quantities from this dataset. First, we compare municipal ideology to politicians' symbolic ideology using ideological self-placement values from politicians who responded either to the CMB annual survey or two subsequent surveys of municipal politicians related to COVID-19, all of which contained a standard left-right self-placement question.[8] In total, we have 908 responses to this question across more than 400 municipalities.

We also compare municipal ideological values to politicians' policy ideology using a suite of policy issue questions from the 2020 CMB annual survey. We measure each politician's ideological position using a Bayesian latent variable model identical in character to the CES model described above. In the supplementary material (SM5), we provide additional detail on this model, including question wording and validation tests. To our knowledge, the results of this model represent the first latent measure of the policy ideology of Canadian politicians ever constructed in Canada and allow us to more directly compare citizens' ideological positions to local politicians' attitudes on important municipal policy issues.

4. Ideology Estimates: An Overview

Before we move to our specific analysis of municipal ideological representation in Canada, we begin with some more general analysis of our ideological estimates. These summary statistics are not only valuable to establish the face validity of the measure we have constructed but will also, we hope, be of interest to political scientists who study Canadian politics and elections at all levels of government.

To begin, Figure 1 summarizes the overall distribution of ideology values across the full CES sample. The distribution has the characteristic bimodal shape of an ideologically polarized electorate, with distinct peaks to the left and right of the
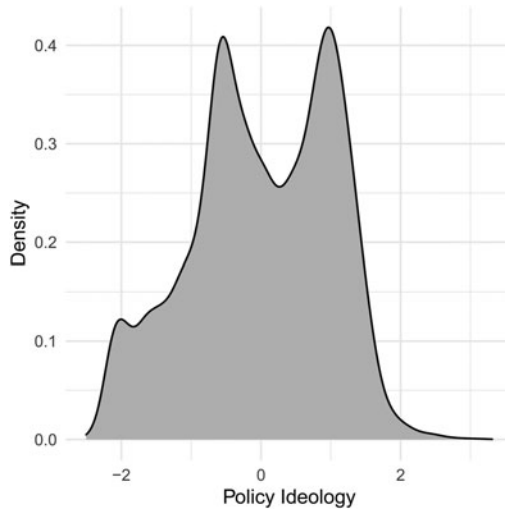
Figure 1. Policy Ideology, Overall Distribution

distribution's mean. The smaller peak on the left-hand of the distribution suggests that policy ideology in Canada may also be somewhat asymmetrical, with more homogeneity on the right than the left. The characteristics of these "strong left" individuals, and their geographic concentration within Canadian federal electoral districts, is a promising area for future research by Canadian political scientists.

4.1 Validation tests

To provide some sense of the face validity of our measure of policy ideology, we can also check that the measure is related in expected ways to other indicators. For instance, while the relationship between symbolic and operational ideology is complex, we would expect to see that policy ideology is strongly related to ideological self-placement: in the aggregate, those who place themselves on the ideological left should also be more likely to hold recognizably left-leaning policy attitudes, and vice versa. Similarly, while individual partisanship in Canada is shaped by a variety of factors, we also have some general expectations about the relationship between partisanship and policy ideology: we would expect Conservative partisans to tend rightward, and we would expect Liberal and New Democratic party (NDP) partisans to tend leftward.

Figure 2 visualizes these tests. In the left plot, we use a non-parametric smoothed line to summarize the relationship between an individual's policy ideology and their ideological self- placement; the relationship is strong, clear and in the expected direction. In the right plot, we summarize the distribution of individual policy ideology for those who identify with seven political parties, as well as non-partisans.[9] Here, too, the results confirm our expectations: Liberal and NDP partisans tend leftward, and Conservative partisans tend rightward—as do partisans of the People's party of Canada, just as we would expect. The plot also suggests interesting
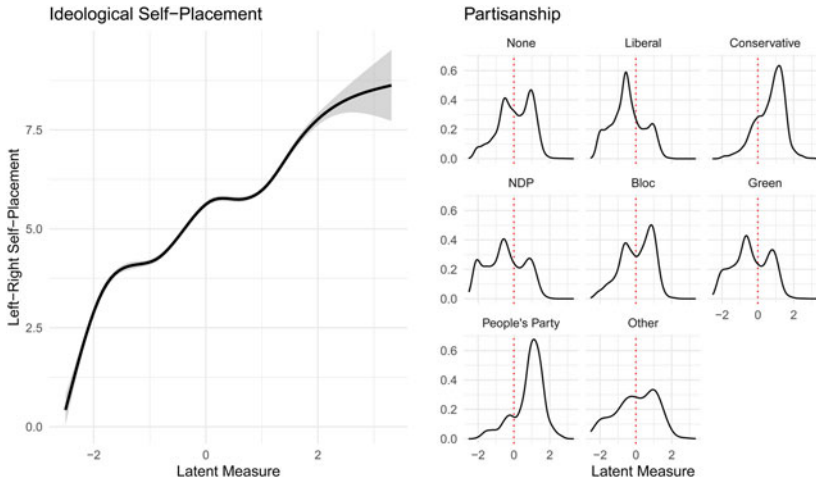
Figure 2. Policy Ideology Measure, Self-Placement (left) and Partisanship (right)

possibilities for further analysis; consider, for instance, the internal challenges faced by the NDP, whose partisans are divided among those on the extreme left, those on the moderate left, and a not-insignificant number of individuals on the moderate right. The Green party, with roots in conservationist conservatism but a recent history of firmly left policy positions, appears to face similar internal heterogeneity.

4.2 Geographic variation

Turning from overall distributions to our local ideological estimates, Figure 3 provides an overview of the average policy ideology of all non-northern federal electoral districts, with right-leaning districts in blue and left-leaning districts in red. Small urban ridings are difficult to see in the overall map (though readers who are viewing the map on a computer can zoom in to see specific regions more clearly), so we also include smaller maps of Canada's four largest metropolitan regions. The maps provide a striking summary of the overall variation in policy ideology across Canada: moderate ideological positions through much of the Maritimes and Quebec, slightly more conservatism in Ontario and British Columbia, and a marked band of deep blue stretching from southern Manitoba through to Alberta's northern boundary. Below the large map, the metropolitan maps reveal what the larger map conceals: nearly all of Canada's most strongly left-leaning districts are nestled in the central core of the country's largest urban regions. These geographic patterns align well with general expectations about Canadian political geography; in the supplementary material (SM4), we show that our MRP measure of policy ideology is strongly correlated with Conservative party vote share in both federal electoral districts and municipalities.

A second way to summarize geographic variation in district and municipal ideology is to simply plot each local community's estimated ideological position. In Figure 4, we do so for the 20 most left-leaning and right-leaning municipalities
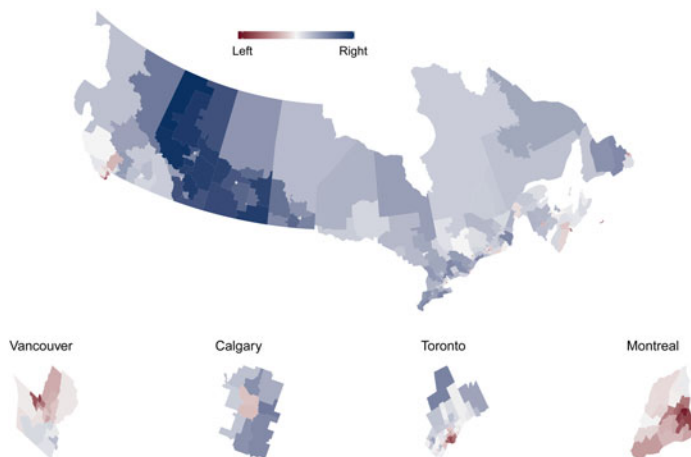
Figure 3. Geographic Variation in Policy Ideology, by Electoral District

and districts. Among the municipalities in our dataset, Alberta clearly dominates the rightward end of the distribution, with places such as Leduc, Grande Prairie and Red Deer among the most conservative. At the other end of the spectrum are big cities like Montreal and Vancouver, along with medium-sized Maritime cities such as Saint John and Fredericton and the left-leaning municipalities of southern Vancouver Island. The same general patterns are visible among federal electoral districts, with rural Alberta at the rightmost end of the spectrum, and urban districts in Montreal, Vancouver and Toronto dominating the leftmost end of the spectrum.

5. Local Ideological Representation

We now turn to our more specific research question: Do Canadian municipal representatives mirror the ideological complexion of their municipalities? In Figure 5, we plot the relationship between municipal ideology and each of our two measures of elite ideology: ideological self-placement (in the left plot) and policy ideology (in the right plot). In each case, we divide our municipalities into population terciles to test for heterogeneity across municipalities of different sizes.

Because neither our politician self-placement nor our politician policy ideology measure is identical to our measure from the CES, these data do not allow us to determine if municipal politicians are more or less conservative, on average, than their constituents. What we can say, however, is that we find a consistent, strong, positive relationship between elite and mass ideology: across municipalities of all sizes, more conservative municipalities are likely to be represented by more conservative representatives, and less conservative municipalities are likely to be represented by less conservative representatives. This relationship is positive across all municipal population sizes when comparing municipal ideology and politicians' ideological self-placement, though the relationship is somewhat weaker in the smallest municipalities. It is consistently strong across municipal population sizes
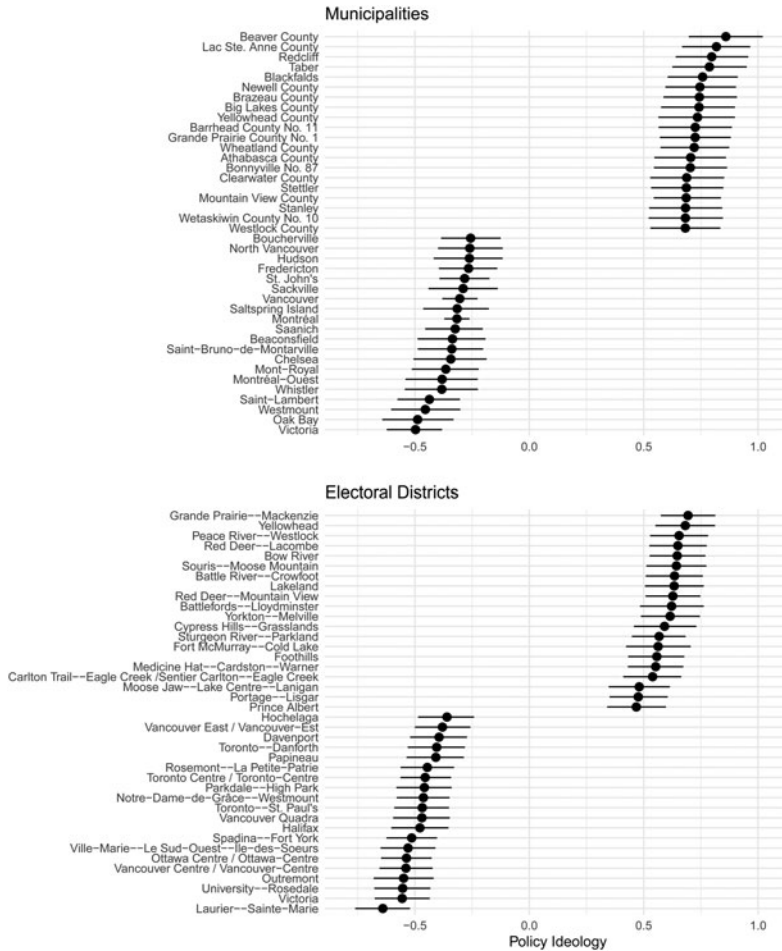
Figure 4. Highest and Lowest Ideology Values, Municipalities and Electoral Districts

in the more direct comparison of politicians' policy ideology and the policy ideology of municipal residents. Because our CES measure focuses on broad policy questions at the Canadian scale, while our measure of municipal politicians' policy ideology is focused on specifically municipal policy attitudes, our findings also demonstrate that politicians' municipal policy attitudes are related to their constituents' more general ideological positions (Anzia 2021). As in the United States, the Canadian municipal arena is clearly capable of producing aggregate ideological representation—and this ideological representation is by no means an exclusively big-city phenomenon.[10]

As we noted above, past studies of partisan and ideological representation in Canada and the United States have found a marked lack of institutional variation: to the extent that ideological representation exists (indeed, to the extent that representational bias also exists—see Schaffner et al. [2020]), it appears to be broadly consistent across local institutional structures. In Figure 6, we find that the same
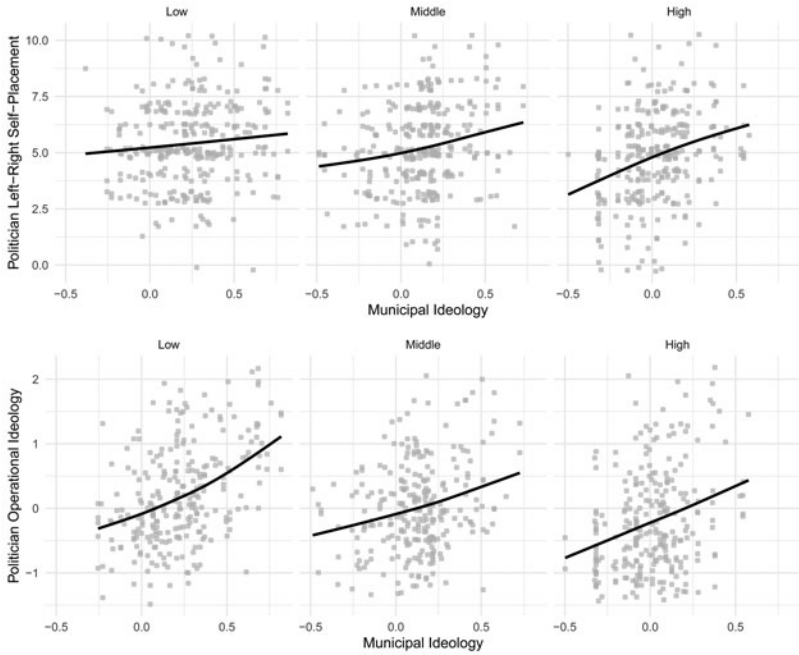
Figure 5. Municipal Policy Ideology and Municipal Politician Ideology, by Population Size
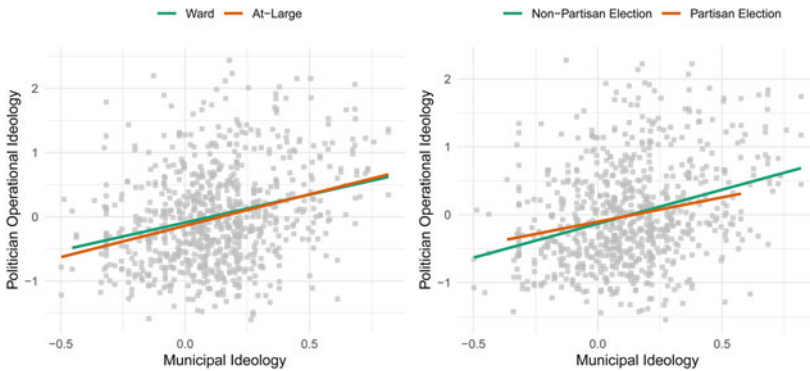

Figure 6. Municipal Ideological Representation and Local Institutions (controlling for population size)

is true for ideological representation across ward and at-large elections (left plot) and partisan and non-partisan local elections (right plot). Because both institutional characteristics vary by population size, we control for population size in both plots. Notice that the slope of the green and orange lines are similar to one another in both plots, all sloping upward at the same general rate; in both cases, the minor differences between the slopes are not statistically meaningful. Municipal ideological responsiveness does not appear to vary substantially on the basis of electoral district type or partisan versus non-partisan electoral competition.

6. Discussion and Conclusion

Using data from the 2019 CES, along with CMB surveys of municipal political elites, we have provided a first look at ideological representation in Canadian local politics. Our findings support and deepen an emerging consensus that policy ideology is a meaningful part of municipal politics in large and small municipalities and that municipal politicians' own ideological positions tend to reflect the average ideological position of their constituents. In future research, we hope to extend our analysis to consider questions of inequality in ideological representation, including underrepresentation of marginalized groups (Schaffner et al., 2020) and municipal politicians' perceptions (and misperceptions) of their constituents' positions on more specific policy issues (Broockman, 2016; Broockman and Skovron, 2018).

While our empirical analysis has focused primarily on local ideological representation, our measurement approach and estimates have the potential to inform a wide variety of Canadian research. Our estimates of policy ideology in Canadian municipalities could be matched with data on municipal spending and public policy outputs to better understand local policy responsiveness in Canada (Einstein and Kogan, 2016; Tausanovitch and Warshaw, 2014). Alternatively, ideology estimates could be matched with data from the Canadian Municipal Elections Database (Lucas et al., 2021) to understand the relationship between a municipality's ideological complexion and its electoral outcomes, such as electoral competitiveness, incumbent success rates, patterns of racial and gender candidacy, and turnout. Municipal ideology estimates could also be matched with census data to better understand how place characteristics relate to policy ideology.

Canadian politics scholars could also use our district-level ideology estimates to explore similar questions at the federal level, such as electoral competitiveness and place-based aggregate predictors of ideological variation. District-level ideology might also help to inform research on local campaign spending patterns, political party strategy and political marketing (Flanagan, 2014; Currie-Wood, 2020). The estimates could also be matched with data on elected MPs—such as parliamentary speeches (Beelen et al., 2016)—to explore the relationship between a district's ideological characteristics and its representative's policy focus, ideological speech patterns and representational style (Koop, 2018).

Finally, our policy ideology estimates may be useful for scholars who are interested in questions of individual political behaviour. Our individual-level dataset, which is also publicly available to other researchers, contains a policy ideology estimate for each respondent ID code in the 2019 CES, allowing researchers to easily merge our measure back into the main CES dataset. We hope that scholars who wish to understand the role of policy ideology in Canadian political behaviour, or even those who simply wish to include a robust policy ideology measure as a control variable in their model, will take advantage of this data source in their research.[11]

Notes

1 Our ideology estimates are publicly available at https://doi.org/10.5683/SP2/BLYP7X.

2 Our discussion here follows more detailed discussions of the challenges involved in local opinion estimation in Tausanovitch and Warshaw (2013) and Caughey et al. (2019).

3 It is practically difficult because many survey research firms are unable to provide representative samples of small geographic areas.

4 We note that our measure contains no questions on the subject of Quebec sovereignty.

5 We assume diffuse priors for all parameters and use stan, as implemented in rstanarm, to generate estimates, drawing 1,000 samples from each of four MCMC chains following a warm-up period of 1,000 iterations. Post-estimation tests provide strong evidence of model convergence; R-hat values are 1.0 for all parameters, and traceplots show clear evidence of mixing.

6 For the municipal model, we build municipal estimates of 2019 Conservative vote share using areal weighted interpolation, following the procedure described in Lucas (2020).

7 We considered several approaches to propagating the uncertainty in our latent measure through the subsequent MRP model. However, relevant simulation studies have shown that both point estimates and variances are very similar when using posterior means, as we do, in comparison to a full probability model. See Armstrong and Lucas (2021) for more information on this issue.

8 The second of these COVID-19 surveys was administered by the University of Toronto's Policy, Elections and Representation Lab as part of the Local Parliament Project.

9 Following standard practice, we define *partisans* as those who identify either "somewhat" or "very" strongly with a federal party.

10 A statistical test of the relationship, using a multilevel model with varying municipal intercepts, suggests that the relationship between mass policy ideology and both measures of elite ideology is large, robust and very unlikely to be due to chance. Because the MRP estimate is measured at the municipal level, we use a Bayesian multilevel model to test the relationship between municipal and elite ideology, with varying municipal intercepts. The relationship between municipal ideology and both measures of elite ideology is positive in well over 95 per cent of posterior draws.

11 Replication data and code for this article are available at https://doi.org/10.5683/SP2/YDA174.

References

Ansolabehere, Stephen, Jonathan Rodden and James M. Snyder, Jr. 2008. "The Strength of Issues: Using Multiple Measures to Gauge Preference Stability, Ideological Constraint, and Issue Voting." *American Political Science Review* 102 (2): 215–32. https://doi.org/10.1017/S0003055408080210.

Anzia, Sarah F. 2021. "Party and Ideology in American Local Government: An Appraisal." *Annual Review of Political Science* 24 (1): 133–50. https://doi.org/10.1146/annurev-polisci-041719-102131.

Armstrong II, David A. and Jack Lucas. 2021. "Multilevel Regression and Poststratification with Latent Variables." Working paper.

Beelen, Kaspar, Tim Alberdingk Thijm, Christopher Cochrane, Kees Halvemaan, Graeme Hirst, Mike Kimmins, Sander Librink, Maarten Marx, Nona Naderi, Ludovic Rehaut, Roman Polyanovsky and Tanya Whyte. 2016. "Digitization of the Canadian Parliamentary Debates." *Canadian Journal of Political Science* 50 (3): 849–864. https://doi.org/10.1017/S0008423916001165.

Blei, David M., Alp Kucukelbir and Jon D. McAuliffe. 2017. "Variational Inference: A Review for Statisticians." *Journal of the American Statistical Association* 112 (518): 859–77. https://doi.org/10.1080/01621459.2017.1285773.

Briggs, Ryan C. 2020. "Canadians Think That Nearly All of Us Will Be Allowed Back to Work around August." *Canadian Journal of Political Science* 53 (2): 245–51. https://doi.org/10.1017/S0008423920000487.

Brodie, Janine and Jane Jenson. 1988. *Crisis, Challenge, and Change: Party and Class in Canada Revisited.* Ottawa: Carleton University Press.

Broockman, David E. 2016. "Approaches to Studying Policy Representation." *Legislative Studies Quarterly* 41 (1): 181–215. https://doi.org/10.1111/lsq.12110.

Broockman, David E. and Christopher Skovron. 2018. "Bias in Perceptions of Public Opinion among Political Elites." *American Political Science Review* 112 (3): 542–63. https://doi.org/10.1017/S0003055418000011.

Caughey, Devin, Tom O'Grady and Christopher Warshaw. 2019. "Policy Ideology in European Mass Publics, 1981–2016." *American Political Science Review* 113 (3): 674–93. https://doi.org/10.1017/S0003055419000157.

Caughey, Devin and Christopher Warshaw. 2018. "Policy Preferences and Policy Change: Dynamic Responsiveness in the American States, 1936–2014." *American Political Science Review* 112 (2): 249–266. https://doi.org/10.1017/S0003055417000533.

Cochrane, Christopher. 2015. *Left and Right: The Small World of Political Ideas*. Montreal and Kingston: McGill-Queen's University Press.

Converse, Philip E. 2006. "The Nature of Belief Systems in Mass Publics (1964)." *Critical Review* 18 (1–3): 1–74. https://doi.org/10.1080/08913810608443650.

Cramer, Katherine. 2012. "Putting Inequality in Its Place: Rural Consciousness and the Power of Perspective." *American Political Science Review* 106 (3): 517–32. https://doi.org/10.1017/S0003055412000305.

Currie-Wood, Rob. 2020. "The National Growth of a Regional Party: Evidence of Linkages between Constituency Associations in the Conservative Party of Canada." *Canadian Journal of Political Science* 53 (3): 618–37. https://doi.org/10.1017/S0008423920000360.

Cutler, Fred and J. Scott Matthews. 2005. "The Challenge of Municipal Voting: Vancouver 2002." *Canadian Journal of Political Science* 38 (2): 359–82. https://doi.org/10.1017/S0008423905040151.

Doering, Jan, Daniel Silver and Zack Taylor. 2020. "The Spatial Articulation of Urban Political Cleavages." *Urban Affairs Review* 57 (4): 911–951. https://doi.org/10.1177%2F1078087420940789.

Einstein, Katherine Levine and Vladimir Kogan. 2016. "Pushing the City Limits: Policy Responsiveness in Municipal Government." *Urban Affairs Review* 52 (1): 3–32. https://doi.org/10.1177/1078087414568027.

Flanagan, Thomas E. 2014. *Winning Power*. Montreal and Kingston: McGill-Queen's University Press.

Fowler, Anthony, Seth Hill, Jeff Lewis, Chris Tausanovitch, Lynn Vavreck and Christopher Warshaw. 2021. "Moderates." Unpublished manuscript, August 3, 2021.

Holman, Mirya R. and J. Celeste Lay. 2021. "Are You Picking Up What I Am Laying Down? Ideology in Low-Information Elections." *Urban Affairs Review* 57 (2): 315–41. https://doi.org/10.1177/1078087420908933.

Hopkins, Daniel J. 2018. *The Increasingly United States*. Chicago: University of Chicago Press.

Imai, Kosuke, James Lo and Jonathan Olmstead. 2016. "Fast Estimation of Ideal Points with Massive Data." *American Political Science Review* 110 (4): 631–56. https://doi.org/10.1017/S000305541600037X.

Jessee, Stephen. 2012. *Ideology and Spatial Voting in American Elections*. Cambridge: Cambridge University Press.

Kamata, Akihito and Daniel J. Bauer. 2008. "A Note on the Relation between Factor Analytic and Item Response Theory Models." *Structural Equation Modeling: A Multidisciplinary Journal* 15 (1): 136–53. https://doi.org/10.1080/10705510701758406.

Kinder, Donald R. and Nathan P. Kalmoe. 2017. *Neither Liberal nor Conservative*. Chicago: University of Chicago Press.

Koop, Royce. 2018. "Electorate Size and Representational Communication in Canadian Cities." *Canadian Journal of Urban Research* 27 (2): 14–24.

Lax, Jeffrey R. and Justin H. Phillips. 2009. "How Should We Estimate Public Opinion in the States?" *American Journal of Political Science* 53 (1): 107–21. https://doi.org/10.1111/j.1540-5907.2008.00360.x.

Loewen, Peter, Daniel Rubenson and Royce Koop. 2018. "Local Parliament Project 2015 Canadian Election Survey." Harvard Dataverse, V2, UNF:6:RgMWqGIvoFYe6TOiKABAYQ== [fileUNF]. https://doi.org/doi:10.7910/DVN/DACHKP (August 3, 2021).

Lucas, Jack. 2020. "Do 'Non-Partisan' Politicians Match the Partisanship of Their Constituents?" *Urban Affairs Review*. Advance online publication. https://doi.org/10.1177/1078087420958074.

Lucas, Jack, Reed Merrill, Kelly Blidook, Sandra Breux, Laura Conrad, Gabriel Eidelman, Royce Koop, Daniella Marciano, Zack Taylor and Salomé Vallette. 2021. "Women's Municipal Electoral Performance: An Introduction to the Canadian Municipal Elections Database." *Canadian Journal of Political Science* 54 (1): 125–133. https://doi.org/10.1017/S000842392000102X.

Lucas, Jack and R. Michael McGregor. 2020. "Conclusion." In *Big City Elections in Canada*, ed. Jack Lucas and R. Michael McGregor. Toronto: University of Toronto Press.

Mason, Lilliana. 2018. *Uncivil Agreement: How Politics Became Our Identity*. Chicago: University of Chicago Press.

McGregor, R. Michael. 2017. "Voters Who Abstain: Explaining Abstention and Ballot Roll-Off in the 2014 Toronto Municipal Election." *Urban Affairs Review* **54** (6): 1081–1106. https://doi.org/10.1177%2F1078087416688960.

McGregor, R. Michael, Aaron A. Moore and Laura B. Stephenson. 2016. "Political Attitudes and Behaviour in a Non-Partisan Environment: Toronto 2014." *Canadian Journal of Political Science* **49** (2): 311–33. https://doi.org/10.1017/S0008423916000573.

Mildenberger, Matto, Peter Howe, Erick Lachapelle, Leah Stokes, Jennifer Marlon and Timothy Gravelle. 2016. "The Distribution of Climate Change Public Opinion in Canada." *PLoS ONE* **11** (8). https://doi.org/10.1371/journal.pone.0159774.

Oliver, J. Eric. 2012. *Local Elections and the Politics of Small-Scale Democracy*. Chicago: University of Chicago Press.

Peterson, Paul. 1981. *City Limits*. Chicago: University of Chicago Press.

Rheault, Ludovic and Christopher Cochrane. 2020. "Word Embeddings for the Analysis of Ideological Placement in Parliamentary Corpora." *Political Analysis* **28** (1): 112–33. https://doi.org/10.1017/pan.2019.26.

Sances, Michael W. 2018. "Ideology and Vote Choice in U.S. Mayoral Elections: Evidence from Facebook Surveys." *Political Behavior* **40** (3): 737–62. https://doi.org/10.1007/s11109-017-9420-x.

Sances, Michael W. 2021. "When Voters Matter: The Limits of Local Government Responsiveness." *Urban Affairs Review* **57** (2): 402–27. https://doi.org/10.1177/1078087419878812.

Schaffner, Brian F., Jesse H. Rhodes and Raymond J. La Raja. 2020. *Hometown Inequality: Race, Class, and Representation in American Local Politics*. Cambridge: Cambridge University Press.

Sheffer, Lior, Peter John Loewen, Stuart Soroka, Stefan Walgrave and Tamir Sheafer. 2018. "Nonrepresentative Representatives: An Experimental Study of the Decision Making of Elected Politicians." *American Political Science Review* **112** (2): 302–21. https://doi.org/10.1017/S0003055417000569.

Stephenson, Laura B, Allison Harell, Daniel Rubenson and Peter John Loewen. 2020. "2019 Canadian Election Study—Online Survey." Harvard Dataverse, V1. https://doi.org/doi:10.7910/DVN/DUS88V (August 3, 2021).

Stevens, Benjamin Allen, Md Mujahedul Islam, Roosmarijn de Geus, Jonah Goldberg, John R. McAndrews, Alex Mierke-Zatwarnicki, Peter John Loewen and Daniel Rubenson. 2019. "Local Candidate Effects in Canadian Elections." *Canadian Journal of Political Science* **52** (1): 83–96. https://doi.org/10.1017/S0008423918000367.

Stimson, James A. 2004. *Tides of Consent*. Cambridge: Cambridge University Press.

Tausanovitch, Chris and Christopher Warshaw. 2013. "Measuring Constituent Policy Preferences in Congress, State Legislatures, and Cities." *Journal of Politics* **75** (2): 330–42. https://doi.org/10.1017/S0022381613000042.

Tausanovitch, Chris and Christopher Warshaw. 2014. "Representation in Municipal Government." *American Political Science Review* **108** (3): 605–41. https://doi.org/10.1017/S0003055414000318.

Treier, Shawn and Simon Jackman. 2008. "Democracy as a Latent Variable." *American Journal of Political Science* **52** (1): 201–17. https://doi.org/10.1111/j.1540-5907.2007.00308.x.

Warshaw, Christopher. 2019. "Local Elections and Representation in the United States." *Annual Review of Political Science* **22** (1): 461–79. https://doi.org/10.1146/annurev-polisci-050317-071108.