



# Pathways to Substantive Representation: Policy Congruence and Policy Knowledge Among Canadian Local Politicians

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## Abstract

In recent years, new data and methods have reinvigorated research on two central elements of elite political behavior: politicians' *congruence with* and *knowledge of* citizens' opinions. Here, we survey over 700 elected officials in Canada to investigate and quantify the relationship between congruence (i.e. politicians' alignment with constituents' attitudes) and knowledge (i.e. politicians' accurate perception of constituents' attitudes) as pathways to substantive representation. We find that they are strongly related: congruent politicians also tend to have accurate perceptions of their constituents' opinions. Individual and contextual correlates of success on each of the two pathways are very similar, but politicians' performance varies considerably across policy issues. We discuss three main implications of our findings: congruence and perceptual accuracy as components of a single pathway to substantive representation; the need to better understand variation in congruence and perceptual accuracy across policy issues and policy-related factors; and the quality of substantive representation in contemporary democracies.

**Keywords** Representation · Congruence · Perceptual accuracy · Responsiveness

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## Introduction

How do politicians represent their citizens' policy preferences? For sixty years, political scientists have answered this question by pointing to two pathways through which public preferences are reflected in a representative's behaviour: a congruence pathway, in which citizens' views are reflected by a representative because the representative *shares* those views, and a perception pathway, in which citizens' views are reflected by a representative because the representative *knows* those views and can then act on them (Miller & Stokes, 1963). The outcome of successful representation along either pathway is assumed to be the same: politicians who produce policy in line with voter preferences.

In recent years, political scientists have reinvigorated research on both of these representational pathways, using new datasets and statistical estimation techniques to make important gains in our understanding of both congruence and knowledge among political elites (Broockman & Skovron, 2018; Eichenberger et al., 2021; Lupu & Warner, 2021; Varone & Helfer, 2021; Sevenans et al., 2021). These research agendas have generally proceeded in parallel, as the political science community worked to develop the tools with which to assess the character and quality of each of the two pathways in contemporary democratic politics. Having done so, we are now in a good position to return to a set of questions that originally animated the typology itself: are the two pathways in fact *distinct* roads to the same destination? Does representation primarily occur along the first pathway for some politicians, and the second pathway for others? Or are politicians who perform well on one pathway also strong on the other?

In this paper, we explore these questions using novel data from politicians and their constituents in hundreds of Canadian local governments. We combine data on nine policy issues from a large public opinion survey with a survey of more than 700 mayors and councillors to assess and compare the quality of both congruence and knowledge among these politicians, where congruence is defined as politicians' alignment with their constituents' preferences, and knowledge is defined as the accuracy of politicians' perception of those preferences. Using a method adapted from Miguel Pereira (2021), we compare politicians' congruence and perceptual accuracy directly. We find that congruence and knowledge are in fact strongly related: most politicians perform well on both congruence and knowledge (58%), and many of those who perform poorly do so on both pathways (22%). Fewer than one fifth of politicians (19%) do well on one pathway but not the other. Moreover, the individual and contextual correlates of weak or strong performance are very similar for both pathways, meaning that congruence and knowledge are similarly explained by the same factors. For most politicians, congruence and knowledge go hand in hand, and the presence of these qualities appears to be related less to individual characteristics than to the policy issue under consideration, which accounts for most of the variance we observe in congruence-knowledge overlap.

These findings have important implications for theories of substantive representation. Above all, they illustrate the close connection between congruence and knowledge among the active elected politicians in our study; rather than being complementary mechanisms through which policy representation is realized, in which

success on one pathway might compensate for failure on the other, we find a strong relationship between the two (Mansbridge, 2009). This suggests the need for new theoretical work on the causal processes that produce such strong convergence across pathways, the policy consequences of failures of congruence and/or knowledge, and the electoral consequences for politicians who are successful on both pathways when compared to the minority who perform well on just one. Perhaps most importantly, however, we argue that the profound variation in politicians' performance on both pathways across policy issues illustrates the need for theories of policy representation that focus less on congruence versus knowledge and more on the factors that are related to greater or lesser representational success *across* issues. We document one such factor in our analysis – the uniformity of public opinion among a politician's constituents—along with considerable variation in representational performance across issue domains. We conclude with a discussion of the implications of these findings for future research on elite behaviour, with a particular focus on the need for research designs that are equipped to examine congruence and knowledge across many policy issues and issue domains.

## Politicians and Public Opinion

In their foundational study of modern representation, Miller and Stokes (1963) describe two pathways by which citizens' preferences might be reflected in a representative's behaviour. In the first pathway, politicians reflect citizens' preferences in their legislative activity because they *agree* with their constituents' views. In the second pathway, politicians reflect citizens' preferences not necessarily because they agree, but because they are aware of their constituents' views and choose to represent them. Miller and Stokes also acknowledge that the two pathways may interact: knowledge may affect agreement if politicians, after learning citizens' attitudes, change their own positions, and agreement might affect knowledge if politicians' own views colours their perception of constituents' opinions. Empirically, Miller and Stokes document a strong correlation ( $r=0.66$ ) between agreement and knowledge among the politicians they study, which they discuss in terms of these interacting mechanisms but largely leave unexplored.

The Miller-Stokes framework continues to have an enormous influence on substantive representation research, continuing to inform both theoretical debates (Mansbridge, 2003, 2009) and empirical research (E.g. Broockman and Skovron (2018); Walgrave et al. (2023); Lupu and Warner (2021)). However, despite dozens of recent studies on each of the two pathways in the Miller-Stokes framework, one important theoretical question has generally been neglected: the relationship between the pathways. While earlier research focused on the relative strength of the two pathways – motivated in part by theories of representational roles then emerging in the political science literature (Erikson et al., 1975; Hedlund & Paul Friesema, 1972; McCrone & Kuklinski, 1979) – more recent research has tended to focus on congruence *or* knowledge as distinct quantities of interest, along with work on the mechanisms that implicitly connect congruence to knowledge: politicians' tendency to assume that their constituents share their own preferences (Pereira, 2021; Kertzer et al., 2020),

and how public opinion prompts politicians to shift their attitudes into alignment with the public (Sevenans et al., 2021; Dynes et al., 2022; Kalla & Porter, 2019; Loewen et al., 2021).

These recent studies support the original intuition articulated by Miller and Stokes that congruence and knowledge may be closely connected, rather than distinct pathways. Nevertheless, none of these studies explicitly investigates the correlation between these qualities or the distribution of ‘good’ performance on congruence and knowledge among politicians. Nor do any of these studies explore why some politicians perform well on both while others do not.

## Research Questions

In what follows, we adapt a measurement approach suggested by Pereira (2021) to enable as direct as possible a comparison of politicians’ performance on both congruence *and* knowledge. We focus on three interrelated research questions. First, and most simply, we want to understand congruence and perceptual accuracy among politicians – that is, their overall representational success on each pathway. These descriptive findings add relevant comparative data to scholarship on politicians’ congruence with and knowledge of their constituents and contribute directly to our understanding of if and how democratic representation is realized.

Second, we describe the *relationship* between congruence and perceptual accuracy. Treating each pathway separately leaves open the possibility that representational failure in one pathway can be balanced by representational success in the other; politicians might make up for their failure of congruence with more effort to understand their constituents’ preferences, or their perceptual failures may be less relevant due to their shared preferences with constituents. We use politicians’ performance on *both* congruence and perceptual accuracy across nine distinct policy issues to explicitly test the relationship between the two pathways. Across these issue domains, we compare how well politicians perform on each pathway. Because performance on each pathway can be classified as relatively ‘good’ or ‘bad’ (we explain below how we define these terms), we also assess the share of politicians who belong to the resulting four ‘types’ of pathways performance: poor congruence and poor knowledge, poor congruence and good knowledge, good congruence and poor knowledge, and good performance on both pathways. Finally, our data enable us to explore politicians’ performance on both pathways across a diverse range of issues.

We expect to find a strong correlation between congruence and knowledge; that is, we expect good congruence to go hand in hand with good knowledge. This expectation is in line with the empirical findings in Miller and Stokes’s original study, as well as more recent findings on the role of social projection in politicians’ perception of public opinion – that is, if politicians tend to project their opinions onto their constituents, then politicians who *agree* with their constituents are also more likely to perform well on knowledge tasks (Sevenans et al., 2021). This expectation is further motivated by the documented tendency of politicians to shift their own positions to be more closely in line with the public’s, once they become aware of public opinion (Sevenans et al., 2021).

Finally, we explore the *correlates* of congruence and knowledge. We pursue this analysis to provide an additional perspective on the relationship between the two pathways – if the correlates of congruence and knowledge behave similarly across the two pathways – that is, if the same individual or contextual conditions predict performance on both congruence and knowledge – this provides further evidence of a close connection between the two outcomes. To assess this possibility, we focus on the correlates outlined in Table 1: individual-level characteristics, municipal-level institutional differences, and issue-level variables. We emphasize that we include these models not so much to make definitive claims about the predictors of representational success, but rather to enable *comparison* of the correlates of congruence and perceptual accuracy as an additional test of their underlying similarity or difference as representational pathways. If the correlates of representational success are similar across the two models, this would provide additional evidence for a “single pathway” interpretation of congruence and perceptual accuracy in practice. In addition, we also evaluate in a similar fashion whether belonging to one of the four aforementioned congruence/knowledge ‘types’ - good congruence / good knowledge, good congruence / poor knowledge, etc. - is predictable by our correlates of interest. Our purpose in this analysis is to provide further nuance on how the pathways relate to one another.

The correlates in Table 1 are by no means exhaustive. However, it is notable, in our view, that our expectations about these variables from past research are quite similar across both pathways: another hint, perhaps, that the two pathways are more intimately related than the standard theoretical framework would have us believe. If the correlates of representational success are similar across the two models, this would provide additional evidence for a “single pathway” interpretation of congruence and perceptual accuracy in practice.

### **Substantive Representation in Municipal Government**

Our analysis focuses on substantive representation in local governments. In Canada, elected mayors and councillors govern more than 3,000 distinct municipalities, which range in population from dozens to millions. We focus our attention on the 450 largest municipalities in Canada, which range in population from 10,000 to 2.9 million and include some 80 percent of the Canadian population. These municipalities are directly responsible for substantial areas of policy, including land use planning, roads and bridges, public transit, and policing. Many municipal politicians represent constituencies of similar size to their provincial and federal counterparts. These are, in short, elected politicians who face similar representational challenges to their counterparts at the state/provincial or federal levels.

Given the sheer number of local governments and politicians, as well as theoretically interesting variation in population size, institutional structure, and local contexts, municipal politics has become an increasingly active site for studies of political representation and elite behaviour. These studies leverage the intersection of statistically well-powered samples and a population of subjects who face similar electoral incentives (and often decision making authority) to those at higher levels of government. Large-scale surveys of local and regional-level elected officials are frequently used to study central questions on democratic representation (e.g. Baekgaard

**Table 1** Correlates of congruence and knowledge: description and directional expectations

| Variable           | Research findings  | Expectation  |
|--------------------|--|--|
| <b>Individual</b>  |  |  |
| Elected At-Large   | At-large politicians represent the population corresponding to our local estimates; ward politicians represent specific communities (Koop and Kraemer 2016). However, recent findings suggest at-large and ward councillors' performance is quite similar (Lucas 2024; Tausanovitch and Warshaw, 2014)   | Knowledge and congruence: higher scores among at-large councillors                             |
| Ideology           | While mechanisms are not yet clear, recent studies suggest that politicians on the right perform more poorly on knowledge tests than politicians on the left (Broockman and Skovron 2018)  | Knowledge: lower scores among right-leaning politicians; Congruence: uncertain                 |
| Time in Office     | Little available research. Recently elected politicians may have been elected in competitive races, making them likely to be congruent and knowledgeable. But long-term politicians have had many opportunities to learn constituents' preferences and citizens have had multiple opportunities to select (and deselect) them                  | Knowledge and congruence: higher scores among longer-serving politicians                       |
| <b>Municipal</b>   |  |  |
| Municipal Ideology | Politicians in more left-leaning or right-leaning municipalities should have similar congruence and knowledge scores, on average. However, heterogeneity of conservative preferences (Cochrane 2013) or generally left-leaning politicians (Lucas 2014) may make knowledge and congruence more challenging in more conservative municipalities | Knowledge and congruence: uncertain  |
| Partisan Election  | Few clear partisan patterns in recent findings on knowledge and congruence (Tausanovitch and Warshaw 2014; Lucas 2024). However, politicians in partisan elections may have higher congruence and knowledge scores due to information advantages and coordination in partisan contests   | Knowledge: higher scores in partisan settings. Congruence: higher scores in partisan settings. |
| Population Size    | Homogeneity of many smaller municipalities may make congruence and knowledge easier for politicians to achieve (Mansbridge 2009). However, politicians in larger municipalities may have access to more resources on constituents' preferences   | Knowledge and congruence: uncertain  |
| <b>Issues</b>      |  |  |
| Issue Uniformity   | When issue preferences are more uniform (i.e. closer to 0% or 100% support than 50%), politicians are more likely to share those preferences and to know their constituents' preferences (Clausen et al. 1983; Sevenans 2023)  | Knowledge and congruence: higher scores in more uniform settings. Congruence: uncertain        |
| Individual Issues  | Congruence and knowledge scores vary substantially across issues (Broockman and Skovron, 2018; Esaiasson and Holmberg 1996)  | Knowledge and congruence: large and significant issue-level variation                          |

et al. (2019); Lee (2021); Öhberg and Naurin (2016)). When focusing on municipal representation, research in the United States has found good evidence of responsiveness between citizen attitudes and municipal policy outputs (Dynes et al., 2022; Einstein & Kogan, 2016; Tausanovitch & Warshaw, 2014). Across local, state, and national levels, prominent research uses similar research designs to make inferences about representational biases, representational inequality, and representational suc-

**Table 2** Overview of survey questions

| Question  | Responses | Pro-<br>por-<br>tion<br>Agree |
|---|-----------|-------------------------------|
| <b>Do you think the federal government should:</b>          |           |                               |
| Ban handguns and assault weapons                            | 10339     | 0.76                          |
| Continue with the carbon tax                                | 10339     | 0.41                          |
| Increase funding for public transit infrastructure          | 10339     | 0.68                          |
| Raise income taxes on people earning more than \$200,000    | 10339     | 0.74                          |
| Increase trade with China                                   | 10339     | 0.40                          |
| <b>Do you think your municipal government should:</b>       |           |                               |
| Encourage more immigrants to settle in your municipality    | 10339     | 0.34                          |
| Give tax breaks to businesses that move to the municipality | 10339     | 0.48                          |
| Subsidize public transit for low-income people              | 10339     | 0.73                          |
| Create stricter rules to limit urban sprawl                 | 10339     | 0.49                          |

cess in contemporary democracies (Broockman, 2016; Pereira, 2021; Schaffner et al., 2020).<sup>1</sup>

This focus on municipal political representation is valuable for at least two reasons. The first, as we have noted above, is the significance of local governments themselves. New research has shown how important local governments are for understanding broader questions of racial discrimination, representational inequality, and even the emergence of far-right politics (Fitzgerald, 2018; Schaffner et al., 2020). Second, municipal governments offer opportunities for researchers to explore questions that are often inaccessible at other levels of government. In many countries, local governments feature considerable variation in their institutional structures, both over time and across space, including partisan and non-partisan elections, district and at-large elections, and widely varying population sizes. All told, variation in socio-demographic, political-cultural, and institutional contexts is enormous. Leveraging this variation opens opportunities to explore important questions in political science about the relationships between local contexts, political institutions, and representational quality.

## Data and Methods

We use two original datasets in our analysis. The first is the Digital Democracy Project (DDP), a large survey of citizens that was collected during Canada's 2019 federal election. Table 2 summarizes the nine issue questions in the survey; notice that five are framed as federal government responsibilities, and four are framed as municipi-

<sup>1</sup>In Canada, recent studies along these lines have reinforced these studies in the USA and Europe. See Lucas (2022); Lucas and Armstrong II (2021).

pal government responsibilities. In total, we collected well over 10,000 responses to these questions, along with the necessary socio-demographic information for the municipal opinion estimation procedure described below. This was one of the largest political science surveys ever conducted in Canada, and among the largest national surveys of specifically municipal policy attitudes ever collected.<sup>2</sup>

Our second data source is the Canadian Municipal Barometer, an annual survey of elected mayors and councillors in the nearly 450 Canadian municipalities described above. For each of the nine issue questions, we asked two corresponding questions of elected representatives: the percentage of residents in the politician's municipality who would support the statement, and the politician's own position on the issue. Nearly 800 politicians completed the relevant questions in the 2020 CMB annual survey, for a response rate of 22%, a very strong response rate for a survey of political elites.<sup>3</sup> In the online supplementary material, we show that our respondents are broadly representative of the larger population of municipal politicians on observable characteristics such as gender, municipal population size, and region.

To compare politicians' perceptions and attitudes to their constituents, we need to translate our national public opinion data into local estimates. To do so, we use multilevel regression and poststratification (MRP), a well-established technique for generating local estimates from national survey samples (Lax & Phillips, 2009; Tausanovitch & Warshaw, 2013). We implement the MRP model in a fully Bayesian setting, enabling simple post-estimation calculation of uncertainty intervals for each of our estimates of issue support in each municipality. We then propagate this uncertainty through our subsequent results, which ensures that our findings are robust to underlying uncertainty about municipal-level public opinion.<sup>4</sup> We provide additional information on our MRP model in the supplementary appendix, along with a description of our procedure for incorporating measurement uncertainty in subsequent results.

Having calculated average issue positions in each municipality, we then turn our attention to the politician survey, calculating our two quantities of interest: congruence with local opinion and knowledge of local opinion. For each policy issue, congruence is coded (1) when a politician's position aligns with the majority in their municipality and (0) when it does not. Knowledge of public opinion is coded (1) when the politician correctly estimates the majority position in their municipality – that is, when their estimate is on the correct side of 50%. This quantity, first proposed and used by Pereira (2021), nicely captures the intuition that we care about

<sup>2</sup>The largest studies of municipal policy attitudes include Cann (2018), who included eleven local issues in a survey of 1,000 Americans, and Tausanovitch and Warshaw (2014), whose analysis incorporates fourteen municipal policy questions drawn from the 2012 CCES. Even in specific cities, surveys of municipal policy attitudes are rare; an important exception is Boudreau et al. (2015).

<sup>3</sup>For comparison, Broockman and Skovron (2018) report a response rate of 20.8% in an American national candidate survey, a rate they describe as "substantially higher than most elite surveys and surveys of the general public" (545). Surveys of elites in other countries report response rates that rarely exceed 20%; see, for instance, Bailer (2014); Deschouwer and Depauw (2014); Walgrave and Joly (2018). A recent study of municipal representatives by Bucchianeri et al. (2021) reported a response rate of 12%.

<sup>4</sup>See Treier and Jackman (2008) for a general discussion of the importance of incorporating measurement uncertainty in subsequent analysis.

politicians' knowledge of the majority view among their constituents. It also creates an attractive dichotomous measure of knowledge for each politician-issue that is directly comparable to congruence.<sup>5</sup>

After comparing politicians' performance on congruence and knowledge directly, we then explore the individual and contextual correlates of these quantities, with a focus on assessing similarities and differences across the two representational pathways. We use politicians' self-reported time in office as our political experience variable. We measure individual ideology using a standard left-right self-placement question. We measure each politician's district type and position (ward council, at-large council, mayor) using two questions from the survey itself, which we then manually validated using municipal websites; in total, 52% of our respondents are ward councillors, 31% are at-large councillors, and 17% are mayors.<sup>6</sup> We measure partisan local competition with a similar combination of survey questions and manual validation, with 83% of respondents competing in non-partisan elections and 17% in partisan elections. Finally, our measure of population size is the log-transformed 2016 census population for each municipality.

Because our theoretical quantity of interest is dichotomous and measured at the level of an individual politicians' alignment or knowledge on an individual policy issue, we employ a multilevel logit model with varying intercepts for each policy issue, municipal politician, and municipality. We implement this model in a Bayesian framework, enabling simple calculation of coefficients and credible intervals for both individual-level and municipality-level correlates. We also assess the correlates of belonging to the four resulting congruence/knowledge 'types' that emerge from our classification of politicians to good/bad performers on either pathway. Because we are exploring the predictors of sorting into four distinct and mutually exclusive outcomes (being a 'good congruence / good knowledge', 'good congruence / poor knowledge' type, and so on), we estimate Bayesian multilevel multinomial logit models with the types as outcomes and the same correlates described above.

Like other contemporary studies of municipal representation, our empirical analysis has several moving parts. In its essence, however, our task is simple. First, we make a best estimate of each municipality's average support for nine policy issues. We then compare these estimates to politicians' own opinions (congruence) and their perception of local opinion (knowledge). We use the resulting scores to explore how well politicians perform on the two representational pathways, the relationship between the two pathways, and, to further clarify similarities or differences between the two pathways, the individual and municipal characteristics that are correlated with representational success on each representational pathway and on politicians' combined congruence-knowledge performance types.

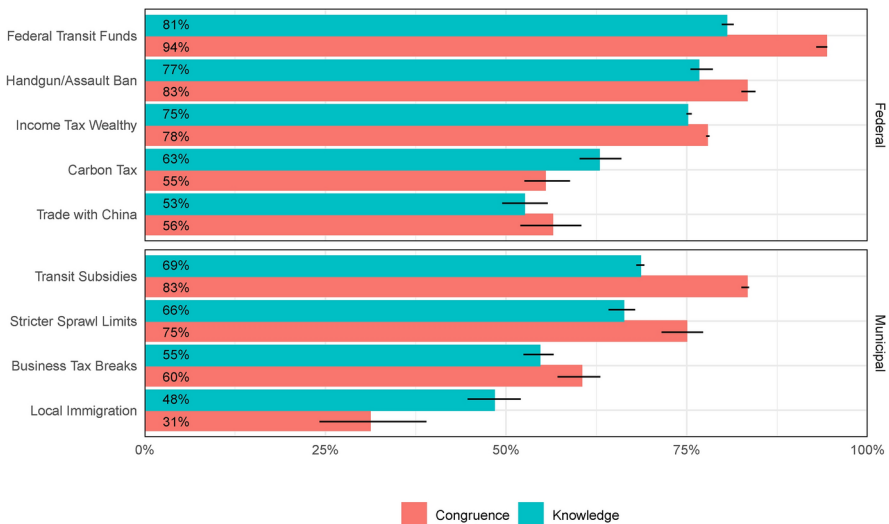
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<sup>5</sup> In the supplementary material (SM2 and SM6), we replicate our main findings using continuous rather than dichotomous measures of congruence and knowledge.

<sup>6</sup> Because we are asking questions of *municipal* rather than district opinion, some may worry that the results are unduly influenced by the inclusion of a large number of ward councillors, who may know more about ward than municipal opinion. We show in the supplementary material (SM7) that our main results are substantively identical when ward councillors are removed from the analysis.

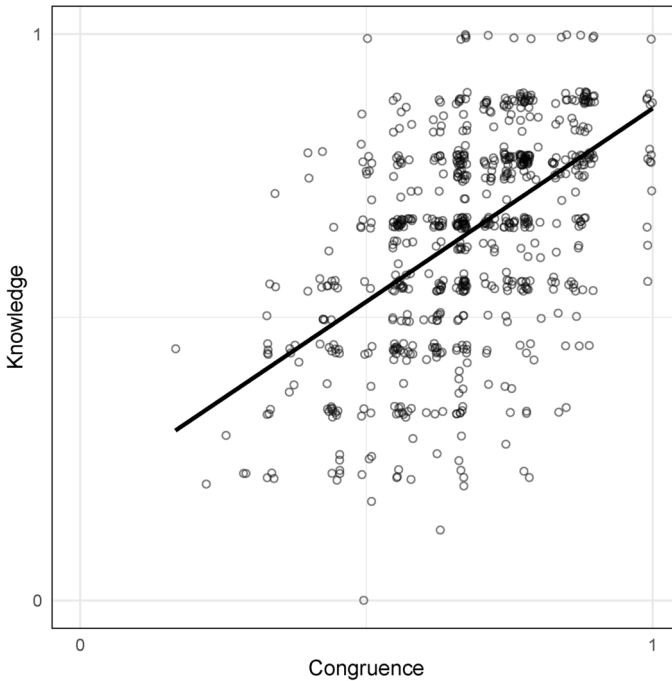
## Results

We begin with Fig. 1, which summarizes the proportion of politicians whose opinion is congruent with the majority in their municipality (red bars) and who correctly perceive the majority position in their municipality (blue bars). Error bars are 95% credible intervals for the congruence and knowledge scores for each issue after incorporating uncertainty in the municipal public opinion estimates. A few patterns are immediately clear in the figure. First, while overall congruence and perceptual accuracy is quite high – 68% for congruence and 66% for knowledge, similar to the low-70% scores among Swedish and Swiss politicians in Pereira (2021)—variation among the policy issues is striking. In some cases, such as federal transit funds, perceptual accuracy is excellent and congruence is nearly perfect, reflecting overwhelming support for federal transit funding among both politicians and the public—an easy issue for politicians to “get right”. In other cases, such as carbon taxes, trade with China, and, most strikingly, local immigrant settlement, congruence and perceptual accuracy scores are much lower. These poor scores reflect a number of potential sources of representational failure: in the case of carbon taxes, a highly contentious issue with strong views on both sides; in the case of trade with China, a much less salient issue, with more uncertain preferences among both the public and politicians; and in the case of immigration, an issue in which the general public and political elites simply disagree. Overall, what is most clear in Fig. 1 is that politicians’ performance on congruence and perceptual accuracy is far from uniform across issues.<sup>7</sup>



**Fig. 1** Congruence and Knowledge, By Issue. Politicians’ congruence scores (in red) and knowledge scores (in blue) for each issue. Horizontal axis is the percentage of politicians who align with (congruence) or know (knowledge) the majority position in their municipality. Issues sorted by level of government responsible. Whiskers are 95% credible intervals

<sup>7</sup> Approximately 20% of the variance in congruence and 7% of the variance in knowledge is explained by issues alone.

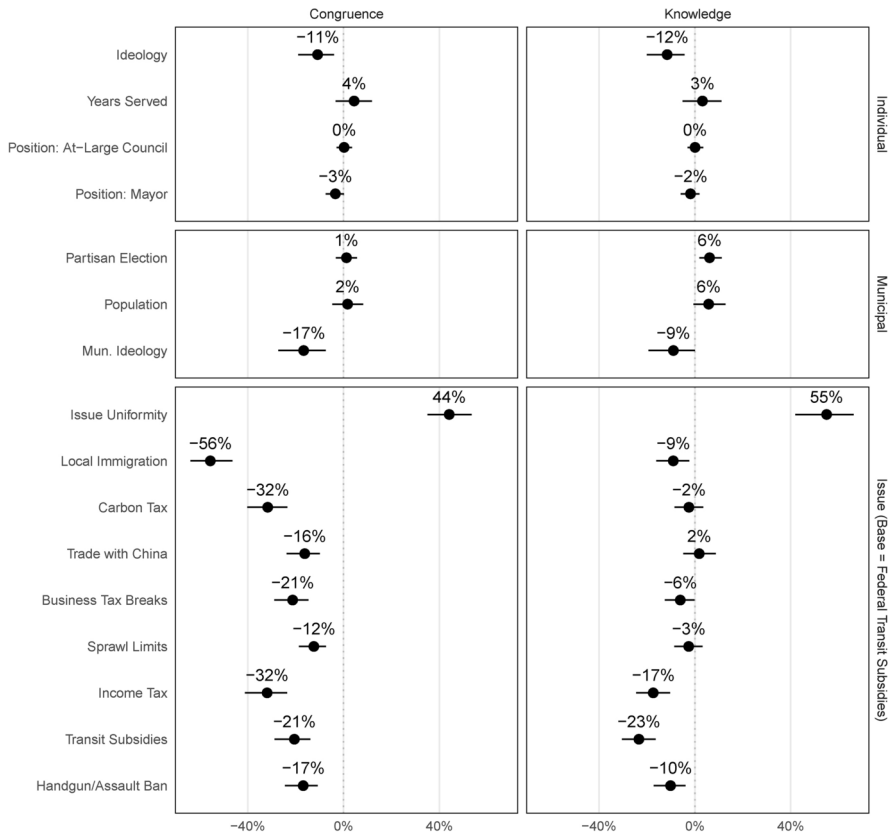


**Fig. 2** Relationship between congruence and perceptual accuracy. Politicians' congruence scores on the horizontal axis, and knowledge scores on the vertical axis. Scores rescaled to range between zero and one

One factor that is *not* strongly related to politicians' congruence and knowledge scores is our framing of the issue as federal or municipal in character. While overall scores for federal issues are slightly higher than for municipal issues, what is most obvious in Fig. 1 is the variation *within* rather than *across* levels of government. Neither the issue ownership nor the issue nationalization argument is obviously supported by these results; what matters, it would seem, is the character of the issue itself, rather than the level of government responsible for that issue.

Notice, finally, the clear relationship between congruence and knowledge in the figure: when congruence scores are strong, perceptual accuracy scores are also strong. On seven of the nine issues, politicians perform slightly better on perceptual accuracy than congruence, though the differences between the two are generally modest. In just one case, local immigrant settlement, do we see a dramatic difference between congruence and knowledge, with nearly half of politicians correct in their knowledge of constituents' attitudes, but less than a quarter congruent with those attitudes. Immigration appears to be an area of substantial disjuncture between elite and public preferences (Walgrave et al., 2023), with strong support for local immigrant settlement among municipal political elites, and considerably more hesitancy among constituents.

The results in Fig. 1 suggest that congruence and knowledge, far from being alternative pathways, are in practice strongly related to one another. Figure 2 confirms



**Fig. 3** Correlates of congruence and knowledge. Marginal effects of each variable on the probability of successful congruence (left panel) or knowledge (right panel). Marginal effects drawn from Bayesian multilevel logit models; full tables available in the Supplementary Material

this relationship by plotting each politician’s congruence and accuracy scores.<sup>8</sup> The relationship is strong, positive, and statistically significant ( $r=.48, p<.01$ ); politicians with good overall congruence scores tend to have very good perceptual accuracy scores as well. In general, politicians tend either to perform well on both congruence and knowledge (61% of politicians perform well on both pathways), or perform poorly on both (14% of politicians), with only a quarter of politicians in our sample performing well on one pathway but not the other.

Finally, Figure 3 summarizes the correlates of congruence and perceptual accuracy.<sup>9</sup> We plot each variable’s estimated marginal effect, holding other variables at their median values. All variables are rescaled to range between zero and one; each

<sup>8</sup>The scores are the proportion of each politicians’ issue positions that are congruent with their locality out of the nine issues they responded to, and the proportion of politicians’ accurate assessment of public opinion on these issues out of the nine assessments they made.

<sup>9</sup>We provide a visual summary of the bivariate relationships for each DV and correlate in the supplementary material (Figure SM.1).

effect can therefore be interpreted as the expected difference in the probability of congruence or perceptual accuracy when comparing individuals at the minimum and maximum values of the variable of interest and who are at the median values of all other variables.

For our purposes, what is most important about the results in Figure 3 is the consistency of the correlates across the two models: with just one exception (partisan elections), the coefficients are identical in direction and significance, and similar in magnitude. In neither model is politicians' years of service associated with congruence or perceptual accuracy; we thus find no support for the view that increased time in office improves performance, nor for the view that politicians become disconnected from constituents over time.

The two position coefficients, at-large councillor and mayor (with ward councillors as the base category), suggest that congruence varies little by a politician's district type or position. Ward and at-large councillors are nearly identical in congruence and knowledge – a striking finding, given that we are using municipal public opinion estimates to calculate the congruence and accuracy scores. Whatever representational gains may be associated with ward representation, they appear not to come at the cost of representational weakness for the municipality as a whole. This finding adds further weight to growing evidence that the consequences of at-large and ward representation for substantive representation are minimal (Lucas & Armstrong II, 2021; Tausanovitch & Warshaw, 2014), even if their consequences for descriptive representation or representational focus remain significant (Koop, 2016; Welch & Bledsoe, 1990).

In contrast to politicians' district type, their ideology *is* associated with both congruence and perceptual accuracy. On average, politicians at the right-wing end of the ideological self-placement spectrum are substantially less likely than those at the left-wing end of the spectrum to be either congruent with or correctly perceive their constituents. This finding aligns with past work in the United States (Broockman & Skovron, 2018; Lax et al., 2019), suggesting that the representational challenges faced by very conservative politicians may be more general than a specific jurisdictional context. In the supplementary material (SM2), we show that *all* politicians tend to perform less-well in right-leaning municipalities. Given that there are more right-wing politicians in right-wing municipalities, this helps to explain at least some of the ideological difference in performance: there is something more "difficult" about congruence and knowledge in right-wing municipalities than in left-wing municipalities. These individual and contextual ideological differences are an important priority for further research.

In neither model is municipal population size a substantively large or significant correlate of representational success. While politicians in large municipalities tend to represent a larger number of constituents, they are also supported by a more robust media environment, more generous staff support, and even, in the largest cities, occasional polling on high-profile municipal issues. Our findings support a growing consensus that, in contrast to expectations from an earlier body of scholarship (Oliver, 2012), population size is not strongly related to patterns of representation or responsiveness (Lucas & Armstrong II, 2021; Tausanovitch & Warshaw, 2014; Schaffner et al., 2020).

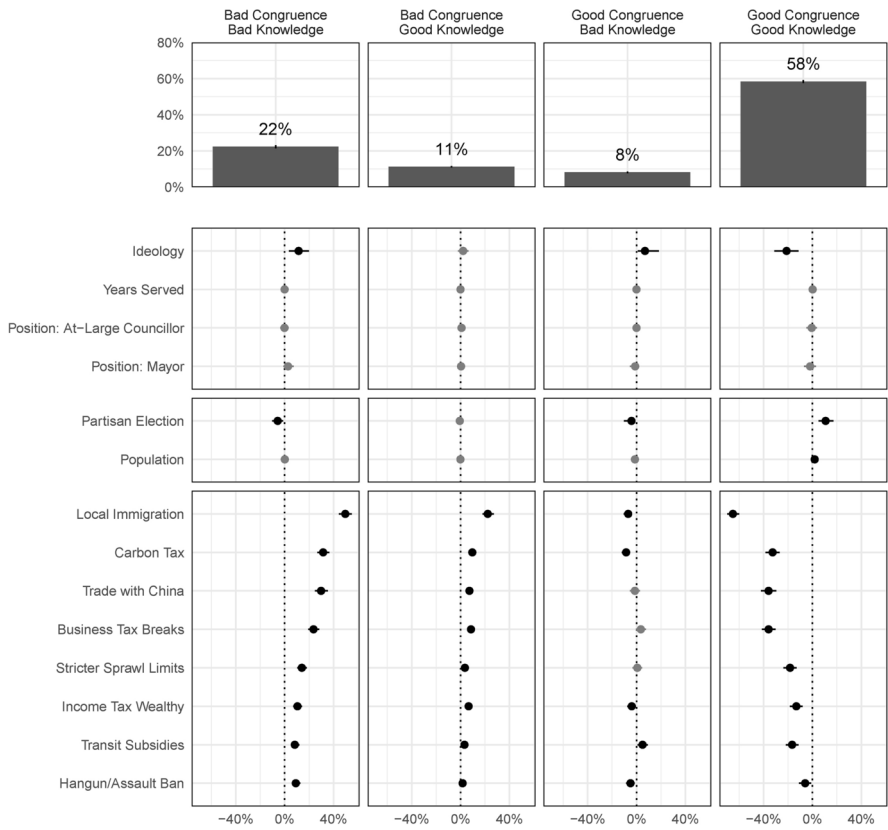
In contrast to population size, the coefficient for municipal ideology is negative and substantively large in both models. This indicates that politicians in more conservative municipalities tend to perform more poorly on both knowledge and congruence. In other words, congruence and knowledge scores tend to be stronger among politicians in more progressive municipalities regardless of the politician's own ideological self-placement. This is an important (and, to our knowledge, heretofore unnoticed) correlate of politicians' representational performance, suggesting that both pathways are more challenging for politicians in very conservative municipalities. We provide additional information on this intriguing finding in the supplementary material (see Figure SM.2).

The other variable in the "municipal" category of the model, partisan elections, is also the only variable for which we see a substantial difference in the direction or magnitude of the coefficient across the two models. Politicians elected in partisan contests are no more or less likely than non-partisan politicians to be congruent with their constituents, but they are substantially more likely to correctly perceive municipal opinion. Perhaps, as we suggested above, partisan politicians have access to more information on their constituents' policy attitudes than their non-partisan counterparts. Or perhaps there is something else about partisan municipalities – increased competitiveness, more intensive media coverage, reduced incumbency advantage – that also makes politicians more aware of their constituents' attitudes. Whatever the source of the difference, the results in Figure 3 suggest that it is very much the exception to the rule: the correlates of congruence are otherwise very similar in direction, magnitude, and significance to the correlates of perceptual accuracy.

The bottom portion of both the congruence and knowledge models reinforce our finding in Figure 1 above: there are dramatic differences among issues in congruence and perceptual accuracy. The first variable in this section – by far the single largest predictor in the model – is the uniformity of issue opinion in the politician's district. When opinion is nearly unanimous, either in opposition or support, politicians are some 46 percentage points more likely to be congruent and 56 percentage points more likely to know constituency opinion than when attitudes are evenly divided. Unsurprisingly, politicians represent public attitudes much more readily when those attitudes are clear. Even after we account for uniformity, however, Figure 3 reveals substantial differences in politicians' performance across issues.<sup>10</sup>

To further evaluate these correlates, we fit a multinomial logit model using the four congruence-knowledge combinations described above. We summarize the results of this analysis in Figure 4. In the top panel, we provide an aggregate summary of the proportion of politicians who fall into each of the four "types": those who perform well on both congruence and perceptual accuracy, those who perform poorly on both tasks, and those who perform well or poorly on one task, but not the other. For the purposes of this summary, we define "good" performance as successful congruence or knowledge for a majority the nine policy issues. In general, the figure suggests

<sup>10</sup> Comparing the marginal effect of the issues variable to each of the other variables in the model, we find that policy issues have a larger effect on the predicted probability of both congruence and perceptual accuracy than the other variables, aside from uniformity ( $p < 0.001$ ). Please see the supplementary material for more detail on this analysis.



**Fig. 4** Congruence-knowledge types and marginal effects. Top panel reports proportion of politicians who fall into each congruence-knowledge type. Bottom panels report marginal effect of each variable on the probability of belonging to each congruence-knowledge type. Marginal effects drawn from Bayesian multilevel multinomial logit models; full table available in the Supplementary Material

that politicians’ overall representational performance is strong: 58% of politicians perform well on *both* congruence and perceptual accuracy, and just 22% of politicians perform poorly in both categories. About a quarter of politicians reside in the “off-diagonal” categories, with 8% performing well in congruence, but poorly in perception, and just 11% performing well on perception, but poorly on congruence.

In the remaining panels of Figure 4, each coefficient summarizes the marginal effect of the variable on the probability that a municipal politician will belong to each congruence-knowledge type.<sup>11</sup> In keeping with the previous models, we find that membership in each of the four types is not strongly associated with most of the individual-level variables, such as tenure or seniority; however, the analysis does

<sup>11</sup>This a multinomial logit model with varying intercepts by issue, municipality, and individual politician. We extracted predicted probabilities for each group from the model and used these probabilities to calculate the marginal effects and credible intervals. We implemented the model in Stan using the brms package in R with default priors; post-estimation inspection of R-hat values showed good evidence of convergence.

reinforce the finding that ideology is related to congruence and knowledge, with right-wing politicians less likely to belong to the “good congruence, good knowledge” type. Partisan elections also increase the likelihood of belonging to the good/good type.

As before, however, it is the issue domain that most strongly conditions whether politicians do well on either representation pathway. Unsurprisingly, given the obvious variation across issues that was visible in Fig. 1, the results in the multinomial logit model confirm that politicians’ membership in the four congruence-knowledge categories varies dramatically in probability as we move across the nine policy issues.

## Discussion and Conclusion

Most empirical and normative theories of policy representation require that elected representatives accurately translate their constituents’ preferences into public policy outputs (Mansbridge, 2009; Soroka & Wlezien, 2009). Many studies, inspired by the “diamond model” proposed by Miller and Stokes (1963), assume that this is achieved either by having politicians whose positions are congruent with constituents *or* by having politicians who act on accurate knowledge of what their constituents want (Stimson et al., 1995). Our findings in this paper suggest that the two pathways to representation are much more directly connected than this standard assumption would have us believe. Using data from hundreds of Canadian politicians and local public opinion estimates on nine policy issues, we find that politicians who perform well on congruence also tend to perform well on knowledge, with just a quarter of politicians performing well on one task but not the other. Moreover, the correlates of performance on the two pathways are extremely similar to one another: the characteristics that are associated with higher performance on one task are also, in nearly every case, significantly associated with higher performance on the other task as well. The two pathways are, in short, intimately connected to one another.

These findings have important implications for theoretical debates on representation. First, the fact that politicians’ performance on the two pathways tend to overlap so strongly suggests that strong theoretical distinctions between the two – such as congruence as “trustee” or “selection” representation, and knowledge as “delegate” or “sanction” representation (Erikson et al., 1975; Mansbridge, 2009) – do not capture how policy representation plays out in practice. Provided that our findings replicate at other levels of government and in other countries – an important next step for this research – they suggest that the congruence/knowledge distinction does not map cleanly on to delegate/trustee role theory or sanction/selection models of representation. Instead, we need to develop theories of how both congruence *and* knowledge might be expected to function under sanction and selection models while also exploring the casual relationship between congruence and knowledge in empirical work. One possibility, for instance, is that citizens tend to select politicians who share their policy preferences, and those politicians build a mental picture of their constituents’ preferences primarily by projecting their own views onto their constituents, a “congruence-first” causal sequence that more directly resembles selection models of representation. Alternatively, vote-seeking politicians may be motivated to

develop accurate knowledge of their constituents' preferences, and by virtue of seeking out this knowledge and articulating it in policy debates, they may come to share their constituents' views even in areas in which they did not originally agree; this "knowledge-first" causal sequence aligns more directly with sanction or vote-seeking models of representation. Our analysis suggests that there is considerable value in thinking about congruence and knowledge not as competing or contrasting pathways to representation, but rather as interrelated parts of a complex causal sequence.

Second, our findings clearly demonstrate the role of issue domain for understanding politicians' performance on both the congruence and knowledge pathways. While this issue-based variation has turned up consistently in research on congruence and knowledge, it is strikingly under-theorized. Existing accounts point to the importance of issue ownership for perceptual accuracy (Varone & Helfer, 2021) and note that politicians are more congruent with the public on issues where their reference groups (e.g. high status individuals) are aligned with majority opinion (Pereira (2021), see also Hertel-Fernandez et al. (2019)). Yet explanations rooted in the concrete policy domains under consideration are generally lacking. We need to begin to theorize why some issues are more difficult for politicians than others, the conditions in which uniformity of public opinion improves congruence and accuracy, and perhaps even to attempt to typologize issue domains on the basis of the representational successes or failures they tend to provoke. For instance, our study suggests that immigration policy is an area of particular difficulty for contemporary politicians in our Canadian sample, but this policy domain may not be unique – perhaps there are other issue areas that cause similar difficulties, either because of their substance or because of peculiarities of the distribution of public opinion on those issues. Developing more robust theories of "easy" or "challenging" issue types, and testing these theories across a variety of issue questions and comparative contexts – including meta-analyses of past perceptual accuracy studies—is an important priority for researchers who are interested in politicians' performance as policy representatives.

Third, we have found few strong individual or institutional predictors of congruence and knowledge. These findings reinforce a curious yet consistent body of evidence about the relative unimportance of institutional and contextual differences – district type, population size, and so on —for representational success among local politicians (Lucas & Armstrong II, 2021; Tausanovitch & Warshaw, 2014). However, the literature suggests other individual-level sources of variance in representational types and capabilities—e.g. domain expertise and issue ownership, (Varone & Helfer, 2021), a predisposition towards certain reasoning biases (Hertel-Fernandez et al., 2019), or the innate disposition towards projection of one's own opinion on others (Belchior, 2014; Esaiasson et al., 2017)—and further investigation of these mechanisms will help to clarify both the sources of improved performance and their consequences for policy representation and career success.

While the institutional and contextual factors we explored here appear to play a secondary role in explaining congruence and knowledge, our results underscore the need to explore the impact of additional institutional/contextual factors that require a comparative design to assess. Extensions of our work to politicians at other levels of government and in other countries will help to clarify the circumstances in which politicians' representational performance is easier or more difficult. Of par-

ticular importance is our finding that politicians in more right-leaning communities struggle more with congruence and knowledge than politicians in more left-leaning communities. Future research should seek to replicate this finding in other contexts and to attempt to understand what it is about more conservative places—such as attitudinal heterogeneity, anti-government sentiment, more extreme policy positions, or other factors—that makes congruence and knowledge particularly challenging in those contexts.

Most generally, we have found that politicians in our sample perform well on both congruence and knowledge. But it is not yet clear where this pattern might be expected to occur. Certain institutional environments, such as ideologically or socially homogenous constituencies, might make it easier for politicians to infer their constituents' positions; on the other hand, our results are no different in small and more homogenous municipalities vs. large and heterogeneous global cities, suggesting that homogeneity may not be a critical ingredient for representational success. Similarly, being elected through party lists could make it easier for politicians who are less congruent with a broader constituency to gain office and exhibit divergent congruence/knowledge performance. Identifying and synthesizing the potential impact of these institutional differences on both congruence and knowledge could therefore produce testable predictions on where we should expect to see the two pathways for representation operating together or as complements.

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## Declarations

**Conflict of Interest** The authors have no conflicts of interest to disclose.

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