Representing Women's Policy Preferences: Evidence from Canada

Susan Franceschet, Jack Lucas, Erica Rayment

Abstract: Research on descriptive and substantive representation has not yet explored whether women officeholders have more accurate perceptions of women's policy preferences. In this study, we draw together theories of women's substantive representation and politicians' knowledge of constituent preferences to explore how shared gender affects politicians' knowledge of their constituents' policy preferences. Using original surveys of 3,750 Canadians and 867 elected politicians, we test (1) whether politicians correctly perceive gender gaps in their constituents' policy preferences and (2) whether women politicians are better at correctly identifying the policy preferences of women constituents. We find that elected representatives perform well when asked to identify the presence and direction of gender gaps in policy preferences, even on issues that are not explicitly gendered. Elected men and women perform equally well at this task.

Are citizens' policy preferences better represented by elected officials who share their gender? Theoretical and empirical research in gender and politics tends to think so, at least when it comes to women. A great deal of research has found that women legislators are more inclined to support and pursue women-friendly policies. Yet the mechanisms that link women's presence (descriptive representation) to favorable policy action (substantive representation) remain elusive. Are women officeholders better at representing women constituents because they share common interests and policy preferences? Or are women legislators more likely to know what their women constituents prefer, regardless of whether they share those preferences?

In this study, we bring together two strands of research – women's substantive representation and politicians' perceptual accuracy – to explore two questions about what elected representatives know about their constituents: are politicians aware of gender differences in policy preferences among their constituents? And are they better able to predict the policy preferences of constituents who *share* their gender? We test both questions using findings from large-scale surveys of Canadian local politicians and the Canadian public.

Disentangling the mechanisms underlying women's substantive representation is important both theoretically and practically. Theoretically, determining whether shared preferences or prior knowledge are the main source of effective substantive representation contributes to discussions about the mechanisms behind why women politicians might be better equipped to represent women constituents. On a practical level, determining whether women politicians are better than men at predicting women's policy preferences can inform strategies about how to improve women's political representation and whether the main focus ought to be on electing more women or electing representatives—men or women—who share women's policy preferences. Of course, we acknowledge that shared knowledge and preferences do not lead automatically to action. The vast literature on women in public office shows the myriad constraints on elected women who might want to pursue women-friendly policies. Despite such obstacles, it is worth exploring whether a foundational element of substantive representation, namely, knowledge of constituents' policy preferences, is shaped by gender.

Our findings suggest that elected politicians are, in the aggregate, well aware of gender gaps in policy preferences, even when issues are not explicitly gendered. Elected women do not perform better than elected men when asked to predict the policy preferences of constituents who are women – in fact, we find that both men *and* women politicians have more accurate predictions of women's policy preferences. We conclude by discussing the role of congruence (or shared policy preferences), along with gender-based stereotypes, in generating these results.

Political Representation, Knowledge, and Gender

Political scientists have long been interested in the quality of democratic representation. Gender scholars have noted the "poverty" of women's political representation (Celis and Childs 2020). Women are descriptively under-represented in nearly all the world's legislatures, and the question of whether numerical under-representation undermines women's substantive representation (promoting women's policy interests) has been a central focus of research on gender and politics (see O'Brien and Piscopo 2018). Normative theorists of representation argue that the shared experiences among those with similar ascriptive characteristics like race, gender, or socio-economic status produce valuable knowledge for politicians, making them better representatives of historically under-represented groups (Mansbridge 1999; 2003, Phillips 1995). In more recent literature on politicians' perceptual accuracy (knowledge of public preferences), empirical political scientists seek to determine whether and when politicians are able to predict their constituents' policy preferences. Below, we bring together these two literatures, outline their main findings, and use those findings to develop expectations for our study of gender and knowledge about their constituents among Canadian local politicians.

Research on politicians' knowledge of their constituents' policy preferences and research on women's substantive representation share some key features. Both are concerned with the quality of representation, whether for women specifically or all citizens. Both research traditions assume that knowledge, primarily politicians' knowledge about their constituents, is a necessary ingredient of good representation (Miller and Stokes 1963; Dovi 2007; Mansbridge 1999). In general, recent research on politicians' knowledge of public opinion finds that politicians are strongly responsive to cross-sectional variation in support – in places with higher support for a policy, politicians tend to perceive higher support – but that absolute error in their predictions is substantial, often twenty percentage points away from the true value (Broockman and Skovron 2018; Kalla and Porter 2019).

Empirical scholarship on women's substantive representation rests on a theoretical account about shared experiences as the source of common policy interests among women (Phillips 1995). Research on women in office does not test this directly, however, focusing instead on gender gaps among officeholders' policy priorities (Poggione 2004) and whether larger proportions of women in elected assemblies leads to policy gains for women (Bratton and Ray 2002; Kittilson 2008). Many scholars examine policy domains that are directly related to women's issues and gender equality, such as reproduction, maternity leave, sexual harassment, and workplace equality (Bird 2005; Childs and Withey 2004; Atchison and Down 2009; Atchison 2015). Other scholars take a broader approach, focusing on representative claims about women, regardless of the specific issue content of these claims (Celis 2007; Erzeel 2012). Several studies find that women legislators are more likely to prioritize issues related to health, social welfare, and education compared to men (Poggione 2004; Schwindt-Bayer 2006; Catalano 2009) and that larger numbers of women in elected office lead to policy gains for women (Schwindt-Bayer and Mishler 2005; Kittilson 2008). Much of this research is silent, however, on the degree to which the policy preferences of women politicians and women citizens align or whether elected women are more likely than elected men to know what women constituents want.

More recent strands of research have explored alignment between elected women and women voters. Campbell, Childs, and Lovenduski (2010) ask if sex differences in policy attitudes at the mass level are mirrored among elected officials in the United Kingdom, showing that on issues relating to gender equality and traditional gender roles, "on average men and women differ, and women representatives are more like women voters and male representatives are more like male voters" (Campbell, Childs, and Lovenduski 2010, 194). Clayton et al (2019) ask whether gender differences among parliamentarians (MPs) align with their co-gender citizens. Their study of mass-elite policy congruence in Sub-Saharan Africa reveals important gender differences among legislators when it comes to prioritizing women's rights policies and poverty amelioration (2019, 93). Fewer differences appear for those issues that are generally prioritized by citizens and representatives, for example, the economy. Overall, the authors conclude that "women are better situated to represent women citizens because they more accurately reflect their political priorities" (2019, 95).

Another strand of research that provides insights about politicians' knowledge of their constituents finds that politicians are better at predicting their constituents' policy preferences when they themselves share those preferences. In a study of politicians in Belgium, Canada,

Germany, and Switzerland, Varone and Helfer (2021) found that politicians from parties that "own" a policy issue tend to more accurately perceive support for that issue among their party's supporters, which may reflect a form of in-group knowledge. Other researchers find that politicians' knowledge of their constituents' attitudes on a policy issue is strongly related to their own preferences. Studying Swedish and Swiss politicians, Miguel Pereira (2021) found strong evidence of "social projection" in politicians' perception of public opinion, meaning that politicians tend to assume that a majority of constituents share their own view on an issue. Hertel-Fernandez et al. (2019) find that the same is true among Congressional staffers in the United States. Using data from Canadian local politicians, Lucas et al. (2022) generalize this finding to suggest that politicians' overall performance in *knowing* their constituents' preferences is closely linked with their performance in *sharing* those preferences; across nine policy issues, politicians who agree with their constituents more accurately predict their constituents' attitudes as well.

Taken together, the findings from these strands of research point in different directions. On the one hand, shared experiences and shared preferences create a foundation for greater knowledge thereby opening a pathway for substantive representation. On the other hand, we have evidence that politicians' perceptions are biased toward the views of more politically active or privileged members of society, and that misperception is especially acute when privileged citizens (e.g., wealthy, highly educated) hold views that differ from their less privileged compatriots (Pereira 2021; Sevenans et al. 2022). Since politicians themselves are more likely to be drawn from the elite, there are reasons to be skeptical that elected women necessarily share policy preferences with and thus have greater knowledge about women in their constituencies. Sharing a gender might not override difference in other ascriptive characteristics. Indeed, research on intersectionality gives us strong reason to be cautious in our expectations about whether women at the mass and elite level share sufficient experiences to shape policy preferences between racialized and white women legislators in responsiveness on a policy issue more likely to affect racialized women (Wiener 2022).

Another reason for skepticism is that previous studies have not found gender to have much effect. Although most studies of politicians' perceptual accuracy do not directly explore gender and representation, some make passing mention of gender in their analyses. Broockman and Skovron (2018) find that candidates' perceptual accuracy differs dramatically by party and modestly by other factors, such as district competitiveness and incumbent status, but that a candidate's gender is unrelated to their knowledge of public opinion. Sevenans et al. (2022) find the same; while politicians in Belgium, Canada, and Israel appear to be more responsive to men's policy priorities, this bias is present regardless of a politician's gender. In other words, women do not appear to be more accurate than men in their understanding of women's policy preferences, and indeed appear to share the same representational biases as their male colleagues.

The competing findings about whether women's policy interests are more likely to be represented by women politicians indicate that more research is needed, and, more specifically, research is needed to better understand the mechanisms of substantive representation.

Data and Methods

Motivated by past research on descriptive representation and politicians' perceptual accuracy, we designed a study that would enable us to explore if elected women are better than

elected men at predicting the policy preferences of women constituents, even on policy issues that are not explicitly gendered or widely framed as "women's issues." To test this possibility, we designed and pre-registered a study of Canadian municipal politicians' knowledge of the policy preferences of men and women, as well as older and younger residents, among their local constituents.¹

Research Design

In the first stage of our study, we conducted a survey of 3,750 Canadians in the fall of 2021 containing questions on municipal policy attitudes across a number of policy domains. Survey recruitment was carried out by Abacus Data from an existing online panel between September 30, 2021 and October 12, 2021, with sample quotas for province, language, gender, and age. Our issue position questions were adapted from past research on municipal policy attitudes in Canada and the United States and were deliberately constructed as policy tradeoffs to avoid acquiescence bias and "cheap talk" responses and more accurately measure policy preferences (Bucchianeri et al. 2021; Einstein and Glick 2018).

Having collected the survey data, we simplified all responses into a binary agree/disagree scale and selected four policy issues that were not framed as "women's issues" or explicitly gendered but which nevertheless had substantively meaningful and statistically significant gender gaps in issue support. These four issues are listed in Table 1, along with overall means and mean values among men and women respondents.²

After selecting the issues, we then designed and pre-registered our study of currently elected municipal politicians – the politicians who are most directly responsible for the issues that were included in the public opinion survey. We randomly assigned each politician a vignette describing a constituent who was either a man or a woman and either 35 or 65 years of age, and asked municipal politicians to predict how that constituent would respond to each of the four policy issue questions. We include age alongside gender in the survey vignette to provide a demographic gap to which we could compare the gender results, and to add additional information to the vignette to distract somewhat from our main variable of interest (gender). We then asked each politician for their own view on each of the four issues as well. We provide the full wording for all survey questions in the Supplementary Material (SM3).

¹ We include our pre-analysis plan in the supplementary material (beginning on p.10). We pre-registered the study on OSF Pre-Registrations on January 17, 2022, prior to accessing and analysing the data from the 2022 Canadian Municipal Barometer survey.

 $^{^2}$ All mean estimates for the public opinion data are weighted using iterative proportional fitting (or "raking") weights to match census distributions for gender, education, immigrant status, citizenship status, visible minority status, province of residence, and age category. Weights range from 0.22 to 4.4, with more than 95% of observations between 0.5 and 1.5.

Survey Questions: General Public	Ν	Agree (Overall)	Agree (Men)	Agree (Women)
Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources.	3,605	82%	78%	87%
Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality.	3,560	85%	83%	87%
It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out.	3,467	45%	53%	36%
Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services.	3,556	56%	61%	51%

Table 1 Summary of Survey Questions in Public Opinion Survey

There is of course significant diversity among women, and additional characteristics for the hypothetical constituent could have been specified in the vignette – such as race, income, or educational attainment. Our decision to include only gender and age, however, was intentional. By inviting politicians to imagine a 35- or 65-year-old woman or man in their municipality, they are left to think about a constituent with these features is *in their community*. This "imagined" constituent will be different from one municipality to the next. By specifying the constituent's age and gender, we allow our elite respondents to fill in additional detail and intersecting identities based on the demographics of their own community. A politician in a suburb outside Toronto might imagine a highly educated South Asian woman, while a politician in a small rural community in Nova Scotia might imagine a low-income white woman. In this way, our approach allows us to account for the enormous diversity in the municipalities that are included in our survey without creating hypothetical constituents who are implausible for some respondents (that is, constituents whose specific characteristics are rare, or even non-existent, in a politician's municipality).

Our elite survey data are taken from the Canadian Municipal Barometer (CMB), an annual survey of mayors and councillors in every municipality in Canada above 9,000 population. In Canada, municipal governments are responsible for a wide range of policy tasks, including transportation and transit, parks and recreation, local land use planning and regulation, policing and public safety, and public health. Municipal politicians are elected every four years; in most provinces, these elections are formally non-partisan (i.e. no party labels on the ballot), though the provincial or federal partisanship of some high-profile candidates may be well known to voters. We follow many studies in advanced democracies in leveraging data from local politicians to inform our broader understanding of political representation (e.g. Butler et al. 2017; Lee et al. 2021; Sheffer 2019).

Our questions were included in the 2022 annual survey, which was fielded from January 3 to February 28, 2022. The response rate for the 2022 survey was 23% (867 responses), a very strong response rate that is comparable to other high-quality surveys of North American political elites. In the supplementary material, we show that our sample of elected politicians is broadly

representative of population size, province, and regional distributions among the larger population of municipal politicians in Canada. Compared to the population as a whole, our sample includes slightly more women than expected (41% of the sample, compared with 35% of the population), but these additional women are helpful for the purposes of our analysis.

In summary, our pre-registered research design involved (1) collecting data from a nationally representative survey of Canadians on municipal policy attitudes that would enable us to estimate gender gaps in Canadians' issue attitudes across a number of policy domains; (2) asking politicians to predict the attitudes of men and women constituents; and then (3) assessing if politicians' gender is related to their performance in the prediction task. Our pre-analysis plan, which covered steps (2) and (3) of this design, was published at an online repository prior to the completion of the politician survey. We include the full pre-analysis plan in our supplementary material.

Outcome Variables and Correlates

We are interested in politicians' knowledge of their constituents' preferences and how that knowledge varies by both politicians' and constituents' gender. Our main outcome variable of interest is therefore a binary measure of each politician's success in predicting their constituent's agreement or disagreement with each policy issue statement. To calculate this variable, we first estimate the probability that men, women, 35-year-olds, and 65-year-olds (the four demographic groups included in the survey vignette) supports each of the four policy issues. We do so using our public opinion data. Because policy attitudes vary in Canada across regions and municipalities (Lucas and Armstrong 2021), these estimates need to incorporate not only the age and gender of survey respondents, but also differences in baseline levels of support across political geography – that is, the model needs to account for the fact that overall support for municipal action on climate change will be different in Vancouver than in rural Alberta, for example. We therefore fit a multilevel logit model of citizens' preferences for each issue, containing respondents' age and gender along with varying intercepts by municipality and region. This model allows us to measure the age and gender gaps that are central to our analysis while also incorporating information about municipal and regional variation in policy preferences. Incorporating this additional information makes for a fairer test of politicians' knowledge of their constituents' preferences.³

Using this multilevel logit model, we then calculate the predicted probability of agreement on each issue for each of the four demographic sub-groups in every municipality for which we have data from local politicians. This allows us to calculate a perceptual accuracy score for each politician, scoring politicians correct (1) if their prediction aligns with the predicted probability we have estimated, and incorrect (0) if their prediction does not align with the predicted probability. For example, if the predicted probability that a 35-year-old woman in Halifax agrees that taxes should be kept low is 65%, the politician would receive a score of one if they predicted agreement, and zero if they predicted disagreement. We also use these predicted probabilities to calculate each politician's congruence with the constituent's view. On this variable, one (1) captures cases when the politician's personal view aligns with the constituent, and zero (0) captures cases when they do not align.⁴ We included this outcome measure in our

³ See the online appendix ("Citizen Attitudes Model") for more information about this model.

⁴ We included this outcome measure in our pre-analysis plan, along with two more complex measures that incorporated the probability of agreement into politicians' correctness scores. In the supplementary material, we show that our results are substantively identical when using the alternative pre-registered outcome measures.

pre-analysis plan, along with two more complex measures that incorporated the probability of agreement into politicians' correctness scores. In the supplementary material, we show that our results are substantively identical when using the alternative pre-registered outcome measures. Overall, politicians' performance in predicting their constituent's attitudes varied substantially across issues, ranging from very good (climate change, 72% correct), to good (living wage and gentrification, 62% correct), to no better than chance (taxes and services, 49% correct).

Having calculated these scores, the remaining variables in our analysis are straightforward. We measure politicians' gender using a standard survey question with an openended response option to allow for non-binary gender identities.⁵ Two respondents to the 2022 Canadian Municipal Barometer survey indicated a non-binary gender identity. For reasons both of statistical power and individual privacy, these non-binary representatives are excluded from our analysis. We thus employ a binary variable for gender, with men coded as (0) and women coded as (1) in all models.

Results

We begin by summarizing gender and age gaps in citizens' policy preferences alongside politicians' collective perceptions of those same gender and age gaps. In Figure 1, the gray coefficients summarize the marginal effects for the general public. Each gray coefficient captures the effect of a shift from men to women (in the left panel) or a shift from 35-year-olds to 65year-olds (in the right panel) on the probability of agreement with each policy issue. Under "keep taxes low", for example, we can see that the gray marginal effect for men versus women is negative, indicating that women are less likely to agree with the statement than men. Similarly, the negative marginal effect for the same policy question in the right-hand panel indicates that older respondents were less likely to agree with this statement than younger respondents. In other words, the gray marginal effects visualize gender gaps and age gaps in support for each policy issue from the public opinion survey. Positive marginal effects indicate that women (left panel) or older respondents (right panel) were more likely to agree with the statement than men or younger respondents, and negative marginal effects indicate that women or older respondents were less likely to agree with the statement than men or younger respondents, and negative marginal effects indicate that women or older respondents were less likely to agree with the statement than men or younger respondents.

There are substantively large and statistically significant differences between men and women in support for all four issues as illustrated by the gray marginal effects in the left-hand panel. We see especially large differences on the questions about local taxes and gentrification. These gender gaps are consistently larger than the age gaps in the right-hand panel, which are statistically significant for just two of the four issues. Thus, in keeping with past research, we find meaningful differences between men and women's average support for these policy issues, with women tending to take a less conservative position on all issues: they are less supportive of tax reductions than men, more supportive of climate change initiatives, more supportive of living wages for contractors, and less supportive of gentrification.

⁵ Most individuals who use the open-ended response option fill in binary gender identities, such as "man",

[&]quot;woman", "homme", and "femme"; we manually recoded these responses into the binary variable and included them in our analysis.



Figure 1. Estimates of policy issue agreement (public opinion survey) and predictions of constituent preferences (elite survey) by gender and age. Full tables available in Supplementary Material (SM3)

Turning to politicians' knowledge of gender and age gaps, we see that politicians accurately predict gender gaps in support for these four policy issues, but are less knowledgeable about the policy preferences of different age groups. Alongside the gray marginal effects in Figure 1, the black coefficients summarize treatment effects from the elite survey experiment. We can interpret each black coefficient as the change in politicians' prediction about a constituent's support for the issue when we randomly assign politicians a woman constituent rather than a man (left panel) or an older constituent rather than a younger one (right panel). For example, on the first issue ("keep taxes low"), the black coefficient for "men vs. women" is large, statistically significant, and negative, indicating that politicians are much less likely to predict that their constituent supports the statement when the constituent is a woman than when the constituent is a man. We can therefore interpret the black coefficients as capturing the expected change in politicians' predictions about their constituents' policy attitudes when we randomly vary the gender or age of those constituents. This quantity might be thought of as politicians' collective understanding of age and gender gaps.

Comparing the black and gray coefficients for each issue in the left-hand panel in Figure 1, we can see that politicians have a remarkably good sense of gender differences in support for the four policy issues among their constituents. Politicians' expectations shift in the correct direction on all four issues, reflecting a good overall sense of gender gaps in policy preferences. In the right panel, politicians are correct in their directional estimate on two of the four issues (climate change and gentrification), modestly incorrect on one issue (living wages), and entirely incorrect on the one question (keeping taxes low).⁶ Politicians thus perform better when asked about gender gaps than age gaps – an important finding, given that generational differences in policy attitudes are an important area of discussion in contemporary politics. Most importantly

⁶ Why are they wrong on this issue? We expect that the answer may have to do with ideological heuristics; politicians may have assumed that older residents are more conservative than younger residents, and thus more supportive of low taxes. However, the question is about the tradeoff between lower taxes and decreased services, and older residents are in fact less supportive of this tradeoff.

for our purposes, however, the "collective wisdom" of elected politicians that is captured in the figure suggests that they are not only well aware that gender gaps in policy preferences *exist* among their constituents, but are also aware of the direction of those gender gaps even when the content or focus of the issues is not explicitly gendered.

Individual-Level Correlates of Predictive Accuracy

In the aggregate, politicians have a good understanding of gender gaps in public policy preferences. But do politicians perform better at this perceptual task when asked about constituents who share their gender? To answer this question, we now turn to our individual-level analysis. Table 2 summarizes the correlates of predictive accuracy among politics. The first column summarizes overall results among all politicians; the second and third columns then summarize the same relationship among women politicians (column 2) and men politicians (column 3). The remaining columns replicate the same model, but add congruence to the model – agreement between the politician and the constituent whose attitude is being predicted.

The results in Table 2 suggest that gender *is* related to politicians' perceptual accuracy, but not quite in the way we might have expected. In the first column, the relationship between shared gender and predictive accuracy is small and not statistically significant. However, this null finding hides important heterogeneity: the relationship is positive and statistically significant for women (column 2) and negative and statistically significant for men (column 3). These results indicate that both women *and* men politicians are more likely to predict their constituent's opinion when the constituent is a woman rather than a man. Put another way, all politicians in our sample – regardless of their gender – perform better when predicting women's policy preferences and worse when predicting men's preferences.

	(Original Mo	del	Wi	ith Congrue	nce
	All Pols.	Women	Men	All Pols.	Women	Men
Shared Gender	-0.01	0.09**	-0.07**	-0.02	0.04	-0.04+
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Congruence				0.37***	0.30***	0.39***
				(0.02)	(0.04)	(0.03)
Num.Obs.	2461	966	1495	2441	955	1486
Issue FEs	Yes	Yes	Yes	Yes	Yes	Yes

Table 2: Shared Gender and Predictive Accuracy

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors in parentheses.

As we discussed earlier, several studies have identified politician-constituent congruence as an important ingredient in perceptual accuracy: these studies have found that politicians are much more likely to correctly predict their constituents' opinions when they *share* those opinions. Given this past finding, our pre-analysis plan included a final analysis to understand the role of congruence as a possible mechanism for the connection between gender and predictive accuracy. We summarize this analysis in the three additional columns in Table 2. The models are identical to the earlier columns, except that we now add congruence as an additional predictor.

As expected, the relationship between congruence and predictive accuracy is extremely strong and statistically significant: when politicians share the views of the constituent whose opinion they are asked to predict, they are some 37 percentage points more likely to correctly predict the constituent's opinion. Even more important, for our purposes, is the effect of the added variable on the "Shared Gender" coefficients. Among women politicians, the coefficient is now less than half the size of the coefficient in the original analysis and no longer statistically significant. This suggests that congruence is crucially important for predictive accuracy among women politicians: a major reason that women politicians more accurately perceive women constituents' attitudes is because they are more likely to agree with those constituents. In the final column, the coefficient for shared gender has also shrunk considerably and is only marginally significant (p<0.1), suggesting that congruence plays an important role in men politicians' perceptual accuracy as well - specifically, the men politicians in our sample are more likely to agree with women in their municipalities than with men, which substantially improves their knowledge of women constituents' policy preferences.⁷ However, the lingering (if marginal) statistical significance of the "shared gender" coefficient in column 6 suggests that other factors may also be involved in men's perceptual accuracy when asked about women constituents. We return to this issue in the next section.

Discussion and Conclusion

As a group, Canadian local politicians have a very good general understanding of gender gaps in policy preferences on important and salient local policy issues. When asked to predict their constituents' preferences, politicians understand not only that men and women may differ in their policy preferences, but also correctly estimate the *direction* of those differences even on issues that are very unlikely to have been explicitly discussed in gendered terms in local policy discussions or media coverage.

At the level of individual politicians, we found an important gender component to politicians' perceptual accuracy, with both men *and* women politicians performing better when asked to predict women's preferences than men's preferences. Our additional analysis illustrated the important role of shared policy preferences as a mechanism for this predictive accuracy: when politicians *share preferences* with their constituents on policy issues, they are also more accurate in their *perception* of their constituents' attitudes. In our analysis, women's improved performance in accurately perceiving constituents' preferences appears to be due to the likelihood that they share policy preferences with those constituents.

Congruence, however, is not the only factor that accounts for politicians' ability to better predict women constituents' policy preferences. The results presented in Table 4 suggest that the men politicians in our sample continue to perform better when predicting women constituents'

⁷ Why would men politicians be more likely to agree with women constituents? We cannot fully explain this result here, but we note that it may originate in a slight leftward bias among Canadian municipal politicians, relative to their constituents. This leftward bias, combined with a gender gap in political ideology among constituents, would mean that men politicians are slightly more likely to agree with constituents who are women than with constituents who are men.

preferences even after accounting for congruence. Further research is needed to identify which other factors may be contributing to politicians' ability to correctly predict the policy preferences of women constituents as a group. The literature on gender stereotypes suggests a starting point for one potential explanation. Deeply ingrained beliefs that men are assertive, tough, and confident while women are caring, collaborative and nurturing tend to create mental shortcuts that characterize certain policy issues as masculine or feminine (Huddy and Terkildsen 1993, Eagly and Karau 2002). Moreover, men tend to be constructed as the norm or default category in politics, whereas women are presented as divergent from that norm. Women in turn are presented as a politically salient group with distinctive preferences from men, which are captured in wellestablished gender gaps in public opinion (Inglehart and Norris 2000, Gidengil et al 2003, Lizotte 2020). Gender gaps in partisan preferences, with women more likely to support left parties and men leaning toward conservative parties are regularly reported during election coverage. The alignment of gender stereotypes with certain policy positions and the salience of gender as a factor that shapes those preferences, particularly for women, may provide politicians with clearer cues about women's policy preferences, as a group, than about men's preferences.

Given the important connection between policy congruence and perceptual accuracy, future research should seek to identify contexts in which women politicians share the preferences of women constituents – both in terms of the specific policy issues and in terms of the legislative and institutional contexts in which mass-elite policy congruence among women is likely to occur. Research has consistently found that the tendency for women politicians to mirror those of women voters is strongest on issues that are more clearly related to gender equality (Campbell, Childs and Lovenduski 2010, Clayton et al. 2019, Lovenduski and Norris 2003). Investigations of mass-elite policy congruence among women on a wider range of policy issues – including issues that are not explicitly gendered, like those explored here – would provide better insight into the conditions under which the presence of women in politics might be particularly important for the effective representation of women's interests. Research across a range of institutional and legislative contexts, including partisan national legislators, would also be valuable. Additionally, research designs that explicitly incorporate variation among women along a range of intersectional dimensions would provide a clearer understanding of which women's preferences are better understood by politicians.

Our study serves as a valuable point of connection between research on women's descriptive and substantive representation and research on politicians' knowledge of their constituents' policy preferences. We find that politicians who share their constituents' policy preferences are better at accurately identifying those preferences. This provides clarity about the mechanism through which women politicians might be better equipped to represent women – namely, shared preferences. If constituents are better represented by those who share their policy preferences, and women politicians are more likely to have the same policy preferences as women constituents – as the literature discussed above suggests – then it follows that there is good reason to continue to expect that women's substantive representation will be improved by the presence of women politicians.

References

- Atchison, Amy. 2015. "The impact of female cabinet ministers on a female-friendly labour environment." *Journal of Women, Politics & Policy* 36: 388-414.
- Atchison, Amy and Ian Down. 2009. "Women cabinet ministers and female-friendly social policy." *Poverty & Public Policy* 1 (2): 1-23.
- Bird, Karen. 2005. "Gendering Parliamentary Questions." Political Studies 7: 353-370.
- Bratton, Kathleen A., and Leonard P. Ray. 2002. "Descriptive Representation, Policy Outcomes, and Municipal Day-Care Coverage in Norway." *American Journal of Political Science* 46 (2): 428. <u>https://doi.org/10.2307/3088386</u>.
- 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.
- Bucchianeri, Peter, Riley Carney, Ryan Enos, Amy Lakeman, and Gabrielle Malina. 2021. "What Explains Local Policy Cleavages? Examining the Policy Preferences of Public Officials at the Municipal Level." *Social Science Quarterly* 102 (6): 2572–2760. <u>https://doi.org/10.1111/ssqu.13039</u>.
- Butler, Daniel M, Craig Volden, Adam M Dynes and Boris Shor. 2017. "Ideology, learning, and policy diffusion: Experimental evidence." *American Journal of Political Science* 61(1): 37–49.
- Campbell, Rosie, Sarah Childs, and Joni Lovenduski. 2010. "Do women need women representatives?" *British Journal of Political Science* 40 (1): 171–94. <u>https://doi.org/10.1017/S0007123409990408</u>.
- Celis, Karen. 2007. "Substantive representation of women: The representation of women's interests and the impact of descriptive representation in the Belgian Parliament (1900-1979)." *Journal of Women, Politics and Policy* 28 (2): 85–114. https://doi.org/10.1300/J501v28n02_04.
- Childs, Sarah and Julie Withey. 2004. "Women representatives acting for women: Sex and the signing of Early Day Motions in the 1997 British Parliament." *Political Studies* 52: 552-564.
- Clayton, Amanda, Cecilia Josefsson, Robert Mattes, and Shaheen Mozaffar. 2019. "In Whose Interest? Gender and Mass–Elite Priority Congruence in Sub-Saharan Africa." *Comparative Political Studies* 52 (1): 69–101. https://doi.org/10.1177/0010414018758767.
- Dingler, Sarah C., Corinna Kroeber, and Jessica Fortin-Rittberger. 2019. "Do parliaments underrepresent women's policy preferences? Exploring gender equality in policy congruence in 21 European democracies." *Journal of European Public Policy* 26 (2): 302– 21 <u>https://doi.org/10.1080/13501763.2017.1423104</u>.
- Dovi, Suzanne. 2007. The Good Representative. Malden, MA: Blackwell Publishing.
- Eagly, Alice H. and Steven J. Karau. 2002. "Role Congruity Theory of Prejudice Toward Female Leaders." *Psychological Review* 109 (3): 573-598. <u>https://doi.org/10.1037//0033-</u> 295X.109.3.573
- Einstein, Katherine Levine, and David M. Glick. 2018. "Mayors, Partisanship, and Redistribution: Evidence Directly from U.S. Mayors." Urban Affairs Review 54 (1): 74– 106. <u>https://doi.org/10.1177/1078087416674829</u>.

- Erzeel, Silvia. 2012. "Women's Substantive Representation in the Belgian Chamber of Representatives: Testing the Added Value of a 'Claims-making' Approach." World Political Science 8 (1): 28–47. <u>https://doi.org/10.1515/wpsr-2012-0009</u>.
- Erzeel, Silvia. 2015. "Explaining Legislators' Actions on Behalf of Women in the Parliamentary Party Group: The Role of Attitudes, Resources, and Opportunities." *Journal of Women, Politics & Policy* 36: 440-463. <u>https://doi.org/10.1080/1554477X.2015.1082890</u>.
- Gidengil, Elisabeth, André Blais, Richard Nadeau, and Neil Nevitte. 2003. "Women to the Left? Gender Differences in Political Beliefs and Policy Preferences." In *Women and Electoral Politics in Canada*, edited by Manon Tremblay and Linda Trimble, 140–59. Toronto: Oxford University Press.
- Hertel-Fernandez, Alexander, Matto Mildenberger, and Leah C. Stokes. 2019. "Legislative Staff and Representation in Congress." *American Political Science Review* 113 (1): 1–18. https://doi.org/10.1017/ S0003055418000606.
- Huddy, Leonie and Nayda Terkildsen. 1993. "The Consequences of Gender Stereotypes for Women Candidates at Different Levels and Types of Office." *Political Research Quarterly* 37 (1): 119-147. <u>https://doi.org/10.2307/2111526</u>
- Inglehart, Ronald and Pippa Norris. 2000. "The Developmental Theory of the Gender Gap: Women's and Men's Voting Behaviour in Global Perspective." *International Political Science Review* 21 (4): 441-463.
- Kalla, Joshua, and Ethan Porter. 2019. "Correcting Bias in Perceptions of Public Opinion Among American Elected Officials: Results from Two Field Experiments." *British Journal of Political Science*. <u>https://doi.org/10.31219/OSF.IO/C2SP6</u>.
- Kittilson, Miki Caul. 2008. "Representing women: The adoption of family leave in comparative perspective." *Journal of Politics* 70 (2): 323–34. https://doi.org/10.1017/S002238160808033X.
- Lee, Nathan, Brendan Nyhan, Jason Reifler and DJ Flynn. 2021. "More accurate, but no less polarized: Comparing the factual beliefs of government officials and the public." *British Journal of Political Science* 51(3):1315–1322.
- Lizotte, Mary-Kate. 2020. Gender Differences in Public Opinion: Values and Political Consequences. Philadelphia: Temple University Press.
- Lucas, Jack. N.d. Ideology in Canadian Municipal Politics. Unpublished Manuscript.
- Lucas, Jack, Peter Loewen, and Lior Sheffer. 2022. "Pathways to Substantive Representation: Congruence and Knowledge in Politicians' Perceptions of Public Opinion." Unpublished Manuscript
- Lovenduski, Joni, and Pippa Norris. 2003. "Westminster women: The politics of presence." *Political Studies* 51 (1): 84–102. <u>https://doi.org/10.1111/1467-9248.00414</u>.
- Mansbridge, Jane. 1999. "Should blacks represent blacks and women represent women? A contingent "yes"." *Journal of Politics* 61 (3): 628–57. https://doi.org/10.2307/2647821.
 ——. 2003. "Rethinking representation." *American Political Science Review* 97 (4): 515–28. https://doi.org/10.1093/screen/27.5.16.
- Miller, Warren E, and Donald E Stokes. 1963. "Constituency Influence in Congress." *American Political Science Review* 57 (1): 45–56.
- O'Brien, Diana and Jennifer M. Piscopo. 2018. "The Impact of Women in Parliament." *The Palgrave Handbook of Women's Political Rights*. Susan Franceschet, Mona Lena Krook, and Netina Tan (Eds). London: Palgrave Macmillan. 53–72.

- Pereira, Miguel M. 2021. "Understanding and Reducing Biases in Elite Beliefs About the Electorate." *American Political Science Review*, 1–17. https://doi.org/10.1017/s000305542100037x.
- Phillips, Anne. 1995. The Politics of Presence. New York: Clarendon Press.
- Poggione, Sarah. 2004. "Exploring Gender Differences in State Legislators' Policy Preferences." Political Research Quarterly 57 (2): 305-314.
- Schwindt-Bayer, Leslie A. 2006. "Still Supermadres? Gender and the Policy Priorities of Latin American Legislators." *American Journal of Political Sceince* 50 (3): 570-585.
- Schwindt-Bayer, Leslie A., and William Mishler. 2005. "An integrated model of women's representation." *Journal of Politics* 67 (2): 407–28. <u>https://doi.org/10.1111/j.1468-2508.2005.00323.x</u>.
- Schwindt-Bayer, Leslie A. 2012. *Political Power and Women's Representation in Latin America*. New York: Oxford University Press.
- Sevenans, Julie, Karolin Soontjens, and Stefaan Walgrave. 2022. "Inequality in the public priority perceptions of elected representatives." *West European Politics* 45 (5): 1057-1080.
- Sheffer, Lior. 2019. "Political Accountability, Legislator Gender, and the Status Quo Bias." *Politics & Gender* 17(3): 365-401.
- Varone, Frédéric, and Luzia Helfer. 2021. "Understanding MPs' perceptions of party voters' opinion in Western democracies." *West European Politics* 0 (0): 1–24. https://doi.org/10.1080/01402382.2021.1940647.
- Walgrave, Stefaan, Arno Jansen, Julie Sevenans, Karolin Soontjens, Jean-Benoit Pilet, Nathalie Brack, Frederic Varone, et al. 2022. "Inaccurate Politicians. Elected Representatives' Estimations of Public Opinion in Five Countries." *Journal of Politics*.
- Wiener, Elizabeth. 2022. Which Women, Exactly? Examining Gender Gaps in Legislator Responsiveness to Women's Issue Advocacy through an Intersectional Lens. *Journal of Women, Politics, and Policy* 43 (1): 82-94.

Competing interests: the authors have no conflicts of interest to disclose.

Representing Women's Policy Preferences Supplementary Material

Contents

1.	Elite Survey Responses: Summary	2
	Breakdown: Province	2
	Breakdown: Gender	2
	Breakdown: Municipal Population Size	2
2.	Survey Questions	3
3.	Marginal Effects and Treatment Effects	5
4.	Citizen Attitudes Model	6
5.	Additional Information: Ethics Protocols	7
6.	Additional Analysis: Preanalysis Plan	8

1. Elite Survey Responses: Summary

The CMB 2022 survey received 867 complete responses, This represents a response rate of 23%. We received at least one response from 89% of the municipalities in the Canadian Municipal Barometer study.

Breakdown: Province

This table compares the proportion of our population from each province to the proportion of our completed responses by each province. In the "difference" column, negative numbers indicate under-representation in our sample relative to the population, and positive numbers indicate over-representation in our sample relative to the population.

Province	Population	Sample	Difference
AB	0.09	0.11	0.02
BC	0.12	0.09	-0.03
MB	0.03	0.02	-0.01
NB	0.03	0.03	0.00
NL	0.01	0.01	0.00
NS	0.03	0.03	0.00
NWT	0.00	0.00	0.00
ON	0.36	0.32	-0.04
PEI	0.01	0.00	0.00
QC	0.29	0.35	0.05
SK	0.02	0.03	0.00
ΥT	0.00	0.00	0.00

Table 1: Provincial Representativeness: Population and Sample

Breakdown: Gender

This table compares the proportion of women in the sample to the proportion in the survey population. In the "difference" column, negative numbers indicate under-representation in our sample relative to the population, and positive numbers indicate over-representation in our sample relative to the population.

Table 2: Gender Representativeness: Population and Sample

Gender	Population	Sample	Difference
F	0.35	0.41	0.07
Μ	0.65	0.59	-0.07

Breakdown: Municipal Population Size

This table compares the proportion of politicians in our overall population by each municipal population category, along with their proportion in our sample. In the "difference" column, negative numbers indicate underrepresentation in our sample relative to the population, and positive numbers indicate over-representation in our sample relative to the population.

Pop. Cat.	Population	Sample	Difference	popcat
1	0.30	0.26	-0.05	<15,000
2	0.21	0.19	-0.02	15,000 - 25,000
3	0.16	0.15	-0.01	25,000-50,000
4	0.12	0.12	0.00	50,000-100,000
5	0.14	0.15	0.01	100,000-500,000
6	0.07	0.08	0.01	500,000 +

Table 3: Population Representativeness: Population and Sample

2. Survey Questions

Exact wording for the public opinion survey questions were as follows:

- It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)

Exact wording for the politician survey questions were as follows:

- We would like to know a little more about how your constituents think about municipal issues. Imagine a {35 year old / 65 year old} {man/woman} in your municipality. If you had to guess, how would he respond to each of these questions?
 - It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out. ({She/he} would strongly disagree, {She/he} would somewhat disagree, {She/he} would somewhat Agree, {She/he} would strongly Agree, I don't know what {she/he} would think.) Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality. ({She/he} would strongly disagree, {She/he} would somewhat disagree, {She/he} would strongly disagree, {She/he} would somewhat disagree, {She/he} would strongly disagree, {She/he} would strongly Agree, I don't know what {she/he} would strongly Agree, I don't know what {she/he} would think.) Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources. ({She/he} would strongly disagree, {She/he} would somewhat Agree, {She/he} would strongly disagree, {She/he} would somewhat Agree, {She/he} would strongly disagree, {She/he} would strongly disagree, {She/he} would strongly disagree, {She/he} would strongly disagree, {She/he} would somewhat {she/he} would strongly disagree, {She/he} would somewhat Agree, {She/he} would strongly disagree, {She/he} would somewhat Agree, {She/he} would strongly disagree, {She/he} would somewhat Agree, {She/he} would strongly disagree, I don't know what {she/he} would strongly Agree, I don't know what {she/he} would strongly Agree, I don't know what {she/he} would think.)
- Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services. ({She/he} would strongly disagree, {She/he} would somewhat disagree, {She/he} would strongly Agree, I don't know what {she/he} would think.)
- And what is your opinion on the same issues?
 - It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)

- Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services. (Strongly Disagree, Somewhat Disagree, Somewhat Agree, Strongly Agree, Don't Know)
- In politics people sometimes talk of left and right. Where would you place yourself on a scale from 0 to 10, where 0 means left and 10 means right? (0 (Left), 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (Right), Don't Know)
- Using the same scale, where would you place the average resident in your municipality? (0 (Left), 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (Right), Don't Know)

3. Marginal Effects and Treatment Effects

In the table below, we provide full results for logit models for the public opinion data in our analysis. We use these models to extract marginal effects, which we plot in figure 1 in the main text.

Table 4: Models: Public Opinion Data

	(1)	(2)	(3)	(4)
Woman	-0.71^{***}	0.34***	0.55***	-0.46^{***}
	(0.07)	(0.10)	(0.09)	(0.07)
Age	-0.01^{***}	0.002	-0.004^{*}	-0.01^{***}
-	(0.002)	(0.003)	(0.003)	(0.002)
Constant	0.80***	1.49***	1.53^{***}	1.04***
	(0.11)	(0.15)	(0.14)	(0.11)
Issue	Gentrification	Living Wage	Climate Change	Taxes
Observations	3,467	3,560	3,605	$3,\!573$
Log Likelihood	-2,325.31	-1,491.30	-1,635.16	-2,410.79
Akaike Inf. Crit.	4,656.63	2,988.59	$3,\!276.31$	4,827.58
Note:			*p<0.1; **p<0.05	5; ***p<0.01

For gender effects, calculating marginal effects is straightforward, but marginal effects are slightly more complex when comparing 35-year-old to 65-year-old respondents. To calculate these marginal effects with uncertainty, we implement the logit model in a Bayesian framework, calculate predicted probabilities for the two age categories for each issue, and then summarise the calculated differences across the posterior draws for each model. While this is a convenient procedure for calculating the marginal effects of interest with 95% credible intervals, we emphasize that the Bayesian model produces results that are identical to a standard MLE model. Table 2 demonstrates this, summarizing estimated marginal effects from MLE and Bayesian models for each variable and policy issue.

Table 5:	Comparison	of Marginal	Effects
----------	------------	-------------	---------

Issue	Gender (MLE)	Gender (Bayes)	Age (MLE)	Age (Bayes)
Gentrification	-0.17	-0.17	-0.09	-0.09
Living Wage	0.04	0.04	0.01	0.01
Climate Change	0.08	0.08	-0.02	-0.01
Taxes	-0.11	-0.11	-0.09	-0.08

The table below summarizes treatment effects from the survey of politicians.

	(1)	(2)	(3)	(4)
Woman	-0.23^{***}	0.18***	0.13***	-0.23^{***}
	(0.03)	(0.03)	(0.03)	(0.03)
Age	-0.09^{***}	-0.11^{***}	-0.17^{***}	0.15***
-	(0.03)	(0.03)	(0.03)	(0.03)
Constant	0.58^{***}	0.60***	0.72^{***}	0.51^{***}
	(0.03)	(0.03)	(0.03)	(0.03)
Issue	Gentrification	Living Wage	Climate Change	Taxes
Observations	850	842	866	861
Adjusted \mathbb{R}^2	0.06	0.05	0.05	0.07
Note:			*p<0.1; **p<0.05;	***p<0.01

Table 6: Models: Politician Treatment Effects

4. Citizen Attitudes Model

To assess the accuracy of politicians' predictions of citizen attitudes, we needed to estimate the probability of support for each issue among men and women 35 and 65 years of age. However, we also know that baseline levels of support for each issue are likely to vary across Canadian municipalities and provinces, and this variation should be incorporated, as much as possible, into our public opinion estimates. We therefore begin with a multilevel model of citizen attitudes on each of the four policy issues as a function of the respondent's age and gender, with varying intercepts for municipality and province, as follows:

$$log \frac{p(agree_i)}{1 - p(agree_i)} = \theta_0 + \beta_1 Age_i + \beta_2 Gender_i + \alpha_{k[i]}^{mun} + \alpha_{l[i]}^{province}$$

We model municipality and province intercepts as drawn from a normal distribution with mean zero:

$$\begin{aligned} \alpha_k^{municipality} &\sim \mathcal{N}(0, \sigma_{municipality}^2) \\ \alpha_k^{province} &\sim \mathcal{N}(0, \sigma_{province}^2) \end{aligned}$$

We implement this model in an MLE framework in R using the lme4 package. We then use the model results to predict the probability of agreement with each policy statement among 35-year-old women, 35-year-old men, 65-year-old women, and 65-year-old men in each municipality for which we have responses in the elite survey. This model therefore allows us to predict constituent attitudes among specific demographic groups while also incorporating information, when available, about differences in baseline levels of support on each issue at the municipal and provincial levels.

5. Additional Information: Ethics Protocols

This research project involved human participants. Political elite and general public surveys were approved by [removed for review] Research Ethics Board. In this section, we describe our research procedures in relation to APSA Council's 2020 Principles and Guidance for Human Subjects Research.

None of the researchers involved in this study have any potential or perceived conflicts of interest in relation to this research. Participants in the survey of political elites were not compensated for their participation. Participants in the public opinion surveys were online panel members recruited by Abacus, a commercial survey sample firm. All participants were compensated in keeping with Abacus's recruitment policy. As is customary for commercial sample providers, the exact terms of compensation are proprietary and were not shared with the researchers.

Consent. All participants provided informed consent prior to starting the online surveys, and were free to withdraw from the study at any time by closing their browsers. Informed consent documents were written in accessible language and are in compliance with the Government of Canada's Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS 2 2018).

Deception. This project did not involve deception.

Harm and trauma. Our surveys were assessed by [removed for review] as having minimal risk to participants. The participant pool was not primarily comprised of members of vulnerable or marginalized groups, and we did not anticipate differential benefits or harms for particular groups.

Confidentiality. Confidentiality was guaranteed to all participants. All replication data and code are anonymized to protect the confidentiality of both public and elite respondents.

Impact. Our research collected information on citizen and politician attitudes on policy issues and did not involve intervention in political processes.

Laws and Regulations. Our research complies with applicable laws and regulations on human subjects research in Canada.

Shared responsibility. All members of the research team, including research assistants, were aware of applicable ethics requirements and the necessity of protecting respondents' privacy and confidentiality.

Power. Respondents to public opinion surveys in our study were members of an online panel and their participation in the survey was entirely voluntary. For this reason, we are unaware of power imbalances that may have caused participants to feel compelled to participate. This is all the more true of our politician sample, which consisted of elected representatives; these public figures are in positions of power and are unlikely to have experienced power imbalances in relation to a request to participate in a confidential academic survey.

6. Additional Analysis: Preanalysis Plan

In our pre-registered analysis plan, we specified three possible measures of politicians' perceptual accuracy. We used the simplest of the three measures – a binary score – in the main text. In the table below, we show that our findings are substantively identical in direction and statistical significance with the two alternative outcome measures specified in the preanalysis plan.

	All Politicians			Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Shared Gender	-0.01	-0.01	0.00	0.09^{**}	0.08^{***}	0.04^{***}	-0.07^{**}	-0.07^{***}	-0.03^{***}
	(0.02)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Num.Obs.	2461	2461	2461	966	966	966	1495	1495	1495
Issue FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Preanalysis Plan: Representing Women's Policy Preferences: Evidence from Canada

04/11/2021

Contents

Project Overview	2
Relevant Literature	3
Linking Women's Descriptive and Substantive Representation	3
Mechanisms producing shared policy priorities among women	4
Knowledge and Misperception of Public Opinion among Political Elites	4
Survey Questions	7
Public Opinion Survey $\ldots \ldots \ldots$	7
Politician Survey	8
Outcome Measures	10
Data Setup Plan	11
Analysis Plan	14
Analysis 1: Treatment Effects	14
Analysis 2: Gender and Representational Knowledge	14
References	16

Project Overview

Existing research on the substantive representation of women suggests that women politicians are better equipped to represent women's interests in political debate and decision-making. An important part of the ability to act on behalf of women, however, involves the ability to accurately understand women's needs, preferences, and priorities on a range of policy issues. In this study, we draw together theories of the substantive representation of women and perceptual accuracy to examine whether and to what extent shared gender improves the accuracy of politicians' assessments of their constituents' policy preferences. Using the results from a public opinion survey of 3,925 respondents, we identify gender gaps in support for four municipal policy issues that are not explicitly gendered and estimate the level of support for each issue among men and women respondents. We then use a survey experiment of about 700 municipal politicians in Canada to test (1) whether politicians perceive gender differences in constituent policy preferences, and (2) whether women politicians are better at correctly identifying the policy women's preferences. Findings from the study add to our understanding of whether and why descriptive representation might matter for substantive representation as well as factors that influence perceptual accuracy of constituent opinion.

Relevant Literature

Linking Women's Descriptive and Substantive Representation

The central question motivating our study is whether women can expect better representation when being represented by women officeholders. Although numerous scholars have explored the link between women's descriptive representation (understood as presence) and substantive representation (defined as policy interests), there is much to learn about the factors shaping women's substantive representation.

Research on whether women's presence in public office promotes better policy representation for women generally points to a link between women's presence and policy actions that promote women's interests. Several studies find elected women to be more likely than elected men to introduce and co-sponsor womenfriendly legislation and to speak on behalf of women's issues in plenary debates (Barnes 2016; Clayton et al. 2019; Schwindt-Bayer and Mishler 2005; Swers 2005; Xydias 2007). Studies of whether women's descriptive representation improves policy outcomes for women is mixed, however. Cross-national studies find that legislatures with higher proportions of women are linked to policies that improve women's lives, like lengthier and more generous parental leaves or childcare programs (Bratton and Ray 2002; Kittilson 2008). But a study by Franceschet and Piscopo (2008) found that electing more women to Argentina's federal congress changed the policy agenda, with an increase in women's rights bills, but policy outcomes did not change substantially, with women's rights bills being less likely to pass into law than other types of legislation.

Most scholars of women's substantive representation operationalize it as promoting or pursuing "women's interests" (Franceschet, Krook, and Piscopo 2012; Escobar-Lemmon and Taylor-Robinson 2014; O'Brien and Piscopo 2018), although more recent research has sought to study it more agnostically. Celis (2007) and Erzeel (2012), for example, avoid predetermining the content of women's interests, instead examining the representative claims MPs make about women. Scholars employing the concept of women's interests try to acknowledge women's diversity, by defining them as those issues that emerge from the gender division of labour and hierarchies of status and influence that disadvantage women relative to men. The policy issues associated with women's substantive representation include reproductive rights, childcare, family law, sexual harassment and violence, and equal pay, among others.

On these policy issues, research generally confirms gender gaps among elected representatives, with women placing greater priority on women's issues and being more likely to speak and act on such issues.¹ Surveys of elected officials suggest that women politicians have different policy priorities than their male colleagues, especially when it comes to issues relating to gender equality (Lovenduski and Norris 2003; Wängnerud 2000; Tremblay 1998). This research tends to assume rather than empirically demonstrate that women citizens also prioritize such issues and want their elected representatives to promote them.

A separate body of research documents gender gaps in policy preferences, political attitudes and vote choice in Canada and beyond. Women tend to be more likely to support left leaning political parties (Inglehart and Norris 2000; Erickson and O'Neill 2002; Gidengil et al. 2005), and tend to have more left leaning policy preferences than men on a wide range of issues, from crime to social spending and wealth redistribution, to gender equality issues (see Gidengil et al. (2003)).

We know less about congruence in policy attitudes among women constituents and elected women. Exceptions include a study comparing mass-elite policy attitudes on gender equality issues specifically, using data from the British Election Study and British Representation Study (Campbell, Childs, and Lovenduski 2010). Asking whether elite women and women in the mass public share policy attitudes, the authors conclude that attitudes toward gender equality issues among political elites mirror attitudes in the mass public (2010, 93). Another study exploring mass-elite convergence in policy priorities is Clayton et al. (2019), who ask whether convergence is more likely among citizens and elites of the same gender . They note, "the assumption of shared priorities often forms the basis of many subsequent questions of gender and substantive representation" (2019, 71). Their study of mass-elite policy convergence in Sub-Saharan Africa reveals gender differences among legislators when it comes to prioritizing women's rights policies and poverty amelioration (2019; 93).

 $^{^{1}}$ Research on legislator priorities and action (bill introduction and voting) also finds party to be even more predictive than gender of representatives' attitudes and behaviour (Swers 2005; Tremblay 1998) yet often finds gender differences within parties, with elected women holding more progressive views on women's issues than men in the same party.

Fewer differences appear for those issues that are generally prioritized by most citizens and representatives, for example, the economy. Overall, the authors conclude that "women are better situated to represent women citizens because they more accurately reflect their political priorities" (2019, 95).

Findings from a study of 21 European countries complicate a straightforward conclusion that elected women are necessarily better at representing women's policy interests. Dingler, Kroeber, and Fortin-Rittberger (2019) examine policy congruence between women in the mass public and elected representatives on policies that go beyond the traditional feminist issues. The authors do not find policy congruence to be greater in countries with larger proportions of elected women, implying that men representatives may be just as capable of representing women's policy interests. Their key finding is that "who votes is more consequential than who represents" (2019, 303). Congruence in mass-elite policy preferences were in fact greater in those countries where women vote at higher rates than men (ibid.).

Mechanisms producing shared policy priorities among women

There are several different mechanisms that might account for shared priorities among women politicians and women constituents. Such mechanisms likely do not operate independently; all three may be present and shaping representative relationships.

- 1. Shared experiences: As one of the most salient social identities, gender produces shared experiences among women that helps explain their policy attitudes and priorities. Arguments by Mansbridge (1999) about when women's descriptive representation is necessary for their substantive representation draws on shared experiences to show why, particularly when a group's interests are "uncrystallized," members of that group should be present in decision-making (1999). That is, precisely when group interests are not obvious or clear-cut, elected members draw on their own experiences to determine what policy might best serve the interests of that group. Shared experience and "linked fate" also link descriptive and substantive representation in a study of racial and ethnic minorities (Sobolewska, McKee, and Campbell 2018).
- 2. Knowledge produced through interaction: Women politicians are more likely to interact with organizations and advocacy groups of women and therefore know their interests through such channels (Clayton et al. 2019). Research shows that constituents are more likely to contact representatives who share ascriptive characteristics, which is another pathway for women representatives to learn about the policy preferences of women constituents.
- 3. Electoral motivations: Politicians are likely aware of gender gaps in voting and women may be particularly likely to seek women's vote by taking up and promoting issues they believe important to them. Mansbridge (2003) defines this as "anticipatory representation," that is, when elected representatives pursue the policy interests of a particular group believing that doing so will translate into future electoral support.

Knowledge and Misperception of Public Opinion among Political Elites

Alongside our main theoretical interest in the descriptive and substantive representation of women, our study will also contribute to a more specific literature on politicians' perceptions of constituents' preferences. Since Miller and Stokes (1963), politicians' knowledge of their constituents' preferences has been understood as one of two core pathways to substantive representation (the other being congruence with constituents' views). Many normative approaches to representation require that politicians accurately understand their constituents' views and incorporate that knowledge into their legislative and other activity (Mansbridge 2003).

Despite the importance of politicians' perceptual accuracy for our theories of representation, the practical and methodological challenges involved in assessing politicians' performance in this area have meant that research on perceptual accuracy was, until recently, rather uncommon. In the years that followed Miller and Stokes's pathbreaking article, a few studies combined elite surveys with "ground truth" data, such as referendum results, to probe politicians' knowledge of constituents; these include a study by Hedlund and Friesema (1972) of politicians in Iowa, Erikson, Luttbeg, and Holloway (1975) of politicians in Florida, and

an impressive national study, using state-level opinion estimates from Gallup surveys, by Uslaner and Weber (1979). Then, after a few decades of dormancy, this research tradition was revived in the United States by Broockman and Skovron (2018), who studied state legislative candidates' knowledge of constituents' attitudes across several policy issues. New research soon followed, including additional work on American political elites (Kalla and Porter 2019; Kertzer et al. 2020) and several important studies in Europe (Pereira 2021; Sevenans, Soontjens, and Walgrave 2021; Varone and Helfer 2021).

In many respects, of course, politicians are just ordinary people, with the same cognitive abilities and defects as anyone else (Sheffer et al. 2017) – and while we have relatively few studies of politicians' perceptions and misperceptions of public opinion and behaviour, studies of ordinary citizens' perceptions are more plentiful. In a recent meta-analysis, Bursztyn and Yang (2021) summarize 79 relevant studies of social, political, and economic perceptions and find a number of recurring patterns. First, misperceptions are *pervasive*; in 80% of the studies that Bursztyn and Yang assessed, a majority of study participants were incorrect in their perceptions. Second, misperceptions are *asymmetric*, clustering on one side of the truth; when we're wrong in our perceptions, in other words, most of us tend to be wrong in the same direction, systematically under- or over-estimating public opinion. Third, misperceptions are shaped by *group membership*, with perceptions (and misperceptions) are strongly associated with one's *own position*: if you think unemployment is a serious problem, for example, you'll be inclined to think that your fellow citizens share your concern.

These findings are strikingly similar to the more focused literature on politicians' knowledge. As in Bursztyn and Yang, recent studies of politicians have found that misperception of public opinion is pervasive – on average, politicians' estimates are often some 20 percentage points off the true value (Broockman 2016; Kalla and Porter 2019). While politicians' perceptions are strongly responsive to cross-sectional variation – in places with higher support for a policy proposal tend to perceive that support is higher – their absolute error is substantial.

Asymmetries of misperception are also common among politicians. In the United States, politicians systematically overestimate their constituents' conservatism (Broockman and Skovron 2018), a weakness that they share with the staffers who work for them (Hertel-Fernandez, Mildenberger, and Stokes 2019). Recent work among Canadian politicians (Lucas, n.d.) and Europe (Sheffer et al., n.d.) suggests that the same is true in other countries, with the notable exception of immigration policy – the one policy domain in which politicians seem to consistently underestimate their constituents' conservatism. Across nearly all issues, however, the evidence suggests that politicians' misperceptions are no more symmetric than those of ordinary citizens.

In-group bias has been less thoroughly explored among politicians – understandably, political scientists tend to focus on politicians' representation of their constituents, or in-group, rather than out-groups like opposing political parties, residents of other regions, or citizens of other countries. However, we have little reason to expect politicians to be immune from this effect; in one study of politicians in Belgium, Canada, Germany, and Switzerland, Varone and Helfer (2021) found that politicians from parties that "own" a policy issue tend to more accurately perceive public attitudes on those issues, perhaps a form of in-group knowledge.

Finally, we have very good reason to expect that Bursztyn and Yang's arguments about the relationship personal views and perceptual accuracy hold true among politicians as well. In one important recent study, Miguel Pereira (2021) finds that politicians' own views strongly influence their perception of public opinion. Hertel-Fernandez, Mildenberger, and Stokes (2019) find that the same is true among Congressional staffers. Other recent work, including a study of Canadian local politicians by Jack Lucas et al. (n.d.) finds further evidence of "egocentric bias" or "social projection" among elected representatives.

Overall, then, all of the core patterns that Bursztyn and Yang identify – pervasive misperception, asymmetric error, in-group effects, and egocentric bias – are clearly visible in recent studies of political elites. A few more specific patterns have also recurred in many recent studies, the most important of which – a tendency to overestimate the conservatism of one's constituents – we have already mentioned above. Several studies have also found that politicians' perceptions are biased toward the views of more politically active or privileged members of society, and that misperception is especially acute when privileged citizens (e.g. wealthy, highly educated) hold views that differ from their less privileged compatriots (Pereira 2021; Schaffner, Rhodes, and La Raja 2020; Sevenans, Soontjens, and Walgrave 2021). A final important pattern has been the domain-specific and even issue-specific character of politicians' perceptual accuracy. Across many studies, politicians perform much better on some issues than others, suggesting that sources of perceptual bias, and the challenges of perception, probably vary in important ways across policy domains (Hedlund and Friesema 1972).

While none of these studies has dealt directly with gender representation, a few make passing mention of gender and perceptual accuracy. Broockman and Skovron (2018) find that candidates' perceptual accuracy differs dramatically by party and modestly by other factors, such as district competitiveness and incumbent status, but that a candidate's gender is unrelated to their knowledge of public opinion. Sevenans, Soontjens, and Walgrave (2021) find the same; while politicians in Belgium, Canada, and Israel appear to be more responsive to men's policy priorities, this bias is present regardless of a politicians' gender; in other words, women do not appear to be more accurate than men in their understanding of women's policy preferences, and indeed appear to share the same representational biases as their male colleagues. Thus far, it would appear that elected women are no stronger in their overall perceptions, nor in their perceptions of specifically women's preferences, than other politicians.

Survey Questions

Our study requires both mass and elite survey data. Our public opinion data come from a survey led by an existing online panel from September 30, 2021 to October 12, 2021, with sample quotas for province, language, gender, and age category. A total of 3,925 Canadians completed the survey.

Elite survey data are from the Canadian Municipal Barometer, an annual survey of mayors and councillors in every municipality in Canada above 9,000 population. This survey will be fielded from January 3 to February 28, 2022. We anticipate approximately 700 politicians will complete the survey.

Public Opinion Survey

What is your opinion on each of the following issues?

 iss_1

It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

iss_2

Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

iss_3

Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

iss_4

Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

Politician Survey

We would like to know a little more about how your constituents think about municipal issues.

Imagine a $\{35/65\}$ year old $\{man/woman\}$ in your constituency. If you had to guess, how would $\{he/she\}$ respond to each of these questions?

$percep_issue1$

It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out.

- {He / She} would strongly disagree (1)
- {He / She} would somewhat disagree (2)
- {He / she} would somewhat agree (3)
- {He / she} would strongly agree (4)
- Don't know what {he / she} would think (9)

$percep_issue2$

Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality.

- {He / She} would strongly disagree (1)
- {He / She} would somewhat disagree (2)
- {He / she} would somewhat agree (3)
- {He / she} would strongly agree (4)
- Don't know what {he / she} would think (9)

$percep_issue3$

Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources.

- {He / She} would strongly disagree (1)
- {He / She} would somewhat disagree (2)
- {He / she} would somewhat agree (3)
- {He / she} would strongly agree (4)
- Don't know what {he / she} would think (9)

$percep_issue4$

Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services.

- {He / She} would strongly disagree (1)
- {He / She} would somewhat disagree (2)
- {He / she} would somewhat agree (3)
- {He / she} would strongly agree (4)
- Don't know what {he / she} would think (9)

And what is your own opinion on the same issues?

iss_1

It is good for a neighbourhood when it experiences rising property values, even if it means some current residents might have to move out.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

 iss_2

Municipalities should require that all municipal contractors pay their employees a living wage, even if it means increased costs for the municipality.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

iss_3

Municipalities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues and/or expending financial resources.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

iss_4

Municipalities should prioritize keeping taxes low, even if it means low-income residents have access to fewer social services.

- Strongly disagree (1)
- Somewhat disagree (2)
- Somewhat agree (3)
- Strongly agree (4)
- Don't know (9)

Outcome Measures

We will measure politicians' knowledge of constituent opinion using three measures of correctness:

- 1. Binary measure. We will first use a multilevel logistic regression model and the public opinion survey to predict the most likely response (i.e. agree versus disagree) for each possible combination of age and gender in each municipality for each of the four issue questions. We will then score each politician with a binary correctness measure for each issue: zero for an incorrect response and one for a correct response. Politicians who choose "don't know" will receive a score of zero for their response. If there are statistically significant gender differences in the likelihood of a "don't know" response, we will report this relationship in the paper and carry out the analysis excluding politicians who choose "don't know," to avoid biasing the correctness results by politicians' propensity to provide a response to the question.
- 2. Continuous correctness, binary outcome. Using the same logit models, we will predict the probability of each response for each of the four combinations of age and gender for each issue question. We will then score each politician based on the probability of their response. Here, too, politicians who choose "don't know" will receive a score of zero for their response. If there are statistically significant gender differences in don't know responses, we will report this relationship and run the analysis excluding politicians who choose don't know, to avoid biasing the correctness results by the politician's propensity to respond to the question. For example:
- Politician X chooses "agree" for individual (A) on issue 1. The probability that individual A agrees with the statement is 0.33. The politician receives 0.33 points for their choice.
- Politician Y chooses "disagree" for individual (B) on issue 2. The probability that individual B disagrees with the statement is 0.05. The politician receives 0.05 points for their choice.
- 3. Continuous correctness, ordinal outcome. Here we will proceed as described above, but build the probabilities using an ordinal logit model, calculating the individual probability of each choice (strongly agree, somewhat agree, somewhat disagree, strongly disagree) rather than a binary simplification of the choices. We'll then assign the correctness scores using the same procedure described in the second measure.

Data Setup Plan

The first step in our analysis is to calculate the probabilities for each of the four issue questions in the public opinion data. Here we run the logit models and summarise the coefficients. Note that the base category is "non-partisanship" for the party variable, and "less than one year" for the duration variable. The results suggest a substantial and significant gender gap for the first question, and no significant gender gap for the second question. There is also an age gap in the first question and not in the second, no duration gaps for either question, and substantial partisanship gaps for both questions.

Note that our actual predictions will incorporate municipal-level variables (municipal ideology, municipal population, municipal density, education level, racial diversity, region) corresponding with the municipalities in which the politicians are actually elected.

```
# logit models
mod1 <- glm(dv1 ~ woman + age, data=samara, family=binomial(link="logit"))
mod2 <- glm(dv2 ~ woman + age, data=samara, family=binomial(link="logit"))
mod3 <- glm(dv3 ~ woman + age, data=samara, family=binomial(link="logit"))
mod4 <- glm(dv4 ~ woman + age, data=samara, family=binomial(link="logit"))</pre>
```

	Dependent variable:				
	dv1	dv2	dv3	dv4	
	(1)	(2)	(3)	(4)	
woman	-0.712^{***} (0.070)	0.344^{***} (0.096)	0.548^{***} (0.091)	-0.458^{***} (0.069)	
age	-0.013^{***} (0.002)	0.002(0.003)	-0.004^{*} (0.003)	-0.011^{***} (0.002)	
Constant	0.803^{***} (0.113)	1.488^{***} (0.151)	1.535^{***} (0.144)	1.042^{***} (0.113)	
Observations	3,467	$3,\!560$	$3,\!605$	$3,\!573$	
Log Likelihood	-2,325.314	-1,491.296	-1,635.157	-2,410.788	
Akaike Inf. Crit.	$4,\!656.629$	2,988.593	$3,\!276.313$	$4,\!827.576$	
Note:			*p<0.1; *	**p<0.05; ***p<0.01	

Tal	ole	1:

Having run the models we can generate predicted probabilities for each of the four possible combinations in our experimental setup.

predictions matrix

```
# predictions
```

```
pred.dv1 <- data.frame(pred = predict(mod1, newdata=prediction.matrix, type="response"), var = "dv1")
pred.dv2 <- data.frame(pred = predict(mod2, newdata=prediction.matrix, type="response"), var = "dv2")
pred.dv3 <- data.frame(pred = predict(mod3, newdata=prediction.matrix, type="response"), var = "dv3")
pred.dv4 <- data.frame(pred = predict(mod4, newdata=prediction.matrix, type="response"), var = "dv4")
predictions <- rbind(pred.dv1, pred.dv2, pred.dv3, pred.dv4)
matrix <- rbind(prediction.matrix, prediction.matrix, prediction.matrix)
preds <- cbind(matrix, predictions) %>% mutate(outcome.pred = round(pred, digits=0), matcher = paste(wor
ggplot(preds, aes(x=woman, y=pred, group=factor(age), fill=factor(age))) +
    geom_bar(position=position_dodge(), stat="identity") + xlab("") + ylab("") +
    facet_wrap(~var) + theme(legend.position="bottom", legend.title=element_blank())
```



Now we simulate responses from politicians to illustrate the analysis we will undertake. We assume 700 complete responses, with 4% of respondents choosing "don't know."

We then clean up the politician responses and merge with the public opinion predictions.

```
# clean out DKs and recode
politician.sim$pol.pred <- car::recode(politician.sim$pol.pred, "1:2=0; 3:4=1; 9=NA")
# merge with probabilities</pre>
```

```
preds <- preds %>% dplyr::select(matcher, pred)
merged <- left_join(politician.sim, preds, by="matcher")</pre>
```

We then calculate the simulated outcome variables.

```
merged$binary <- round(merged$pred, digits=0)
merged$prob1 <- merged$pred</pre>
```

```
merged$prob0 <- 1 - merged$pred
merged$outcome1 <- ifelse(merged$pol.pred==merged$binary,1,0)
merged$outcome2 <- ifelse(merged$pol.pred==0,merged$prob0,merged$prob1)</pre>
```

Analysis Plan

Analysis 1: Treatment Effects

The first analysis is a simple test of the treatment effect for each variable. This tells us how much each randomly assigned characteristic affects politicians' perception of support or opposition. Compared against the actual public opinion results, this model provides a "wisdom of crowds" estimate for politicians: we can compare the direction and magnitude of the politician coefficients to the observed coefficients in the public opinion data to test for overall understanding of the direction of policy preferences in the different groups.

```
treatment.mods <- merged %>% group_by(var) %>%
  do(model = lm(pol.pred ~ woman + factor(age), data=.))
stargazer(treatment.mods[[2]][[1]],
      treatment.mods[[2]][[2]],
      treatment.mods[[2]][[3]],
      treatment.mods[[2]][[4]])
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu % Date and time: Tue, Jan 11, 2022 - 20:15:07

		Dependent variable:			
	pol.pred				
	(1)	(2)	(3)	(4)	
woman	-0.080^{**}	-0.005	-0.003	-0.014	
	(0.039)	(0.038)	(0.038)	(0.039)	
factor(age)65	0.056	-0.045	-0.112^{***}	-0.030	
	(0.039)	(0.038)	(0.038)	(0.039)	
Constant	0.506^{***}	0.521^{***}	0.561^{***}	0.514^{***}	
	(0.032)	(0.032)	(0.032)	(0.032)	
Observations	669	683	678	668	
\mathbb{R}^2	0.009	0.002	0.013	0.001	
Adjusted \mathbb{R}^2	0.006	-0.001	0.010	-0.002	
Residual Std. Error	$0.499 \ (df = 666)$	$0.501 \ (df = 680)$	$0.498 \ (df = 675)$	$0.501 \ (df = 665)$	
F Statistic	3.015^{**} (df = 2; 666)	$0.720 \ (df = 2; 680)$	4.273^{**} (df = 2; 675)	0.381 (df = 2; 665)	

```
Table 2:
```

Note:

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

Analysis 2: Gender and Representational Knowledge

Our second analysis is the core analysis for the paper: the extent to which shared gender improves perceptual accuracy. We do this for each politician's overall perceptual accuracy, as well as their perceptual accuracy for each variable. We also break the politician sample into men and women to explore heterogeneity by gender.

```
# create co-gender and co-partisan variables
merged$cogen <- ifelse(merged$pol.gender==merged$woman,1,0)
# models: overall
correct.mod1.overall <- lm(outcome1 ~ cogen + var, data=merged)
correct.mod2.overall <- lm(outcome2 ~ cogen + var, data=merged)</pre>
```

```
# models: by issue
correct.mod1.byissue <- merged %>% group_by(var) %>%
  do(model = lm(outcome1 ~ cogen, data=.))
correct.mod2.byissue <- merged %>% group_by(var) %>%
  do(model = lm(outcome2 ~ cogen, data=.))
# models: by gender
correct.mod1.bygender <- merged %>% group_by(pol.gender) %>%
  do(model = lm(outcome1 ~ cogen + var, data=.))
correct.mod2.bygender <- merged %>% group_by(pol.gender) %>%
  do(model = lm(outcome2 ~ cogen + var, data=.))
```

Lastly, if we find that gender effects are statistically significant and positive – that is, if politicians are indeed more accurate in their perception of co-gender constituents – we will want to check if this is true even when politicians disagree with their co-gender constituents.

merged\$agree <- ifelse(merged\$pol.dv == merged\$binary,1,0)</pre>

```
# models: by agree
correct.mod1.bygender <- merged %>% group_by(agree) %>%
    do(model = lm(outcome1 ~ cogen + var, data=.))
correct.mod2.bygender <- merged %>% group_by(agree) %>%
    do(model = lm(outcome2 ~ cogen + var, data=.))
```

References

Barnes, Tiffany D. 2016. Gendering Legislative Behavior. Cambridge: Cambridge University Press.

- Bratton, Kathleen A., and Leonard P. Ray. 2002. "Descriptive Representation, Policy Outcomes, and Municipal Day-Care Coverage in Norway." American Journal of Political Science 46 (2): 428. https: //doi.org/10.2307/3088386.
- 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.
- Bursztyn, Leonardo, and David Y. Yang. 2021. "Misperceptions About Others." NBER Working Paper Series 29168: 2013–15. https://doi.org/10.2139/ssrn.3909951.
- Campbell, Rosie, Sarah Childs, and Joni Lovenduski. 2010. "Do women need women representatives?" British Journal of Political Science 40 (1): 171–94. https://doi.org/10.1017/S0007123409990408.
- Celis, Karen. 2007. "Substantive representation of women: The representation of women's interests and the impact of descriptive representation in the Belgian Parliament (1900-1979)." Journal of Women, Politics and Policy 28 (2): 85–114. https://doi.org/10.1300/J501v28n02 04.
- Clayton, Amanda, Cecilia Josefsson, Robert Mattes, and Shaheen Mozaffar. 2019. "In Whose Interest? Gender and Mass-Elite Priority Congruence in Sub-Saharan Africa." Comparative Political Studies 52 (1): 69–101. https://doi.org/10.1177/0010414018758767.
- Dingler, Sarah C., Corinna Kroeber, and Jessica Fortin-Rittberger. 2019. "Do parliaments underrepresent women's policy preferences? Exploring gender equality in policy congruence in 21 European democracies." *Journal of European Public Policy* 26 (2): 302–21. https://doi.org/10.1080/13501763.2017.1423104.
- Erickson, Lynda, and Brenda O'Neill. 2002. "The Gender Gap and the Changing Woman Voter in Canada." International Political Science Review 23 (4): 373–92. https://doi.org/10.1177/0192512102023004003.
- Erikson, Robert S, Norman R Luttbeg, and William V Holloway. 1975. "Knowing One's District: How Legislators Predict Referendum Voting." American Journal of Political Science 19 (2): 231. https: //doi.org/10.2307/2110434.
- Erzeel, Silvia. 2012. "Women's Substantive Representation in the Belgian Chamber of Representatives: Testing the Added Value of a 'Claims-making' Approach." World Political Science 8 (1): 28–47. https: //doi.org/10.1515/wpsr-2012-0009.
- Escobar-Lemmon, Maria C., and Michelle M. Taylor-Robinson. 2014. Representation: The Case of Women. Oxford: Oxford University Press.
- Franceschet, Susan, Mona Lena Krook, and Jennifer M. Piscopo, eds. 2012. The Impact of Gender Quotas. Oxford: Oxford University Press.
- Franceschet, Susan, and Jennifer M. Piscopo. 2008. "Gender Quotas and Women's Substantive Representation: Lessons from Argentina." *Politics and Gender* 4 (3): 393–425. https://doi.org/10.1017/S1743923X08000 342.
- Gidengil, Elisabeth, André Blais, Richard Nadeau, and Neil Nevitte. 2003. "Women to the Left? Gender Differences in Political Beliefs and Policy Preferences." In Women and Electoral Politics in Canada, edited by Manon Tremblay and Linda Trimble, 140–59. Toronto: Oxford University Press.
- Gidengil, Elisabeth, Matthew Hennigar, André Blais, and Neil Nevitte. 2005. "Explaining the gender gap in support for the new right: The case of Canada." Comparative Political Studies 38 (10): 1171–95. https://doi.org/10.1177/0010414005279320.
- Hedlund, Ronald D., and H. Paul Friesema. 1972. "Representatives' Perceptions of Constituency Opinion." The Journal of Politics 34 (3): 730–52. https://doi.org/10.2307/2129280.

- Hertel-Fernandez, Alexander, Matto Mildenberger, and Leah C. Stokes. 2019. "Legislative Staff and Representation in Congress." American Political Science Review 113 (1): 1–18. https://doi.org/10.1017/ S0003055418000606.
- Inglehart, Ronald, and Pippa Norris. 2000. "The developmental theory of the gender gap: Women's and men's voting behavior in global perspective." *International Political Science Review* 21 (4): 441–63. https://doi.org/10.1177/0192512100214007.
- Kalla, Joshua, and Ethan Porter. 2019. "Correcting Bias in Perceptions of Public Opinion Among American Elected Officials: Results from Two Field Experiments." British Journal of Political Science. https: //doi.org/10.31219/OSF.IO/C2SP6.
- Kertzer, Joshua D, Joshua Busby, Jonathan Monten, Jordan Tama, and Craig Kafura. 2020. "Elite Misperceptions and the Domestic Politics of Conflict."
- Kittilson, Miki Caul. 2008. "Representing women: The adoption of family leave in comparative perspective." Journal of Politics 70 (2): 323–34. https://doi.org/10.1017/S002238160808033X.
- Lovenduski, Joni, and Pippa Norris. 2003. "Westminster women: The politics of presence." *Political Studies* 51 (1): 84–102. https://doi.org/10.1111/1467-9248.00414.
- Mansbridge, Jane. 1999. "Should blacks represent blacks and women represent women? A contingent "yes"." Journal of Politics 61 (3): 628–57. https://doi.org/10.2307/2647821.
 - ——. 2003. "Rethinking representation." American Political Science Review 97 (4): 515–28. https://doi.org/10.1093/screen/27.5.16.
- Miller, Warren E, and Donald E Stokes. 1963. "Constituency Influence in Congress." American Political Science Review 57 (1): 45–56.
- O'Brien, Diana Z., and Jennifer M. Piscopo. 2018. "The Impact of Women in Parliament." In *The Palgrave Handbook of Women's Political Rights*, 53–72. London: Palgrave Macmillan. https://doi.org/10.1093/0198296746.001.0001.
- Pereira, Miguel M. 2021. "Understanding and Reducing Biases in Elite Beliefs About the Electorate." American Political Science Review, 1–17. https://doi.org/10.1017/s000305542100037x.
- 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.
- Schwindt-Bayer, Leslie A., and William Mishler. 2005. "An integrated model of women's representation." Journal of Politics 67 (2): 407–28. https://doi.org/10.1111/j.1468-2508.2005.00323.x.
- Sevenans, Julie, Karolin Soontjens, and Stefaan Walgrave. 2021. "Inequality in the public priority perceptions of elected representatives." West European Politics. https://doi.org/10.1080/01402382.2021.1928830.
- Sheffer, Lior, Peter John Loewen, Stuart Soroka, Stefan Walgrave, and Tamir Sheafer. 2017. "Nonrepresentative Representatives: An Experimental Study of the Decision Making of Elected Politicians." American Political Science Review, no. 295735: 1–20. https://doi.org/10.1017/S0003055417000569.
- Sobolewska, Maria, Rebecca McKee, and Rosie Campbell. 2018. "Explaining motivation to represent: how does descriptive representation lead to substantive representation of racial and ethnic minorities?" West European Politics 41 (6): 1237–61. https://doi.org/10.1080/01402382.2018.1455408.
- Swers, Michele L. 2005. "Connecting descriptive and substantive representation: An analysis of sex differences in cosponsorship activity." *Legislative Studies Quarterly* 30 (3): 407–33. https://doi.org/10.3162/036298 005X201617.
- Tremblay, Manon. 1998. "Do Female MPs Substantively Represent Women? A Study of Legislative Behaviour in Canada's 35th Parliament." Canadian Journal of Political Science 31 (3): 435–65. http: //ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ijh&A N=49.3203&site=ehost-live.

- Uslaner, Eric M., and Ronald E. Weber. 1979. "U. S. State Legislators' Opinions and Perceptions of Constituency Attitudes." Legislative Studies Quarterly 4 (4): 563. https://doi.org/10.2307/439405.
- Varone, Frédéric, and Luzia Helfer. 2021. "Understanding MPs' perceptions of party voters' opinion in Western democracies." West European Politics 0 (0): 1–24. https://doi.org/10.1080/01402382.2021.1940647.
- Wängnerud, Lena. 2000. "Testing the politics of presence: Women's representation in the Swedish Riksdag." Scandinavian Political Studies 23 (1): 67–91. https://doi.org/10.1111/1467-9477.00031.
- Xydias, Christina V. 2007. "Inviting More Women to the Party: Gender Quotas and Women's Substantive Representation in Germany." International Journal of Sociology 37 (4): 52–66. https://doi.org/10.2753/ij s0020-7659370403.