



RESEARCH NOTE/NOTE DE RECHERCHE

# Women's Municipal Electoral Performance: An Introduction to the Canadian Municipal Elections Database<sup>1</sup>

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## Abstract

This research note describes the Canadian Municipal Elections Database (CMED), a new publicly available and actively maintained dataset of more than 24,000 municipal elections in Canada. We describe the need for high-quality election results data for municipal politics research and describe the content, sources and construction of the CMED. To illustrate the value of the CMED, we estimate gender differences in municipal electoral performance for the first time, finding that women are, on average, more likely than men to win municipal elections in Canada.

## Resumé

Cette note de recherche décrit la Canadian Municipal Elections Database (CMED), un nouvel ensemble de données accessible au public et activement mis à jour sur plus de 24 000 élections municipales au Canada. Nous faisons valoir le besoin de données de haute qualité sur les résultats électoraux pour la recherche en politique municipale, et nous décrivons le contenu, les sources et la constitution de la CMED. Pour illustrer la valeur de la base de données sur les élections municipales au Canada, nous estimons pour la première fois les différences sexospécifiques en matière de performance électorale municipale, en constatant que les femmes sont, en moyenne, plus susceptibles que les hommes de remporter les élections municipales au Canada.

**Keywords:** municipal politics; gender and politics; municipal elections; election results

**Mots-clés :** politique municipale; genre et politiques; élections municipales; résultats électoraux

## 1. Introduction

In recent years, major new data collection efforts have made it possible to understand Canadian municipal elections and voting behaviour in unprecedented detail. However, despite the exciting progress that these new data sources have enabled, municipal elections scholars have thus far been constrained by the absence of a crucial data source: a comprehensive database of municipal election results.

In this research note, we introduce the Canadian Municipal Elections Database (CMED), the most comprehensive database of municipal election results ever constructed in Canada and one of the largest databases of municipal election results anywhere in the world. The database contains more than 24,000 unique elections across nearly 2,000 municipalities; for six cities, it also contains results stretching back to the nineteenth century. The database is publicly available on Dataverse in easily downloadable formats and is actively maintained by the Canadian Municipal Barometer partnership, with new election results added regularly.<sup>2</sup>

We begin by describing the importance of municipal election results for political science research and outline the construction and content of the CMED. We then illustrate the potential of the database by estimating an important quantity that has never before been accessible to the Canadian political science community: the relationship between gender and electoral outcomes in municipal elections. We conclude by describing other important questions for which the CMED will be immediately relevant, as well as our plans to expand the database with both historical and contemporary elections.

## 2. Municipal Elections in Political Science

Municipal elections research is growing rapidly (Lucas and McGregor, [forthcoming](#)). One reason for this growth has been a recognition among political scientists that the sheer *number* of municipal elections, combined with interesting institutional variation across municipalities, makes municipal elections an excellent laboratory for important political science questions. For example, the varying presence and absence of political parties make it possible to better understand how parties structure representation, responsiveness and competition (Breux and Couture, 2018; Lucas, 2020b; Tausanovitch and Warshaw, 2014). Similarly, variation in ward versus at-large elections can help us understand how electoral institutions shape representational priorities (Koop and Kraemer, 2016; Welch and Bledsoe, 1990). Municipal election results have also enabled research on the causes and consequences of electoral reform (Lucas, 2020a; Santucci, 2017) and the spatial character of electoral cleavages (Doering *et al.*, 2020). While scholars must of course be aware of important differences between municipal and regional or national elections, these studies, among many others, highlight how the abundance and variability of municipal elections make it possible to explore research questions that are more difficult to study in elections at other scales.

A second reason for increased interest in municipal elections is a growing recognition of the importance of municipal politics and policy. Canadian municipalities today are large, complex, sophisticated organizations, with responsibility for issues that shape the day-to-day experiences of their residents. This is all the

more true in big cities, which not only address bread-and-butter issues of municipal policy but also play a central role in many of the most pressing issues of our era, from immigrant settlement to climate change (Lucas and Smith, 2019). Several Canadian municipal election studies, both single-case and comparative, focus on municipal elections not only for their larger lessons but also for their importance to the lives of millions of Canadians.

To enable this work, researchers need access to large, comparable and comprehensive municipal election results datasets. Outside Quebec, such studies have been minimal and sporadic. To our knowledge, past studies have been limited to one study of incumbency advantage (Lucas, 2020b), one survey-based study (Kushner and Siegel, 1997) and one dataset—closest to the one we develop here—of election outcomes in large municipalities across Canada (Breux et al., 2017). These datasets have been limited in scope, and most importantly, they have not been publicly available in accessible formats for other researchers.

### 3. The Canadian Municipal Elections Database

The Canadian Municipal Elections Database (CMED) is a large, public, actively maintained database of Canadian municipal election results. The database currently contains 24,153 unique elections from 1,843 municipalities, with 93,695 distinct observations, each of which represents a single candidate running in a single race. It includes data on votes received, votes cast, position sought, incumbency status, candidate gender, election magnitude (the number of individuals elected in each district), and candidate name for every candidate in every race; in some cases, it also includes additional information such as political party.

The CMED is built from four sources, summarized in Table 1. The first is the Canadian Municipal Barometer elections dataset, which consists of complete election results for the most recent election in every municipality above 9,000 population in Canada—442 municipalities in total. We created this dataset using central databases of election results (Manitoba, New Brunswick, Newfoundland and Labrador, Ontario), downloadable election results datasets (Alberta, British Columbia, Quebec) and official election results reported on municipal websites or provided to us by municipal clerks (Nova Scotia, Saskatchewan, Prince Edward Island). We then cleaned and standardized variables (such as names and vote totals) and calculated other variables (district magnitude and total votes). In some provinces (British Columbia, Alberta, Quebec, New Brunswick), candidates' gender was included in official results; in all other cases, we manually coded candidate gender using candidate names, and for all ambiguous names, we verified candidate gender using candidates' self-descriptions and pronoun use on their websites and by searching for photographs of candidates in online news coverage of the relevant elections. To confirm these codes, we then used a statistical inference package (Blevins et al., 2015) to infer the probability of each candidate's gender based on their first name, and we manually double-checked all candidates for whom the probability indicated substantial ambiguity (40–60% probability of a female name) along with any individuals whose probability score did not agree with our manual code (for example, candidates coded as female whose female probability was below 50%). Finally, for all candidates who were successfully elected, we visited

**Table 1** Canadian Municipal Elections Database: Data Sources

Subset of dataset	Years	<i>N</i>	Elections	Source
Canadian Municipal Barometer data	2016–Present	10,450	2,764	Manually entered from online sources
Canadian Urban Democracy data	1867–Present	24,139	5,519	Manually entered from archival sources
British Columbia data	2008–Present	9,883	1,757	CivicInfo BC official results
Quebec data	2005–Present	49,223	14,113	Government of Quebec official results
Total		93,695	24,153	

the websites of each of the 442 municipalities in the dataset to verify gender using official photographs.

The second data source is the Canadian Urban Democracy dataset, part of a larger project on the historical development of urban democratic institutions in Canada. This dataset contains complete election results for six of Canada's largest cities—Calgary, Edmonton, Montreal, Toronto, Vancouver and Winnipeg—for every election back to the nineteenth century. It was constructed by manually digitizing election results based on archival paper records, which we photographed in each city's municipal archives, as well as microfilm newspaper records when archival results were unavailable. We focused our attention on securing official election results, rather than results from newspapers or other sources, even when doing so required travel to archives to photograph results, because the city clerks who prepared the official results had a professional obligation to report results clearly and accurately. Given the historical character of the results, we acknowledge that we have no way of verifying the quality of the counting procedures or record-keeping from which we draw the results, except to note that available archival correspondence and newspaper coverage rarely indicate concerns about the quality of the official results or question the final vote counts. In Montreal, candidates' political party affiliations were provided as part of the official results, but in other cities we added each candidate's political party affiliation using secondary sources and inspection of microfilm newspaper coverage of hundreds of historical elections. We then manually coded candidates' gender using candidate names and, for more recent elections, by searching for candidates online using both Google searches and the Internet Archive's Wayback Machine. We once again used a gender inference package to identify ambiguous names and manually double-checked those names using microfilm newspaper coverage and online searches. In many cases, historical coding of candidates' gender was aided by gendered reporting conventions, in which all female candidates were referred to as "Miss" or "Mrs." in official election results. This data source includes 5,519 distinct elections across the six cities.

The remaining elections in the CMED are drawn from publicly available official results in British Columbia and Quebec. For British Columbia, we include results for 1,757 elections from CivicInfo BC, which provides results for British Columbia local elections since 2004. For Quebec, we include official government-reported results from 14,113 elections, which includes all municipal elections since 2005. The British

**Table 2** Summary of Canadian Municipal Elections Database by Time Period and Population

Time	Small population	Medium population	Large population
Deep history (1800s– 1999)	None	None	Calgary, Edmonton, Montreal, Toronto, Vancouver, Winnipeg
Recent history (2000– 2014)	All municipalities in Quebec since 2005; all municipalities in British Columbia since 2008	All municipalities in Quebec since 2005; all municipalities in British Columbia since 2008	All cities in Quebec and British Columbia, plus Calgary, Edmonton, Toronto and Winnipeg
Most recent election (2017– 2019)	All municipalities in Quebec and British Columbia	All municipalities above 9,000 population	All municipalities

Columbia results required little manipulation to add to the database. In Quebec, available government data was not sufficient to distinguish ward and at-large elections, which is necessary to construct our district magnitude variable. We therefore manually coded each of the more than 1,000 municipalities in Quebec for at-large or ward elections for each election year in the dataset. We did so with archival provincial government records using the Internet Archive's Wayback Machine.

We used a variety of strategies to identify and correct errors in the data, which we describe in more detail in the supplementary materials. For example, we checked hand-coded total vote counts with machine-calculated totals to identify and correct typographical errors. We also used machine-calculated vote shares to identify errors—flagging, checking and fixing cases with logically impossible vote shares (for example, above 100%) or extreme values (0% vote share and above 90% vote share). Finally, we checked vote share distributions for each district magnitude to visually identify and manually check outliers. Our Dataverse repository provides clear contact information so that researchers can contact us to correct any remaining errors and update the dataset.

Table 2 provides a summary of the available data in the CMED. As the table illustrates, the dataset is strongest for very large cities and most comprehensive for the most recent election, for which we have data for every municipality in Canada with a population of at least 9,000 and for all municipalities in Quebec and British Columbia. We emphasize that the results in the dataset are not samples but rather complete election results for the municipalities listed in the table.

#### 4. Municipal Elections and Women's Electoral Performance

To illustrate the value of the CMED for political science research, we now briefly analyze an important question in current research: the presence and size of gender differences in electoral performance. This question has been explored in past research in a variety of contexts. In the United States, studies of the US House of Representatives and Senate have suggested that women do not receive fewer votes than men in recent elections (Darcy and Slavin, 1977; Smith and Fox,

2001). In Canada, a recent study of federal elections (Sevi *et al.*, 2019) finds that the gender gap in vote share has decreased over time and is statistically indistinguishable from zero today; this study aligns with past findings at the federal level (Black and Erickson, 2003; Hunter and Denton, 2008) and in federal ridings in Quebec (Tremblay, 1995).

Because of the lack of election results data, Canadian studies of gender and municipal representation have focused on women's presence as a proportion of city councils. This work has generally found that women are not better represented at the municipal level than in provincial or federal legislatures (Tolley, 2011; Ogilvie *et al.*, 2020). Recent studies have deepened this work by exploring the predictors of women's municipal representation across institutions, population sizes and municipal positions (Breux *et al.*, 2019; Gavan-Koop and Smith, 2008; Sullivan, 2019).

Our analysis provides a first look at women's electoral performance in Canadian municipal elections; we restrict our focus to elections after 2000, allowing us to bracket the interesting but separate question of the history of the gender gap in women's electoral performance over time. We focus on a dichotomous outcome variable in our analysis—elected (1) or not (0)—for two reasons. First, variation in municipal district magnitude makes vote-share-based analysis less informative at the municipal scale. Second, our substantive interest is in who actually *wins* municipal elections; focusing on winners and losers is a more stringent and substantively meaningful test.

Our estimate of the relationship between gender and electoral performance could potentially be contaminated by temporal and spatial heterogeneity across elections. For instance, if women are more likely to run for office in recent elections, and if, for any reason, *all* candidates are more likely to win in recent elections than in the past (for example, if municipal elections are becoming less competitive over time), an estimate of gender and electoral performance that did not account for this time trend would be biased. The same could be true if competition varied across municipalities in ways that were also related to women's likelihood to run. We therefore include fixed effects (FEs) for election year and municipality to eliminate unobserved temporal and spatial heterogeneity from our estimate; the resulting coefficient can be interpreted as an estimate of the average difference in electoral performance between women and men within municipalities and election years. In addition, because incumbent success rates are high in Canadian municipalities, we control for incumbent status. For ease of interpretation, and because the linear probability model may be preferable to maximum likelihood estimators in models containing a large number of fixed effects, we fit an ordinary least squares (OLS) model in the main text. Our findings are robust to alternative specifications and estimators; we show in the supplementary materials that our results are substantively identical with a variety of alternative specifications as well as a logistic regression model.

Table 3 summarizes our analysis. Overall, women are 6 percentage points more likely than men to win municipal elections.<sup>3</sup> We show in the supplementary materials that this relationship is substantively large and statistically significant across municipal population sizes and regions; we also show that the relationship may be more pronounced among council candidates when compared with candidates for mayor. In addition to the results in Table 1, to enable direct comparison with previous studies at the federal level, we estimate 3.2 per cent higher vote

**Table 3** Regression Results: Gender and Probability of Electoral Success

	Probability of election
Woman	0.06*** (0.004)
Incumbent	0.34*** (0.004)
Year FEs	Yes
Municipal FEs	Yes
Observations	61,319

Note: Standard errors in parentheses.

\*  $p < .1$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ .

share for women than men in municipal single-member plurality elections; this estimate is very similar to recent federal estimates (Sevi et al., 2019).<sup>4</sup>

## 5. Conclusion

This research note has introduced the CMED and provided the first ever pan-Canadian estimate of gender differences in municipal electoral performance. This is just one example of the many questions that researchers might explore using the CMED. More in-depth research on gender and election outcomes would, of course, be a valuable extension to the findings we report here; for instance, preliminary analysis suggests that women are more likely than men to win municipal elections only in council elections, rather than mayoral elections.<sup>5</sup> This possibility, among others, is worthy of further research. Others may wish to use the database to explore patterns of incumbent success and incumbency advantage, electoral competitiveness, municipal turnout or challenger entry—these questions, and many others, are more tractable now that the CMED is available. Combined with municipal elections datasets in the United States (for example, Benedictis-Kessner, 2017; Benedictis-Kessner and Warshaw, 2020; Ferreira and Gyourko, 2009), the CMED will also enable scholars to explore comparative municipal elections research.

We also hope that this research note will serve as a catalyst for the further growth of the CMED across space (more municipalities) and time (more historical results). By clarifying the value of accessible election results data, we hope to persuade municipal officials, provincial governments and municipal associations to make election results available in complete and downloadable formats, thus reducing the need for manual data entry and enabling more widespread use of the data. We also hope that the CMED will inspire municipal archivists to make election results publicly available online, reducing the need for costly trips to municipal archives and enabling innovative digitization efforts using crowd-sourcing methods (Sumner et al., 2020) or university-based research teams.

**Supplementary material.** To view supplementary material for this article, please visit <https://doi.org/10.1017/S000842392000102X>

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## Notes

- 1 Data and replication files for this article are available at <https://doi.org/10.5683/SP2/PR4RMO>.
- 2 The database is available at this link: <https://doi.org/10.5683/SP2/4MZJPQ>.
- 3 Notice that this analysis also confirms our expectations regarding incumbency; incumbents are some 34% more likely, on average, to win municipal elections.
- 4 See supplementary materials (5).
- 5 See supplementary materials (6).

## References

- Benedictis-Kessner, Justin de. 2017. "Off-Cycle and Out of Office: Election Timing and the Incumbency Advantage." *Journal of Politics* **80** (1): 119–32. <https://doi.org/10.1086/694396>.
- Benedictis-Kessner, Justin de and Christopher Warshaw. 2020. "Politics in Forgotten Governments: The Partisan Composition of County Legislatures and County Fiscal Policies." *Journal of Politics* **82** (2): 460–75. <https://doi.org/10.1086/706458>.
- Black, J. H. and Lynda Erickson. 2003. "Women Candidates and Voter Bias: Do Women Politicians Need to Be Better?" *Electoral Studies* **22** (1): 81–100.
- Blevins, Cameron and Lincoln Mullen. 2015. "Jane, John . . . Leslie? A Historical Method for Algorithmic Gender Prediction." *Digital Humanities Quarterly* **9** (3). <http://www.digitalhumanities.org/dhq/vol/9/3/000223/000223.html>.
- Breux, Sandra and Jérôme Couture. 2018. "Accountability without Parties?" In *Accountability and Responsiveness at the Municipal Level: Views from Canada*, ed. Sandra Breux and Jérôme Couture. Montreal and Kingston: McGill-Queen's University Press.
- Breux, Sandra, Jérôme Couture and Royce Koop. 2017. "Turnout in Local Elections: Evidence from Canadian Cities, 2004–2014." *Canadian Journal of Political Science* **50** (3): 699–722.
- Breux, Sandra, Jérôme Couture and Royce Koop. 2019. "Influences on the Number and Gender of Candidates in Canadian Local Elections." *Canadian Journal of Political Science* **52**: 163–81.
- Darcy, R. and Sarah Slavin. 1977. "When Women Run against Men." *Public Opinion Quarterly* **41** (1): 1–12.
- Doering, Jan, Daniel Silver and Zack Taylor. 2020. "The Spatial Articulation of Urban Political Cleavages." *Urban Affairs Review*, July 16. <https://doi.org/10.1177/1078087420940789>.
- Ferreira, Fernando and Joseph Gyourko. 2009. "Do Political Parties Matter? Evidence from U.S. Cities." *Quarterly Journal of Economics* **124** (1): 399–422.
- Gavan-Koop, Denisa and Patrick J. Smith. 2008. "Gendering Local Governing: Canadian and Comparative Lessons—The Case of Metropolitan Vancouver." *Canadian Political Science Review* **2** (3): 152–71.
- Hunter, Alfred A. and Margaret Denton. 2008. "Do Female Candidates 'Lose Votes'? The Experience of Female Candidates in the 1979 and 1980 Canadian General Elections." *Canadian Review of Sociology* **24** (4): 395–406.
- Koop, Royce and John Kraemer. 2016. "Wards, At-Large Systems and the Focus of Representation in Canadian Cities." *Canadian Journal of Political Science* **49** (3): 433–48. <https://doi.org/10.1017/S0008423916000512>.
- Kushner, Joseph and David Siegel. 1997. "Ontario Municipal Elections Voting Trends and Determinants of Electoral Success in a Canadian Province." *Canadian Journal of Political Science* **30** (3): 539–53.
- Lucas, Jack. 2020a. "Reaction or Reform? Subnational Evidence on PR Adoption from Canadian Cities." *Representation* **56** (1): 89–109.
- Lucas, Jack. 2020b. "The Size and Sources of Municipal Incumbency Advantage in Canada." *Urban Affairs Review*. OnlineFirst. <https://doi.org/https://doi.org/10.5683/SP2/8BLD2I>.
- Lucas, Jack and R. Michael McGregor. Forthcoming. Introduction to *Big City Elections in Canada*, ed. Jack Lucas and R. Michael McGregor. Toronto: University of Toronto Press.
- Lucas, Jack and Alison Smith. 2019. "Which Policy Issues Matter in Canadian Municipalities? A Survey of Municipal Politicians." *School of Public Policy Publications (SPPP)* **12** (March): 1–25. <https://doi.org/10.11575/sppp.v12i0.56964>.
- Ogilvie, Megan, Cameron Tulk and Andres Plana. 2020. "How Well Are Women Represented on Your Local City Council?" *Toronto Star*, March 8. <https://www.thestar.com/news/canada/2020/03/08/how-well-are-women-represented-on-your-local-city-council-search-our-database-to-find-out.html>.



- Santucci, Jack. 2017. "Party Splits, Not Progressives." *American Politics Research* 45 (3): 494–526. <https://doi.org/10.1177/1532673X16674774>.
- Sevi, Semra, Vincent Arel-Bundock and André Blais. 2019. "Do Women Get Fewer Votes? No." *Canadian Journal of Political Science* 52 (1): 201–10.
- Smith, Eric R. A. N. and Richard L. Fox. 2001. "The Electoral Fortunes of Women Candidates for Congress." *Political Research Quarterly* 54 (1): 205–21.
- Sullivan, Katherine. 2019. "While the Notion That Women Are Making Great Gains in Canada's Municipal Politics Persists, the Data Say Gender Parity Is a Distant Dream." *Policy Options*, November 4. <https://policyoptions.irpp.org/magazines/november2019/only-a-fifth-of-canadian-mayors-are-women/>.
- Sumner, Jane Lawrence, Emily M. Farris and Mirya R. Holman. 2020. "Crowdsourcing Reliable Local Data." *Political Analysis* 28 (2): 244–62. <https://doi.org/10.1017/pan.2019.32>.
- Tausanovitch, Chris and Christopher Warshaw. 2014. "Representation in Municipal Government." *American Political Science Review* 108 (3): 605–41. <https://doi.org/10.1017/S0003055414000318>.
- Tolley, Erin. 2011. "Do Women 'Do Better' in Municipal Politics? Electoral Representation across Three Levels of Government." *Canadian Journal of Political Science* 44 (3): 573–94. <https://doi.org/10.1017/S0008423911000503>.
- Tremblay, Manon. 1995. "Les femmes, des candidates moins performantes que les hommes? Une analyse des votes obtenus par les candidates et candidats du Québec à une élection fédérale canadienne, 1945–1993." *International Journal of Canadian Studies* 11: 59–81.
- Welch, Susan and Timothy Bledsoe. 1990. *Urban Reform and Its Consequences*. Chicago: University of Chicago Press.

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