

## **Planning for the Future: Methodology Training in Canadian Universities**

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### **ABSTRACT**

Recent changes in government policy making and the labour market have created new opportunities for political scientists, provided that we have the skills to respond to them. We argue that changes need to be made in the area of methodology training in order to capitalize on these opportunities. Canadian political scientists should ensure that all our students acquire basic quantitative competencies, in addition to research design and qualitative analysis training, and that those graduate students interested in more sophisticated quantitative methods have the opportunity to develop those skills. We explain how expanding and deepening training in quantitative methods is one strategy for ensuring a role for political science in evidence-based policy making, for expanding labour market options for students, and for keeping apace with disciplinary trends. We caution, however, that special care needs to be taken to ensure that all political scientists have equal opportunities to develop such skills.

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As political scientists in Canada mark the 50<sup>th</sup> anniversary of the *Canadian Journal of Political Science*, social science disciplines and academic programmes are under increasing pressure to justify their relevance. Newspaper columnists decry a disconnect between what university professors teach their students and the skills needed in the labour force. Government initiatives challenge programmes to prove their worth in the academic market. Researchers in political science are encouraged to disseminate their research to a broader (and non-traditional) audience, often as part of knowledge mobilization (Bennet and Bennet 2013; Social Sciences and Humanities Research Council 2016, 14). This has understandably led to some reflection, including introspective works in political science (Lupia 2014; Stoker et al. 2015; Wood 2014) and broader critiques of Canadian post-secondary education (Clark et al. 2011; Coates and Morrison 2011).

Meanwhile, evidence-based policy (EBP) has gained importance in democratic governments' efforts to improve policy effectiveness. In Pierre Trudeau's first term (1968-1979), he advocated for EBP, which led to an increase in evidence-based policy *analysis* both within the state and the private sector (Brooks 2007, 38–40). When Justin Trudeau's government took office in 2015, he made clear that ministers would be expected to gather evidence prior to making decisions. For example, the mandate letter provided to the Minister of Innovation, Science and Economic Development made the prime minister's intentions clear: "I expect that our work will be informed by performance measurement, evidence, and feedback from Canadians" (Trudeau 2015). Given the complexity of social and policy problems, the demand for EBP analysis using increasingly sophisticated methods is only likely to continue (Mintrom 2007, 151).

While the natural sciences have an edge over the social sciences in certain discussions, like the science of climate change, the government's priorities also create an opportunity for the Canadian political science community. The best policy analysis combines technical skills with appropriate substantive and political expertise. Economists have tended to dominate policy analysis in Canada (Mintrom 2007, 146, 151–54), but in many arenas, political scientists have appropriate substantive knowledge and theoretical viewpoints to provide pertinent analysis and evaluation of competing policy options. Furthermore, new and exciting types of data that will facilitate policy-relevant political science research are being produced at a startling rate (King 2011; Margetts 2015), and Canadian funding agencies are developing recommendations for training and research infrastructure related to “big data” (Social Sciences and Humanities Research Council 2013, 5; Social Sciences and Humanities Research Council et al. 2013). The rapid changes in the types of evidence available and the renewed commitment to EBP create new opportunities for political science to raise its public profile and highlight its relevance with policy makers. How well equipped are we, as a community, to respond to this opportunity?

Our argument is simple. Political science needs to make training students to analyse empirical evidence a priority. This means that we need to ensure all students have the appropriate level of literacy, or competency, in quantitative analysis, in addition to research design and qualitative analysis, and that we provide sufficient opportunities for interested PhD students to develop advanced quantitative analytical and related technical (e.g., coding, programming) skills. Critical and normative approaches are a traditional strength of Canadian political science, but making a greater commitment to incorporate quantitative training will bring clear benefits to our discipline. First, enhanced quantitative training can expand our capacity to be effective contributors to policy making and partners in large-scale multidisciplinary research projects.

Second, training in quantitative methods can help undergraduate and graduate students capitalize on trends in the public, private, and academic labour markets. Third, our recommendations are consistent with broader trends in the discipline elsewhere. We caution, however, that Canadian political science must also take care to recognize the benefit of diverse viewpoints and ensure that no equity-seeking groups are left behind in our pursuit of greater quantitative capacity.

### **Answering the Demand for Evidence**

The desire for EBP is not new, nor is it uniquely Canadian (Executive Office of the President 2015; Wood 2014). The push for EBP is related to the transition to New Public Management (NPM) that occurred several decades ago. That shift was characterized by prioritizing efficient management and led to changes in how governments delivered their services. There have been some setbacks (Chouinard and Milley 2015), but the current Trudeau government appears to be fully embracing EBP. The Liberal platform notes, “We will appoint a Chief Science Officer who will ensure that...scientific analyses are considered when the government makes decisions.” (Liberal Party n.d.). Likewise, when Navdeep Singh Bains, the Minister of Innovation, Science and Economic Development, reinstated the long-form census, he stressed that “We're focused on sound, evidence-based policies. We want to make sure we're driving good policies based on good evidence and quality data.” (Harris 2015).

Though whether such statements will lead to substantive change is not certain, the current government climate is an opportunity for Canadian political scientists to use their expertise to inform the government. However, political science research is utilized less in policy making compared to other social science disciplines in Canada. Landry et al. (2001, 340) found that political science research ranked the *lowest* of six social science disciplines on a knowledge utilization scale. There are two sides to this finding. On the one hand, not all political science

research is nor should be related to public policy. On the other hand, much of our work has as much relevance to policy as other social sciences, such as anthropology or sociology. We have the expertise to help officials make informed policy choices, and we should take steps to make it more likely that our research will be used by policy makers. This means making an effort to communicate our findings in lay language, in non-academic fora (editorials, blogs, social media), and in a timely manner. Such strategies are associated with higher rates of research use by Canadian bureaucrats (Landry et al. 2001).

Beyond dissemination, the nature of the analyses is also relevant. Like others, we recognize that a variety of tools are needed to effectively address modern, complex policy questions (Birkett and Marsh 2014; Howlett and Lindquist 2007, 88; Peters et al. 2010, 329). High quality qualitative research in both causal and interpretive traditions has made crucial contributions to public policy debates. However, Canadian political science ought to make a concerted effort to broaden and deepen the discipline's quantitative toolbox for analyzing observational and experimental data, especially in an era of big data and EBP. Some evidence indicates that quantitative methodologies have a positive, significant impact on whether research is utilized by policy makers across social science disciplines in Canada (Landry et al. 2001). Improving our capacity to read, analyze and conduct quantitative analysis is important because we share research interests and methodologies with many other social science disciplines, including psychology, sociology, economics, and business. If we do not develop the capacity to understand the analysis of complex experimental or observational datasets (even if the actual data work is conducted by others), we may miss the opportunity to partner effectively with others and to be involved in interdisciplinary work in which political science might offer rich theoretical and empirical understanding of political and policy issues (Margetts 2015, 213–14).

## **Answering the Demand for Labour Market Hard and Soft Skills**

Governments emphasize investment and enrolment in STEM (Science, Technology, Engineering, and Mathematics) fields due to their contribution to innovation and economic growth, but new research suggests that in Canada, social science domain knowledge, or “social knowledge,” also contributes to innovation and economic growth (Hawkins et al. 2015). In addition, employers stress a range of soft skills, rather than industry-specific or functional knowledge, as top priorities for new employees, including working well with others, written and oral communication, problem solving, and analytical skills (Drummond and Rosenbluth 2015, 14–15; see also Aon Hewitt 2016). Furthermore, even though starting salaries between STEM and social science fields differ, in the medium term social science graduates close much of the earnings gap (Drummond and Rosenbluth 2015, 13). Despite this evidence that the hard and soft skills of social science graduates are sought after and contribute to growth, enrolments in the humanities and social sciences have recently grown more slowly than those in STEM fields (The Association of Universities and Colleges of Canada 2011).

The political science community can help counter the prevailing narrative by ensuring that our graduates have well-developed analytical skills, including an appropriate level of quantitative literacy. Political science, like many social sciences, has a comparative advantage over STEM training in that we often analyze real-world social, economic, and political problems. Many of us actively encourage development of the soft skills in high demand through student-centred classroom strategies and assignments. The emphasis on written and oral communication in our programmes also gives our students a set of skills not necessarily taught in STEM disciplines. Finally, we teach critical thinking and analytical writing, and our students are trained

to understand the background and context in which events take place. This needs to remain a priority in our programmes, as it is our inherent comparative advantage.

Nonetheless, we could do more to improve our undergraduate and graduate students' technical skills, including basic quantitative competencies for all and opportunities for advanced training for some. For example, research suggests that the Canadian public sector needs staff with better technical skills (Howlett 2009; Williams 2012). Likewise, the role of data scientist, or “someone who is better at statistics than any software engineer, and better at software engineering than any statistician” (Therriault 2016, 531), is in demand throughout the public and private sector, including in finance, journalism, and technology development, among others. According to those who have made the transition to such non-academic careers, applied non-academic research often requires both pragmatism and strong technical or methodological skills in order to address the limitations of imperfect data or research designs (Jackson 2016; Lau and Yohai 2016; Therriault 2016, 532). Understanding non-academic labour markets is important because most of our students do not become academics. In 2011, only 24 per cent of working-age (25-65) Canadians with PhDs in the social and behavioural sciences and law were employed as full-time university professors, with 38 per cent working in non-postsecondary education, law, or government, social and community services (Edge and Munro 2015, 22).

We therefore need to make sure that we equip our students with methodology training that is appropriate and useful for their level of study. As undergraduates, political science students typically consume knowledge produced by others. Methods training that focuses on research design with some exposure to qualitative and quantitative methods of analysis is appropriate for helping them effectively digest and comprehend research and information produced by others. At the master's level, students should be more informed, critical consumers,

who sometimes produce original work. Therefore, their training should include an understanding of the principles of research design, including statistical inference and basic bivariate quantitative analysis (e.g., the ability to construct quantitative tables and understand measures of association). PhD students, however, are being trained to produce research. Whether or not they end up in an academic environment, it is important that they have a well-stocked toolkit. Knowledge of research design is fundamental, as is awareness of the various ways that data can be analyzed to address pressing questions. It is crucial that our PhD students have an understanding of the range of qualitative and quantitative analysis methods, as well as proficiency in critically analysing their use. Further, once they identify a research question and appropriate method of analysis, we need to make sure they have the opportunity to learn the skills necessary to conduct the analysis effectively.

Most Canadian universities cannot claim to provide sufficient training to meet these market expectations. Although some departments may have since expanded their methods requirements, Parker (2010, 124) found that only 20 per cent of Canadian undergraduate political science degrees required a course on quantitative research methods and only 20 per cent required a course on research design or qualitative methods when he conducted his research. It is worth noting that according to his analysis, Canada lagged behind the seven peers examined, except Australia, when it came to requiring research design and qualitative methods training for undergraduates.<sup>1</sup> At the graduate level, many Canadian PhD programmes require no quantitative or technical training beyond one semester of research design or qualitative methods, and political methodology is not offered as a field of specialization. Departments that include quantitative training for some PhD fields usually offer no more than one semester<sup>2</sup>, which is sufficient to be a consumer of basic quantitative research but insufficient to become a producer of quantitative



work using the more advanced techniques increasingly common in the discipline. It is also insufficient to become an instructor in quantitative methodology. Therefore, not only are most PhD students currently unable to acquire the skills necessary to use quantitative methods that might be appropriate for their own research, but they may also lack exposure to the ideas and rationale behind quantitative methods, including basic quantitative literacy, that are necessary for staying up to date with current research, participating in interdisciplinary quantitative research projects, and training future political science students in such methods. Such skills are also potentially beneficial for employment outside of academia.

Part of the challenge is that students who choose political science as their area of specialty often lack minimal math skills. Most universities only require that students have a high school English course to be admitted into social science programmes, including political science, and foundational math courses are seldom required for undergraduate political science degrees. Other social science disciplines, like psychology and economics, require students to develop or supplement their math skills once they arrive at university. In addition, perhaps the biggest barrier is that some political science students have a “math phobia” and avoid quantitative data analysis on that basis, rather than being open to it depending on the research question. The starting point for teaching methods of quantitative analysis therefore is different than for qualitative analysis. To become fluent in the quantitative methods that dominate recent work, most students would need a foundation similar to that expected for economics or psychology. If political science degrees are to remain relevant in an era when funding for universities is contingent on observable outcomes, and parents and students are gravitating toward degrees with marketable skills, we need to recognize that empirical analysis, including quantitative analysis, is a formidable research skill and one worth devoting resources to. This could mean offering more

research design and methodology courses, partnering with other disciplines, or even incorporating elements of quantitative analysis into other courses.

In general, Canadian political science has not kept up with methodological trends in the discipline or social science elsewhere. For example, in the UK, the social sciences have been incorporated into the STEM agenda in public secondary schools (Marginson et al. 2013, 151). In addition, the creation of Q-Step Centres in 15 universities seeks to specifically address the UK's shortage of quantitatively trained social science graduates by investing in new quantitative training and educational programmes, including deepening graduate programs in quantitative social science (for more information, see Nuffield Foundation et al. 2014). This could prove a useful model for Canadian political science both to address stagnant undergraduate enrolments and to expand private and public sector job opportunities for our graduates. Meanwhile, political science departments in the US are key contributors to interdisciplinary degree programmes in “data science” at the undergraduate, master's, and doctoral levels (e.g., New York University, Pennsylvania State University). Some Canadian universities are also introducing similar interdisciplinary data science degrees, and where possible, political science departments should participate in such discussions.

We recognize that there remain structural barriers, such as restrictions on time to degree and prerequisite math training, to developing significant expertise in research methodologies, whether qualitative or quantitative, for most Canadian-trained political scientists. But the demand for such training, in Canada and elsewhere, is evident in the proliferation of extra-curricular short courses on specialized qualitative and quantitative methods. In qualitative and mixed methods research, the Consortium for Qualitative Research Methods (CQRM), hosted at Syracuse University, offers a two-week summer school in qualitative methods and counts several

Canadian political science departments among its membership. Several specialized training programmes are also available to learn specific quantitative skills, including Concordia University's Workshops on Social Science Research, the Laurier Summer Institute of Research Methods, and the Institute for Social Research at York University. Finally, a wider range of methodological training, including both qualitative and quantitative methods, is available abroad, such as from the Inter-university Consortium for Political and Social Research (ICPSR) Summer Program at the University of Michigan, the Essex Summer School in Social Science Data Analysis, and the Methods School of the European Consortium for Political Research (ECPR). Importantly, the availability of these programmes should not be seen as a simple solution: the offerings of such extracurricular programmes can be ad hoc, and students may not have access to funding for fees and travel to attend such training outside their home departments.

### **An Agenda for the Future of Canadian Political Science**

Research in political science, public administration and international relations has become increasingly quantitative (Corley and Sabharwal 2010, 639–40; Evans and Moulder 2011, 796; Kadera 2013, 2–3; Raadschelders and Lee 2011, 24; Schedler and Mudde 2010, 420). Consistent with these trends, analysis of publications by Canadian political scientists indicates that quantitative research tends to be cited more frequently than qualitative or purely theoretical work (Montpetit et al. 2008), although Blais et al. (2008) found that Canadian political scientists are much less quantitative than their American colleagues. Even those critical of the emphasis on research design and methods in political science admit that those using sophisticated research designs and methods increasingly act as disciplinary gatekeepers and trend setters (Mead 2010, 454). As a community, our quantitative expertise lags behind that of our colleagues elsewhere, and yet we compete for publication space in many of the same journals with international

reputations. We do not think that we should change how we do what we do well, but enhancing training in quantitative methods in Canadian political science can ensure that our community stays relevant and up-to-date with disciplinary trends.

We caution, however, that even if resource constraints are overcome, adopting a more rigorous programme of quantitative methods training can also create new challenges. In general, we know that women and some equity-seeking minority groups are less likely to use quantitative methods in political science (Achen 2014; Blais et al. 2008; Breuning and Sanders 2007, 349–50; Evans and Bucy 2010, 299; Evans and Moulder 2011, 796; Maliniak et al. 2008, 123–24, 133–34).<sup>3</sup> Already, women, Indigenous, and visible minority political scientists are underrepresented relative to their share of the population and are more likely to leave the profession or report barriers to their success in Canada (CPSA Diversity Task Force 2012, 11–13). We need to be mindful not to exacerbate pre-existing imbalances, and so the Canadian political science community needs to recognize both the importance of providing basic methodology training for all students *and* of providing opportunities for women and other equity-seeking groups to acquire advanced skills and use such methods when appropriate for their research.

Beyond issues of diversity and equity within the profession, ensuring that a diverse group of political scientists has competencies in quantitative analysis is important for at least two other reasons. First, to the extent that academic, public, and private sector labour markets increasingly seek workers with quantitative or technical competencies, we should ensure that all our students are equally prepared with the basic skills and the opportunities to learn advanced skills that can contribute to labour market and career success. Second, women and members of equity-seeking groups are more likely to study issues related to gender or minority group politics (CPSA Diversity Task Force 2012, 8–9). Encouraging women and members of equity-seeking groups to

acquire quantitative skills will help ensure sufficient research capacity to address pressing policy and political questions that can benefit from quantitative analysis while minimizing the extent to which minority perspectives are ignored or overlooked (Achen 2014). For example, Walter and Andersen (2013, 10) persuasively argue that quantitative literacy can be essential to challenge and critique dominant social science epistemologies, including quantitative data collection and analysis, that clash with Indigenous epistemologies or ways of knowing.

Recognition of the underrepresentation of women and equity-seeking minorities in STEM fields is widespread and a concern of the current Canadian government (Charbonneau 2016). We should be careful not contribute to it as we seek to increase the quantitative aspect of political science training. This is not just a Canadian problem. In the United States, focused efforts and programmes are in place to help diversify the political science discipline. For example, the American Political Science Association has for 30 years organized a highly successful summer programme that includes quantitative training for African-American and Latino students to help improve their chances for graduate school success. Likewise, the Visions in Methodology network, in coordination with other efforts of the Society for Political Methodology, seeks to support and encourage women to acquire, use, and develop advanced experimental and quantitative methodologies (Dion 2014). Adopting similar programmes in Canada, or considering preferential policies for access to scholarships for specialized training opportunities, would be positive steps in this regard.

## **Conclusion**

Political scientists are trained to develop theories to understand the world around us. We have a comparative advantage in the theoretical and contextual knowledge of politics. We thus have much to offer through our research, but if we lack the capacity to provide sound empirical

analysis, including quantitative when it is appropriate, we may miss critical opportunities to contribute and partner with interdisciplinary teams, the government and even the private sector on issues where our insights would be most useful. This would be a twofold loss: the quality of public policy would suffer and it would lessen the visibility of political science as a discipline.

As a community of educators, we need to make sure that future political scientists are well-positioned to provide sound data analysis in the current context of EBP and big data. Our PhD students should be equally capable in qualitative and quantitative methods in order to have a fully stocked toolkit with which to approach their research questions. We should also support those who show an interest or aptitude for specific types of analysis by either providing advanced training ourselves or facilitating their enrolment in programmes elsewhere. Knowing how to analyze data is an important skill, but knowing what data to look for and which theories might be relevant in explanations is crucial for high-quality analyses. As such, political science training that combines knowledge of the political and policy context with quantitative and technical skills should create a comparative advantage over other fields for our graduates.

In many ways, our call for greater attention to training Canadian political scientists in the use of quantitative methodologies echoes that of Adam Shortt, one of the founders of the CPSA, who wanted political science to help formulate solutions to complex social problems (Brooks 2007, 27). To the extent that we want to encourage greater quantitative and technical competencies, not just for their own sake but to improve our discipline's ability to contribute to important political and policy debates, our call also answers critiques of the discipline that it has become too narrow and has abandoned addressing real-world problems (Shapiro 2007). We think this anniversary of the *CJPS* is an opportune time to revisit this mission and in so doing ensure that Canadian political science is prepared for current and future opportunities. At the same time,

given the extent to which policy analysis in particular has become more pluralist, it is essential that efforts to advance the technical capacity of political scientists provide sufficient opportunities for all perspectives, including those of women and equity-seeking minorities, to be heard.

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## Endnotes

<sup>1</sup> Parker's (2010) sample included all universities in Australia, Canada, Finland, the Netherlands, Norway, Sweden, and the United Kingdom and a random sample of 200 universities in the United States. With regard to quantitative methods requirements for undergraduates, degree programs in Canada were similar to those elsewhere, with the exception of Norway and the Netherlands, where a high proportion of degrees require quantitative course work.

<sup>2</sup> Of course, some programmes offer additional courses and advanced training opportunities for students.

<sup>3</sup> The literature referenced mostly examines gender and methodology in publications due to the difficulty in measuring ethnic identity or membership in other potentially underrepresented groups (e.g., LGBTQ). However, the Society for Political Methodology/Methodology Section of the American Political Science Association has identified underrepresentation of members of equity-seeking minority groups as an issue of concern.