Indigenous Futures: Research Sovereignty in a Changing Social Science Landscape

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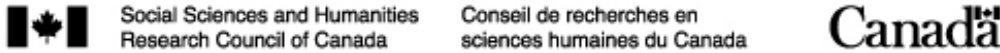
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Key messages

In Canada, social science research is paying increasing attention to Indigenous issues. However, much of this research remains based on existing primary and secondary sources and/or does not engage Indigenous peoples in the research process. Even among studies that include human research participants, Indigenous community participation is often limited to the minimum required by Tri-Council policies. Fewer studies involve deeper involvement of Indigenous communities in research. To the extent that involvement in social science research builds research capacity and promotes research sovereignty, **social science researchers should be encouraged to deepen the participation of Indigenous communities in their research**. This stimulus should go beyond ethical requirements and include financial and career incentives for Indigenous participatory research.

When Indigenous communities participate in or lead social science research or when research teams include at least one Indigenous researcher, studies are more likely to include Indigenous epistemological perspectives (or world views) and participatory evidence sources and methods of analysis. While we cannot speak directly to whether increased participation increases the use of Indigenous approaches or whether such approaches foster increased participation, the association is clear. **Social science researchers studying Indigenous issues in Canada should be trained in Indigenous perspectives and encouraged to incorporate Indigenous participation in their studies, especially when such studies are grounded in mainstream disciplinary approaches and methods.**

Many studies include only minimal participation by Indigenous communities, and a small minority of studies appear to not even meet minimums required by Tri-Council policies. However, we also found that published studies are often mute on their ethics approvals and processes, making it difficult to determine what role (if any) Indigenous communities played in the research. **Researchers should be transparent and report their ethics approvals and processes, and editors and publishers should encourage and support such transparency.**

Almost half of the 500 journal articles we reviewed on Indigenous issues in Canada over the last decade appeared in just ten journals, and nearly 20% of articles were distributed across disciplinary journals that published no other work on this topic. On the one hand, the concentration in a small number of journals reflects a rich community and space of scholarly dialogue. On the other hand, this pattern also suggests that research on this topic has not found similar space in mainstream, international journals, which are often privileged by hiring and promotion committees in universities. **Gatekeepers, like article reviewers and journal editors, should recognize the value of participatory research that includes Indigenous perspectives, and university policies should recognize epistemological and methodological biases in mainstream, disciplinary publications and should ensure that Indigenous scholars and research is not devalued or disadvantaged.**

Overall, we document a rich but very small body of scholarship that embraces Indigenous world views and participatory research practices within the social sciences. However, we also find significant room for improvement. **Universities should foster equitable knowledge exchange between social scientists and Indigenous communities, including around issues of epistemology and methodology.** Equitable exchange includes expanding the role of Indigenous scholars and communities inside and throughout the university, not just the expansion of Indigenous programs.

Executive Summary

The issuance of the Truth and Reconciliation Commission (TRC) of Canada report provides an opportunity and clear need to reaffirm the right of Indigenous communities to be equal partners and leaders in research within their communities. Similarly, Indigenous communities have articulated the principles and policies that should guide research within their communities as well as the ways in which social science methods, including statistical approaches, can be harnessed to promote self-determination among Indigenous communities. Meanwhile, social science research is becoming increasingly technical, often using complex research designs and highly technical methodological approaches, including specialized quantitative analyses of experimental and observational data. Institutional, organizational and human resources are required to support Indigenous Peoples in their development of capacity to critique, participate in and lead social science research in their communities. Without these types of resources, Indigenous perspectives are at risk of being ignored or undervalued, particularly in instances of evidence-based policy making.

Specifically, we ask:

1. What are the primary methodological approaches used across social science disciplines to study Indigenous issues in Canada?
2. To what extent do Indigenous peoples and communities in Canada actively participate in social science research in their communities, including by methodological approach?
3. Where are the institutional, organizational, and human capital capacity competencies and gaps in Canada, and how does the Indigenous research landscape in Canada compare to those in the United States, Australia, and New Zealand?

To address our 3 research questions outlined above, we compiled and analyzed two new bibliographic databases:

- *Canadian Social Science Indigenous Research (CSSIR)* database of peer-reviewed and grey literatures in multiple social science disciplines that include Indigenous peoples or communities in Canada as the primary population of interest between 2005 and 2015
- *Indigenous Social Science Research Policy (ISSRP)* database compiles existing peer-reviewed and grey literature on the existing institutional, organizational, and human resources related to social science research methodologies in Canada, the United States, Australia, and New Zealand published between 2005 and 2017.

What are the main approaches and levels of Indigenous participation in social science research?

We construct and analyze a new bibliographic database of peer-reviewed journal articles, books, and grey literature published in the last decade on Indigenous issues in Canada. We developed our classification system from the following understandings about social science research (for a discussion of these issues in qualitative research, see Lincoln, Lynham, and Guba 2011). Our classification system was also informed by our understanding of Indigenous epistemologies and methodologies. While there is not one Indigenous methodology, but many (Kovach 2010), Indigenous methodologies often share an epistemological understanding of knowledge as relational, as between peoples or between people and the natural world (Wilson 2001). We classified over 500 journal articles according to their epistemologies, evidence sources, and methods of analysis. We also coded the gender, organizational affiliation, and Indigenous self-identification of the first five authors of each article. Additional study characteristics, such as

study setting (e.g., urban, on reserve) and whether an Indigenous language was used were also coded. Finally, we coded the level of Indigenous community participation, including a separate category of studies led by Indigenous communities.

Our preliminary analysis of the CSSIR database suggests that there is significant room for improvement in the ways in which Indigenous peoples participate in social science research about their communities in Canada. First, half of all research does not include any interaction with Indigenous peoples. On the one hand, theoretical or conceptual studies or those relying on only primary and secondary sources are not necessarily less supportive of Indigenous research sovereignty. On the other hand, such research could benefit from greater input and interaction with Indigenous peoples and communities. Second, research that involves interaction with Indigenous research participants could go much further to go beyond minimum requirements of Tri-Council policies and to deepen meaningful Indigenous participation in research. Third, relatively little research is led by Indigenous communities, uses Indigenous languages, or includes authors who self-identify as Indigenous. This, too, suggests room for improvement in supporting and promoting research participation by Indigenous peoples and scholars.

The results also suggest that there is an association between higher levels of participation by Indigenous communities and the use of Indigenous epistemologies and evidence sources and analysis methods that are consistent with greater participation of Indigenous peoples. Likewise, when Indigenous communities or authors directly lead research, studies more often include Indigenous perspectives and evidence and methods that directly engage Indigenous peoples and communities.

What institutional, organizational, and human capital resources support Indigenous research in Canada, the United States, Australia, and New Zealand?

Institutions or formal and informal rules, policies and norms that shape research on Indigenous Peoples include relevant research policy, ethical regulations, incentives, and epistemologies. These institutions present several similarities across the four countries included in this report. In the last four decades, all four countries initiated a transition from colonial studies that considered Indigenous Peoples as research objects to decolonizing research through the recognition of Indigenous knowledge and Indigenous people as researchers. This movement is part of the demand from Indigenous nations and communities for their right to self-determination. As a result, all four countries have developed ethical guidelines to regulate and oversee research on Indigenous individuals and communities. Despite the development of ethical regulation and some funding programs that acknowledge Indigenous knowledge and rights to decide on their own research, some other academic rules create conflicts. Researchers working with participatory research and Indigenous epistemologies still have greater difficulties obtaining funding for their studies and publishing their work in mainstream high-impact peer reviewed journals.

Organizations that promote/conduct research and/or researcher training in Indigenous studies have experienced recent changes in all four countries. Indigenous organizations were established to promote participatory research and the recognition of Indigenous knowledge. Also, with the exception of Australia, all countries have seen the expansion of Indigenous-led tertiary institutions that have widely contributed to the Indigenization of the curriculum and the consolidation of Indigenous scholarship. However, these changes have been insufficient to grant full recognition to Indigenous knowledge and increase the research capacity of Indigenous

communities. Participatory research and research partnerships still do not enjoy the same status and recognition of traditional research and universities do not have sufficiently skilled scholars to conduct these kinds of studies.

Despite changes in institutions and organizations that shape Indigenous research, gaps of human capacity remain in all four countries. While literature on human capacity for social science Indigenous research is scarce, mainly composed of policy-oriented reports that focus on initial levels of postsecondary education (non-degree and bachelor programs), it shows that there is a pipeline problem that starts with high school completion and extends to faculty recruitment and promotion. In all four countries, this pipeline is attributed to limited funding for postsecondary Indigenous education, lack of culturally relevant career guidance, neglect of Indigenous knowledge and values at mainstream universities, and persistent racism. Excepting Australia, all countries have developed Indigenous tertiary institutions that have contributed to increased Indigenous participation in higher education. Yet, these institutions are often underfunded and have difficulties attracting and retaining faculty. Increased funding is another common solution but at least in the case of Canada and the US, such increases are constrained by the overlapping of responsibilities between provinces (states), the federal level, and Indigenous Nations.

Overall, while the development of ethics statements and policies has been a sign of significant progress, Canada still falls short of full recognition of Indigenous knowledge. To achieve it, some lessons could be learned from other countries, such as the Indigenization of the curriculum through Indigenous-led pedagogical innovations and the participation of Indigenous individuals (e.g. Elders) in university governance as implemented in New Zealand. Also, though numbers of Indigenous scholars in Canada are comparable to the US and Australia, Canada could increase its number of Indigenous scholars, following models used in Australia and elsewhere. Finally, although none of the analyzed countries has solved the conflict between promoting participatory, Indigenous-led research and mainstream academic metrics, Indigenous-led institutions could offer lessons to revise these metrics and harmonize academic success with community –based research and scholarship.

Key messages

- Social science researchers should be encouraged to deepen the participation of Indigenous communities in their research.
- Social science researchers studying Indigenous issues should be trained in Indigenous perspectives and encouraged to incorporate Indigenous participation in their studies, especially when studies are grounded in mainstream disciplinary approaches and methods.
- Researchers should be transparent and report their ethics approvals and processes, and editors and publishers should encourage and support such transparency.
- Gatekeepers, like article reviewers and journal editors, should recognize the value of participatory research that includes Indigenous perspectives, and university policies should recognize epistemological and methodological biases in mainstream, disciplinary publications and should ensure that Indigenous scholars and research are not devalued or disadvantaged.
- Universities should foster equitable knowledge exchange between social scientists and Indigenous communities, including around issues of epistemology and methodology.

Context

The issuance of the Truth and Reconciliation Commission (TRC) of Canada report (Truth and Reconciliation Commission of Canada 2015) provides an opportunity and clear need to reaffirm the right of Indigenous communities to be equal partners and leaders in research within their communities, principles echoed in the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada 2014). Similarly, Indigenous communities have articulated the principles and policies that should guide research within their communities (First Nations Information Governance Centre (FNIGC) n.d.) as well as the ways in which social science methods, including statistical approaches, can be harnessed to promote self-determination among Indigenous communities (Walter and Andersen 2013). Meanwhile, social science research is becoming increasingly technical, often using complex research designs and highly technical methodological approaches, including specialized quantitative analyses of experimental and observational data. Institutional, organizational and human resources are required to support Indigenous Peoples in their development of capacity to critique, participate in and lead social science research in their communities.[1] Without these types of resources, Indigenous perspectives are at risk of being ignored or undervalued, particularly in instances of evidence-based policy making (Maddison 2012).

This knowledge synthesis critically examines methodological trends in social science research on Indigenous issues in Canada, paying attention to the participation of Indigenous scholars and communities. We construct and analyze two bibliographic databases to answer the following empirical research questions crucial to assess the extent to which Indigenous scholars or communities are active participants in social science research in their communities:

1. What are the primary methodological approaches used across social science disciplines to study Indigenous issues in Canada?
2. To what extent do Indigenous peoples and communities in Canada actively participate in social science research in their communities, including by methodological approach?
3. Where are the institutional, organizational, and human capital capacity competencies and gaps in Canada, and how does the Indigenous research landscape in Canada compare to those in the United States, Australia, and New Zealand?

In this knowledge synthesis, we present and discuss descriptive and bivariate statistics on methodology and degree of Indigenous research participation in research over the last decade related to Indigenous individuals or communities in Canada. We also provide a qualitative interpretive synthesis based on the existing literature to identify the primary strengths and weaknesses in the existing institutional, organizational, and human resources necessary to ensure autonomous Indigenous social science research capacity in Canada and in comparison to international peers.

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[1] Institutional resources are policies and practices in Indigenous and non-Indigenous research contexts. Organizational resources are established networks or organizations that can help articulate and share best practices. Human resources refers to individuals with sufficient experience or technical training to critique and carry out a wide range of social science research methodologies.

Our descriptive and interpretive analyses scope the existing Indigenous social science research capacity necessary to achieve the emancipatory aims of the TRC of Canada and uphold the research principles articulated by Indigenous communities and Tri-Council policies. Given a recently renewed commitment by the Canadian government to evidence-based policy-making (Liberal Party n.d.; Semeniuk 2015), it is particularly important that Indigenous researchers and communities be supported in developing the technical capacity to critique, participate in, and lead the collection and analysis of such evidence.

Background literatures: The landscape of social science & Indigenous research

In the late 1990s and early 2000s, new reflections on the ethics of research with and within Indigenous communities in Canada explicitly acknowledged past abuse of Indigenous research participants and articulated the need to acknowledge and value Indigenous knowledge and perspectives and ensure that such research supports self-determination (First Nations Information Governance Centre (FNIGC) n.d.; Social Sciences and Humanities Research Council of Canada, Natural Sciences and Engineering Research Council of Canada, and Canadian Institutes of Health Research 2005; Interagency Advisory Panel on Research Ethics (PRE) 2015). For example, in 1998, out of a meeting convened to discuss the *First Nations and Inuit Regional Longitudinal Health Survey*, First Nations participants articulated the principles that should guide all research among First Nations (First Nations Information Governance Centre (FNIGC) n.d.). According to the First Nations Information Governance Committee, the key principles that should guide research are Ownership, Control, Access, and Possession.

As part of its renovation of the Tri-Council Policy on ethical research involving humans in the early 2000s, the Interagency Advisory Panel on Research Ethics facilitated continued dialog among Indigenous communities, researchers, and government to articulate a broader set of principles and practices that "draw on the evolution of research ethics in local Aboriginal communities and stimulate mutual and respectful exchange of knowledge between Aboriginal and non-Aboriginal research environments" (Interagency Advisory Panel on Research Ethics 2005). The resulting report included contributions from multiple Indigenous communities in Canada and recommendations to inform revisions of the Tri-Council Policy on ethics for research involving human subjects (Aboriginal Research Ethics Initiative (AREI) 2008). The substantially revised Tri-Council Policy in ethics in human research has since included guidance regarding research in Indigenous communities that is designed to protect and enhance Indigenous autonomy and voice in research (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humananities Research Council of Canada 2014; Social Sciences and Humanities Research Council of Canada, Natural Sciences and Engineering Research Council of Canada, and Canadian Institutes of Health Research 2010).

Implications

We aim to understand the range of research methods, methodologies, and Indigenous participation in social science research as a starting point to identifying potential institutional,

organizational, or human resource gaps in Indigenous research capacity. Three recent trends make the need for this assessment both urgent and timely.

First, technological changes are ushering in a new era of social science data collection, including by governments. Overall, the range of social data generated and intentionally collected has grown substantially since the 1998 adoption of the Tri-Council policy on ethics in research on human subjects (King 2011). The Canadian government collects a wide range of administrative and observational (primarily survey-based) data related to Indigenous individuals and communities. For example, Statistics Canada publishes a report summarizing key indicators related to Indigenous Peoples in Canada based on census and administrative datasets (Statistics Canada 2015). Statistics Canada also administers or maintains many surveys or special survey modules of Indigenous Peoples in Canada, including the Aboriginal Children's Survey, Aboriginal Peoples Survey, National Household Survey, among others. These data are useful for both Indigenous and non-Indigenous academic and government researchers, but it is unclear how extensively these data are used and to what extent Indigenous researchers or communities are using them to answer community-driven research demands.

Second, the current government has articulated a renewed commitment to evidence-based policy-making (Liberal Party n.d.; Semeniuk 2015). Indeed, one of its first acts was to reinstate the Long Form Census, explicitly stressing the importance of such information in evidence-based policy-making (Harris 2015). However, research from Australia suggests that Indigenous knowledge and perspectives are often discounted or ignored in the process of evidence-based policy-making (Maddison 2012). The current Canadian government's commitment to evidence-based policy-making increases the urgency of ensuring that Indigenous Peoples in Canada have the institutional, organizational, and human resources to actively critique, participate in and lead social science research with clear policy implications.

Finally, the social sciences have become increasingly technical, using sophisticated qualitative and quantitative methodologies, with the latter becoming increasingly dominant in many social science disciplines (Shapiro 2007). Research in sociology, economics, political science, public administration and international relations has become increasingly quantitative (Hudson 1996; Fisher et al. 1998; Moody 2004; Breuning and Sanders 2007; Hunter and Leahey 2008; Mead 2010; Evans and Moulder 2011; Corley and Sabharwal 2010; Raadschelders and Lee 2011; Kadera 2013). Thus, there is an increased demand for Indigenous researchers and communities to understand various research methods, including qualitative and quantitative methodologies that are used by universities, government and consultants. Such capacity could also enhance reconciliation and nation rebuilding. Academic researchers are well positioned to lead this process in a way that emphasizes relationship-building, capacity building, and integrating Indigenous understandings and approaches to well-being and other culturally-specific values and priorities.

While our project seeks to understand and build capacity for Indigenous participation in social science research, including non-Indigenous ways of knowing, we do not do so because we believe social scientific methods provide a "better" way of knowing. Rather, we acknowledge the structural position of power accorded to mainstream, academic methodologies. If Indigenous researchers and communities are to be supported in developing sufficient technical capacity to effectively counter, participate in, or lead social science research, they need to be familiar with leading qualitative and quantitative methodologies. They need institutional and organizational resources with the capacity to enforce the principles articulated by Indigenous communities (First Nations Information Governance Centre (FNIGC) n.d.) or Tri-Council Agencies (Canadian

Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada 2014). Indeed, in Canadian health research, building Indigenous research capacity has been essential to ensuring that Indigenous communities were given voice and became partners or leaders in research in their communities (Anderson 2011).

Indigenous People remain underrepresented relative to their representation in the population among those with PhDs or holding academic appointments in universities (Ramos 2012). The current Minister of Science, Kirsty Duncan, has stressed the importance of ensuring that women and other underrepresented groups, including Indigenous Peoples in Canada, pursue careers in STEM fields (Charbonneau 2016). In light of the recent Call to Action of the TRC to "establish a national research program with multi-year funding to advance understanding of reconciliation" (Truth and Reconciliation and Commission of Canada 2015), we need to better understand methodological trends in the social sciences to identify the range of technical skills needed for Indigenous individuals and communities to be equal partners and leaders in social science research involving their communities.

Approach

To address our 3 research questions outlined above, we compiled and analyzed two new bibliographic databases:

- *Canadian Social Science Indigenous Research (CSSIR)* database of peer-reviewed and grey literatures in multiple social science disciplines that include Indigenous peoples or communities in Canada as the primary population of interest between 2005 and 2015 and
- *Indigenous Social Science Research Policy (ISSRP)* database compiles existing peer-reviewed and grey literature on the existing institutional, organizational, and human resources related to social science research methodologies in Canada, the United States, Australia, and New Zealand published between 2005 and 2017.

What are the primary methodological approaches used to study Indigenous issues?

The approach to answering this question begins with the construction of a new bibliographic database of peer-reviewed journal articles, books, and grey literature published in the last decade on Indigenous issues in Canada. Appendix A provides additional detail about the search strategy, screening process, and coding protocol used to build the database. First, we conducted several searches of academic databases and targeted searches of specific portals or websites to identify as many potentially relevant items as possible. Second, we trained two research assistants to screen the titles and abstracts of all the items to exclude those that did not belong in the study. Third, we developed a classification system to identify (operationalize) differences across the publications with regard to epistemological perspective, evidence sources, and methods of analysis. Fourth, research assistants were trained in the coding protocol and met weekly with other members of the team to discuss and resolve coding questions.

We developed our classification system from the following understandings about social science research (for a discussion of these issues in qualitative research, see Lincoln, Lynham, and Guba 2011). First, social science research encompasses a range of different epistemological perspectives that each represent different assumptions about the nature of knowledge. Second, different epistemological perspectives (or paradigms) suggest or require different research

methodologies, or processes for pursuing knowledge. Third, methods, particularly when thought of as a "tool" of data collection, may often be used as part of different methodologies with different epistemological perspectives. For example, one-on-one interviews can be used as part of both an interpretive or a positivist methodology, and while similar in some ways, the types of questions and dynamics of one-on-one interviews will vary depending on the methodological and epistemological perspective of the study. That is, *some* methods of data collection and analysis may be flexible enough to use with different methodological or epistemological perspectives, but *all* methods in social science research inherit and should be shaped by the study's epistemological perspective.

Our classification system was also informed by our understanding of Indigenous epistemologies and methodologies. While there is not one Indigenous methodology, but many (Kovach 2010), Indigenous methodologies often share an epistemological understanding of knowledge as relational, as between peoples or between people and the natural world (Wilson 2001). Furthermore, like mainstream social science, the use of Indigenous methodologies requires an alignment between a method as tool and the epistemological perspective or worldview guiding the study. For us, this means that some research methods used as part of an Indigenous methodology may share some basic characteristics with mainstream social science methods, but when informed by an Indigenous epistemology, the use of those methods will differ in important and meaningful ways from the ways in which they may be used with other social science epistemologies.

Overall, we designed our classification system in such a way that it helps us identify systematic similarities and differences across research projects while always acknowledging that in practice the use of different methods is often shaped in important ways about the underlying epistemology and understanding of the world and power relationships in it. This means that we may sometimes group together studies according to their evidence source (e.g., one-on-one interaction between researcher and study participant) that vary dramatically in their epistemological perspective. Likewise, our classification system allows us identify the range of evidence sources that are used within one epistemology. Therefore, it is often most informative to use more than one dimension of the research methodology to describe any one item in our database.

Specifically, we code each article in the database according to its epistemology, evidence source, and method of analysis. An article can have more than one epistemology, evidence source, or method of analysis. See Appendix A for definitions of all categories.

We coded *all* the epistemological perspectives identified or used in each article, including:
- positivist/post-positivist,
- constructivist,
- critical,
- post-modern, and
- Indigenous.

The evidence sources used in each article are coded as including:
- experiment,
- survey,
- one-on-one dialogue,
- experience,
- group dialogue,
- primary sources,
- secondary sources,
- reflexive sources, and
- other sources

Method of analysis used in each article may include any of the following:

- quantitative descriptive,
- quantitative inferential,
- interpretive ethnography,
- positivist ethnography,
- qualitative content analysis,
- discourse analysis,
- qualitative comparative case analysis,
- inductive analysis,
- participatory methods of analysis,
- agent-based modelling/simulations, and
- other methods of analysis.

In addition, we coded several characteristics of the first five authors of all the articles, including whether they self-identified as Indigenous and whether they are affiliated with an educational, governmental, or non-profit organization.[2] We also use Genderize.io to generate an estimated probability that each author is gendered female based on their first name.[3] We also code whether the research was conducted using an Indigenous language, the name of the location or place where the study took place, as well as coding whether it is an urban or on-reserve research setting. Finally, we also include all the available metadata, including keywords and author keywords, associated with each item. These indicators allow us to answer this first research question and describe the epistemological and methodological approaches used in the articles as well as other key characteristics of the study settings and the five principal authors.

To what extent do Indigenous individuals or communities in Canada actively participate in social science research?

Our approach to measuring Indigenous research participation draws upon existing work on Indigenous research (Kovach 2010; Smith 1999; Wilson 2008; and Tri-Council Policy Statements) and community-based, participatory methods (Goodman, Bird and Gabel 2017). We consider Indigenous participation to be an ordinal scale indicator that includes:

- no human participation involved (theoretical and/or conceptual studies or research based on existing sources),
- omitted participation (omits the involvement of Indigenous individuals and the review and approval from Indigenous communities),
- acknowledge (limit the participation of Indigenous communities to the approval of ethics protocol),
- engage (minimal involvement of Indigenous communities in the project focused primarily on sharing information),
- collaborate (partner with Indigenous participants in each aspect of the research process), and
- empower (very strong, entrenched involvement).

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[2] Since a majority of authors do not explicitly articulate whether they do/do not self-identify as Indigenous, our reliance on such explicit self-identification may not accurately capture the number of Indigenous authors.

[3] We recognize that gender is not a binary identity. The Genderize.io database uses social media profiles and other large datasets to estimate a probability that a first name is associated with a female gender identity. The database includes this probability, if available, from querying the Genderiz.io API. A recent study suggests the error rate for misgendering first names is only 2% (Teele and Thelen 2017).

Non-participatory →		Low level of involvement →		High level of involvement	
No human involvement	Omitted participation	Acknowledge	Engage	Collaborate	Empower

We included a separate dichotomous indicator for Indigenous-led studies in which Indigenous communities initiate and have leadership of the research process, which means they have greater power than non-Indigenous researchers or organizations. These studies go beyond research conducted by individual Indigenous researchers in educational or non-educational institutions.

This classification, combined with those for the articles' epistemology, evidence sources, and analysis methods, and other related indicators described above, allows us to describe the distribution of approaches and authors who have published research on Indigenous issues in Canada over the last decade as well as explore the extent to which certain article or author characteristics tend to coincide. In the results section, we present several tables and figures illustrating trends and associations found in the database.

What institutional, organizational, and human capital resources support Indigenous research in Canada, the United States, Australia, and New Zealand?

The second bibliographic database collects the primary and secondary literature on the institutional, organizational, and human capital resources in Canada, Australia, New Zealand, and the United States. Some of the articles were identified during the construction of the CSSIR database, while others were identified through a targeted search of the literature. The items were grouped into those about each country and those that include comparisons across countries. Then, we synthesized the available information to describe the institutional, organizational, and human capital resources available for Indigenous research in these countries. The results section includes a high level overview our findings as well as areas for which we could not find sufficient research.

Results

This section provides answers to each of the project's research questions. Before turning to the project's research questions, we begin by providing an overview of the CSSIR dataset and general trends in the last decade of published research on Indigenous issues in Canada.

Overview of CSSIR dataset

Overall, the CSSIR dataset includes references for 694 items, of which the majority (501, 72.2%) are journal articles that were coded for methodology and Indigenous participation. The CSSIR dataset also includes 80 (11.5%) PhD theses, 47 (6.8%) monographs, 26 (3.7%) items of grey literature, and 40 (5.8%) journal articles that were not coded for participation and methodology due to availability and time constraints and were included based on screening of their titles, abstracts, and/or descriptions only. Fourteen of the journals are open access (see Appendix B).

Figure 1; Journal articles, 2005-2015
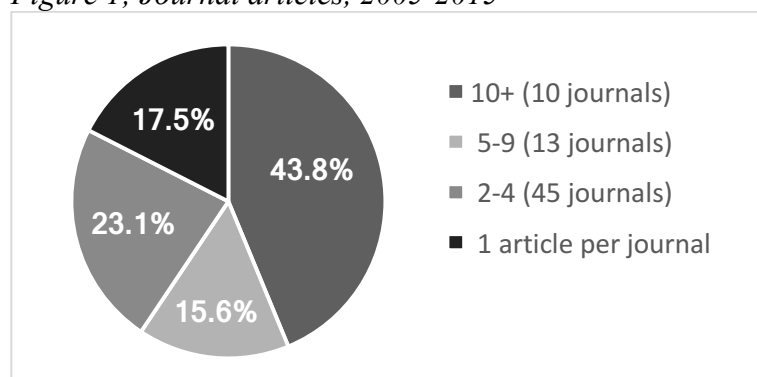
Source: CSSIR (2017).

Journal articles are the most common mode of knowledge mobilization in the CSSIR database, and articles are highly concentrated in journals specializing in Indigenous studies, human geography, and/or Canada (see Figure 1). Many (235, or 43.8.1%) articles are published in one of ten journals in the CSSIR database that each published more than 10 articles between 2005 and 2015 (see Figure 2). Five journals, including *Canadian Journal of Native Studies*, *Canadian Geographer*, *First Peoples Child and Family Review*, *Journal of Aboriginal Economic Development*, and *Aboriginal Policy Studies*, publish a high concentration of research on Indigenous issues in Canada, including 173 articles (32.2%) between 2005 and 2015. Meanwhile, 94 articles (17.5%) in the CSSIR database are the only articles on this topic appearing in their respective journal in 2005-2015. Many of the journals with only one article on Indigenous issues in Canada are non-Canadian, disciplinary journals. Overall, these patterns suggest that social science studies of Indigenous issues in Canada are highly concentrated in journals that specialize in Indigenous Studies or Canadian disciplinary journals. Otherwise, such studies are highly dispersed in general disciplinary, international journals.

The CSSIR also provides some sense of who is publishing research on Indigenous issues in Canada. A majority (401, or 57.9%) of the publications in the CSSIR are published by a single author (see Figure 3). If we exclude PhD thesis, 52.4% percent (321) still have only one author. We also coded the probability that an author was female or male using an automated method based on large-scale datasets of first names and gender identification in administrative and social media databases (see Appendix A). Using this method, we were able to assign probable genders to the first authors in 633 items and to all authors of 583 items in the CSSIR database. For studies with three or fewer authors, women are more likely to be first author, ranging from 55.9% of single-authored articles to 60.3% of first authors on articles with three authors. However, women are less likely to be the lead author on studies with four or more co-authors, leading only 47.4% of studies with four authors and 38.7% of those with five or more authors. Similarly, among studies with three or fewer authors, women tend to outnumber men; on average, women represent an average of 55.9%, 58.2%, and 58.9% of all authors when studies have three, two, or one author respectively. However, when studies have four authors, the average number of women is closer to 50%, and the average percentage of women on teams of five or more authors is only 46.3%. Together, these statistics suggest that social science research on Indigenous issues in Canada tends to be published by individuals or small research teams, and women are overrepresented, particularly on studies with smaller research teams and in comparison to their representation in many social science disciplines.

Figure 2: Journals with 5 or more articles (2005-2015)
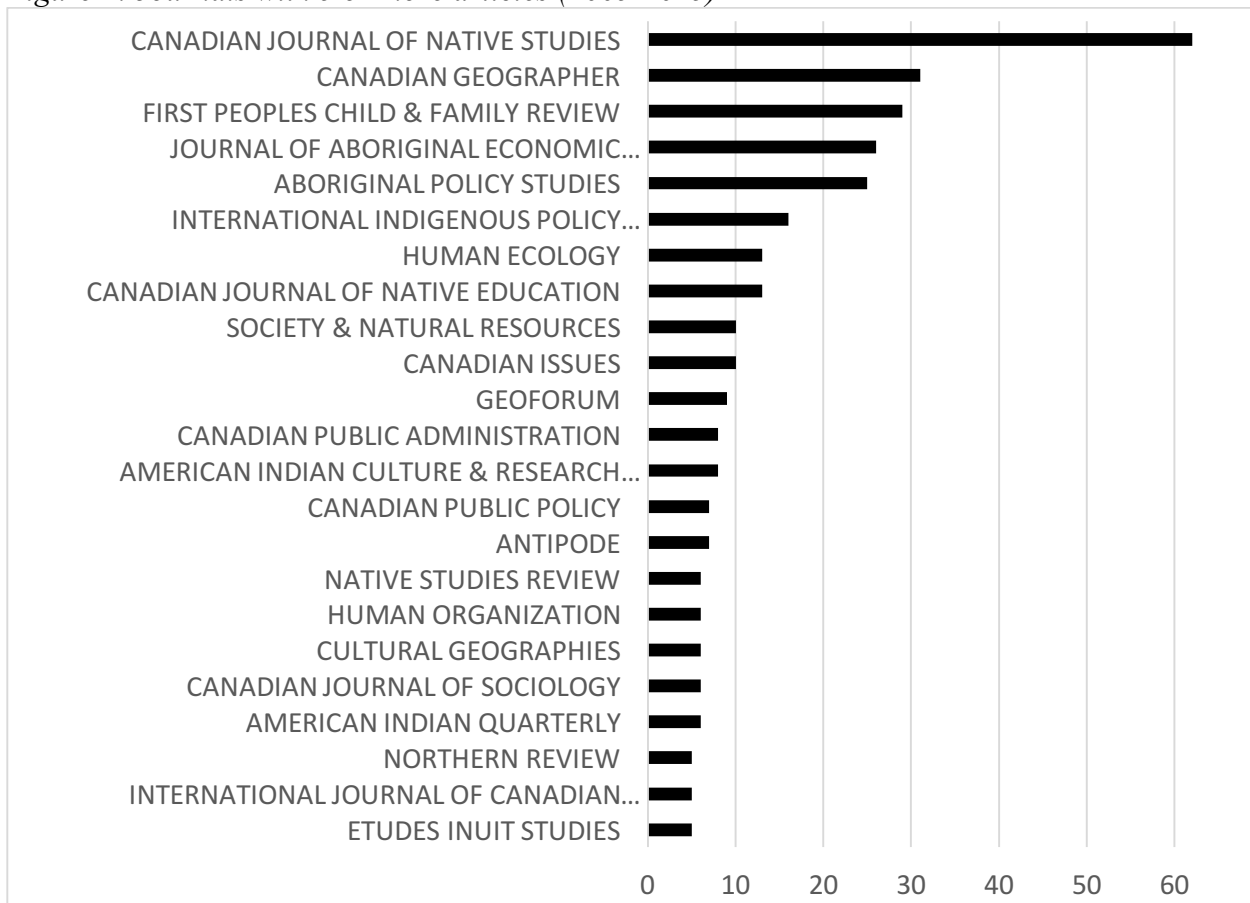
Source: CSSIR (2017). See also Appendix C.

Figure 3: Number of authors per publication, 2005-2015
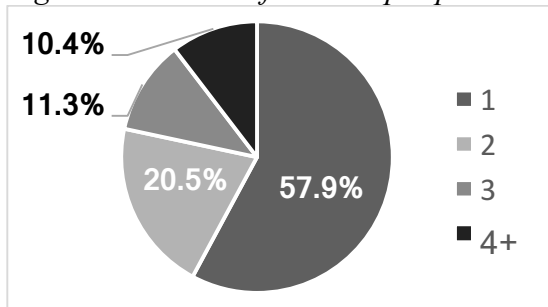
Source: CSSIR (2017).

Using author and journal provided keywords, we can also summarize the main topics discussed in the 2005-2015 articles using word clouds in which larger words appear more frequency among the terms analyzed. Figure 4 illustrates the frequency of author and journal provided keywords that appear at least 5 times in the CSSIR database (excluding stems for Canada, Indigenous, Aboriginal, First Nations, and America). The figure also includes a word cloud of the place-names for locations of the articles in the CSSIR database, for all locations mentioned at least five times. In addition, of the 501 coded articles, 77 (15.4%) include urban Indigenous peoples or communities, and 115 (23%) include a reserve as a research setting.

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Further, 34 (or 6.8%) of the articles' research involved the use of an Indigenous language. Overall, about 10% of articles include comparisons with or analyses in territories beyond Canadian borders. The annual number of articles about urban Indigenous peoples or communities, on reserves, using Indigenous language, or in comparisons beyond Canada varies, with no clear ten-year trend.

Figure 4: Word clouds of keywords and research locations, 2005-2015

Source: Authors' elaboration using Fellows (2014) Word cloud in R based on CSSIR database (2017).

What are the primary methodological approaches used to study Indigenous issues?

As explained above, we separately coded the epistemological approach(es), the main evidence source(s), and methods of analysis in all the articles on Indigenous issues in Canada published in peer-reviewed journals. Here, we first provide an overview of patterns and trends for each research dimension, and then we describe the ways in which these intersect.

Epistemological perspectives

While some articles explicitly articulate their epistemological approach, others leave this aspect of their research implicit. A majority (349, or 69.7%) of the 501 coded journal articles are coded as having only one epistemological perspective (see Table 1). On the one hand, such blending of approaches is not uncommon in interdisciplinary studies, and some epistemologies, though based on different assumptions about the nature of knowledge, can be fruitfully used together. On the other hand, to the extent that epistemological orientations do emphasize different worldviews about the nature of knowledge, not all epistemologies are compatible, and in general, researchers should play close attention to ensure that when they draw upon different epistemological traditions, they do so in ways that are sensitive to the underlying assumptions of an approach.

Of the coded journal articles, only 58 (11.6%) reference Indigenous epistemologies, or ways of knowing, and most the articles using an Indigenous epistemology combine the approach with a social science epistemology. Of those, 15 use only an Indigenous perspective, without another social science epistemology. By far, the most common approach to be combined with an

Indigenous perspective is critical theory (19 articles alone, 8 with another social science approach). In contrast, a larger number (and percentage) of articles use either a constructivist (68, or 13.6%) or positivist/post-positivist (119, or 23.8%) approach, not in combination with another approach. This suggests that mainstream social science epistemological perspectives continue to dominate research on Indigenous issues in Canada, and even when authors incorporate an Indigenous epistemological perspective into their research, they are very likely to also draw upon social science perspectives.

Table 1: Epistemological orientation in journal articles, 2005-2015

Epistemology in journal article	Count	Percentage
Indigenous only	**15**	**3.0%**
Indigenous + Constructivist	9	1.8%
Indigenous + Critical	19	3.8%
Indigenous + Critical + Constructivist	2	0.4%
Indigenous + Positivist	2	0.4%
Indigenous + Post-modern	5	1.0%
Indigenous + Post-modern + Critical	6	1.2%
Constructivist only	**68**	**13.6%**
Constructivist + Positivist	9	1.8%
Critical only	**118**	**23.6%**
Critical + Constructivist	17	3.4%
Critical + Positivist	3	0.6%
Positivist/post-positivist only	**119**	**23.8%**
Post-modern only	**29**	**5.8%**
Post-modern + Constructivist	7	1.4%
Post-modern + Critical	71	14.2%
Post-modern + Critical + Constructivist	2	0.4%
Total	**501**	**100.0%**

Source: CSSIR (2017).

Evidence sources

Next, we consider the source of the evidence used in the research articles, allowing that many articles may combine multiple sources. We also coded the evidence source without regard to epistemological or methodological orientation, instead focusing as much as possible on the characteristics of the evidence source, rather than the way in which the evidence was collected (which would be informed by the epistemological approach in most cases). The most common evidence sources for research on Indigenous issues in Canada are primary sources, secondary sources, and one-on-one interactions between researchers and research participants (see Figure 6). A relatively large number of articles also rely on researchers' experiences, which include participant observation as well as other forms of knowledge acquired from personal history or involvement with researched communities.

Much less common is research that uses surveys, group interactions (e.g., focus groups or sharing circles), or reflexive sources created by research participants (e.g., journaling, photovoice, or counter-mapping). The predominance of primary and secondary sources is not

surprising given norms in academic scholarship that privilege building upon prior research (secondary sources) and analyzing existing texts and artifacts (primary sources). However, the relatively rare use of group interactions (which would include Indigenous methodologies like sharing circles) and reflexive sources of evidence (which actively engage research participants in the creation of evidence) is surprising.

Figure 5: Evidence sources included in journal articles by year, 2005-2015
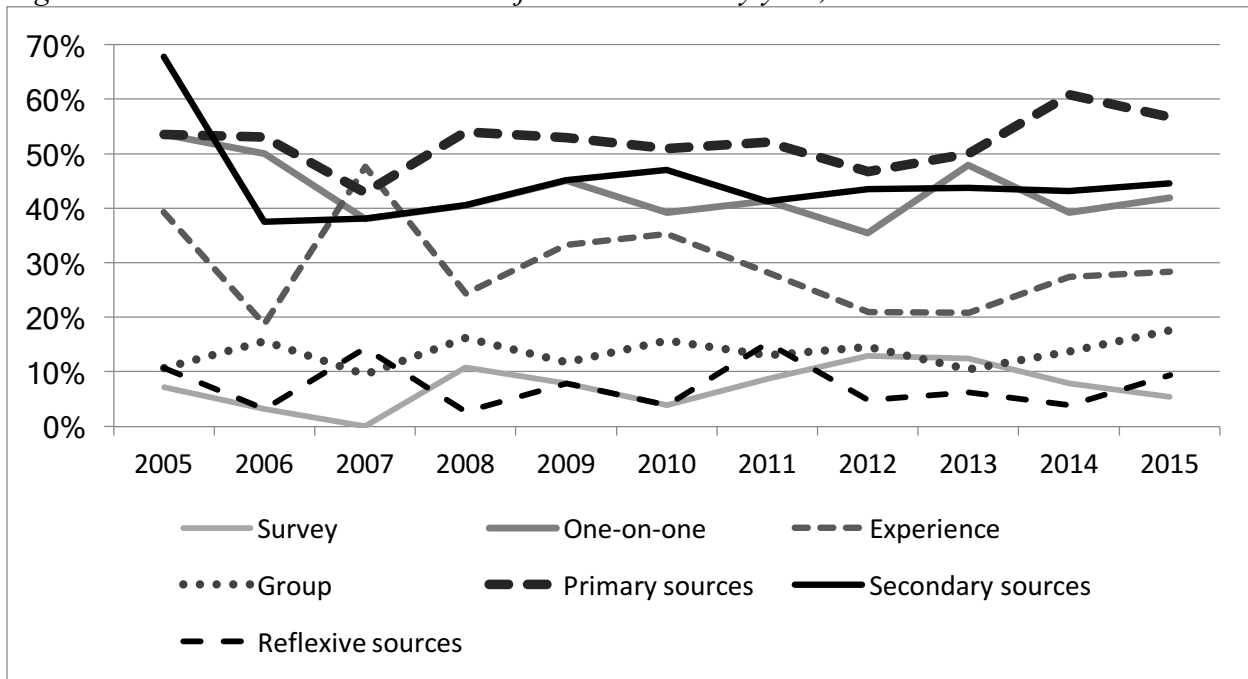
Source: CSSIR (2017). NOTE: Because articles often contain more than one evidence source, sums will exceed 100%. See also Appendix C.

Methods of analysis

Finally, we also coded the method of analysis. Like the coding of evidence sources, the coding emphasized the actual methods described, independent of the article's explicit or implicit epistemological approach, and we also allowed articles to include multiple different methods of analysis. Based on our coding, the most common methods of analysis are comparative case studies, discourse analysis, and content analysis (see Figure 7). The use of content analysis is not surprising given the large number of articles that use a constructivist approach in which understanding or illustrating how meanings are socially constructed is often central. The use of discourse analysis, a method most often associated with post-modern approaches, is more common than might be expected given the relatively small number of articles articulating this epistemological perspective. Participatory methods, in which research participants actively participate in the process of analysis, are relatively uncommon (only 60 out of 501 coded articles), which is disconcerting given the importance of engaging Indigenous peoples in research about their communities.

Figure 6: Methods of analysis

Figure 6 bar chart:
- Comparative case study - 150
- Discourse analysis - 137
- Content analysis - 122
- Quantitative (descriptive) - 86
- Inductive analysis - 80
- Other - 67
- Participatory analysis - 60
- Interpretive ethnography - 53
- Quantitative (inferential) - 40
- Positivist ethnography - 18
- Simulated data modelling - 2

(x-axis: 0% 5% 10% 15% 20% 25% 30%)
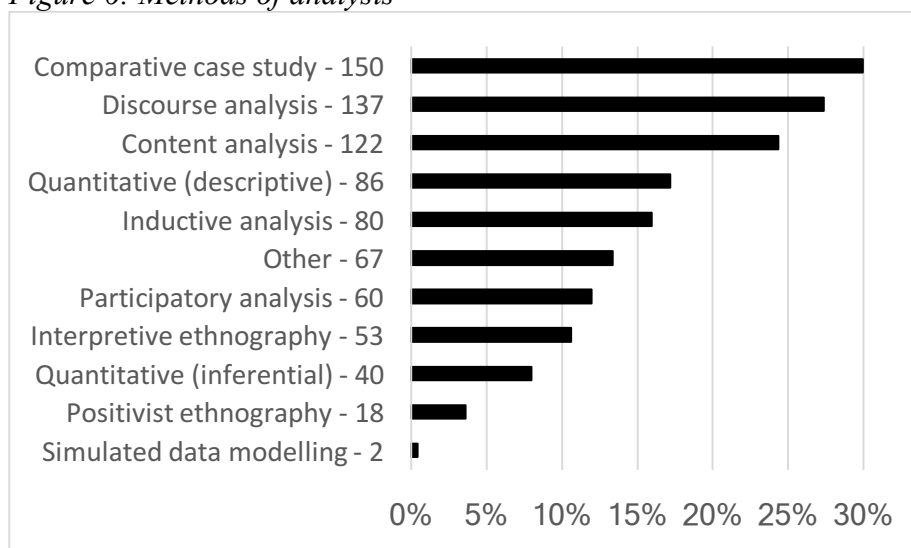
Source: CSSIR (2017). Note: Frequency counts included in method label; may exceed total number of articles due to multi-method studies. See also Appendix C.

As explained above, our coding of evidence sources and analysis methods intentionally aimed to capture similar sources or methods across different epistemological approaches. By looking at which epistemological perspectives are most often combined with specific evidence sources or analysis methods, we can also get a sense of how different evidence sources and tools of analysis are likely to be used in practice. For example, among those articles coded as having an Indigenous epistemology (alone or in conjunction with other perspectives), the most common sources of evidence are personal experience (33 articles), one-on-one interactions (25), secondary sources (21), primary sources (17), and group interactions (15, see Table 2). In contrast, very few studies that include positivist/post-positivist perspectives (alone or alongside other perspectives) rely upon reflexive sources (4), researcher experiences (11), or group interactions (14), and instead, studies that include this epistemological perspective are more likely to use primary sources (85), secondary sources (50), or one-on-one interviews (35).[4]

Table 2: Frequencies of evidence sources by epistemological approach

	Survey	One-on-one	Experience	Group	Primary sources	Secondary sources	Reflexive sources
Indigenous	4	25	33	15	17	21	12
Constructivist	9	67	41	30	40	36	14
Critical	13	105	74	28	130	127	15
Positivist	17	35	11	14	85	50	4
Post-modern	6	52	39	11	85	70	8

Source: CSSIR (2017). Note: Epistemological categories include any article with that approach (even when combined with other approaches), and articles may include more than one evidence source. Not all evidence sources included in table. See also Appendix C for more detailed breakdown.

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[4] Our coding also resulted in some apparently incongruous combinations of epistemology and evidence source (e.g., post-modern studies using survey data), which could be due to coding errors.

    Similarly, certain methods of analysis tend to coincide with specific epistemological perspectives (see Table 3). Among those articles that include an Indigenous epistemology (alone or in conjunction with another approach), inductive (25 articles) and participatory (24) methods of analysis are most common, followed by articles that include content analysis (15), discourse analysis (11), or interpretive ethnography (11). In comparison, articles that include positivist or post/positivist perspectives seldom use participatory methods of analysis (4), and instead, are more likely to use quantitative methods (both descriptive and inferential, 90 articles), comparative case studies (43), or content analysis (20). These patterns reflect an affinity between some methods of analysis and specific epistemological perspectives. However, some methods of analysis are more versatile and can be combined with a wide range of epistemological perspectives, as one might expect for some methods as tools.[5]

Table 3: Frequencies of analysis methods by epistemological approach

	Quant. (desc.)	Quant. (infer.)	Interp. ethnog.	Content analysis	Disc. analysis	Comp. case study	Induc- tive	Partic- ipatory
Indigenous	3	2	11	15	11	8	25	24
Constructivist	9	3	16	43	14	38	20	26
Critical	19	6	27	60	109	78	46	26
Positivist	59	31	1	20	2	43	3	4
Post-modern	5	3	20	29	77	20	28	10

Source: CSSIR (2017). Note: Epistemological categories include any article with that approach (even when combined with other approaches), and articles may include more than one analysis method. Not all methods included in table. See also Appendix C for more detailed breakdown.

To what extent do Indigenous peoples in Canada participate in social science research?

In this section, we describe the extent to which Indigenous peoples or communities participate in social science research about Indigenous issues in Canada.

Variations in Indigenous community participation

Of articles published 2005-2015, about half of articles (250 of 501) included no human research participants (see Figure 8). We explore the evidence sources and analysis methods of these articles in the next section. Among articles that include interactions with research participants, we coded participation by Indigenous communities on a five-category ordinal scale, ranging from omitted participation to Indigenous empowerment. A small number (17, 4.1%) of studies appear to include interaction with Indigenous research participants but provide no indication that Indigenous communities approved research protocols as required by Tri-Council policies. While it is possible that this information was merely omitted from the publication but that appropriate Tri-Council and local Indigenous policies and practices were followed, it is highly problematic that the published research is unclear or vague in this regard. Researchers should report their institutional and Indigenous ethics approval information, including protocol numbers and brief descriptions of the consultation or approval process with Indigenous communities. Even those

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[5] Some combinations of epistemology and methods coded in the CSSIR are apparently contradictory and could indicate measurement or coding errors.

studies that reported higher levels of Indigenous participation in their texts often neglected to detail the process of consultation and approval with the community in which the research took place. In the interest of transparency and to ensure compliance with Tri-Council policies, all research should include at a minimum the information necessary to confirm compliance (e.g., reporting of protocol numbers, contact information of ethics boards).

Figure 7: Indigenous participation in journal articles' research
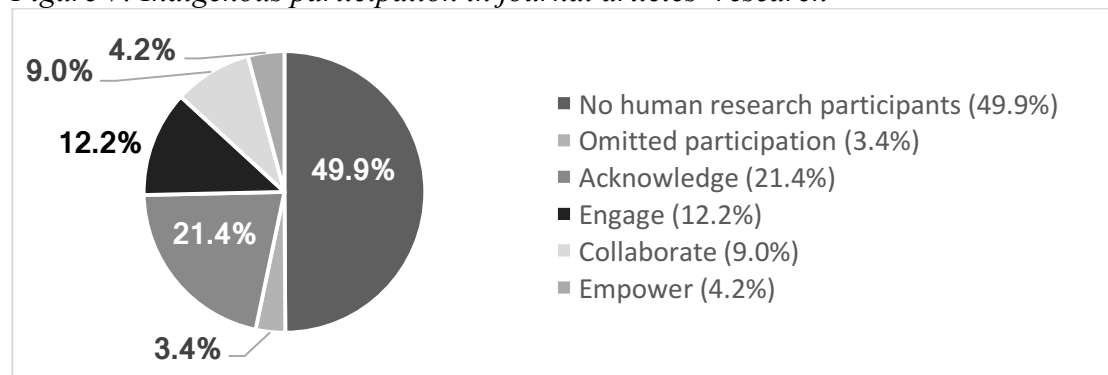
Source: CSSIR (2017). See Appendix C for distribution by year.

Among those studies that include interaction with Indigenous peoples, the most common level of participation ("acknowledge", 107 articles, 21.4%) is also the most minimal required by Tri-Council policies, in which the Indigenous community is acknowledged and provides access to research participants but without much community interaction as part of the knowledge mobilization process. As our criteria for active involvement of Indigenous communities increases across categories in our scale of Indigenous participation, the number of articles meeting those criteria quickly declines. About 12% (61) of the coded articles include engagement with Indigenous communities, primarily in the form of information sharing and knowledge mobilization, and only 9% (45) articles provided evidence of strong, entrenched involvement of Indigenous participants in each aspect of the research process, from development of research questions through analysis and findings. Very few studies (21, or 4.2%) include very strong, entrenched involvement of Indigenous communities that includes fully shared leadership responsibilities and builds capacity for future community-led research (see also Appendix A for further elaboration of the category). This pattern suggests there is significant room for improvement in the extent to which social science research in Canada facilitates the development of research capacity and sovereignty among Indigenous communities.

Indigenous & community-led research
In addition to our coding of participation, we also coded articles that reported research led by Indigenous communities, (the first five) authors' self-identification as Indigenous and affiliation, and whether an Indigenous language was used in the research. Very few articles (24 of 501, or 4.8%) met our definition of "Indigenous-led research," in which the Indigenous community initiated and defined the research project. These articles were all published between 2007 and 2015, with about 2-4 per year meeting these criteria. While this finding might suggest that Indigenous communities are not actively leading and developing research, it could also just reflect that such research does not result in publications in academic journals, instead perhaps resulting in white papers or other research output.

Self-identification of Indigenous identity and organizational affiliations among authors
We also coded, to the extent the information was available in the article, whether any of the authors self-identified as Indigenous. For 397 articles (79.2%), information on whether any authors self-identified as Indigenous was not readily available in the article. Of the remaining articles that could be coded, only 12% (60) of the articles between 2005-2015 included at least one author who self-identified as Indigenous. Over time, the percentage of articles including self-identified Indigenous authors has remained relatively low and stable. While our method of coding Indigenous self-identification may undercount the number of Indigenous authors to some extent, articles with Indigenous (co)authors are less common.

Figure 8: Organizational affiliations of first five authors
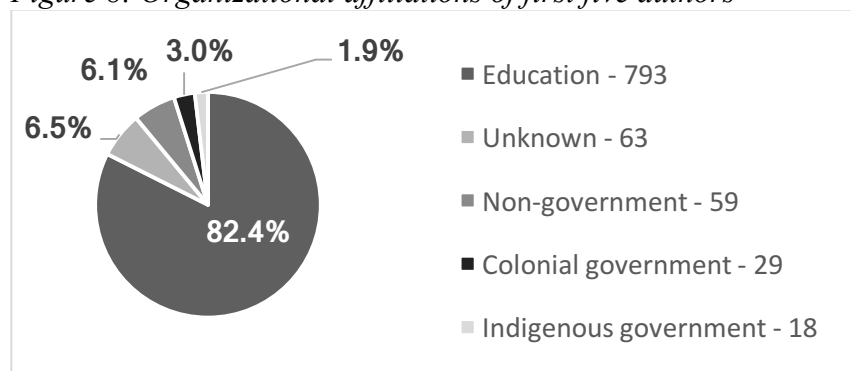
Source: CSSIR (2017)

We also coded the type of organization that each of the first five authors belonged to at the time of publication (See Figure 9). We were unable to code the affiliations of 63 authors (6.5%). Most authors are affiliated with educational organizations (e.g., universities or colleges, 792 or 82.4%), followed by NGOs, and colonial or Indigenous governments Table 4 presents the intersection of self-identification and organizational affiliations. We have only complete coding for 144 authors (15%), who may not be representative of all authors. Nevertheless, the distribution of Indigenous compared to Non-Indigenous is similar across authors affiliated with NGOs and colonial or Indigenous governments. In contrast, non-Indigenous authors appear overrepresented among authors affiliated with educational organizations compared to Indigenous authors and across other organization types.[6] Given the limitations of our data and coding, we suggest that this is an area that requires additional research.

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[6] This is based on calculating the expected number of authors in each cell based on the total number of authors that self-identify as Indigenous/non-Indigenous and total number of authors that are affiliated with educational organizations. For example, given that there are 66 authors that self-identify as Indigenous and 117 authors affiliated with educational organizations, we would expect about 54 authors would self-Identify as Indigenous and be affiliated with educational organizations. However, we observe only 43. Though we were only able to code Indigenous self-identification for a small percentage of articles, to the extent that there is bias in who articulates their Indigenous identity, it is likely that a much larger proportion of Non-Indigenous self-identifiers than Indigenous among the authors for whom this information is unknown.

Table 4: First five authors' self-identification and organizational affiliation, 2005-2015

| Self-id | Organizational affiliation | | | | | Total |
	Education	NGO	Colonial gov't	Indigenous gov't	Unknown	
Indigenous	43	14	2	7	15	81
Non-Indigenous	74	2	1	1	2	80
Unknown	675	43	26	10	46	800
Total	792	59	29	18	63	961

Source: CSSIR (2017).

Summary of variations in Indigenous participation in research

In sum, our preliminary analysis of the CSSIR database suggests that there is significant room for improvement in the ways in which Indigenous peoples participate in social science research about their communities in Canada. First, half of all research does not include any interaction with Indigenous peoples. On the one hand, theoretical or conceptual studies or those relying on only primary and secondary sources are not necessarily less supportive of Indigenous research sovereignty. On the other hand, such research could benefit from greater input and interaction with Indigenous peoples and communities. Second, research that involves interaction with Indigenous research participants could go much further to go beyond minimum requirements of Tri-Council policies and to deepen meaningful Indigenous participation in research. Third, relatively little research is led by Indigenous communities, uses Indigenous languages, or includes authors who self-identify as Indigenous. This, too, suggests room for improvement in supporting and promoting research participation by Indigenous peoples and scholars.

What is the relationship between research characteristics & Indigenous participation in research?

In this section, we examine the interactions of characteristics of research studies and Indigenous participation, beginning first with community participation, then Indigenous community led studies, and finally studies with Indigenous authors. Identifying current strengths and gaps can help guide development of Indigenous peoples' and communities' research capacity and sovereignty.

Research characteristics in studies without human research participants

Here we consider the relationships between epistemology, sources, and analysis method by our coding of the studies' degree of Indigenous community participation. About half of all journal articles did not include human research participants. These are theoretical or conceptual studies, literature reviews, or studies that rely solely on existing (e.g., primary and secondary) sources (see Appendix C for detailed distribution). Of these studies without human research participants, 125 out of 250 include a critical epistemological perspective, either alone or alongside another perspective. Nearly a third (81 out of 250) of the articles without human research participants include positivist or post-positivist perspectives, and about a quarter (67 of 250) include post-modern perspectives. The least common perspectives to not include human research participants are articles that include (alone or in combination with other perspectives) constructivist (29 of 250) and Indigenous (23 of 250) perspectives. Of those articles coded as not having human research participants, Figure 10 illustrates the number of articles that use a variety of evidence sources and analysis methods. By far, studies without human research participants rely primarily

on primary and secondary sources or researcher experience. All other sources are included in only a handful of studies. The most common methods of analysis are discourse analysis (96), comparative case studies (66), descriptive statistics (58), content analysis (33), inferential statistics (32), and inductive analysis (25).

Figure 9: Evidence and methods in studies without human participants
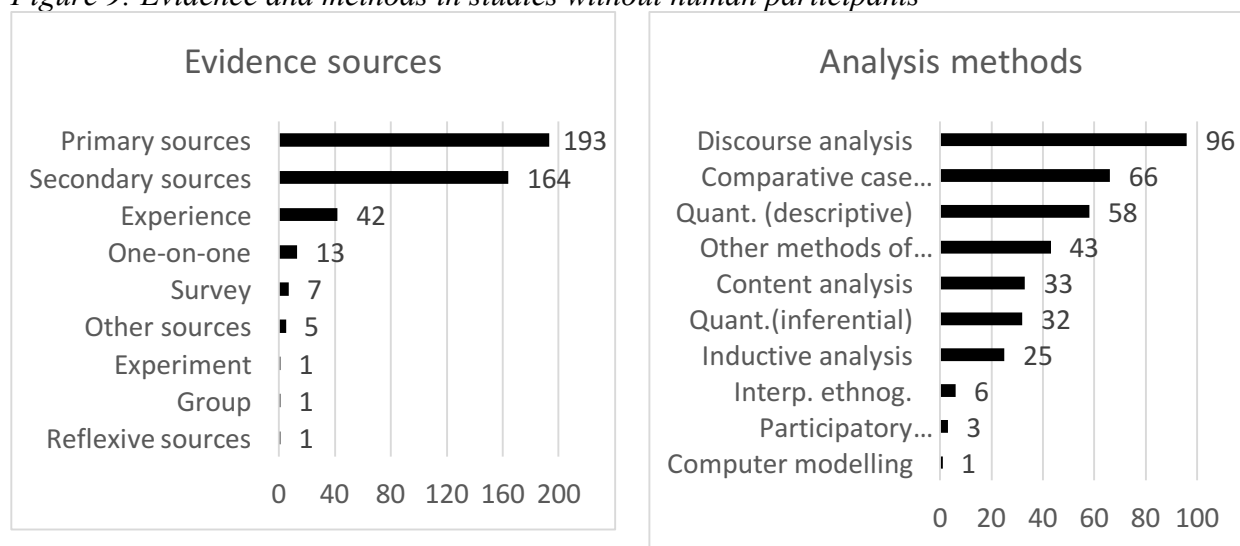
Source: CSSIR (2017). Note: Articles may be coded as having multiple sources and methods.

Research characteristics in studies by level of Indigenous community participation
If we focus instead just on studies with some evidence of human research participants and meeting the minimum requirements of Tri-Council policies for Indigenous community acknowledgement, studies that include Indigenous epistemologies (alone or alongside other social science approaches) tend to have deeper Indigenous community participation in comparison to studies that exclude Indigenous epistemologies (see Figure 11). In studies that exclude Indigenous perspectives, we observe a tendency to minimize or have lower levels of Indigenous community participation. We cannot speak to whether including deeper Indigenous participation leads to greater incorporation of Indigenous perspectives or whether an embrace of Indigenous epistemologies prompts researchers to more deeply engage Indigenous communities in their research, but an association exists.

Figure 10: Epistemology by level of Indigenous participation in studies with participants
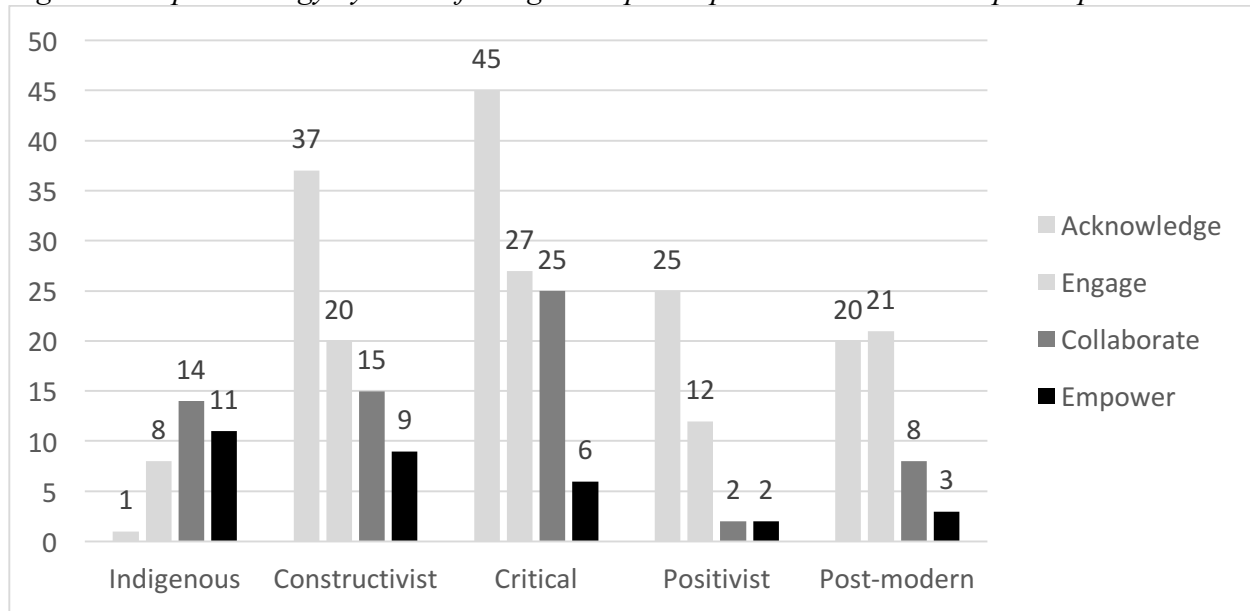
Source: CSSIR (2017). Note: Includes all articles with that epistemology (alone or in combination with another), and articles with multiple perspectives may be counted more than once.

Figure 11 depicts the number of studies that use an evidence source and their level of Indigenous community participation. For most sources, acknowledge, or the lowest level of participation, is the most common type of participation (e.g., survey, one-on-one, experience, primary and secondary sources). However, studies with higher levels of participation (collaborate and empower) more often include reflexive, group, and experiential sources. Figure 12 illustrates the relationships between Indigenous participation and methods of analysis. For many methods of analysis (e.g., content analysis, comparative case study, discourse analysis, and, the most common level of community participation is minimal (acknowledge). But often, the second most common level of participation is the other extreme, empower. Empower is the most common (modal) participation category only for studies involving inductive analyses. Interpretive ethnographies also include nearly as many studies with the highest levels of community participation as studies with the lowest levels.

*Figure 11: Evidence sources by level of Indigenous participation in studies with participants*
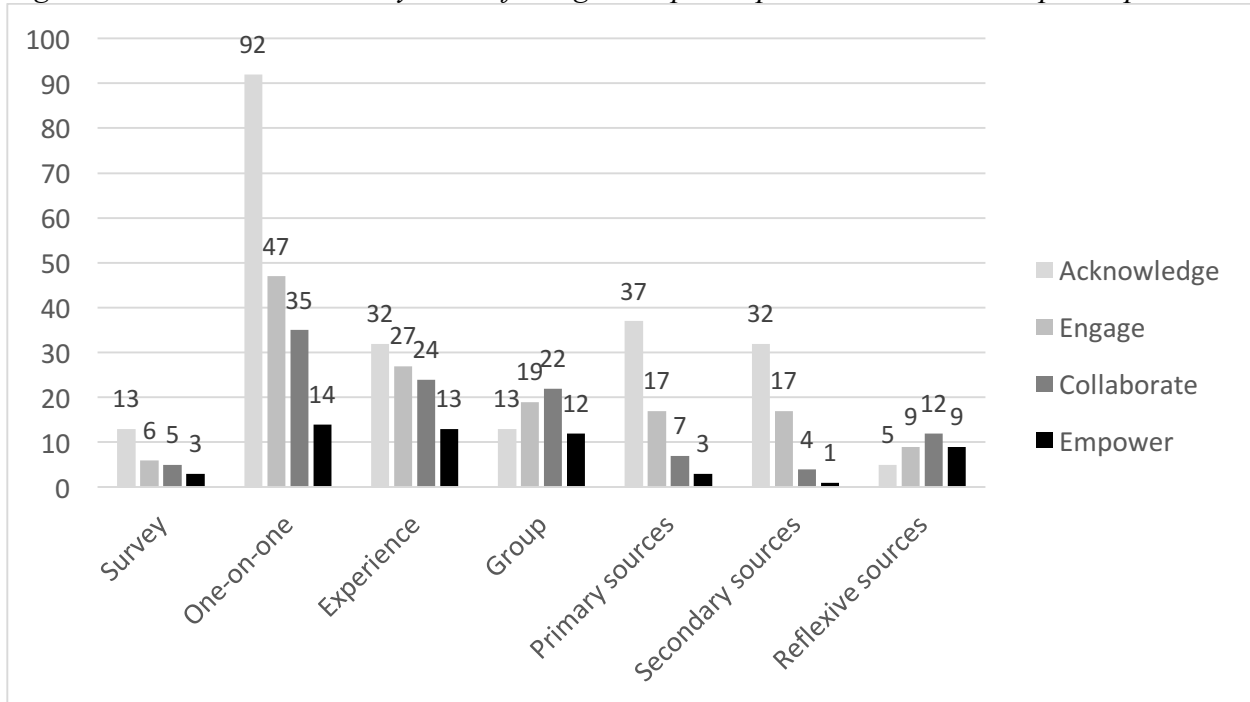
Source: CSSIR (2017). Note: Articles may be coded as having multiple sources and methods.

Figure 12: Analysis methods by level of Indigenous participation in studies with participants
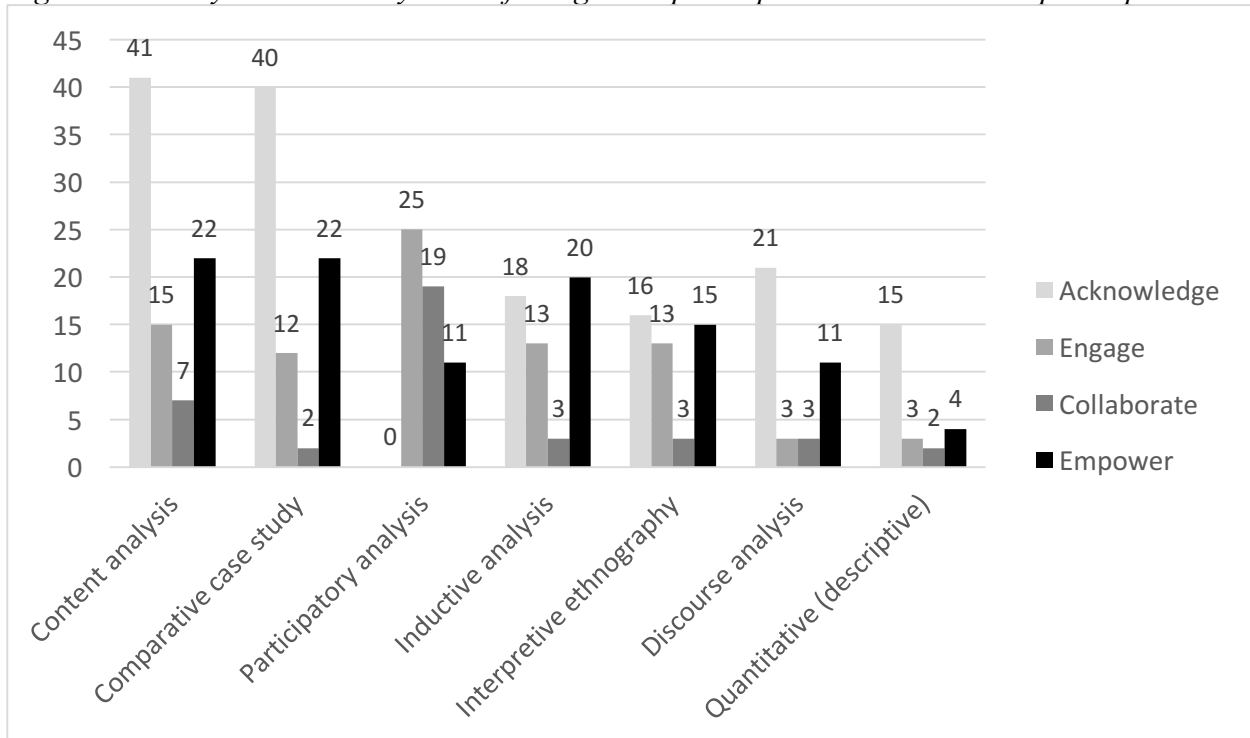
Source: CSSIR (2017). Note: Articles may be coded as having multiple sources and methods. Less frequent methods are excluded. See Appendix C.

Figure 13: Epistemological approaches of studies led by Indigenous communities

Pie chart segments: 29.2%, 25.0%, 4.2%, 4.2%, 8.3%, 8.3%, 8.3%, 8.3%, 4.2%

Legend:
- Indigenous - 7
- Indigenous + Critical - 6
- Indigenous + Constructivist - 2
- Critical + Constructivist - 1
- Post-modern - 1
- Constructivist - 2
- Critical - 2
- Positivist - 2
- Post-modern + Critical - 1
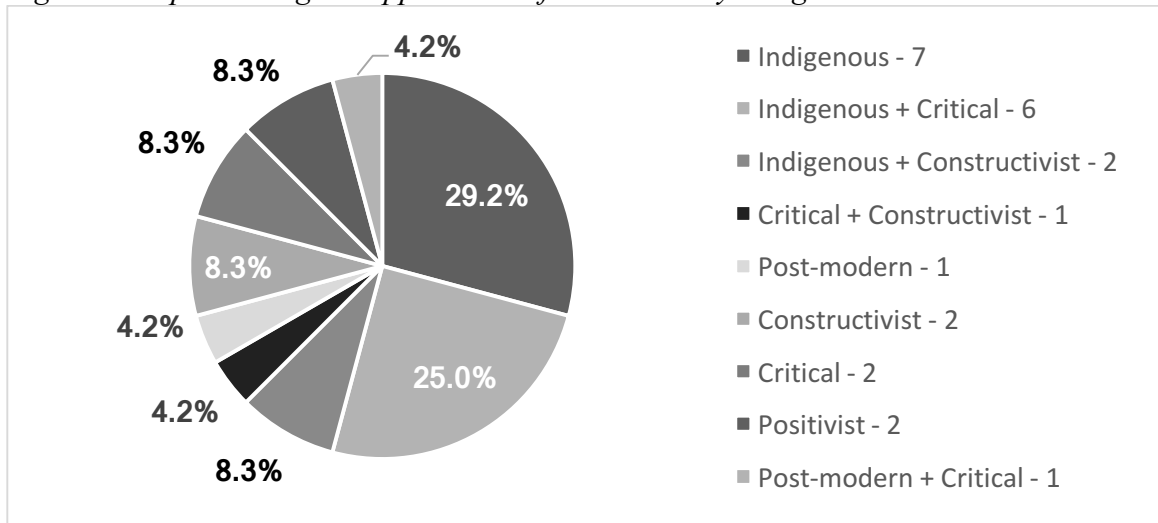
Source: CSSIR (2017)

Indigenous community-led research characteristics

Another way to measure Indigenous participation in research considers research led by Indigenous communities. We identified 24 (out of 501) journal articles that were led by Indigenous communities. Among those articles, 15 (62.5%) included an Indigenous epistemology. The remaining studies mostly used a mix of all the other social science epistemologies (see Figure 14). Primary and secondary sources are the most common in the CSSIR database, but those are the least common sources used in studies led by Indigenous communities (see Figure 15). Instead, one-on-one interactions, experience, reflexive sources, and group interactions are most common. Similarly, studies led by Indigenous communities also use different types of methods of analysis from other studies as well. Participatory methods of analysis are the most common, followed by content analysis and interpretive ethnography. Together these patterns suggest that studies led by Indigenous communities are more likely to use Indigenous perspectives and more participatory sources of evidence and analysis.

Figure 14: Evidence and methods in studies led by Indigenous communities

Evidence sources:
- One-on-one: 17
- Experience: 14
- Reflexive sources: 10
- Group: 9
- Survey: 5
- Primary sources: 4
- Secondary sources: 3

Analysis methods:
- Participatory analysis: 16
- Content analysis: 7
- Interp. Ethnography: 7
- Inductive analysis: 4
- Comparative case...: 4
- Discourse analysis: 3
- Other: 2
- Quant. (descriptive): 2
- Modelling: 1
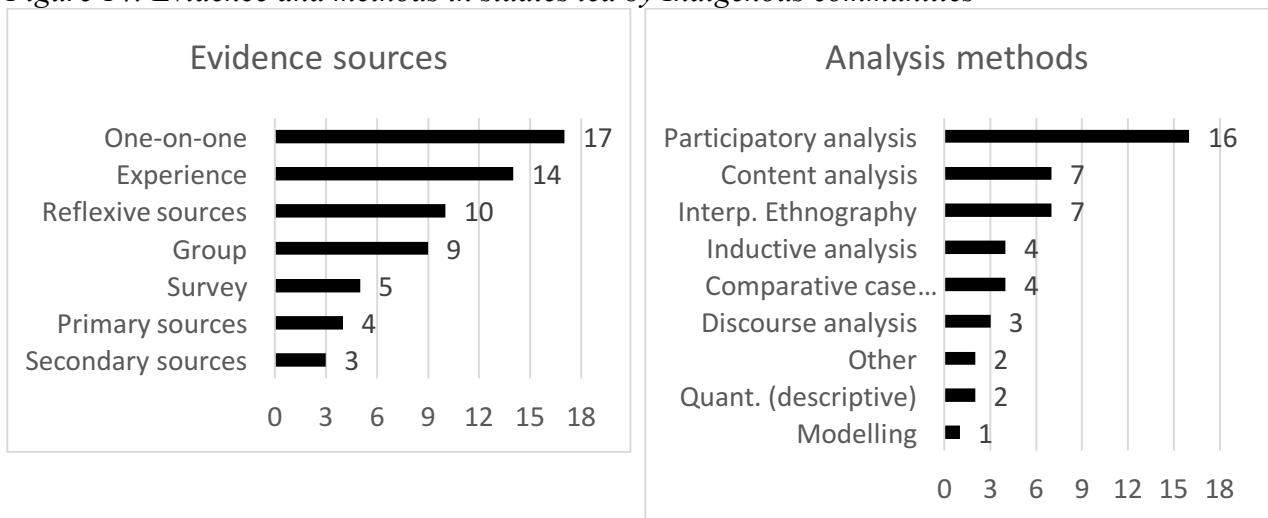
Source: CSSIR (2017)

Research characteristics of articles with at least one Indigenous author
Of the 60 articles that are coded as having at least one author who self-identified as Indigenous, the most common epistemological approaches are critical (16 articles), Indigenous (12), or a combination of critical and Indigenous (11, Figure 15). Articles with an self-identified Indigenous author appear more likely to use Indigenous, critical, and post-modern perspectives compared to the general pattern in the full sample (see Figure 16). In terms of evidence, articles with an Indigenous author often use personal experience or one-on-one interactions for evidence, ahead of primary and secondary sources, which are most common overall (see Figure 17). These studies also often include reflexive sources and group interactions. Articles with an Indigenous author also are more likely to use participatory and inductive methods of analysis. Together, the perspectives, evidence, and methods used in articles with Indigenous authors follow a different pattern from that observed in the overall sample.

Figure 15: Epistemological perspectives in studies with at least one Indigenous author
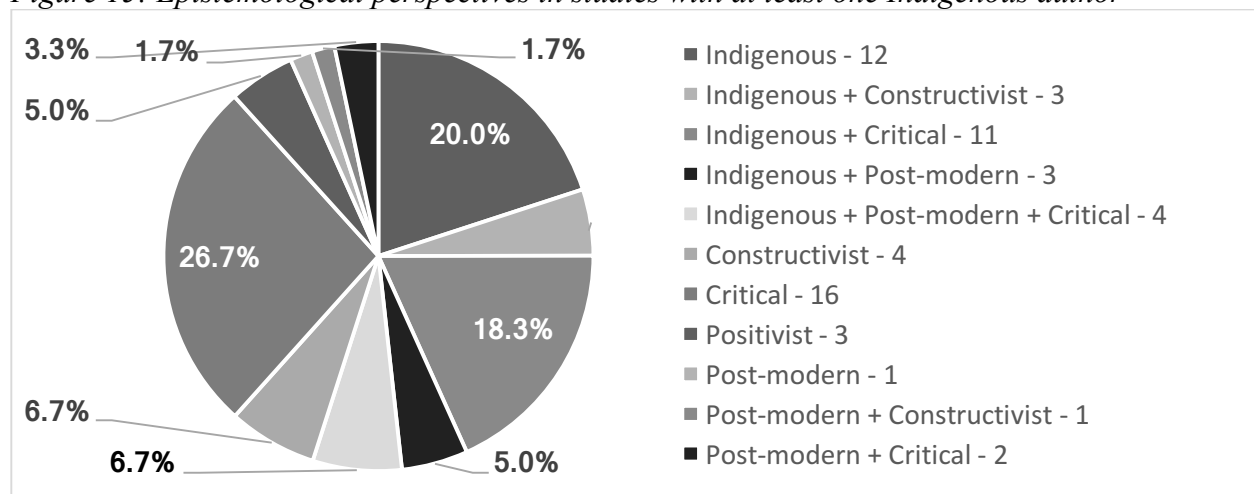
Source: CSSIR (2017)

Figure 16: Evidence and methods in studies with at least one Indigenous author
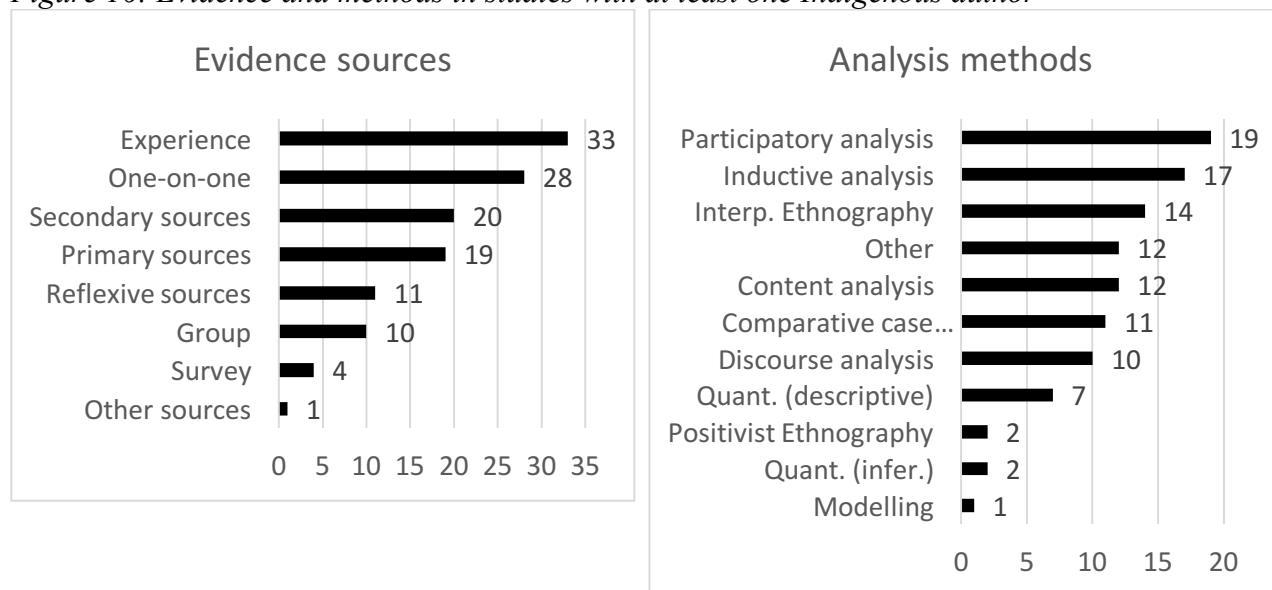
Source: CSSIR (2017)

Summary: Research characteristics by types and levels of Indigenous participation
We capture characteristics of research with different forms of Indigenous participation in research: community participation, community-led research, and research with Indigenous (co)authors. The results suggest that there is an association between higher levels of participation by Indigenous communities and the use of Indigenous epistemologies and evidence sources and analysis methods that are consistent with greater participation of Indigenous peoples. Likewise, when Indigenous communities or authors directly lead research, studies more often include Indigenous perspectives and evidence and methods that directly engage Indigenous peoples and communities.

What institutional, organizational, and human capital resources support Indigenous research in Canada, the United States, Australia, and New Zealand?

In addition to the CSSIR, we also compiled a bibliography related to the Indigenous research landscape in Canada, Australia, New Zealand, and the US. The analysis is based on 147 documents, including journal articles, books, dissertations, and grey literature. Our literature review considers the institutional, organizational, and human capital resources that shape research on Indigenous issues in each country. Appendix D includes the full bibliography.

Institutional resources
Institutions or formal and informal rules, policies and norms that shape research on Indigenous Peoples include relevant research policy, ethical regulations, incentives, and epistemologies. These institutions present several similarities across the four countries included in this report. In the last four decades, all four countries initiated a transition from colonial studies that considered Indigenous Peoples as research objects to decolonizing research through the recognition of Indigenous knowledge and Indigenous people as researchers. This movement is part of the demand from Indigenous nations and communities for their right to self-determination. As a result, all four countries have developed ethical guidelines to regulate and oversee research on Indigenous individuals and communities. In all four cases, Indigenous organizations and communities designed their own ethical guidelines, and with the exception of the US, government agencies have also developed ethical regulations. At the same time, participatory research is increasingly considered and required as a necessary tool for Indigenous communities to make decisions and benefit from research projects. Moreover, Indigenous scholars and communities are working towards the recognition and consolidation of Indigenous epistemologies and methodologies as valid approaches and more appropriate tools to account for Indigenous needs, aspirations, and culture.

These institutions also present significant differences. First, in Canada, Australia, and the US, there are clear definitions of what constitutes research on Indigenous peoples. These definitions are associated with research conducted within Indigenous territories and/or research involving Indigenous groups. These studies are required to follow specific ethical statements. New Zealand however, declared all research as a matter of concern of Māori people, and therefore, every ethics clearance process must have some sort of Māori consultation. While the New Zealand approach gives more voice to Indigenous peoples compared to the more restricted definition of the other three countries, consultation there often becomes a simple review process without actual participation in research decisions. Second, while Canada and Australia have a centralized government ethical statement on research on Indigenous Peoples, New Zealand and the US

instead have a decentralized regulation. Based on the analysis of this report, this different institutional structure has its trade-offs. Centralized ethical statements are more likely to bind research institutions and make them comply with ethical regulations. However, its centralized character may compromise Indigenous participation and perspectives in its formulation and eventually reflect a Western approach to research ethics. Decentralized regulation may recognize Indigenous sovereignty and allow the building of their own ethical statements, as in the case of the US, but it may also pave the way for overlaps between conflicting ethical requirements or, as in the case of New Zealand, make rules weak and unclear. Finally, although all four countries encourage participatory research through their ethical guidelines and/or through grant funding, in decentralized settings it is less clear when and how to establish participatory research or partnerships to conduct studies.

Regardless of these differences, there are some common challenges in the four countries. Despite the development of ethical regulation and some funding programs that acknowledge Indigenous knowledge and rights to decide on their own research, some other academic rules create conflicts. Researchers working with participatory research and Indigenous epistemologies still have greater difficulties obtaining funding for their studies and publishing their work in mainstream high-impact peer reviewed journals. In general, Indigenous epistemologies and participatory research are not readily accepted, challenge mainstream academic performance metrics, and may discourage some scholars to undertake this path. Similarly, Western approaches to research do not acknowledge community rights to protection of privacy and intellectual production and instead they focus on protecting individuals. This conflict creates substantial difficulties for Indigenous peoples to own and protect data collected during studies conducted in their communities. In addition, ethical guidelines whether government-defined or Indigenous-led typically equate definitions of community and territory. As a result, research on off-reserve or less geographically bounded communities is weakly regulated, poorly funded, and provides less protection to Indigenous Peoples. Finally, the question about the role of non-Indigenous researchers in Indigenous studies is still contested in all four countries. Yet research sovereignty entails not only developing research capacity but also the capacity to "challeng[e] the assumption of research rooted in a scientific world view that clashes with [Indigenous] concepts of reality and right relationships" (Castellano 2004, 112).

Organizational resources

Organizations that promote/conduct research and/or researcher training in Indigenous studies have experienced recent changes in all four countries. Indigenous organizations were established to promote participatory research and the recognition of Indigenous knowledge. Australia and New Zealand have created advisory entities to formulate higher education reforms that benefit Indigenous people. Partnerships between mainstream universities and Indigenous communities have promoted collaborative research projects. Also, with the exception of Australia, all countries have seen the expansion of Indigenous-led tertiary institutions that have widely contributed to the Indigenization of the curriculum and the consolidation of Indigenous scholarship.

However, these changes have been insufficient to grant full recognition to Indigenous knowledge and increase the research capacity of Indigenous communities. Participatory research and research partnerships still do not enjoy the same status and recognition of traditional research and universities do not have sufficiently skilled scholars to conduct these kinds of studies. In addition, initiatives to support higher education for Indigenous students are still concentrated on the development of isolated Indigenous programs or in add-on programs to promote access and

retention of Indigenous students. Likewise, efforts to Indigenize the curriculum have fallen short. In this area, New Zealand has been most innovative, including not only the development of independent programs of Māori studies but also the implementation of a Māori focus in a diverse range of areas beyond Māori studies (e.g. business, social work, psychology, environmental studies, political science, etc.) (Durie 2009). Some mainstream universities regularly invite Māori scholars and Elders to provide Indigenous viewpoints on specific topics, and some courses require student participation in Indigenous experiential learning as part of their learning outcomes (Durie 2005). However, Indigenous-led institutions such as Wānanga in New Zealand, tribal colleges in the US, and Aboriginal postsecondary institutions in Canada have limited financial resources compared to mainstream universities, while facing funding barriers since they are measured by Western performance measures which are at odds with Indigenous approaches to education.

Human capital and research capacity
Despite changes in institutions and organizations that shape Indigenous research, gaps of human capacity remain in all four countries. While literature on human capacity for social science Indigenous research is scarce, mainly composed of policy-oriented reports that focus on initial levels of postsecondary education (non-degree and bachelor programs), it shows that there is a pipeline problem that starts with high school completion and extends to faculty recruitment and promotion. In all four countries, this pipeline is attributed to limited funding for postsecondary Indigenous education, lack of culturally relevant career guidance, neglect of Indigenous knowledge and values at mainstream universities, and persistent racism. These challenges become magnified as Indigenous individuals progress in their academic careers. Due to their low numbers, Indigenous graduate students and faculty often are more isolated than undergrads, used as tokens, and overwhelmed by multiple tasks that usually involve representing Indigenous peoples in different university events and endeavours. Likewise, Indigenous grad students and faculty struggle to manage the conflict between requirements of Western academic performance and expectations of service and contribution to their communities. Overall, there is a chain of circumstances that perpetuates the colonial perspective of universities related to the lack of inclusion of Indigenous scholars, delayed Indigenization and the prevention of Indigenous students from attending and progressing through different university education levels.

Potential solutions to these challenges are also similar in all countries. Excepting Australia, all countries have developed Indigenous tertiary institutions that have contributed to increased Indigenous participation in higher education. Yet, these institutions are often underfunded and have difficulties attracting and retaining faculty. Increased funding is another common solution but at least in the case of Canada and the US, such increases are constrained by the overlapping of responsibilities between provinces (states), the federal level, and Indigenous Nations. For these countries, finding a way to clarify and provide fair funding without affecting Indigenous sovereignty seems to be a condition for progress. Likewise, efforts that focus on producing a critical mass of Indigenous scholars at mainstream universities could promote culturally relevant environments and programs. Incentives, affirmative action, and special programs are part of these efforts, but they are sometimes limited due to the shortages of qualified Indigenous candidates. At the same time, universities in all four countries are trying to attract and recruit more Indigenous students through innovative programs, such as Elders as advisors, long-distance programs, and other Indigenous support programs. Yet, the predominance of a Western perspective persists, dividing the experience and requirements from students between individual academic success and service and cooperation to their home communities. Lessons from

Indigenous tertiary education institutions could help to harmonize these two goals and decolonize mainstream universities.

Section summary

Overall, while the development of ethic statements and policies has been a sign of significant progress, Canada still falls short of full recognition of Indigenous knowledge. To achieve it, some lessons could be learned from other countries, such as the Indigenization of the curriculum through Indigenous-led pedagogical innovations and the participation of Indigenous individuals (e.g. Elders) in university governance as implemented in New Zealand. Also, though numbers of Indigenous scholars in Canada are comparable to the US and Australia, Canada could increase its number of Indigenous scholars, following models used in Australia and elsewhere. Finally, although none of the analyzed countries has solved the conflict between promoting participatory, Indigenous-led research and mainstream academic metrics, Indigenous-led institutions could offer lessons to revise these metrics and harmonize academic success with community –based research and scholarship.

State of Knowledge

Our analysis of the social science research landscape of studies on Indigenous issues in Canada has both strengths and weaknesses.

Study strengths

Our approach to mapping the social science research landscape of research on Indigenous issues in Canada has several strengths. First, our search protocol was expansive, including targeted searches to identify research not indexed by large commercial services and self-published by various organizations. As a result, the CSSIR is likely one of the most comprehensive snapshots of recent research on Indigenous studies in Canada. Likewise, the Indigenous Social Science Research Policy (ISSRP) bibliographic database includes an extensive overview of the secondary literature on the research resources in Canada, the United States, Australia, and New Zealand. Second, our research team included experts in social science and Indigenous research epistemologies and methodologies, which informed our protocol and decisions about how to code each study. This approach, including regular consultation throughout the data collection and analysis process, enabled us to address new issues that arose during the study process.

Study weaknesses

Though our team included several Indigenous scholars with expertise in social science methods as well as participatory research, given the tight timelines for producing the report, the team was not able to seek feedback from Indigenous communities or potential research partners. As such, our knowledge mobilization plans include plans to engage in discussions with Indigenous communities and partners about our findings as well as to provide opportunities for communities and scholars to provide feedback on the CSSIR directly, which will be incorporated into a revised version of the database. In addition, the disciplinary background of the research team was limited to political science and sociology, which shaped our own methodological approach and informed our coding of the studies. Undoubtedly, scholars from other disciplines would be likely to approach our research questions with different approaches and methodologies. Clearly, this is a self-study of academic practices by academics, with all the limitations that accompany such

studies. Also, due to time constraints and document availability, we were only able to code the contents of journal articles, excluding PhD theses, grey literature, and other research outputs that are an equally important part of the research landscape.

Additional gaps in knowledge
Here we focus on two significant gaps left unaddressed by our study. First, because our primary focus was on published, mostly academic research, we still know very little about the approaches and methodologies used applied social research carried out NGOs or Indigenous and colonial governments. Future work should review the approaches and methods used in such studies to better understand the challenges Indigenous communities face in achieving research sovereignty. Second, there is a lack of more systematic information about human capital resources of Indigenous research across research settings. Some studies account for the access to tertiary and higher education, and the conditions of undergraduate students. Yet, information about graduate and faculty complement is scarce and often anecdotal. Numbers of Indigenous peoples at these levels might be scarce, which can complicate statistical and qualitative studies as individuals could be more easily identified and confidentiality is difficult to maintain. Nevertheless, it is important to have more systematic information about human capital within both Indigenous and university communities conducting research in order to develop policies and programs to fill existing gaps.

Additional Resources

As part of our knowledge mobilization plans, both bibliographic databases will be distributed online (indigenousfutures.ca) and are the primary resources available for target audiences and decision-makers. The CSSIR will allow those interested in Indigenous research trends to search for studies by keyword, place, and other characteristics. As part of our research process, we also compiled additional lists or information that may help orient researchers working at the intersection of social science and Indigenous studies in Canada. These are included as Appendices to this report:
- Appendix B: Open-access journals in CSSIR
- Appendix D: Indigenous Social Science Research Policy (ISSRP) bibliographic database
- Appendix E: Indigenous studies journals
- Appendix F: Canadian Universities with Aboriginal and Indigenous Studies Graduate Programs (Master and PhD)
- Appendix G. Organizations that conduct or disseminate Indigenous studies in Canada

These resources will also be posted online for comment and feedback.

Knowledge Mobilization

Our knowledge mobilization plans include presentations of project findings at relevant meetings and dissemination of research reports and databases online.

Presentations to academic and Indigenous communities
During the development of the project, our team presented preliminary plans and findings at various academic meetings, and we plan additional presentations over the next several months.

Co-PI Dr. Chelsea Gabel presented some preliminary findings on a panel entitled "Wise Research Practices" that was organized by the Federation for the Humanities and Social Sciences as part of the 2017 Congress in Toronto, Ontario. Dr. Claudia Diaz Rios and Ms. Kelsey Leonard also presented preliminary findings as a workshop at the 2017 World Indigenous Peoples Conference on Education (WIPCE) in Toronto. Additional research presentations will be proposed for the 2018 meetings of the Comparative and International Education Society (CIES) in Mexico City, the Native American Indigenous Studies Association in Los Angeles, and the 2018 Federation for the Humanities and Social Sciences Congress in Regina. One of our collaborators, Sydney Oakes who is a Senior Policy Advisor in the Executive Core & Government Relations Unit for the Chiefs of Ontario, is helping us organize a meeting to exchange information about our research and community research interests with their educational coordinators.

Open feedback on CSSIR coding
The CSSIR database will be posted to the project website as a public Google Spreadsheet that will enable visitors to correct or comment on our coding of study characteristics. In order to stimulate feedback on the CSSIR, we will distribute a call for feedback to relevant listservs, authors included in the database (if their email information is available), and a curated list of additional researchers or organizations. The CSSIR will remain posted for comments through next summer, allowing ample time for feedback on the first draft of the database. After the comment period, the database will be revised as needed into a second, 2.0 version.

Distribution and archiving of report, other research products, and databases
This report, both databases, all appendices, and any other knowledge mobilization products will be posted to the project website, indigenousfutures.ca. After the comment period on the CSSIR is final, the original, commented, and final versions of the CSSIR will be posted on the project website but also deposited into the Ontario Council of University Libraries' (OCUL) Scholars Portal Dataverse, which is a public archive of research datasets. Once the project site is complete in fall 2017, the project will be promoted through press releases and direct promotion on relevant email listservs. Members of the research team will also promote the report using their personal professional websites and social media networks. In addition, all materials will also be deposited into MacSphere, McMaster University's online research repository to ensure that the study products are preserved beyond the life of the project.

Scholarly publications
The research team plans at least three co-authored papers based on the project and its datasets. First, an expanded discussion that situates Canada's social science landscape to those in the United States, Australia, and New Zealand will examine the challenges and opportunities for Indigenous research with the aim of identifying best practices or lessons to be learned. Second, another paper is planned to examine the intersection of social science and Indigenous research methodologies both in theory and in practice. Finally, a third paper will undertake a multivariate statistical analysis of the revised CSSIR database to better understand the characteristics most associated with more participatory forms of scholarship on Indigenous issues.

Conclusion

Our study sought to map the social science landscape focused on Indigenous issues in Canada during a period that includes both changes in social science data and methods and efforts to redefine research relationships with Indigenous communities. With regard to the last decade of social science research on Indigenous issues in Canada, we find:

- Half of all research in this area does not include human research participants or interaction with Indigenous communities.
- Of that research that does include human research participants, most studies meet only the minimum requirements of Indigenous community involvement based on Tri-Council policies.
- Research led by Indigenous communities or with Indigenous (co)authors is more likely to incorporate Indigenous epistemologies and more reflexive and participatory sources and methods.
- Much of the research on Indigenous issues in Canada is highly bifurcated between a large proportion of studies concentrated in a handful of Canadian Indigenous studies journals and a significant portion thinly distributed across a large number of international disciplinary journals.
- Indigenous scholars and researchers remain underrepresented in academia and face structural barriers to their progress due to biases in scholarly standards and policies that often minimize the contributions of Indigenous scholarship.

Based on these findings, we offer the following key messages for researchers, universities, and policy-makers:

- Social science researchers should be encouraged to deepen the participation of Indigenous communities in their research.
- Social science researchers studying Indigenous issues should be trained in Indigenous perspectives and encouraged to incorporate Indigenous participation in their studies, especially when studies are grounded in mainstream disciplinary approaches and methods.
- Researchers should be transparent and report their ethics approvals and processes, and editors and publishers should encourage and support such transparency.
- Gatekeepers, like article reviewers and journal editors, should recognize the value of participatory research that includes Indigenous perspectives, and university policies should recognize epistemological and methodological biases in mainstream, disciplinary publications and should ensure that Indigenous scholars and research is not devalued or disadvantaged.
- Universities should foster equitable knowledge exchange between social scientists and Indigenous communities, including around issues of epistemology and methodology.

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Appendix A: Canadian Social Science Indigenous Research (CSSIR) database data collection, coding protocol, and codebook

1. Research Questions

1. What are the primary methodological approaches used across social science disciplines to study Indigenous issues in Canada?

2. To what extent do Indigenous Canadian individuals or communities actively participate in social science research in their communities according to methodological approach or discipline?

2. Search strategy

The CSSIR search strategy included all articles published between 2005 and 2015 in peer-reviewed and grey literature based on a targeted search of Web of Science (core collection); EBSCOhost (Bibliography of Native North Americans and America: History and Life databases); ProQuest (Doctoral Dissertations and the Canadian Research Index); and Worldcat, which includes books. Collectively, these databases index journal articles, PhD theses, and books publishing social science research related to Indigenous peoples.

The search included filters for social science disciplines, including anthropology, development planning, economics, interdisciplinary social science, political science, social work and sociology. Studies from related disciplines, such as law, education, linguistics, and geography, were included if they explicitly focused on social conditions of Indigenous peoples (e.g. studies from human geography, sociology of education, comparative education, sociolinguistics, and social aspects and effects of law). We excluded psychology and health because research in those disciplines is normally funded by the CIHR. An exception are studies that explain health policy, which were included in the search.

What are key search terms?

Using Boolean operators, two general strategies were used to identify the sources to be included in the study. These strategies were tailored according to the particular characteristics of each database (WoS, EBSCO, ProQuest, etc.):

- Synonyms of Indigenous Peoples using truncated words, if applicable, and separated by OR, combined with (AND) words associated with Canada, and combined with (AND) research areas or disciplines. Exclusion of non relevant disciplines. Example:

    (("first nation*" OR indig* OR aborig* OR indian) AND (Canad* OR [all provinces' names]) AND ("social science*" OR [disciplines])) NOT (health OR "mental health" OR psych* OR "legal studies")

- Synonyms of Indigenous Peoples using truncated words, if applicable, and separated by OR, combined with (AND) all names of First Nations and Indigenous groups in Canada (separated by OR), and combined with (AND) research areas or disciplines. Exclusion of health and psychology. Example:

(("first nation*" OR indig* OR aborig* OR indian) AND (Inuit OR Métis OR [all names of First Nations in Canada]) AND ("social science*" OR [disciplines])) NOT (health OR "mental health" OR psych* "legal studies").

1. WoS search strategy: The search includes 3 steps (see Appendix 1 for syntax). All searches were conducted only in the relevant databases within the WoS core collection, including the Social Sciences Citation Index and Conference Proceedings Citation Index – Social Sciences and Humanities:

   - Combination of search by topic (TS) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names). Combination of the previous search topic with a search by research area (SU) that includes all areas relevant for this project. Restriction of the search by language (English), document type (article, book, book chapter or proceeding paper), and publication date (2005-2015).

   - Combination of search by topic (TS) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal Peoples . Combination of the previous search topic with a search by research area (SU) that includes all areas relevant for this project. Restriction of the search by language (English), document type (article, book, book chapter or proceeding paper), and publication date (2005-2015).

   - Combination of steps 1 OR 2 excluding all irrelevant WoS categories and research areas (see Appendix 1).

Searches in WoS produced 596 results

2. EBSCO search strategy: The team compiled a list of thirty-two journals relevant for this project. Based on the databases in which these journals were indexed, two databases within EBSCO were selected to conduct the search (America: History and Life and Bibliography of Native North American). The following search was conducted in each of these two databases:

- America: History and Life (see Appendix 1 for syntax).

   - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names). Exclusion of irrelevant subjects (NOT SU) (see Appendix 1). Restriction of the search by publication date (2005-2015), document type (Article, Book, Book Chapter, Conference Paper, Dissertation, Report), and language (English). Narrowing search to relevant journals (see Appendix 1).

   - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal Peoples. Exclusion of irrelevant subjects (NOT SU) (see Appendix 1). Restriction of the search by publication date (2005-2015), document type (Article, Book, Book Chapter, Conference Paper, Dissertation, Report), and language (English). Narrowing search to relevant journals (see Appendix 1).

   - Combination of steps 1 OR 2.

Since health was one of the subjects excluded from the previous searches, another search was added to capture health policy articles:

- Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names) AND subject (SU) health AND subject (SU) policy. Restriction of the search by publication date (2005-2015), document type (Article, Book, Book Chapter, Conference Paper, Dissertation, Report), and language (English).

- Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal Peoples AND subject (SU) health AND subject (SU) policy. Restriction of the search by publication date (2005-2015), document type (Article, Book, Book Chapter, Conference Paper, Dissertation, Report), and language (English).

- Combination of steps 1 OR 2.

- Bibliography of Native North Americans (see Appendix 1 for syntax)

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names). Exclusion of irrelevant subjects (NOT SU) (see Appendix 1). Restriction of the search by publication date (2005-2015), document type (academic journal, book), and language (English). Narrowing search to relevant journals (see Appendix 1).

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal Peoples. Exclusion of irrelevant subjects (NOT SU) (see Appendix 1). Restriction of the search by publication date (2005-2015), document type (academic journal, book), and language (English). Narrowing search to relevant journals (see Appendix 1).

  - Combination of steps 1 OR 2

  - To capture health policy articles, a search was added similar to the one conducted with America: History and Life

Searches in Ebsco produced 521 results

3. ProQuest Search strategy: Two databases were searched in Ebsco: Canadian Research Index and ProQuest Dissertations & Thesis A&I

- Canadian Research Index

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names) AND subject synonyms of research (research OR survey OR "case stud*" OR stud*). Exclusion of anual reports, progress reports, performance reports, and plans. Restriction of the search by language (English) and publication date (2005-2015). Exclusion of non relevant subjects.

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal

Peoples AND subject synonyms of research (research OR survey OR "case stud*" OR stud*). Exclusion of anual reports, progress reports, performance reports, and plans. Restriction of the search by language (English) and publication date (2005-2015). Exclusion of non relevant subjects.

- Combination of steps 1 OR 2

- To capture health policy articles, a search was added similar to the one conducted with EBSCO.

- ProQuest Dissertations & Thesis A&I

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names) AND subject social sciences. Exclusion of irrelevant subjects. Restriction to doctoral dissertations, language (English), and publication date (2005-2015).

  - Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND names of First Nations and Aboriginal Peoples AND subject social sciences. Exclusion of irrelevant subjects. Restriction to doctoral dissertations, language (English), and publication date (2005-2015).

  - Combination or steps 1 OR 2

  - To capture health policy articles, a search was added similar to the one conducted with EBSCO.

Searches in ProQuest produced 139 results.

4. Worldcat: Search with names of First Nations and Aboriginal Peoples were not feasible in Worldcat. The browser did not accept so many search terms.

- Combination of search by subject (SU) using synonyms of Indigenous Peoples (indigen* OR aborigin* OR "first nation*" OR indian) AND (Canada OR all provinces' names) AND relevant subjects ; exclusion (NOT) of irrelevant subjects . Limited by publication date (2005-2015), language (English), number of libraries that held the item (50 or more), document type (books), audience (not juvenile), content (not fiction). Restriction to university libraries with graduate programs (Master or PhD) in Indigenous Studies

- To capture health policy books, a search was added similar to the one conducted with EBSCO

Search in Worlcat produced 112 items

5. Unindexed journals: From the list built by the team, we handsearched articles in non-indexed journals.

This search produced 65 results.

6. Grey literature: in order to complement the search for grey literature, we handsearched in the publication section of different NGOs and Indigenous organizations (see Appendix IV). The list of organizations was compiled by the team and through the iPortal (Indigenous Studies Portal Research Tool) browser that allows the identification of organizations that conduct

Indigenous studies. iPortal was also handsearched for reports and documents based on research using the following combination:

Description=(research OR survey OR stud*) AND Resource Type=(chapters OR documents & presentations OR ebooks).

This search produced 70 results.

3. Selection criteria and strategy

- Must have <u>Canadian</u> Indigenous/Aboriginal focus

- Included fields: anthropology, business, development planning, economics, education, geography, interdisciplinary social science, library and information science, linguistics, political science, social work and sociology (additional interdisciplinary vary among databases. Some examples are women studies, area studies, youth studies, etc.)

- Excluded fields: psychology, mental health, health (excepting studies that explain or interpret health policy or politics), legal and law development studies, history, educational studies (curriculum and pedagogy), archaeology.

To select the items that would be included in the CSSIR, two reviewers checked the title and abstract of each one of the 1,503 items collected in the search phase. These reviewers assessed each item with yes, maybe, or no. In case of disagreement in the assessment, a third reviewer resolved the conflict. With this strategy, a total of 801 items were selected and the remaining and 702 were rejected.

4. Study coding

The 740 unique items identified by the search were coded automatically for the following indicators (variable names in parenthesis) using the information from the source databases (WoS, Ebsco, ProQuest, Worlcat, etc.):

- **Author and Journal keyword:** Where available, the database retains all author keywords (if provided as a separate field) as well as journal or indexing service keywords in two separate variables.

- **Number of authors (numaut)**

- **Author's (probable) gender (A1_female – A5_female)**: We used genderizeR (Wais 2016) and genderize.io (https://genderize.io/) to estimate the probability that an author was female. Genderize.io uses social media and other administrative datasets that combine first names with user genders to predict whether a first name is likely to be associated with someone who identifies as male or female. Based on these predicted probabilities, probabilities greater than 0.8 were coded as female and less than 0.2 were coded male. In instances where the automated coding did not return a predicted probability or the probability was between 0.2 and 0.8, no gender was coded for an author. This method has been used in other recent studies (Teele & Thelen 2017; Sumner forthcoming), including one that estimated the error rate of genderize.io incorrectly assigning a gender based on first name to be about 2% when compared to manual coding of gender by research assistants. We acknowledge that both methods (to varying extents) are based on the problematic assumption that gender is a binary construct.

- **Open access:** A student assistant used the Directory of Open Access Journals (doaj.org) and targeted web searches to determine whether journal titles are open access. This does not account for open access articles published non-open access journals.

Student research assistants coded 501 articles for various characteristics. Books, theses, some journal articles, and other monographs (e.g., grey literature) were not coded due to inconsistent availability. The student assistants were trained to code the characteristics below by separately coding 5-10 articles. Members of the team then met to discuss differences in coding and to clarify concepts and methods. Once the research assistants were trained, due to limited resources and a desire to code as many items as possible, each article was coded by one assistant. However, assistants also indicated whether the article was easy or difficult to code. Those marked difficult, were then coded by another assistant and differences were resolved by a third member of the team. The key team members met weekly during the coding period to discuss any concerns or issues that arose during the coding process.

- **Affiliation of each author (A1_orgtype to A5_orgtype)**: The type of organization each of the first 5 article authors are affiliated with: educational institutions, colonial government, Indigenous government, NGO, unknown.

- **Author's self-identified Indigenous status (A1_sid to A5_sid)**: The self-identification of the first 5 article authors, if known: Indigenous, non-Indigenous, unknown.

- **Place name (place):** Proper names of study location, when available in the text (e.g., province, community, treaty territory, town, Nation, etc.)

- **Location type**:

  - **(Urban)**: yes/no

  - **(On-reserve)**: yes/no

- **Comparative (compare)**: comparative with group outside Canada (yes/no)

The methodological approach categories have **four** dimensions, each one with multiple yes/no variables as follows:

1. **Use of Indigenous language during the research (ind-lang):** The study uses Indigenous language(s) to conduct any part of the research, including research proposal, data collection, analysis or dissemination products. Yes or No.

2. **Epistemology:**
   - **Positivist/post-positivist (epi-pos)**: Assumes reality can be measured, although the measurement may be imperfect.
   - **Constructivist (epi-const)**: Assumes that reality is socially constructed.
   - **Critical (epi-critical)**: Individual and community reality is constructed by historical or institutional oppression.
   - **Constructionist/post-modern (epi-pm)**: Assumes reality is individually, internally constructed by experience.
   - **Indigenous (epi-ind)**: Assumes reality is relational and constructed through relationships between individuals, nature, etc.

3. **Data Sources:**
   - **Experiments (data-experiment)**: Participants complete tasks or answer questions that enable data collection. Can be in a lab, in the field, or on a survey.

- **Surveys (data-survey)**: A series of questions, often with a closed list of response options, administered in person, online, by mail, or over the telephone. Synonymous with questionnaire.
- **One-on-one dialogue (data-1_1)**: One-on-one conversations with participants, often including open-ended questions posed by the researcher, including interviews. Also included are "postcolonial Indigenous interview methods" differ from social science interview methods because the researcher does not guide the interview but facilitate the construction of the interviewee's story, and there is an explicit effort to neutralize power imbalances. All data sources in this category are based on some form of one-on-one interaction between the researcher and an informant.
- **Experience (data-experience)**: Participating in or attending events, meetings, or other activities and recording observations of actions, etc. Common method of data collection in ethnographic studies, and may include use of audio/video recordings. May be called participant observation, reflexive autoethnography, or ceremonies.
- **Group dialogue (data-group)**: Group interviews or conversations, often including open-ended questions and discussion. Would include Indigenous forms of collective knowledge sharing with a researcher, sometimes called a sharing circle.
- **Primary sources (data-psource)**: Archival documents/media or collections, government-generated data/statistics, administrative datasets from government, "big data", newspapers, photos, ethnographic films, diaries, audio recordings, or transcriptions that provide the raw material for a researcher to answer their question. Usually these sources were not created for the purpose of the research. Can include online materials.
- **Secondary sources (data-ssource)**: Grey literature (government, NGO reports), scholarly literature, etc. that engage in analysis of an issue or subject.
- **Reflexive sources (data-rsources)**: Directed by or in consultation with researchers, participants record their experiences over time in text or other media (e.g., video or photography). These sources are created specifically for the research. Participatory GIS and counter-mapping would be a form of reflection or capturing of geolocation data or socially constructed maps of spaces. Other types of reflexive sources include art-based methods, and symbol-based reflections.
- **Other (data-other)**: Anything else that doesn't fit one of the categories above.

4. **Methods of data analysis:**
   - **Quantitative descriptive (meth-qdesc)**: Use of descriptive statistics (means, frequencies, cross-tabulations) to describe a sample or population. Tables or figures will often be simple and easy for non-specialist to understand. Some types of network analysis are descriptive and aim only to describe the network (not attribute cause/effect). May mention particular tools, such as Excel, SPSS, Stata, or R. This could include Indigenous Statistics, or descriptive statistics from an Indigenous perspective or worldview.
   - **Quantitative inferential (meth-qinf)**: Use of inferential statistics to establish correlations or causation, usually including one dependent variable and several independent variables (i.e., multivariate) and usually some form of regression-based method. Results will include mention of statistical significance and include "models" in tables or figures of results. Surveys, experiments, and administrative data are often used in these analyses. Some types of network analysis aim to understand relationships between network structure or position and particular outcomes or dependent variables.

Quasi-experimental methods including "<u>matching</u>" methods would fall into this category, too. May reference particular software tools, such as: Excel; MLwiN; Mplus; Python; R; SAS; SPSS; Stata; Winbugs.

- **Interpretive ethnography (meth-inteth)**: Immersion of the researcher in the participants' environment to identify and <u>understand their culture, identity, goals</u>, etc. Key is to uncover meanings. Includes interpretive, reflexive, auto, and critical versions. May mention tool such as: ATLAS.ti; Maxqda; NVivo; Transana; Computer Aided Qualitative Analysis Software (CAQDAS).

- **Positivist ethnography (meth-poseth)**: Immersion of the researcher in the participants' environment to test hypotheses or understand causal processes. Aims to be objective and descriptive. Not as interested in the construction of meaning or culture but instead in <u>explaining why particular outcomes occur</u>. May mention tools such as: ATLAS.ti; Maxqda; NVivo; Transana; Computer Aided Qualitative Analysis Software (CAQDAS).

- **Qualitative content analysis (meth-cont)**: methods that focus on analysing the functional and sense-making <u>properties of written and oral language, visual imagery, or other forms of cultural media</u>. They assess the internal and external consistency of the speaker and message. These methods include textual, visual, discursive, conversational, thematic, framing, framework, and narrative analysis. May mention tools such as: ATLAS.ti; Maxqda; NVivo; Transana; Computer Aided Qualitative Analysis Software (CAQDAS).

- **Discourse analysis (meth-disc):** analysis of how meanings are constructed by texts, institutions, communities, etc. as a means to understand underlying assumptions/biases/power dynamics. In this context, most often refers to <u>critical or post-modern approaches</u> (i.e., post-colonial, constructionism/constructionist, Foucauldian analysis). Will often not include primary sources of evidence and instead operate at a high level of abstraction or observation.

- **Qualitative comparative case analysis (meth-case)**: case-based methods that aim at tracing processes that lead to specific outcomes by identifying necessary and sufficient <u>causal conditions</u>. Can include <u>comparisons over time</u>, or across different time periods, or historical analyses. Though cases are considered "whole," they are also often disaggregated into independent and dependent variables. <u>Boolean and QCA</u> are two variations on comparative case studies that use Boolean algebra and logic to deduce patterns of cause and effect.

- **Inductive analysis (meth-induc)**: methods that analyze empirical qualitative data to <u>develop theory inductively</u> without relying on preconceived theories. May be called grounded theory. Often combined with interpretive ethnography or discourse analysis. May mention tool such as: ATLAS.ti; Maxqda; NVivo; Transana; Computer Aided Qualitative Analysis Software (CAQDAS). Will differ from discourse analysis in that it will usually include a corpus of documents, experience, fieldwork or other observations that are analyzed inductively to develop a theoretical (descriptive, interpretive or even causal) analysis.

- **Participatory methods of analysis (meth-partic)**: This may include participant action research or other forms of community-engaged or community-based participatory research, which include <u>active participation of the community</u>. The researcher serves as a facilitator or catalyzer of the research process. It can also include other participatory methods whereby "participatory research approaches enable the colonized… to

collectively share and analyze their knowledge, life experiences, and conditions and to use Indigenous knowledge as a frame of reference to plan and act" (Chilisa 2012, 225). The common characteristics of these methods are the central role that the subject of research takes in not only creating source material (e.g., video diaries, sharing circles) but also an active role in the analysis and interpretation of the material. May also include performances and other atypical research creation objects (see SSRHC on "research creation"), some of which may not appear in article/book/document form (and therefore will be systematically underreported in our study).

- **Agent-based modelling/simulations (meth-mod)**: Methods that create simulations to mimic hypothetical human behaviour to understand how context or interactions lead to different outcomes. Often used in biological sciences, epidemiology, or ecology to model interactive behaviours.

- **Other (meth-other)**: Anything not described above

Indigenous participation categories describe a continuum of level of involvement that starts with no participation at all and ends with Indigenous-led research:

1. Participation (ICpartic): coded with one of the following values

- **No human subjects involved (none):** Theoretical and/or conceptual studies or research based on secondary sources (e.g. existing surveys, document analysis, etc.). Studies in this category do not establish any relationship with Indigenous communities. Outcomes are mainly peer-reviewed publications and participation in scholarly conferences. Sometimes, diffusion channels can also include publications in op-eds, magazines, specialty industry journals (non peer-reviewed), technical reports, blogs, websites, podcasts, on social media, and participation in media interviews.

- **Omitted participation (omitted):** Studies that involve human subjects but omit the involvement of Indigenous individuals and the review and approval from Indigenous communities. Diffusion channels are similar to those used by studies with no human subjects involved.

- **Acknowledge (acknowledge):** Studies in this category limit the participation of Indigenous communities to the approval of ethics protocol. Indigenous communities do not engage or participate actively in the project but simply acknowledge it and register no objection to it. Diffusion channels are similar to the previous two categories.

- **Engage (engage):** Minimal involvement of Indigenous communities in the project focused primarily on sharing information. This involvement can include having Indigenous Peoples mainly as informants and/or obtaining some feedback on research design, research questions, choice of methodology, analysis, and/or decisions regarding dissemination. The relationship with Indigenous partners is limited to keeping them informed, listening to and acknowledging the knowledge, goals and concerns of the community. Communication can be occasional or regular, but no clear governance structure is present. Diffusion channels are similar to the previous categories but partners are more intimately involved in alternative outputs, such as workshops, roundtables, community meetings or presentations, and content verification with partners

- **Collaborate (collaborate):** Strong, entrenched involvement. Partner with Indigenous participants in each aspect of the research process, including the development of

research questions, research design, and analysis of findings. Although studies are led by non-Indigenous organizations, there is a strong relationship with partners, which often includes participation in governance structures or research advisory boards. Partner point of view is clearly incorporated into the research. Publications in scholarly and lay outlets come out of this research, but the community-centered outputs are much more of a focus, such as, community reports and presentations, co-authorship and presentations with community members, results to partners, and member checking.

- **Empower (empower):** Very strong, entrenched involvement. Empower participants or Indigenous research partners to leverage the knowledge to have an impact in their environment and continue to carry on research that benefits them by imparting new skills, knowledge and/or resources. Studies are initiated by Indigenous organizations and/or derive from a pre-existing partnership between Indigenous and non-Indigenous communities with fully shared leadership. Indigenous partners actively sit on governance and advisory boards. Indigenous partner perspectives are fully reflected in the research and its outputs and the entire research process is accountable to the Indigenous community. Diffusion channels are similar to those in the Collaborate category but they go beyond research outcomes to build capacity in the community. Sometimes this is done through training and learning of new skills, advocacy, knowledge transfer, and increased awareness.

2. Indigenous-led studies (ICled): (yes/no) Studies in which Indigenous peoples and communities initiate and have leadership of the research process, which means they have greater power than non-Indigenous researchers or organizations. These studies go beyond research conducted by individual Indigenous researchers in educational or non-educational institutions.

Appendix B: Open-access journals in CSSIR

Aboriginal Policy Studies
American Studies
Anthropologica
Canadian Graduate Journal of Sociology and Criminology
Canadian Journal of Nonprofit and Social Economy Research
Cultural Anthropology
Historical Studies in Education-Canada
In Education
International Indigenous Policy Journal
International Journal of Qualitative Methods
International Review of Research in Open and Distance Learning
Language and Literacy
Social Work
Transnational Curriculum Inquiry

Appendix C: Additional tables and figures

All Tables and Figures in this Appendix are derived from the CSSIR, unless otherwise noted.

Table 1: Journals with 5 or more articles (2005-2015), by year

Publication Title	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	Total
Canadian Journal of Native Studies	10	3	3	7	0	7	10	7	4	5	6	62
Canadian Geographer	1	0	3	1	1	2	5	6	5	6	1	31
First Peoples Child & Family Review	0	0	5	0	7	6	0	5	2	0	4	29
Journal of Aboriginal Economic Development	0	5	0	2	2	1	3	5	2	5	1	26
Aboriginal Policy Studies	0	0	0	0	0	0	7	6	2	5	5	25
International Indigenous Policy Journal	0	0	0	0	0	0	0	1	3	0	12	16
Canadian Journal of Native Education	0	2	0	0	5	2	1	2	1	0	0	13
Human Ecology	0	2	0	1	2	2	1	1	2	0	2	13
Canadian Issues	1	0	0	0	8	0	0	1	0	0	0	10
Society & Natural Resources	1	2	1	0	1	1	1	0	0	1	2	10
Geoforum	0	0	0	0	1	1	0	1	2	2	2	9
American Indian Culture & Research Journal	0	1	1	1	1	1	0	1	0	0	2	8
Canadian Public Administration	0	0	0	2	0	0	1	3	0	1	1	8
Antipode	0	0	0	0	1	0	0	0	2	1	3	7
Canadian Public Policy	0	0	0	0	1	0	1	1	1	2	1	7
American Indian Quarterly	1	0	1	0	1	1	0	2	0	0	0	6
Canadian Journal of Sociology	0	1	0	1	0	0	0	0	3	1	0	6
Cultural Geographies	0	0	0	0	1	1	0	0	0	4	0	6
Human Organization	1	1	0	0	1	1	0	1	0	0	1	6
Native Studies Review	0	0	0	2	0	2	0	2	0	0	0	6
Etudes Inuit Studies	1	0	0	1	0	0	2	0	0	1	0	5
International Journal of Canadian Studies	0	0	1	0	2	1	0	0	0	0	1	5
Northern Review	0	0	0	0	0	0	0	0	0	0	5	5

Table 2: Articles by epistemology, 2005-2015

	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	Total
Indigenous only	1	0	2	1	1	3	2	2	1	1	1	15
+ Constructivist	0	0	0	1	1	3	2	2	0	0	0	9
+ Critical	0	0	0	0	3	5	1	2	3	1	4	19
+ Critical + Constructivist only	0	0	0	0	0	1	0	0	0	1	0	2
+ Positivist	0	0	0	0	0	0	0	0	1	0	1	2
+ Post-modern	0	0	0	0	3	0	0	1	0	0	1	5
+ Post-modern + Critical only	0	0	0	0	3	0	3	0	0	0	0	6
Constructivist only	6	7	3	2	2	6	4	11	9	8	10	68
+ Positivist	1	1	0	1	0	1	1	1	0	1	2	9
Critical only	6	6	4	9	10	15	8	12	15	9	24	118
+ Constructivist	0	1	0	1	1	0	4	2	1	3	4	17
+ Positivist	0	0	0	0	1	0	0	1	1	0	0	3
Positivist	6	12	6	13	15	9	11	16	7	13	11	119
Post-modern	3	2	1	2	3	3	2	5	3	2	3	29
+ Constructivist	0	0	1	2	1	0	1	1	0	0	1	7
+ Critical	4	3	4	5	7	5	7	6	7	12	11	71
+ Critical + Constructivist	1	0	0	0	0	0	0	0	0	0	1	2
Total	28	32	21 28	37	32 51	5 1	46 37	62	54 8	51 51	74	47 501	62

Table 3: Frequencies of journal articles' data sources by year, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Experiment	0	0	0	0	0	0	0	0	0	1	0
Survey	2	1	0	4	4	2	4	8	6	4	4
One-on-one	15	16	8	15	23	20	19	22	23	20	31
Experience	11	6	10	9	17	18	13	13	10	14	21
Group	3	5	2	6	6	8	6	9	5	7	13
Primary sources	15	17	9	20	27	26	24	29	24	31	42
Secondary sources	19	12	8	15	23	24	19	27	21	22	33
Reflexive sources	3	1	3	1	4	2	7	3	3	2	7
Other sources	1	1	0	0	0	1	0	1	0	3	1

Note: Articles may include more than one method of data analysis.

Table 4: Frequencies of journal articles' data analysis methods by year, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Quantitative (descriptive)	1	5	6	8	12	8	7	12	11	7	9
Quantitative (inferential)	0	3	3	4	2	4	1	5	6	5	7
Interpretive ethnography	7	2	5	1	8	6	4	3	4	6	7
Positivist ethnography	2	4	0	4	0	3	2	0	2	0	1
Content analysis	7	9	6	10	15	13	14	12	8	10	18
Discourse analysis	9	6	5	12	12	10	11	15	12	15	30
Comparative case study	11	10	1	7	11	16	13	25	16	16	24
Inductive analysis	0	5	6	6	10	9	9	8	6	10	11
Participatory analysis	3	1	5	3	8	6	7	9	4	5	9
Computer modelling	0	0	0	0	0	0	0	1	0	0	1
Other methods of analysis	8	4	4	5	5	11	4	6	10	5	5

Note: Articles may include more than one method of data analysis.

Table 5: Frequencies of journal articles' evidence sources by epistemological approaches

	Experiment	Survey	One-on-one	Experience	Group	Primary sources	Secondary sources	Reflexive sources	Other sources
Indigenous	**0**	**2**	**6**	**9**	**3**	**3**	**4**	**3**	**1**
+ Constructivist	0	1	4	4	6	2	1	3	0
+ Critical	0	0	5	13	4	5	9	5	1
+ Critical + Constructivist	0	0	1	0	0	1	2	0	0
+ Positivist	0	0	1	0	0	1	0	0	0
+ Post-modern	0	0	4	4	0	3	3	1	0
+ Post-modern + Critical	0	1	4	3	2	2	2	0	0
Constructivist	**0**	**4**	**43**	**28**	**17**	**21**	**17**	**8**	**1**
+ Positivist	0	1	6	2	3	4	3	1	0
Critical	**1**	**6**	**57**	**33**	**12**	**56**	**62**	**4**	**2**
+ Constructivist	0	3	9	5	3	6	8	1	0
+ Positivist	0	0	1	1	1	2	0	0	0
Positivist	**0**	**16**	**27**	**8**	**10**	**78**	**47**	**3**	**3**
Post-modern	**0**	**2**	**12**	**11**	**2**	**18**	**18**	**1**	**0**
+ Constructivist	0	0	4	2	1	4	3	1	0
+ Critical	0	3	28	19	6	56	42	5	0
+ Critical + Constructivist	0	0	0	0	0	2	2	0	0

Note: Articles may include more than one data source.

Table 6: Frequencies of journal articles' data analysis methods by epistemological approach

	Quant. (desc.)	Quant. (infer.)	Interp. ethnog.	Positivist ethnog.	Content analysis	Discourse analysis	Comp. case study	Inductive analysis	Partic. analysis	Computer model.	Other methods
Indigenous	**1**	**0**	**5**	**0**	**3**	**1**	**1**	**5**	**5**	**0**	**4**
+ Constructivist	0	0	0	0	5	0	1	6	6	1	0
+ Critical	0	0	1	0	3	5	4	5	9	0	5
+ Critical + Constructivist	0	0	0	0	0	1	0	2	0	0	0
+ Positivist	2	2	0	0	1	0	1	1	0	0	0
+ Post-modern	0	0	4	0	1	2	0	3	2	0	1
+ Post-modern + Critical	0	0	1	0	2	2	1	3	2	0	0
Constructivist	**8**	**2**	**12**	**5**	**24**	**5**	**24**	**9**	**15**	**0**	**10**
+ Positivist	1	1	1	1	5	0	1	0	1	0	0
Critical	**13**	**4**	**11**	**7**	**31**	**42**	**48**	**20**	**8**	**0**	**13**
+ Constructivist	0	0	3	1	7	4	9	2	3	0	1
+ Positivist	2	0	0	0	1	0	1	0	0	0	0
Positivist	**54**	**28**	**0**	**3**	**13**	**2**	**40**	**2**	**3**	**1**	**12**
Post-modern	**1**	**1**	**4**	**1**	**8**	**16**	**2**	**7**	**1**	**0**	**8**
+ Constructivist	0	0	0	0	2	2	2	1	1	0	2
+ Critical	4	2	11	0	16	53	14	14	4	0	11
+ Critical + Constructivist	0	0	0	0	0	2	1	0	0	0	0

Note: Articles may include more than one method of data analysis.

Table 7: Indigenous participation in journals articles by year, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
No human subjects	11	12	10	20	23	29	23	33	25	24	40	250
Omitted participation	2	2	0	0	2	1	2	1	1	3	3	17
Acknowledged	7	11	2	9	10	8	8	14	15	11	12	107
Engage	6	7	3	4	5	5	4	6	4	9	8	61
Collaborate	0	0	3	3	9	6	6	4	2	2	10	45
Empower	2	0	3	1	2	2	3	4	1	2	1	21
Total	15	18	11	17	26	21	21	28	22	24	31	501

Table 8: Indigenous participation according to study epistemology

	No human participants	Omitted	Acknowledge	Engage	Collaborate	Empower	Total
Indigenous	5	0	1	0	5	4	15
Indigenous + Constructivist	2	0	0	1	3	3	9
Indigenous + Critical	11	1	0	1	3	3	19
Indigenous + Critical + Constructivist	1	0	0	1	0	0	2
Indigenous + Positivist	1	0	0	1	0	0	2
Indigenous + Post-modern	1	0	0	3	0	1	5
Indigenous + Post-modern + Critical	2	0	0	1	3	0	6
Constructivist	13	3	27	12	9	4	68
Constructivist + Positivist	2	1	2	2	1	1	9
Critical	62	3	28	10	13	2	118
Critical + Constructivist	6	0	6	3	2	0	17
Critical + Positivist	2	0	1	0	0	0	3
Positivist	78	8	22	9	1	1	119
Post-modern	15	0	8	5	1	0	29
Post-modern + Constructivist	3	0	2	1	0	1	7
Post-modern + Critical	44	1	10	11	4	1	71
Post-modern + Critical + Constructivist	2	0	0	0	0	0	2

Table 9: Indigenous participation according to study evidence sources

	Experiment	Survey	One-on-one	Experience	Group	Primary sources	Secondary sources	Reflexive sources	Other sources
No participants	1	7	13	42	1	193	164	1	5
Omitted	0	5	11	4	3	7	5	0	0
Acknowledge	0	13	92	32	13	37	32	5	1
Engage	0	6	47	27	19	17	17	9	2
Collaborate	0	5	35	24	22	7	4	12	0
Empower	0	3	14	13	12	3	1	9	0

Note: Studies may include multiple evidence sources.

Table 10: Indigenous participation according to analysis methods

	Quant. (desc.)	Quant. (infer.)	Interp. ethnog.	Positivist ethnog.	Content analysis	Disc. analysis	Comp. case study	Inductive analysis	Partic. analysis	Model'g	Other
No participants	58	32	6	1	33	96	66	25	3	1	43
Omitted	4	3	0	2	4	3	8	1	2	0	0
Acknowledge	15	2	16	10	41	21	40	18	0	0	15
Engage	4	1	15	4	22	11	22	20	11	0	5
Collaborate	3	2	13	1	15	3	12	13	25	0	2
Empower	2	0	3	0	7	3	2	3	19	1	2

Note: Studies may include multiple methods

Appendix D: Indigenous Social Science Research Policy (ISSRP) bibliographic database

This bibliography includes all recent documents related to the institutional, organizational, and human resources related to social science research on Indigenous issues or in Indigenous communities in Canada, the United States, Australia, and New Zealand. Comparative documents include those that reference more than one of those nation-states.

Institutions include formal and informal rules, policies and norms that organize Indigenous studies including relevant research policy, research ethics regulation and norms, research incentives, Indigenous epistemology, etc. Some examples of these topics are Tri-Council regulation on research involving the First Nation, Inuit, and Métis People; programs or policies aiming at stimulating studies about Indigenous Peoples; programs or policies stimulating the training or participation of Indigenous People in social research; discussions about Indigenous epistemology and Indigenous knowledge with impact on research ethics and practices; etc.

Organizations are structured entities (e.g., universities, Councils) with a clear purpose that conduct research or train researchers in Indigenous studies. For instance, the ISSRP database includes articles that discuss the development or incorporation of Indigenous perspectives in higher education programs, the development of specific Indigenous higher education programs or research agenda, organizational initiatives to stimulate /shape Indigenous studies, and specific ways that Indigenous communities and governments organize their research ethics or research enterprises, etc.

Even though the two previous topics include articles regarding **human capital**, the ISSRP database also includes articles dealing with conditions, opportunities and challenges for training Indigenous individuals in the area of social science, conditions and challenges for training non-Indigenous individuals to conduct Indigenous studies, gaps of human capacity in specific research areas or methodologies, approaches to train researchers on Indigenous studies, and every other literature related with the development of human capital for Indigenous studies.

The bibliography includes articles and other text documents identified in the CSSIR search and coded as relevant for the ISSRP database during the screening process. The bibliography was supplemented with targeted searches in Google Scholar and a review of recent issues of relevant journal publications.

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Appendix E: Indigenous studies journals

JOURNAL	Indexed
Aboriginal Policy Studies	Unindexed
American Indian & Alaska Native Mental Health Research	Ebsco
American Indian Law Review	Ebsco
American Indian Quarterly	Ebsco
Australian Aboriginal Studies	Ebsco
Ayaangwaamizin: The International Journal of Indigenous Philosophy	Unindexed
Canadian Journal of Native Education	Ebsco
Canadian Journal of Native Studies	Ebsco
Decolonization: Indigeneity, Education & Society	Ebsco
Diaspora, Indigenous and Minority Education	Ebsco
Engaged Scholar Journal: Community-Engaged Research, Teaching, and Learning	Unindexed
Études Inuit Studies	Unindexed
First Nations Perspectives	Unindexed
First People Child & Family Review	Unindexed
Indigenous Nations Studies Journal	Ebsco
Indigenous Peoples Journal of Law, Culture & Resistance	Unindexed
Indigenous Policy Journal	Unindexed
Indigenous World	Unindexed
Indigeous Law Journal	Ebsco
International Indigenous Policy Journal	Ebsco
International Journal of Critical Indigenous Studies	Unindexed
Journal of Aboriginal Economic Development	Ebsco
Journal of Aboriginal Health	Ebsco
Journal of Indigenous Research	Unindexed
Journal of Indigenous Social Development	Ebsco
Journal of Indigenous Voices in Social Work	Unindexed
Native American And Indigenous Studies	Unindexed
Native Studies Review	Ebsco
Nishnaabe Kinoomaadwin Naadmaadwin (Native Social Work Journal)	Ebsco
Pimatisiwin: A Journal Of Aboriginal & Indigenous Community Health	WoS

Appendix F: Canadian Universities with Aboriginal and Indigenous Studies Graduate Programs (Master and PhD)

Cape Breton University
First Nation University of Canada
Queens University
Simon Fraser University
Trent University
University of Alberta
University of British Columbia
University of Northern British Columbia
University of Regina
University of Saskatchewan
University of Toronto
University of Victoria
University of Winnipeg
Wilfrid Laurier University
York University

Appendix G. Organizations that conduct or disseminate Indigenous studies

Aboriginal Policy Research Consortium (International)
Anishinabek Nation: Union of Ontario Indians
Assembly of First Nations
Association of Iroquois and Allied Indians
Center for Aboriginal Policy Research (Australia)
Canadian Research Data Center Network
Center for Indigenous Environmental Resources
Chiefs of Ontario
Congress of Aboriginal Peoples
First Nation Information Governance Center
Fraser Institute
Grand Council Treaty
Haudenosaunee Confederacy
Institute on Governance
Inuit Tapiriit Kanatami (ITK)
Manitoba Metis Federation
Metis Nation of Alberta
Metis Nation of British Columbia
Metis Nation of Ontario
Metis Nation of Saskatchewan
Metis National Council
Metis Settlements General Council
Ministry of Indigenous Relations and Reconciliation
Missing Women Commission of Inquiry: Reports and Publications
National Association of Friendship Centres
National Center for First Nation Governance
National Congress of American Indians
Native Nations Institute for Leadership, Management, and Policy
Native Women's Association of Canada (NWAC)
Nishnawbe-Aski Nation
Okanagan Nation Alliance
Ontario Federation of Indigenous Friendship centres
Ontario Native Women's Association (OWNA)
Six Nations Council
The Scow Institute
Union of Ontario Indians (UOI)
Upper Columbia United Tribes (UCUT)