INDIGENOUS HEALTH IMPACT ASSESSMENT:

Systematic review of the literature

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for Indigenous Health

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de la santé autochtone

INDIGENOUS KNOWLEDGE(S) AND PUBLIC HEALTH

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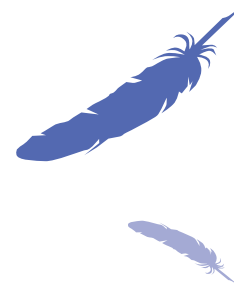# CONTENTS CONT.

INTRODUCTION

To advance the integration of Indigenous [1] Peoples' knowledges, values, and priorities into the health impact assessment (HIA) process in Canada, this literature review examines the existing base of evidence on what is known about Indigenous participation in the assessment of resource and infrastructure developments. Framed by the 2019 *Impact Assessment Act* and 2021 *United Nations Declaration on the Rights of Indigenous Peoples Act*, this review considers what a distinctions-based Indigenous-specific HIA process in Canada could look like. The literature review takes an inclusive, rights-, gender-, and equity-based approach to document the published literature on diverse perspectives of First Nations peoples, Inuit, and Métis peoples in Canada and, when available, national,

regional, and community-specific considerations, including urban, rural, and remote off-reserve populations.

First, we begin with an overview of Indigenous community-specific frameworks of health and well-being and discuss the implications of these frameworks for HIA. Next, the review presents Indigenous Peoples' perspectives of the current impact assessment (IA) process, including gaps in available resources, challenges in engagement with government and collaboration with industry, and opportunities for enhanced leadership. Finally, the review highlights national and international best practices, tools, and guidance for meaningful engagement of Indigenous individuals, communities, organizations, and governments in the IA process.

Indigenous Peoples' health and IA in Canada

Fostering Indigenous self-determination within IA processes and decision-making is an essential part of advancing reconciliation in Canada (Truth and Reconciliation Commission [TRC], 2015; Justice Canada, 2021). Access to natural resources has long been a justification for colonial laws, policies, and practices that have dispossessed Indigenous Peoples from their territories (Booth & Skelton, 2011a; Lewis et al., 2025; Shandro et al., 2017). Settler colonialism, as an ongoing system, aims to transfer resources to settler populations by eliminating Indigenous claims to land through forced removal, marginalization, assimilation, genocide, and other indirect means (Wolfe, 2006).

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[1] The term 'Indigenous' is used throughout the literature review instead of Aboriginal, First Nations, Inuit, Métis, Indians, Native, or Native Americans. Indigenous is consistent with the terminology of the United Nations Declaration on the Rights of Indigenous Peoples, which Canada now supports without qualification. The only time the terms - Aboriginal, First Nations, Inuit, Métis, Indians, Native, or Native American - will be used is when the terminology is used in the historical context, in a (in)direct quote, in legal terminology, is in the name of legislation, or when referring to a specific Indigenous group.

Resource extraction and industrial projects have been primary drivers of this environmental dispossession, as state and industry profits have been prioritized over the health, well-being, and rights of Indigenous Peoples (Booth & Skelton, 2011a; Gislason & Andersen, 2016; Lewis et al., 2021a). IA is thus a key area of focus for the Government of Canada in renewing its nation-to-nation, government-to-government, and Inuit-Crown relationships (Impact Assessment Agency of Canada [IAAC], 2024).

Indigenous HIA in Canada is framed by three significant pieces of legislation: the *Constitution Act* (1982), the *Impact Assessment Act* (2019), and the *United Nations Declaration on the Rights of Indigenous Peoples Act* (2021). Section 35 of the *Constitution Act* (1982) recognizes and affirms Aboriginal and Treaty rights. Although these rights are not defined, they have been interpreted by courts and Indigenous Peoples as broadly including the inherent right to self-government, land, and land-based ways of life, as well as specific rights to fish, hunt, and harvest (Centre for Constitutional Studies, n.d.; Crown-Indigenous Relations and Northern Affairs Canada, 2023).

Similarly, the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) asserts the collective and individual rights of Indigenous Peoples related to self-determination, dignity, freedom, and well-being. Specifically, Article 8 of the *Declaration* stipulates that, "States shall provide effective mechanisms for prevention of, and redress for… Any action which has the aim or effect of dispossessing them of their lands, territories or resources" (United Nations [UN], 2007, p.10). Similarly, Article 18 establishes the right of Indigenous Peoples to participate in decision-making in matters affecting their rights, including on matters that impact their lands, while Article 19 affirms that States must consult Indigenous Peoples in good faith, in order to obtain their free, prior, and informed consent (FPIC) on developments that may affect them (UN, 2007). Moreover, Article 25 states that "Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard" (UN, 2007, p.19). Articles 26-30 and 32 make equally important provisions about Indigenous Peoples' rights over land, water, and resources.

Building on UNDRIP and the TRC's Calls to Action (2015), the 2019 *Impact Assessment Act* significantly advances the consideration of Indigenous health and well-being concerns in IA. Based on consultation with Indigenous Peoples, the Act mandates federal IA processes to account for any potential health, social, economic, and cultural effects of proposed projects for Indigenous Peoples and the intersection of these effects with gender and sex (S.C. 2019, c. 28, s. 1 "22"). The *Impact Assessment Act* further mandates the consideration and protection of Indigenous Knowledge when shared (22, 1, g), as well as any potential adverse impacts to Indigenous rights (22, 1, c). Finally, the *Impact Assessment Act* recognizes Indigenous Governing Bodies as "jurisdictions" (S.C. 2019, c. 28, s. 1 "22") and creates a mechanism for Indigenous governments (i.e., jurisdictions) to lead assessment processes by delegation from the Minister of Environment and Climate Change Canada (S.C. 2019, c. 28, s. 1 "31").

Most recently, in 2021, the Government of Canada passed the *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDRIPA) to advance the implementation of UNDRIP across the country. The cornerstone of this Act is the requirement that "The Government of Canada must, in consultation and cooperation with Indigenous peoples, take all measures necessary to ensure that the laws of Canada are consistent with the Declaration" (S.C. 2021,

c. 14, 5). UNDRIPA effectively establishes a role for Indigenous leadership and decision-making in IA by recognizing the Crown's need to respect FPIC when major projects may affect Indigenous Peoples, their lands, or their traditional territories. The federal government has advanced UNDRIPA as a critical step in renewing its relationship with First Nations, Inuit, and Métis based on the recognition of Indigenous self-determination and the right to self-government (Justice Canada, 2025).

Taken together, these three pieces of legislation make legal space for Indigenous leadership in assessing the potential effects of resource and infrastructure development projects on Indigenous Peoples' health based on communities' own complex knowledge systems and definitions of well-being. This represents an important shift in Indigenous Peoples' relationship with IA in Canada, from an approach of marginalization, ignorance, and violence, to one that actively recognizes Indigenous Peoples' self-determination, land responsibilities, expertise, and control over their own lives. While Canada's colonial legacy continues, Indigenous-led HIA can play a critical role in advancing meaningful IA based on trust, equity, transparency, and mutual benefit.

HIA: Purpose and approach

HIA provides a systematic and transparent process to identify and analyze the potential effects of a proposed development project on the health and well-being of a population. HIA aims to take a comprehensive approach and considers both positive and adverse impacts that may be direct, indirect or unintended, as well as how these impacts may be distributed across population groups (Winkler et al., 2021). As the primary objective of HIA is to protect and promote health, HIA processes must take an equity lens to examine how a proposed development may cause changes in any determinant of health or health outcomes (McDermott et al., 2024). By systematically assessing all determinants of health, HIA can support informed decision-making on major projects as well as adequate monitoring and evaluation as projects progress. It is important to distinguish that HIA is a voluntary component of IAs in Canada. Specifically, the federal *Impact Assessment Act* requires designated projects to undergo an IA that explicitly includes health effects as a key consideration; but a distinct or standalone "Health Impact Assessment" report may not be required.

While the technical process of HIA varies, the International Association for Impact Assessment has outlined nine general steps, involving (Winkler et al., 2021, p. 5):

1. screening,
2. scoping,
3. baseline definition,
4. assessing impacts,
5. reporting,
6. external review,
7. intersectoral negotiations,
8. implementation and monitoring, and
9. evaluation and audit.

These steps emphasize the thorough approach to undertaking meaningful and transparent HIA. Each step is important and should match the scale of the proposed development. In applying these steps, the International Association for Impact Assessment has put forward five key principles to guide the practice of HIA globally (Winkler et al., 2021, p. 4). These principles include:

1. take a comprehensive approach to health;
2. engage all potentially impacted groups;
3. consider equity and equality in the distribution of health effects;
4. commit to the ethical and impartial use of evidence; and
5. highlight sustainability in the assessment of short- and long-term future impacts.

...there is a need for clear documentation on the expectations for an adequate and rigorous HIA, as well as training to build the capacity of HIA practitioners.

The International Association for Impact Assessment's approach has become widely accepted by practitioners and is informed by the best practices, guidance, and experience of international development organizations and HIA experts. As Canada moves to develop national guidelines on HIA, this international approach may be an important starting point since it aligns with the expectations of the 2019 *Impact Assessment Act* and highlights many of the priorities of Indigenous Peoples, communities, organizations, and governments in Canada. However, guidance and principles are not the same as legislative standards and there is growing concern among practitioners and policymakers around the variability in quality and rigour of HIAs globally. A recent review by McDermott et al. (2024) of HIA frameworks available to support practitioners found that none provided adequate guidance on how to meet all five of the key principles in every step of the HIA process. As HIA is increasingly recommended by Health Canada as part of the overall IA process, there is a need for clear documentation on the expectations for an adequate and rigorous HIA, as well as training to build the capacity of HIA practitioners.

For Indigenous Peoples, communities, organizations, and governments in Canada, the current voluntary nature of HIA and lack of legislated or documented standards are an urgent concern (Assembly of First Nations [AFN], 2024; First Nations Major Projects Coalition [FNMPC], 2020). With little accountability or experience, IA practitioners in state- and proponent-led processes have unevenly included Indigenous Peoples' knowledges, realities, and priorities related to health and well-being (St-Pierre, 2021). At best, practitioners have sought Indigenous participation in scoping potential health impacts and, at worst, have applied inappropriate Western health frameworks that have downplayed or erased Indigenous concerns from IA processes, reports, and recommendations (Jones & Bradshaw, 2015; Lewis et al., 2021b). Meaningful HIA for Indigenous communities requires a stand-alone Indigenous-specific HIA process informed by guidance, expectations, and standards established by Indigenous communities themselves (AFN, 2024).

METHODS:
SYSTEMATIC REVIEW

To advance the integration of Indigenous Knowledge, values, and priorities into the HIA process in Canada, this literature review examined the existing base of evidence on Indigenous participation in the assessment of resource and infrastructure developments. In scoping and assessing the available literature for inclusion, this review followed the principles of a systematic review. Systematic review methodologies provide a rigorous, replicable, and comprehensive approach to understanding the quantity and diversity of published resources related to a particular topic (Shamseer et al., 2015). Preliminary searches identified a limited number of resources specific to Indigenous HIA in Canada, thus a systematic review process facilitated the identification of Canadian and international peer-reviewed and grey (e.g., government and consultant reports, websites, theses, etc.) literature, as well as published guidelines and tools relevant to Indigenous participation, leadership, and equity in IA processes more broadly.

Three search strategies were applied complementarily across two electronic databases (Web of Science, Google) to collect peer-reviewed and grey literature related to Indigenous communities and IA published in English between 2004-2025 (Table 1). Keyword search strings and inclusion criteria were established by the full research team (see p. 11). First, Web of Science was searched for academic articles and sources by the lead author, with all citations screened based on relevance of title. This was followed by an advanced Google Scholar search that was conducted until the entire page of results was not relevant to the review topic (see Castleden et al., 2017 and Furgal et al., 2010 for similar sampling strategies). Abstracts were then screened for inclusion by three research team members to secure consensus around relevance to Indigenous participation in the assessment of resource and infrastructure developments in Canada. Based on this screening, 126 peer-reviewed articles were selected for a full-text review by the lead author. Finally, a grey literature

search was conducted drawing from the three strategies proposed by Godin et al. (2015):

1. a customized google search,
2. a search of targeted organizations, and
3. a systematic examination of each report's bibliography.

Given the review topic, consulting grey literature was particularly important for highlighting resources, guidelines, and tools produced by Indigenous people themselves. In screening materials for inclusion, sources produced by Indigenous researchers, organizations, and governments were prioritized.

Following the screening of abstracts for relevance, 210 resources were included for full-text review. The full-text review resulted in a total of 114 publications included in this systematic review (See reference list [2]).

Review inclusion criteria

- Topic relevant to Indigenous engagement and participation in IA processes
- Published between 2004-2025
- Includes full article/document and review information
- In English

Based on the goal of this review to advance Indigenous-specific HIA in Canada for infrastructure and resource developments, the research team established four key thematic questions to guide the analysis of the literature:

1. What are the implications of Indigenous community-specific models of health and well-being for HIA processes in Canada?
2. What tools, guidelines, and resources exist in Canada and internationally to support Indigenous HIA processes?
3. What best practices have been identified to achieve Indigenous leadership and/or meaningful engagement in IA processes as defined by Indigenous communities?
4. What challenges and barriers to Indigenous leadership in IA have been identified by key stakeholders in these processes, including Indigenous communities, researchers, industry, and government.

For each publication, the first author undertook a close reading and drew on thematic coding to assess the text and organize findings based on the key research questions.

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[2] The reference list contains all relevant publications identified in this systematic review.

TABLE 1: LITERATURE SEARCH PROCESS

	Web of Science	Google Scholar	Grey literature and direct search
Keyword strings	= (Indigenous OR First Nation OR Métis OR Inuit OR Aboriginal) AND (Impact Assessment)	= (Indigenous OR First Nation OR Métis OR Inuit OR Aboriginal) AND Impact Assessment AND (Tool OR Guideline OR best practice)	1. Direct search of websites of national and regional First Nations, Inuit and Métis organizations. 2. Review of bibliographies of Indigenous organizational sources. 3. Google search = (Indigenous OR First Nation OR Métis OR Inuit OR Aboriginal) AND Impact Assessment AND (Tool OR Guideline OR best practice)
Abstracts reviewed	365	Until full page with no relevant article	Until full page with no relevant response on Google
Sources included for full-text review	54	71	85
Total included	**18**	**24**	**72**

INDIGENOUS COMMUNITY-SPECIFIC MODELS OF HEALTH AND WELL-BEING

Despite advances in IA in Canada over the past forty years, Indigenous communities continue to question whether these state-led processes can adequately capture their health priorities and concerns. Conventional human health risk assessment methodologies emphasize biophysical aspects of health and rely on probabilistic risk assessment of potential environmental exposures (Gregory et al., 2016). These methodologies do not account for Indigenous Peoples' holistic frameworks of health and well-being and have been challenged to incorporate diverse Indigenous Knowledge (Donatuto et al., 2016; Eckert et al., 2020). The lack of consideration for the cultural, social, spiritual, and economic determinants of Indigenous well-being, as well as complex relationships to land have led to critiques around the relevance, legality, and constitutionality of IA for Indigenous communities (AFN, 2024; Lewis et al., 2025).

Centering Indigenous definitions and frameworks of health and well-being is essential to assessing, monitoring, and mitigating any potential impacts of major projects. International best practices for HIA have shifted away from risk assessments focused on biophysical factors to include holistic determinants of health. The International Association for Impact Assessment defines health and well-being as including the social, cultural, and economic environment (e.g., employment, access to healthcare services), the physical environment (e.g., safe drinking water), institutional factors (e.g., capacity of public, private and civil society actors), and individual characteristics (e.g., gender) (Winkler et al., 2021). Similarly, the World Health Organization and European Centre for Health Policy (1999) and the International Finance Corporation (2009) recommend social determinants of health models that make space for qualitative and quantitative data, and consider how potential changes to structural, social, economic, and cultural conditions may impact well-being at the individual and community levels. While these frameworks represent an important step forward in understanding how different populations and communities experience the health impacts of

major developments, they struggle to adequately include complex Indigenous ways of living, values, and knowledge systems.

Indigenous models of health and well-being are holistic and grounded in the worldviews, Indigenous knowledge systems, histories, cultures, and environments of distinct nations and the many communities within them. A wide body of peer-reviewed literature has examined the determinants of Indigenous health through participatory and Indigenous-led research. Broadly, this research suggests that Indigenous health models take a life course approach and emphasize the interrelationships of social, cultural, spiritual, environmental, economic, and biophysical factors at the individual, family, and community levels (Donatuto et al., 2016; Loppie & Wien, 2022; Morton Ninomiya & Pollock, 2017; Richmond & Ross, 2009; Salerno et al., 2021). Indigenous models further account for how well-being is shaped by personal, intergenerational, and collective experiences with colonization and racism, as well as individual, community, and government

self-determination (Loppie & Wien, 2022; Reading, 2015). Finally, Indigenous health models are grounded in multifaceted connections with the land and the protocols and responsibilities required to uphold these relationships (Gibson et al., 2017; Lewis et al., 2021a). In the context of HIA, this means that potential health impacts must include non-conventional indicators related to land-based food security, traditional medicines and ceremonial practices, social cohesion and intergenerational relationships, language, spiritual connections, environmental responsibilities, and social and cultural identity (AFN, 2015; Inuit Tapiriit Kanatami, 2014; Les Femmes Michif Otipemisiwak [LFMO], 2019).

Although there may be shared elements across First Nation, Inuit, and Métis communities, the diversity of place-based worldviews, knowledge systems, and cultures means that no standardized Indigenous health framework or set of determinants is sufficient to support current HIA (St-Pierre, 2021). Context is critical to understanding and defining how and through

which impact pathways a major project may affect an Indigenous individual, family, community, or Nation (Myette & Riva, 2021). While some socioeconomic determinants, such as income, employment or education, are considered standard measures by Western approaches, they are not perfectly transferable to all Indigenous communities (Wilkes, 2015). Instead, these determinants take on diverse meanings related to their placed-based epistemologies. Specific determinants, valued components, and indicators of health must be established by each First Nation, Inuit, or Métis community based on their own priorities, values, and experiences.

Indicators of First Nations health and well-being

Many, but certainly not all, First Nations models of health and well-being draw upon the medicine wheel and emphasize the interconnectedness of mental, spiritual, physical, and emotional factors (AFN, 2015). The Assembly of First Nations (2015) and Native Women's

Association of Canada (2020), as well as a variety of First Nations organizations (FNMPC, 2020; First Nations Health Council, 2023) and First Nations-led research projects (Gibson et al., 2017) have examined indicators related to the potential health impacts of major developments. These suggested indicators include:

- connection and access to traditional territory;
- culture and language;
- food security, including confidence in the safety of country food and medicines;
- community infrastructure;
- history of colonization;
- access to culturally safe health services and supports;
- experience of Indigenous women, girls, Two-Spirit, transgender, and gender-diverse people;
- housing;
- education;
- employment, income, and socioeconomic status;
- access to and sharing of Indigenous Knowledge;
- work-life balance, workplace safety, stress and satisfaction;
- community cohesion;
- degree of self-determination;
- knowledge of and engagement in traditional spirituality;
- ability to steward traditional lands and govern territory; and
- family and clan relationships.

Indicators of Inuit health and well-being

Across the four regions of Inuit Nunangat (Inuvialuit region, Nunavut, Nunavik, Nunatsiavut), diverse political contexts, geographies, histories, and cultures have led to the development of specific, place-based models of health and well-being. Inuit Tapiriit Kanatami (2014) has developed an overarching model of the social determinants of Inuit health based on eleven key factors:

1. quality of early childhood development (e.g. maternal, fetal, infant, and children's health and wellness);
2. culture and language;
3. livelihoods, including harvesting, producing cultural goods and artwork, and employment;
4. income distribution;
5. housing;
6. personal safety and security, including gender-based violence;
7. education;
8. food security;
9. availability of quality and culturally safe health services;
10. mental wellness; and
11. environment (access, quality, and safety).

More recently, community-led, participatory research in Nunavik developed a regionally specific Inuit cultural model of health and well-being based around three foundational local concepts (Fletcher et al., 2021):

1. Qanuinngisiarniq: sense of well-being, including mental, social and physical states and being free from emotional distress/worry;
2. Inuuqatigiitsiarniq: quality of relations with family, friends, neighbours, and people within the community; and
3. Ilusirsusiarniq: body imbued with strength and capacity.

These three concepts are linked to eight interrelated determinants of Inuit community well-being:

1. community,
2. family,
3. identity,
4. food,
5. land,
6. knowledge,
7. economy, and
8. services.

Indicators of Métis health and well-being

Métis models of health and well-being are framed by the unique legal and political context of Métis peoples in Canada. Métis communities and individuals have long lacked access to dedicated, distinctions-based health services, resources, and funding (Les Femmes Michif Otipemisiwak [LFMO], 2019). As a result, there has been limited research into Métis-specific determinants of health and collection of disaggregated Métis-specific health data. As Indigenous HIA advances in Canada, it is critical

that Health Canada work closely with Métis organizations and Métis peoples, particularly in rural communities and urban centres, to develop adequate Métis-specific models of health and well-being. Existing health models produced by Les Femmes Michif Otipemisiwak (2019), the Métis Centre at the former National Aboriginal Health Organization (Dyck, 2008), and Métis-led academic research (Atkinson et al., 2023; Auger, 2021; Macdougall, 2017) suggest the following indicators:

· self-determination, governance and Métis rights;
· colonization;
· connection to culture and traditions;
· spirituality;
· education;
· employment and entrepreneurship;
· gender;
· access and relationships to Métis lands;
· kinship, family and community relationships; and
· physical and mental healing.

KEY TOOLS, GUIDELINES AND RESOURCES TO SUPPORT INDIGENOUS HIA

Nationally and internationally, there are limited existing resources specifically focused on how to conduct Indigenous HIA. As HIA becomes essential to equitable, rights-based IA processes, there will be important opportunities to share lessons learned across Indigenous jurisdictions in Canada, as well as in Australia, Aotearoa (New Zealand), the United States, and Sápmi (Norway/Sweden). Based on our systematic review of more than 100 sources, the following tools, guidelines, and resources are available to inform the development of Indigenous community-specific HIA:

Canadian resources

Shandro, J., & Jokinen, L. (2018). *A guideline for conducting health impact assessment for First Nations in British Columbia, Canada.* **Tsimshian Environmental Stewardship Authority.**

Produced for the Tsimshian Environmental Stewardship Authority, this resource is the only available publication focused specifically on how to conduct HIA with First Nations in British Columbia. The resource is expressly regionally focused and First Nations-specific; it is not intended to be a catch-all for all Indigenous communities in Canada. The guideline details an approach and process for identifying, mitigating, and managing health risks and impacts to First Nations' health through all phases of IA. The resource is aimed at IA practitioners, federal and provincial decision-makers, and First Nations to advance HIA that protects Indigenous rights, health, and well-being. While produced for First Nations in British Columbia, the steps and requirements outlined will have some applicability to many Indigenous communities nationally.

communitycommons.org/ entities/61c26518-9261-4a7c- af11-172ebf8255b7

First Nations Major Projects Coalition. (2019). *Major project assessment standard.*

The First Nations Major Projects Coalition (FNMPC) is a group of 144 First Nations communities, organizations, and governments across Canada that share learning, resources, and best practices around major project development. FNMPC aims to support each member community in asserting their jurisdiction over their lands and waters by providing training, guidance, capacity building, tools, and technical expertise around major project assessment and decision-making. In 2019, FNMPC produced a Standards document developed by and for First Nations to outline principles, criteria, and expectations to guide proponents and the federal government throughout IA. Appendix 4 of the Standard outlines 12 comprehensive expectations (see on p. 17) for conducting meaningful HIA with First Nations as part of the IA process (FNMPC, 2020, pp 38-48).

fnmpc.ca/wp-content/uploads FNMPCMPASGuidanceappen dices-FINALJanuary2020.pdf

FNMPC's expectations for meaningful HIA with First Nations (FNMPC, 2020, pp. 38-48)

1. Affected Indigenous groups will be provided the right of first refusal to engage in the health impact assessment from the outset and remain engaged throughout the process.
2. Provision of adequate funding and time for Indigenous groups to conduct and/or comment on health impact assessments.
3. Health impact assessments will be undertaken by experienced professionals that the Indigenous group(s) are comfortable working with.
4. A health impact assessment's scope is tied to the size and complexity of the proposed project, scale and scope of health risks, and the vulnerability of the affected Indigenous groups to health impacts.
5. The scope of Indigenous health impact assessment must be closely tied to Indigenous definitions of health and Indigenous determinants of health.
6. Indigenous health data will be disaggregated from non-Indigenous health data, and where possible disaggregated between different Indigenous groups.
7. Focus on the people most vulnerable to health impacts from the proposed project.
8. Cumulative effects context – the "weight of recent history" – on Indigenous health is critical to understand prior to estimating project-specific effects.
9. Triangulation from a variety of health data and perspective sources.
10. Inclusion of an appropriately broad range of potential health impact causes and outcomes.
11. Identification of enforceable and implementable health impact avoidance, mitigation and offset measures will be conducted with affected Indigenous groups.
12. Determination of significance be informed by or conducted from an Indigenous health perspective.

National Collaborating Centre for Healthy Public Policy

The National Collaborating Centre for Healthy Public Policy has produced an open library of online resources on HIA aimed at IA practitioners, public sector actors, and non-governmental organizations (NGOs). The resources include a free training course, published guides and tools, and multimedia videos, webinars, and presentation series to support the implantation of HIAs in Canada. The online training course (2019) provides an overview of the goals, process, and stakeholders involved in conducting high quality HIA. While a wide variety of HIA resources are available, none are Indigenous-specific, and few have been produced since the 2019 *Impact Assessment Act*.

ccnpps-ncchpp.ca/health-impact-assessment

International resources

International

International Association for Impact Assessment: IAIA.org

The International Association for Impact Assessment is the leading international network for IA and brings together academic researchers, practitioners, public sector actors, industry, and impacted communities. As the practice of HIA advances, the Association has produced updated resources focused on equity and vulnerable populations, meaningful participation of impacted stakeholders, and a holistic understanding of the determinants of health and well-being. The most relevant guides include:

- *Health impact assessment: International best practice principles* (2021). **iaia.org/uploads/pdf/ SP5%20HIA_21_5.pdf**
- *FasTips No. 12: Indigenous and local peoples and traditional knowledge* (Croal et al., 2015). **iaia.org/wp-content/uploads/2025/02/12.- FasTips-Indigenous-and-Local-People-and- Traditional-Knowledge.pdf**
- *FasTips No. 8: Health impact assessment* (Martuzzi et al., 2014). **iaia.org/wp-content/ uploads/2025/02/8.-FasTips-Health- Impact-Assessment.pdf**

World Health Organization, & European Centre for Health Policy. (1999). *Health impact assessment: Main concepts and suggested approach.*

This resource is the original paper to advance HIA internationally and introduce a standardized definition and approach. The World Health Organization's Regional Office for Europe has since produced numerous policy briefs, guidelines, and case studies to inform HIA practice, with a particular focus on health equity and urban centres.

who.int/europe/health-topics/health-impact- assessment#tab=tab_1

Australia

Harris, P., Harris-Roxas, B., Harris, E., & Kemp, L. (2007). *Health impact assessment: A practical guide.* **Centre for Health Equity Training, Research and Evaluation, University of New South Wales & NSW Health.**

This handbook was produced by New South Wales Health and the University of New South Wales in Australia to build the capacity of IA practitioners to undertake HIA. The guide covers the established

steps of HIA, presents case studies, and outlines how to conduct HIA. While the guide discusses the participation of Indigenous Peoples in HIA processes and potential impacts on Indigenous health, it is not a primary focus of this handbook.

globalgovernancewatch.org/
docLib/20140206_Health_Impact_
Assessment_A_Practical_Guide.pdf

New Zealand

Ministry of Health, New Zealand. (2007): *Whānau Ora health impact assessment.*

The New Zealand Ministry of Health produced the first Māori-specific HIA tool to guide policymakers on how to conduct HIA with Māori communities. The guide explains the key concepts, steps, and considerations for HIA grounded in Māori knowledge, determinants, and priorities for health and well-being, and includes practical checklists and worksheets.

health.govt.nz/system/files/2011-11/whanau-
ora-hia-2007.pdf

United States

State of Alaska Health Impact Assessment Program. (2011). *Technical guidance for health impact assessment in Alaska.*

The Alaska Department of Health and Social Services established a Health Impact Assessment Program in 2010 to support HIA for large natural resource projects in the state. This toolkit is aimed at IA practitioners and proponents, and details methodologies and workplans for conducting HIA specific to the context, priorities, and determinants of health and well-being in Alaska. While not Indigenous-specific, the toolkit was developed in close collaboration with the Alaska Native Tribal Health Consortium to ensure the guidance addressed the health determinants and needs of native communities in the state.
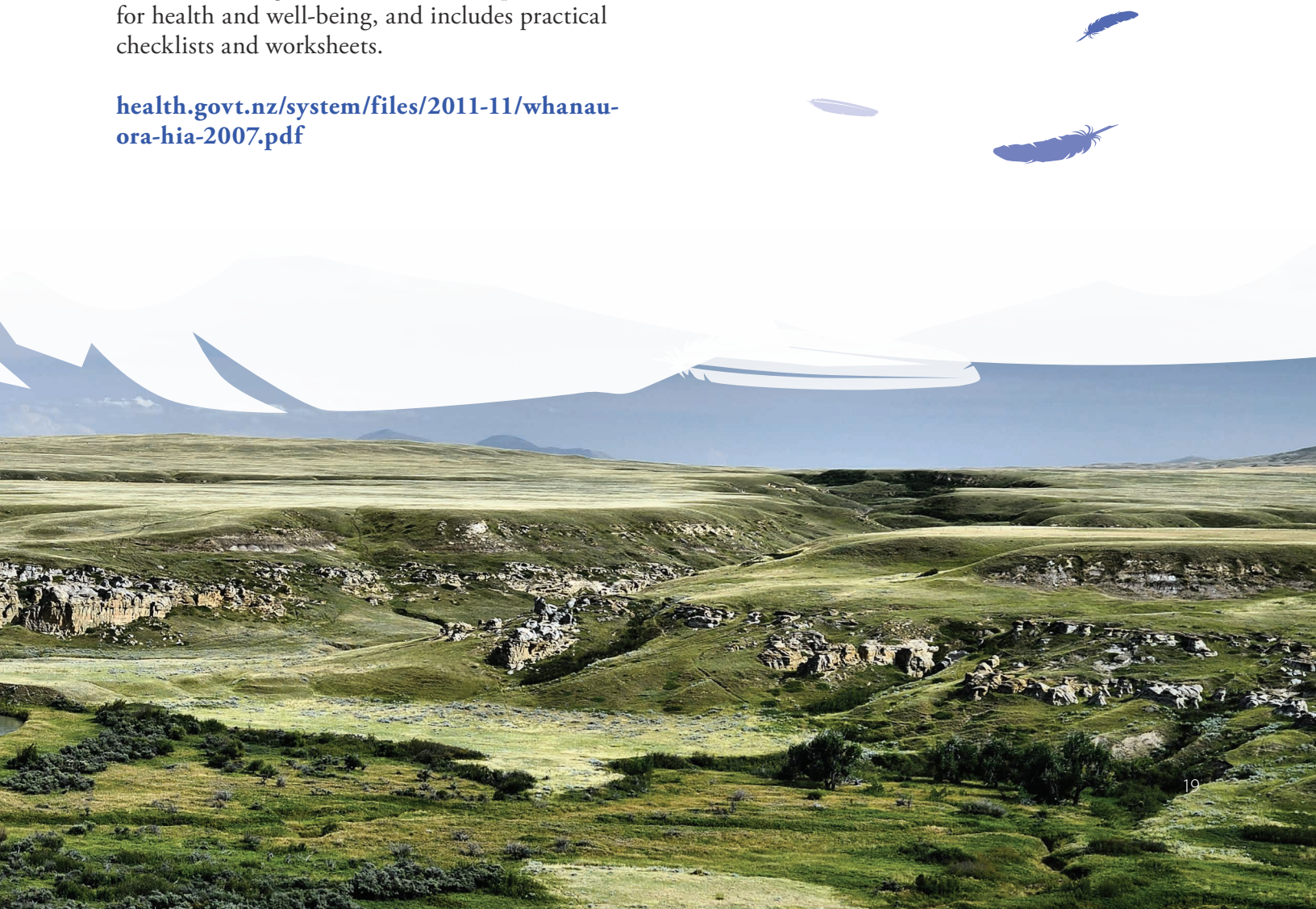
For Indigenous HIA to be effective and meaningful, it must be led by potentially impacted Indigenous communities themselves.

BEST PRACTICES FOR INDIGENOUS HIA

In this section, we present best practices from the Canadian and international base of evidence for Indigenous-specific HIA processes that reflect Indigenous Peoples' knowledge and values. Based on our review of 114 sources, we suggest that distinctions-based Indigenous HIA in Canada should:

- be Indigenous-led;
- determine potential impacts based on community-specific models of health and well-being;
- assess impacts relative to community-specific baseline health data;
- draw on Indigenous value-based methodologies;
- prioritize cumulative effects;
- respect Indigenous jurisdiction over Indigenous knowledge systems;
- enhance relationships and communication between Indigenous Peoples, government, and industry; and
- integrate culturally-relevant gender based analysis and equity considerations.

Indigenous-led assessment

While Indigenous Peoples and their health concerns may be included in IA, their designated roles in these processes are often as stakeholders or communities of interest to consult, and not as rightsholders with constitutionally protected interests. IA policy has made proponents responsible for determining the potential impacts of projects, with external IA practitioners contracted to undertake the work of assessment on the ground. This practice is reflected in a large body of international literature focused on how to increase the participation of Indigenous communities in conventional IA processes (Booth & Skelton, 2011b; Kwiatkowski et al., 2009; O'Faircheallaigh, 2017b; Udofia et al., 2017). Engagement, however, still leaves proponents with the power to determine how, and to what extent, Indigenous priorities are included in IA, and forces Indigenous Knowledge and values to fit into a Westernized and colonial process (Darling, 2023; Jones et al., 2014; O'Faircheallaigh & MacDonald, 2022). For Indigenous HIA to be effective and meaningful, it must be led by potentially impacted Indigenous communities themselves.

Indigenous-led IA is becoming increasingly common in Aotearoa (New Zealand) and Australia as separate processes parallel to conventional IA (Jolly & Thompson-Fawcett, 2023; O'Faircheallaigh & MacDonald, 2022). Indigenous-led IA shifts ownership over the process to Indigenous communities and governments and recognizes Indigenous inherent authority over lands and resources (Jolly & Thompson-Fawcett, 2021). In Canada, Indigenous-led IA could align with the *Impact Assessment Act* (2019) and the opportunity to delegate powers, duties, or functions related to IA to Indigenous Governing Bodies. In the context of HIA, processes administered by First Nations, Inuit, or Métis communities can ensure that their cultural definitions of health, their knowledge systems, and their ways of life are central to understanding how a development may impact determinants of well-being. Indigenous-led HIA further allows communities to develop assessment approaches that respect their own laws and customs in determining the significance and acceptability of potential changes to well-being, as well as the adequacy of any mitigation, monitoring, and avoidance measures (O'Faircheallaigh, 2017a; O'Faircheallaigh & MacDonald, 2022).

What Indigenous-led HIA means to each First Nations, Inuit, or Métis community may be different. For some communities, it will mean undertaking the full HIA process independently with resources and funding provided by the proponent or government. For others, it may mean collaborative administration of the HIA with the proponent, with the community overseeing and verifying at each phase of the process. It could also mean that the community may choose to select an IA practitioner who they feel confident will have the capacity to work from local epistemologies, histories, and health models (Jolly & Thompson-Fawcett, 2021; St-Pierre, 2021). What is most important in Indigenous-led HIA is that the Indigenous community has decision-making power about how the HIA process is conducted, their role in it, and the final recommendations.

Example – The Kimberly Land Council's Indigenous Impacts Assessment, Australia (O'Faircheallaigh, 2017b)

The Kimberly Land Council (KLC), the representative Indigenous body for the Kimberly region of Western Australia, negotiated with the state government to delegate responsibility for assessing the potential impacts of a proposed liquefied natural gas project on local Indigenous communities. The KLC conducted a comprehensive Indigenous Impacts Assessment process based on their local knowledge, values, and protocols for public engagement. The process was overseen by a Traditional Owner Task Force that approved consultants, validated study components, and ensured Elders and young people were given adequate opportunities to participate. All decisions related to identifying impacts, determining locally appropriate baselines, assessing significance, and reporting were made entirely by Indigenous Peoples and organizations. The final *Indigenous Impacts Report* comprised six volumes of cultural, archeological, environmental, social, and economic studies, and proposed over 100 specific recommendations for effective management based on Indigenous Knowledge of and authority over local resources. This report became one component of the overall environmental impact assessment to be used by state and federal governments for decision-making on the proposed project and was also foundational to the agreement negotiated by KLC with the proponent. It is unclear, however, what impact this Indigenous-led assessment process could have for final project approval, as the proponent has withdrawn their proposal for commercial reasons.

Place-based, community-specific models of health and well-being

Given the diversity of Indigenous worldviews, knowledge systems, geographies, and histories across Canada, a standardized Indigenous HIA approach is not possible. Although First Nations, Inuit, and Métis communities may share some similar concerns, priorities, or determinants of health, as noted above, each has their own place-based model of well-being with specific determinants, valued components, and indicators of health. For instance, Anishinaabe definitions of well-being are grounded in the philosophy of mino-bimaadiziwin (or 'living in a good and healthy way by sustaining relationships of reciprocity and responsibility with all living things') (Bell, 2016). The Omushkegowuk Cree law of awawanenitakik emphasizes living according to the Omushkegowuk way of life and values, including upholding responsibilities to ancestral lands (Daigle, 2016). Inuit health models based on Inuit Qaujimajatuqangit and Qaujimaningit reflect Inuit worldviews, knowledge systems, and practices, and promote the importance of language, land, spirituality, and shared humanity (Akearok et al., 2023). Even conventional social determinants of health, such as income and education, may take on different meanings and measures when contextualized within local health models that centre land-based economies, teachings, generosity, and contributions to the collective (Akearok et al., 2023; Wilkes, 2015). For HIA to comprehensively and adequately determine the potential impacts of major projects, the approach must begin from these place-based, community-specific and holistic environmental health frameworks (Lewis et al., 2021a; 2025).

Place-based environmental health frameworks centre relationships to land and the roles, responsibilities, ceremonies, and practices that uphold them (Tobias & Richmond, 2014). As major projects change the environment and how Indigenous Peoples use and connect with their territories, developments impact not only access to physical resources but also knowledge systems, spiritualities, languages, and social relationships (Lewis et al., 2021b). Land displacement disconnects individuals from their stewardship responsibilities, the significant places where Indigenous Knowledge is generated, shared and practiced, sense of place and identity, and safe foods and medicines (Salerno et al., 2021).

Example – Assessing the local impacts of the Mount Polley environmental disaster (Shandro et al., 2017)

Shandro et al.'s (2017) assessment of the Mount Polley tailings pond breach on First Nations' well-being in British Columbia demonstrates how geographically- and culturally specific health pathways can only be fully understood and measured by impacted Indigenous communities themselves. The Mount Polley Mine tailings breach released 25 million cubic metres of mine waste into the Fraser River watershed on the day that First Nations' salmon fisheries opened (p. 85). Yet, impacts to First Nations' health were not included in the assessments produced by the company or BC government. Through community-based participatory research with First Nations along the watershed, Shandro et al. document how reduced access to salmon fishing negatively impacted a range of health determinants from food safety and food security to community income, physical activity, social cohesion, and sharing of cultural identity (p. 95). The breach also led to signficant emotional stress, as communities were dislocated from traditional lands, foods, and medicines and faced uncertainty around the safety of salmon consumption. For these First Nations, individual, family, and community well-being are inextricably linked to the health of salmon and the river ecosystem.

Community-specific baseline health data

One of the primary challenges to undertaking meaningful and evidence-based Indigenous-led HIA is the lack of baseline health data (McCallum et al., 2015). Limited availability of disaggregated, distinctions-based, and culturally appropriate Indigenous data is a much larger national issue that affects health research, policy, and programming in Canada. In the context of HIA, community-specific baseline data is essential to accurately predict the potential impacts of developments on health and make informed decisions on project approvals (FNMPC, 2020; Jones & Johnston, 2021). With substantial gaps in data access and availability, HIAs often draw from generalized population health data and health risk assessment measures that are inadequate and incomplete for Indigenous communities (Dylan & Thompson, 2019; Jones & Johnston, 2021). This application of mainstream, non-Indigenous data can be dangerous as it underestimates the particular risks of Indigenous populations to environmental changes and exposures based on community-specific practices. For example, Olsgard et al. (2023) demonstrate how the development of adequate human health, water quality criteria for First Nations in the Athabasca region required a statistically representative community survey to measure local consumption rates of traditional foods and medicines. Similarly, the lack of accurate demographic and health data related to urban Indigenous Peoples creates a significant gap in the ability of HIA processes to understand the current health conditions of this population and how they may be impacted by potential projects (Snyder et al., 2024).

To undertake comprehensive HIA, Indigenous communities need data that captures their place-based determinants of well-being and facilitates the accurate measurement of changes to these determinants over time. This means that multiple types and forms of data are required, both quantitative and qualitative,

and based on Indigenous ways of knowing (e.g., oral histories) (O'Faircheallaigh, 2009; McCallum et al., 2015). The complexity, time, and resources involved in gathering representative baseline data means that local health models, HIA approaches, and data collection needs developing in advance of any particular IA process (St-Pierre, 2021; Udofia et al., 2017). Indigenous communities need to compile their own baseline health data reflective of their own realities, knowledges, and concerns, as well as equity of health experiences within community (e.g. age, gender, etc.).

Indigenous value-based methodologies

New HIA methodologies are needed to capture the place-based values and determinants of well-being of Indigenous communities. While community-specific health data is necessary, its inclusion in standard HIA approaches led by mainstream practitioners is not sufficient for meaningful Indigenous HIA (Donatuto et al., 2016; Lewis et al., 2021b). Conventional HIA has largely ignored or excluded Indigenous concerns related to identity, spirituality, and Indigenous Knowledge, deeming these factors 'intangible' and too difficult to quantify (Gregory et al., 2016). New approaches are required that facilitate structured evaluation of potential project effects based on Indigenous community priorities and draw on methods that integrate qualitative and quantitative measures.

A key aspect of the HIA process is the determination of "significance" in order to evaluate, compare, and prioritize the potential impacts of major projects. Informed decision-making on developments requires weighing the relative significance of each impact to assess whether the benefits will be greater than potential adverse effects that cannot be avoided or mitigated. Federal guidance under the *Impact Assessment Act* outlines eight criteria for characterizing the extent of significance: magnitude, geographical extent, timing, frequency, duration, reversibility, social and ecological contexts, and uncertainty (IAAC, 2025). In this process, the

Canadian guidance advises that Indigenous communities be involved in assessing the severity of effects and determining culturally appropriate thresholds for comparison.

Few examples, however, exist of Indigenous leadership in significance determination or the application of evaluation techniques relevant to Indigenous health values, concerns, and experiences (Olsgard et al., 2023). Risk assessment is generally conducted by external western-trained practitioners that lack the experience, knowledge, and relationships with Indigenous communities to adequately highlight their values (St-Pierre, 2021). These practitioners tend to work from narrow definitions of physical and psychosocial impacts and rely on easily quantifiable impact measures (Gregory et al., 2016). Attempts to engage with Indigenous priorities are often challenged by impacts related to intangible values and Indigenous Knowledge that do not fit neatly into standard assessment techniques. As a result, Indigenous communities may be engaged in identifying impacts or valued components but are not directly involved in characterizing significance for decision-making.

Undertaking HIA based on Indigenous values requires Indigenous communities to be involved in all aspects of significance determination, from assessing whether an impact will be positive or adverse to characterizing the severity of effect, identifying uncertainties, and drawing conclusions for overall well-being (FNMPC, 2020; McCallum et al., 2018). This, in turn, requires new methodological approaches capable of integrating divergent value systems in order to adequately highlight Indigenous concerns, meet the expectations of government and proponents, and enhance transparency (Gregory et al., 2016; Lewis et al., 2025; Mayhew & Perritt, 2021). Indigenous communities need to be supported in developing evaluation frameworks that are based on their own determinants of well-being, account for local cumulative and intersecting impacts, and use culturally appropriate decision-making methods (e.g. consensus-based ranking/weighing of impacts).

Example – Developing a community-specific health evaluation methodology in Native Coast Salish communities (Donatuto et al., 2016)

To advance a health assessment process that reflects local definitions of health, Coast Salish communities in Washington State developed and tested their own community-specific health indicators. Community-led research identified six strength-based indicators of well-being:

1. community connection,
2. natural resources security,
3. cultural use,
4. education,
5. self-determination, and
6. resilience (p. 6).

To measure the quality of these indicators, each was linked to three attributes that describe specific community values and priorities. For example, cultural use is described by respect for and stewardship of natural resources and the connections between humans, environment, and spirit world; sense of place and connection to homeland; and ability to practice appropriate customs, rituals, and prayers (p. 6). A descriptive scale was then constructed to assign a numerical value to each attribute and allow relative ranking across the six health indicators. In this way, the community health methodology facilitated the integration of intangible community values and descriptive data into the development of appropriate baseline measures and thresholds for future use in HIA.

Cumulative effects

To assess the full range of potential impacts to well-being, Indigenous HIA must highlight cumulative effects across multiple historic, existing, and proposed projects, as well as all phases of any individual project, from planning to potential long-term effects post-closure. The inclusion of relevant cumulative effects must be determined by the impacted Indigenous communities themselves to avoid any possibility of project splitting by industry proponents (AFN, 2024). Only through Indigenous leadership in HIA can communities ensure that cumulative and intersecting risks to health are adequately considered and appropriately situated within the context of colonialism and ongoing structural barriers to well-being (AFN, 2024; FNMPC, 2019; Gislason & Andersen, 2016; Paci & Villebrun, 2005). This means including cumulative impacts related to access and use of lands from which communities have already been dislocated; health care systems that are already underfunded and overcapacity; and the intersection of income inequality and boom and bust development cycles (Gislason & Andersen, 2016).

A growing body of research is emphasizing the cumulative burden on Indigenous communities of engagement and consultation in the development phases of major projects. Gislason and Andersen's (2016) case study of Blueberry River First Nation in British Columbia points to the significant time and capacity required to participate in IAs, "when the scale of the number of projects grows, the consultation process itself becomes an enormous burden" (p.11) without any compensation. Similarly, Darling et al. (2023) discuss the 'explanatory fatigue' of First Nations governments in the Yukon repeatedly asked to explain their worldviews, knowledge systems, and legal positions in various assessment processes. Finally, Jones et al. (2014) highlight how engagement processes can re-victimize or re-traumatize community members, particularly

Elders asked to describe painful historical events and serious adverse future impacts. When Indigenous Peoples repeatedly participate in planning and consultation processes with little resulting action, this leads to feelings of helplessness, frustration, mistrust, and stress that negatively affect individual and community well-being (Myette & Riva, 2021; Salerno et al., 2021). Including potential impacts to well-being post-closure is also essential for Indigenous communities to make informed decisions based on the full development lifecycle of projects (Morrison-Saunders et al., 2023; Rixen & Blangy, 2016).

Indigenous jurisdiction over Indigenous knowledge systems

Indigenous Peoples' knowledge systems are essential to understanding the complex determinants and pathways through which developments may affect Indigenous health and well-being. As noted above, Indigenous Knowledge is place-based, continually evolving, and cannot be separated from the broader structures and systems through which it is taught, practiced, reinforced, and protected (Arsenault et al., 2019; McGregor, 2021). Anishinaabe scholar McGregor (Whitefish River First Nation) (2021) defines Indigenous knowledge systems as the "political, legal, economic, and cultural systems that enable the continued generation and renewal of Indigenous peoples to ensure their well-being" (p. 3). Indigenous Knowledge is not a piece of information but includes all the laws, protocols, and practices of how to live (Daigle, 2016; McGregor, 2021). In the context of HIA, this means that local Indigenous Knowledge is not a form of data to extract from communities, insert into mainstream assessment models, and "consider" alongside Western forms of information (McGregor, 2021). Instead, proponents and governments need to relinquish their power and turn over authority to Indigenous communities to develop and lead their own HIA processes grounded in their own Indigenous knowledge systems.

The *Impact Assessment Act* creates a legal standard for the consideration and protection of Indigenous Knowledge in project assessment and decision-making (S.1, 22, g). In practice, proponents, practitioners, and government employees interpret the considerations within the Act by engaging Indigenous communities and seeking their environmental, cultural, and archeological knowledge to integrate with scientific information (McGregor, 2021). This decontextualizes community knowledge, separating it from the local knowledge systems and traditional knowledge holders that give it meaning, and from the laws and protocols that govern its use in community. Once shared, Indigenous communities have little control over how their information is received, understood, and used in decision-making. As non-Indigenous IA practitioners, regulators and policymakers do not have the experience and relationships to understand Indigenous knowledge systems and methodologies, they cannot adequately include or evaluate Indigenous Knowledge in IA (Jones & Johnston, 2021; Keats & Evans, 2020; Lewis et al., 2021a).

For HIA to meaningfully address the concerns of Indigenous communities, assessment processes must recognize the inherent jurisdiction of Indigenous Peoples over their own knowledge systems. Jurisdiction goes beyond deciding what information is included and shared; it means determining how the entire HIA process takes place, who is involved, and what their responsibilities are according to local laws. When Indigenous communities, organizations, and governments develop their own HIA processes, they ensure that Indigenous Knowledge appropriately frames every step and the right knowledge experts are involved in measurement. When Indigenous Peoples are directly involved in project decision-making, their self-determination over local knowledge is enhanced and any challenges around interpreting or considering this knowledge by non-Indigenous peoples can be minimized.

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Example – The Nunavut Impact Review Board and the consideration of Inuit Qaujimaningit (Peletz et al., 2020)

The Nunavut Impact Review Board (NIRB) mandates that Inuit Qaujimaningit and Qaujimajatuqangit (Inuit knowledge) should guide the entire impact assessment process in the territory and the final decision. The NIRB requires that proponents consult and recognize IQ and use it in the preparation of all Impact Statements. The NIRB further requires culturally relevant community consultation throughout the IA process, facilitating ongoing feedback based on Inuit knowledge from a predominantly Inuit population. Although important challenges remain, Peletz et al. (2020) demonstrate the critical role of Nunavut's legal context and Inuit leadership in advancing IQ-led impact assessment. While regulatory standards are important, the research shows that the composition of NIRB's board of largely of Inuit community members has been essential. Inuit board members are best placed to understand local Inuit knowledge and assess how it informs final project recommendations, as well as ongoing monitoring.

Relationships and communication

Overall, Indigenous HIA must be supported by relationship building between Indigenous communities, government, and industry based on honesty, transparency, shared expectations, and respect for Indigenous rights. State and proponent-led IA processes have long ignored, downplayed, or underestimated the concerns of Indigenous Peoples, choosing to prioritize economic benefits over Indigenous well-being (Booth & Skelton, 2011a; Gibson et al., 2017; Nightingale et al., 2017; Stienstra et al., 2016). IA is associated with ongoing structures of colonialism that continue to marginalize Indigenous voices and dispossess Indigenous Peoples from their ancestral lands. As a result, there is a deep mistrust in IA processes among many Indigenous communities and an unwillingness to actively participate or share community knowledge if Indigenous priorities and values will not be meaningfully implemented in decision-making (Adams et al., 2023; St-Pierre, 2021).

Building and maintaining trusting relationships takes time and must extend beyond the formal IA process. Long-term investments of time on the ground in community, resources to support local capacity, and flexibility in project planning to accommodate community concerns are required by industry to demonstrate mutual respect (Gibson et al., 2017; Noble, 2016). These investments may contradict industry priorities of efficiency maximization and cost reduction, meaning industry cannot respect Indigenous community values while lobbying the government to reduce IA requirements and timelines. Most importantly, HIA will only be perceived as meaningful and legitimate by Indigenous communities if supported by the federal government's broader renewal of its nation-to-nation, government-to-government, and Inuit-Crown relationship based on rights, self-determination, and partnership (AFN, 2024).

Relationship building also requires transparent communication between communities, proponents, and the government around how HIA processes will take place, who holds particular legal responsibilities, and how recommendations will be considered in final decision-making (Aashukan, 2017; First Nations Health Authority, 2015; Peletz et al., 2020; Udofia et al., 2017). Comprehensive and accurate HIA is only possible if project information, potential risks, and feasible mitigation strategies are shared with Indigenous communities in an open, honest, and timely manner.

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Equity-focused Indigenous HIA

Culturally relevant Gender Based Analysis (CRGBA) must be fully integrated into HIA to examine how the potential impacts of major projects are experienced by all members of First Nations, Inuit, and Métis communities (Native Women's Association of Canada [NWAC], 2020). Development may impact Indigenous women, men, 2SLGBTQQIA+, and gender-diverse individuals in different ways due to the intersection of health determinants and impact pathways with:

- cultural gender roles (e.g., on-the-land responsibilities and activities);
- biological factors (e.g., cancers associated with female biological organs, declining sex ratios) (Mackenzie et al., 2005);
- gendered health risks related to workplaces and transient workforces (e.g., sex work, violence/safety);
- equal access to economic opportunities for women, gender diverse, and 2SLGBTQQIA+ individuals; and
- equal access to culturally safe and gender affirming health services and supports.

Existing research in Canada shows that Indigenous women and children disproportionately face the negative impacts of resource and industrial developments, while experiencing few of the potential benefits (Aalhus et al., 2018; Gibson et al., 2017; Hoogeveen et al., 2021; Sax et al., 2021). Sexism and gendered pay inequities in a predominantly male industry can be barriers for Indigenous women, 2SLGBTQQIA+, and gender-diverse individuals to access employment, career advancement, training, and entrepreneurship opportunities related to major projects (Moodie et al., 2021; Pauktuutit Inuit Women of Canada [Pauktuutit], 2020). Limited access to social services for childcare and elder care in rural and remote communities can be an additional challenge for women to secure employment, particularly in the context of rotational work schedules at many development sites (Pauktuutit, 2020).

Understanding of gender-specific indicators is limited by gaps in the literature around the particular health impacts for Indigenous men and gender-diverse individuals, as well as a lack of available data disaggregated by gender identity (2 Spirits in Motion Society, 2022; Mackellar et al., 2023; Manning et al., 2018). In developing

Sexism and gendered pay inequities in a predominantly male industry can be barriers for Indigenous women, 2SLGBTQQIA+, and gender-diverse individuals to access employment, career advancement, training, and entrepreneurship opportunities related to major projects

(Moodie et al., 2021; Pauktuutit Inuit Women of Canada [Paukuutit], 2020).

Indigenous HIA guidance and tools, First Nations, Inuit, and Métis specific factors related to how gender and 2SLGBTQQIA+ identity shape health and well-being must be assessed for each community based on local Indigenous knowledge systems and culture (LFMO, 2019; NWAC, 2020). As a starting point, HIA should draw from existing First Nations, Inuit, and Métis-specific Gender Based Analysis models produced by Les Femmes Michif Otipemisiwak (2019), the Native Women's Association of Canada (2020), and Pauktuutit Inuit Women of Canada (2025).

Similarly, understanding the full range of potential impacts of major projects on First Nations, Inuit, and Métis health and well-being means HIA processes must consider factors related to diverse ability and disability, location, and status. Major gaps exist in the literature around the potential impacts of major projects for Indigenous individuals with diverse abilities; there is, however, literature available in disability studies that would have transferability to the development context (see Rojas-Cárdenas et al., 2025 and Ward, 2025). HIA practitioners will also need to directly engage these individuals in community-specific processes to understand how disability may impact access to economic and education opportunities, land and land-based cultural practices,

Meaningful Indigenous HIA must take an equity lens to assess how potential health impacts may be experienced differently within and across Indigenous communities and emphasize equitable health outcomes in decision-making

(Jonasson et al., 2019; Hoogeveen et al., 2021).

and health care services, among other determinants of health (Indigenous Disability Canada/BCANDS, 2025).

Location is also important to account for as the potential impacts of major projects will be determined by where Indigenous Peoples live and work. Residing in First Nations reserves, Inuit regions, or Métis settlements will shape the determinants of health differently than for Indigenous Peoples living off reserve, in rural, and in urban locations. Geographic remoteness, political context, and legal status can all be related to location and create particular vulnerabilities for individual health and well-being. For example, First Nation status shapes an individual's access to rights, health services, and diverse resources. Despite a growing body of literature on the impact of major projects to Indigenous Peoples' health, few studies have examined the experiences of Indigenous Peoples and communities in urban centres. A few studies conducted in Australia suggest that these communities

may face specific barriers to participating in IA processes due to lack of legal status, living away from homelands, and lack of representative bodies recognized by national governments (Haigh et al., 2015; O'Faircheallaigh, 2017a; Claudio et al., 2018).

Meaningful Indigenous HIA must take an equity lens to assess how potential health impacts may be experienced differently within and across Indigenous communities and emphasize equitable health outcomes in decision-making (Jonasson et al., 2019; Hoogeveen et al., 2021). This means equity must be considered through all phases of HIA, from the establishment of health indicators and valued components to the determination of significance and who is involved in making recommendations. Assessment of equity concerns must be supported by community-specific Gender Based Analysis protocols, data collection, and analytical approaches (Hoogeveen & Harris, 2024).

CHALLENGES

Jursdictional issues

The ability of HIA to advance Indigenous self-determination and leadership in IA processes is challenged by two key jurisdictional issues: who has the authority to approve projects and who has fiduciary responsibility over Indigenous Peoples' health and health care. The *Impact Assessment Act* (2019) asserts federal jurisdiction over IA for designated major projects that will impact Indigenous Peoples or result in a change to their health, social, or economic conditions (S. 2). However, following the Supreme Court of Canada's 2023 constitutionality review, there remain differing legal interpretations and positions taken on the continued federal authority of Indigenous health under Section 91(24) of the *Constitution Act, 1982* in IA processes (Hamilton, 2023; West Coast Environmental Law, 2023).

For provinces and territories with no Indigenous-led or general HIA process in place, or with weaker IA legislation related to the protection of Indigenous health and rights, Indigenous HIA will not take place or factor seriously in decision-making. Jurisdictional differences in how projects are assessed may also make it more difficult for Indigenous HIA at the federal level to adequately consider cumulative effects across all proposed and operating projects (West Coast Environmental Law, 2023). Finally, many Indigenous governments are asserting jurisdiction over their lands and resources, and their authority to conduct HIA based on their own laws, customs, and models of well-being. While the *Impact Assessment Act* recognizes the jurisdiction of Indigenous Governing Bodies and makes legal space for Indigenous-led assessments, it is unclear what criteria are used to delegate authority for IA to Indigenous communities and how Indigenous-led IA will be part of final decision-making.

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Ensuring meaningful outcomes from Indigenous HIA will require collaboration and the recognition of Indigenous self-determination across all levels of government.

Indigenous HIA is also framed by the question of responsibility for health and the risk that Indigenous health concerns may fall into jurisdictional gaps between the government of Canada, provinces/territories, and Indigenous governments. While the health of First Nations and Inuit peoples is the responsibility of the federal government, many now live in urban and rural settings where they access provincially funded health services and supports. This is also the case for non-Status First Nations and many Métis individuals living away from Métis settlements whose health falls under provincial jurisdiction. Conflicting jurisdictions over health and IA is an important consideration as Indigenous HIA processes advance at the federal level. Ensuring meaningful outcomes from Indigenous HIA will require collaboration and the recognition of Indigenous self-determination across all levels of government.

Defining a role for Indigenous governments in decision-making

Despite the Crown's efforts to increase Indigenous engagement in IA processes, there remains a lack of transparency around how Indigenous health concerns are weighed in decision-making. There is currently no legislative basis for the inclusion of Indigenous governments in final project decisions, nor legal requirement to secure Indigenous consent for projects that will significantly impact human and environmental health (Adams et al., 2023; AFN, 2024; Jones et al., 2014). The result is that many Indigenous communities choose to negotiate directly with proponents through confidential impact and benefit agreements that provide their consent to development activities (O'Faircheallaigh, 2017a). The experience of Māori-led cultural

impact assessment in Aotearoa (New Zealand) suggests that Indigenous communities will not see HIA as legitimate or meaningful if they cannot trust that the overall IA process will adequately prioritize their assessment and recommendations (Jolly & Thompson-Fawcett, 2023). Although Māori-led cultural impact assessment is a legislated requirement of the IA process in Aotearoa, it remains part of the broader, Westernised IA model dominated by proponents and government. Cultural impact assessment thus continues to be perceived by Māori communities as a "process to achieve project go-ahead," rather than a meaningful assessment (Jolly & Thompson-Fawcett, 2023, p. 398).

As the federal government moves to bring Canadian law in-line with UNDRIP through the 2021 *United Nations Declaration on the Rights of Indigenous Peoples*

Act, recognition of FPIC and the jurisdiction of Indigenous governments based on their own laws, customs, and traditions will require a legal role for Indigenous communities in final decision-making and setting criteria for approval (Keefer et al., 2025). Nunavut and the role of the Nunavut Impact Review Board (NIRB) may provide an important example for moving forward in recognition of Indigenous authority. NIRB is responsible for assessing proposed projects in the territory based on Inuit Qaujimaningit and Qaujimajatuqangit (Inuit knowledge, principles, and values) and provides a final recommendation to the Minister of the Environment and Climate Change for approval (NIRB, 2024; Peletz et al., 2020).

Building capacity for participation: Funding, time, and resources

For Indigenous communities to take a leadership role in HIA, there needs to be significant investment in building their capacity to undertake these processes. Currently, IA processes are placing a significant burden on Indigenous communities in terms of the time, human resources, financial resources, and organizational capacity required to meaningfully participate (Kebaowek First Nation & Kitigan Zibi Anishinabeg, 2023). If Indigenous communities are to lead their own HIAs, there needs to be substantial federal investment in Indigenous governments and organizations to develop their own IA laws and processes; generate their own health frameworks, indicators, and thresholds; enhance or secure technical skills in risk assessment; support widespread community member participation; gather baseline health data; and

implement monitoring programs (AFN, 2024; Brown et al., 2020; Udofia et al., 2017).

Alongside funding and access to resources, process timelines are an important barrier to Indigenous leadership in HIA. Developing community-specific health assessment models and processes is long-term work that cannot occur within the IA timelines of any particular proposed project. Beyond limited Impact Assessment Agency of Canada program funding cycles (Brown et al., 2020), stable and ongoing funding from the government of Canada is needed to support this work, with public health agencies playing a role in building technical capacity for HIA (Harris-Roxas et al., 2012).

At the same time, government and proponents have a responsibility to educate themselves about the Indigenous communities and lands they hope to work with before IA processes begin. As a demonstration of good faith and intention to build positive relationships, government and proponents should invest the time and resources to learn the unique histories, experiences, concerns, and cumulative impacts of communities, as well as cultural safety. When Indigenous communities need to continuously re-educate public servants, IA practitioners, and industry employees, it reduces the limited time they have to engage in assessment processes (Darling et al., 2023).

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Gaps in information and guidance

First Nations, Inuit, and Métis communities have identified gaps in informational resources and guidance to support adequate Indigenous HIA. Based on the literature reviewed, the following guidelines, tools, and communication materials are needed.

Guidance for proponents on how to support Indigenous HIA based on the expectations, best practices, and recommendations of Indigenous communities. As proponents rarely exceed the outlined requirements of the federal IA process (Firelight Group & CEMA-TKWG, 2015), clear guidelines are needed with directives around steps, funding, relationship building, information sharing and respecting Indigenous jurisdiction, and self-determination. This guidance must clarify the parameters for what constitutes an adequate Indigenous HIA (Harris-Roxas et al., 2012) and how to conduct it in a systematic way that aligns with the community's seasonal calendar of activities (Kebaowek First Nation & Kitigan Zibi Anishinabeg, 2023).

Guidance for proponents and government on how to appropriately review and assess Indigenous HIA. This is particularly important if government is to meaningfully consider Indigenous HIA in decision-making.

Guidance for proponents on Indigenous health and well-being and Indigenous rights, and how they may be impacted by developments.

Guidance for government and proponents on Indigenous Peoples' history and experiences of colonialism and developing a mandatory on-boarding training requirement for any employees in relevant positions.

Distinctions-based tools or manuals to guide Indigenous communities in developing their own HIA laws, models, and processes. While the final HIA approach will be community-specific, there is an important opportunity to share experiences and lessons learned around how to build local community capacity, including the research, data, and resources required, and how to leverage HIA within the overall IA process.

Resources to inform Indigenous communities on their rights related to IA broadly, including legislation and policy on IA, Crown responsibilities and obligations, jurisdiction, and IA processes.

Methodological guidance for Indigenous communities with explicit measurement techniques to effectively assess and determine the significance of well-being effects based on local values (Gregory et al., 2016). This will also support Indigenous HIA in articulating health concerns and impacts in a way easily understood by government and proponents.

Indigenous working groups for communities with experience in undertaking Indigenous-led assessments to share lessons and best practices (AFN, 2024).

Documentation or guidance from the federal government to identify how Indigenous HIA will factor into decision making.

LIMITATIONS

No systematic review is without limitations. In this case, we are cognizant of the potential lack of inclusion of nation-specific resources if First Nations were to use only their nationhood identity (e.g., Mi'kmaq, Haudenosaunee, Nuu-chah-nulth, Dene, etc.), or if Inuit were to use only their regional identity (Inuvialuit, Nunavummiut, Nunavimmiut, Nunatsiavummiut) rather than the more generic use of identifiers we used in our literature search. As more Indigenous-led HIAs, IAs, and related resources are produced, the inclusion of nation- and community-specific identifiers will be an important consideration for future literature reviews. We further recognize that our review only included literature published in English. This is a significant limitation given that English and French are the official languages of Canada and resulted in the exclusion of sources available exclusively in French and Indigenous languages.

CONCLUSION

To examine the potential effects of major developments for Indigenous health and well-being, Indigenous Peoples need a leadership role in IA. Indigenous HIA processes are required that frame place-based Indigenous worldviews, knowledge systems, and definitions of health. Given the diversity of First Nations peoples, Inuit, and Métis peoples across Canada, HIA processes must be determined by each community based on local determinants of well-being. This means that a standardized or one-size-fits all Indigenous HIA approach is not possible. Instead, distinctions-based HIA frameworks, guidance, and tools are needed to support individual communities in developing their own unique HIA protocols, procedures, and methods. Documentation should be complemented by opportunities for sharing best practices, lessons learned, and technical capacity across communities.

Health Canada has advanced HIA as an important mechanism for highlighting health and well-being concerns within the broader IA structure. Although the *Impact Assessment Act* mandates the consideration of potential effects to health, HIAs continue to be voluntary. For Indigenous HIA to be seen as a legitimate and meaningful process, there needs to be transparency and consistency around how HIA reports and recommendations will be considered and weighed in final project decision-making alongside other factors. Ultimately, accountability will require a legal role for Indigenous Peoples in both conducting IAs and decision-making on projects that will impact their lands, waters, and resources.

First Nations peoples, Inuit, and Métis peoples and governments will determine what adequate HIA looks like for them, and how, or even if, they want to engage in the process. Based on this review of more than 100 sources, there are few existing resources or guidelines to support an Indigenous HIA approach in Canada. However, the national and international literature suggest important best practices to guide Indigenous HIA as it develops in Canada. Indigenous HIA should be Indigenous-led, begin from place-based Indigenous models of health and well-being, draw on value-based methodologies to evaluate effects, use community-specific baseline health data, respect Indigenous jurisdiction over local knowledge systems, be supported by long-term relationship building, and take an equity lens to assessment. In so doing, HIA will not only be meaningful as a process to assess potential health effects, but also to recognize and respect Indigenous self-determination.

To examine the potential effects of major developments for Indigenous health and well-being, Indigenous Peoples need a leadership role in IA.

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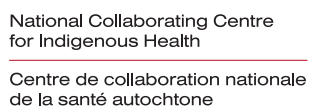
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