



Canadian Brain Research Strategy
Indigenous Initiatives

WORKSHOP REPORT

Two-Eyed Seeing Through Compound Eyes

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INTRODUCTION

The Canadian Brain Research Strategy held its Two Eyed Seeing Workshop on January 18, 2024, aimed at fostering collaborative relationships and enhancing understanding of Indigenous perspectives in brain health research. This event brought together more than 128 participants, including researchers, funders, institutions, Indigenous community members, and health service organizations, to initiate vital dialogues and develop concrete solutions for brain health research with Indigenous Peoples.

EXECUTIVE SUMMARY

The Two-Eyed Seeing Through Compound Eyes Workshop was a unique, cross-cultural opportunity to engage researchers, funders, institutions, and Indigenous community members in dialogue about developing relationships and actionable strategies for advancing brain health research with Indigenous Peoples. This event served as a critical step in CBRS's ongoing efforts to create a national research strategy, highlighting the holistic and interconnected nature of health as understood through Indigenous Knowledges.

The workshop aimed to foster collaborative relationships, enhance understanding of Indigenous perspectives, and identify actionable strategies to improve brain health research and outcomes for Indigenous Peoples.

The discussions were grounded in four guiding principles

1. Embracing Indigenous Knowledge

Learning to see from one eye with the strengths of Indigenous knowledge and ways of knowing, from the other eye with the strengths of mainstream knowledges and ways of knowing and learning, and to use both eyes together for the benefit of all.

2. Partnership

New partnerships and networks that embrace strength-based approaches and community engagement. Finding cross-cultural understandings, translating constructs of interest, and establishing trust.

3. Appreciating Diversity

Increased understanding of the heterogeneity of Indigenous communities and nations, including the unique needs of each community, its desires, goals and challenges.

4. Connectivity

Stronger connections between Indigenous researchers, investigators who conduct Indigenous research, and Indigenous communities. Building upon Indigenous Knowledges that everything in the universe is connected, whether it is the connection between ancestral spirits and the mortal world.

BACKGROUND

Canada's current approaches to brain health and mental wellness face critical gaps that hinder our ability to fully understand and address these complex issues. The CBRS is leading a national effort to reimagine our approach to brain research and health as a country. Indigenous Knowledges, with their rich, holistic, and deeply interconnected views of health, offer transformative potential for brain health research. In adopting a holistic perspective in our national research strategy for brain and mental health, we recognize Indigenous Knowledges as a vital and integral component of this transformation. Embracing these ways of knowing is not merely about equity; it is essential for improving our research practices and health outcomes for all.

While Indigenous knowledge systems differ across communities and nations, they broadly share a holistic understanding of health—one that connects physical, mental, emotional, and spiritual well-being in ways Western medicine often overlooks. In this worldview, health extends beyond the individual; it encompasses relationships with family, community, ancestors, and the natural world.

This holistic approach is particularly relevant to brain health research. It is increasingly clear that biological factors alone do not provide a complete picture of brain health and function. Social determinants—such as air quality, housing, access to healthcare, and education—play a significant role. Research shows that time spent in nature can enhance cognitive function and reduce stress, anxiety, and depression, while environmental disruptions can trigger mental health challenges.

By braiding Indigenous perspectives with Western scientific methods, we can achieve a fuller understanding of brain health, encompassing everything from molecular processes to societal influences. This transdisciplinary approach opens new avenues for prevention,

diagnosis, and treatment of brain-related conditions, leading to research that is both more inclusive and impactful.

Between July 2022 and May 2023, we held a series of introductory sessions and focus groups that explored the successes, challenges, and opportunities in brain research for Indigenous Peoples. These discussions included a wide range of participants: Traditional Knowledge Holders, Indigenous scholars at all career stages, brain researchers working with Indigenous communities, heads of Indigenous research organizations, health administrators, community representatives, and other key stakeholders. In May 2023, we also convened a separate meeting with research funding organizations, allowing them to share their own approaches to Indigenous initiatives and explore opportunities for enhanced collaboration.

These efforts culminated in the "Two-Eyed Seeing Through Compound Eyes Workshop" in January 2024, which convened more than 120 participants from various sectors. This workshop fostered cross-cultural dialogue, built relationships, and developed actionable solutions for advancing brain health research with Indigenous Peoples.

BRAIN HEALTH RESEARCH THROUGH INDIGENOUS LENSES

The theme of the first half of the Two Eyed Seeing Workshop was to examine projects, programs, and experiences of Indigenous health researchers, and how we can look at conducting research in a good way. The varying expertise exemplified by the presenters illustrated to the audience that we can define Indigenous health research on our own terms, while advocating for colonial systems to accept the holistic nature of the work needed to be done in Indigenous communities. The knowledge shared in the discussion informs the best way to move forward to reconciling Indigenous brain health research with the people it is meant to serve, whilst creating frameworks and parameters which can be implemented in academia, and other forums.

- **Grant Bruno:** Ph.D Candidate in Medical Sciences-Department of Pediatrics, University of Alberta
 - Indigenous Autism in Canada: A Scoping Review
 - Autism in Maskwacis: A Community Led Qualitative Study

Grant Bruno spoke extensively about his experiences in autism research and has lived experience as a father of two children who are on the autism spectrum. Grant explained

how *Nêhiyawak (Plains Cree)* Spiritual belief systems have children choosing their parents, which is fundamentally different than deficit-based models of Western medicine. Children are spiritual gifts and are to be treated as such. Autistic people are more spirit than human, and it's our responsibility to learn from them. Further, negative reinforcement from Western ideology towards Indigenous peoples, affects us on multiple levels, and we begin to live/believe those same sentiments, which speaks to the necessity of minimizing (as much as possible) the adverse effects of prejudice, racism, and discrimination. We need to apply language and ceremony (Intergenerational strengths) in Western spaces, such as research, to illustrate how we survived for generations since colonialism has been implemented and continued. There are far more studies, discussion, and discourse surrounding topics such Intergenerational traumas, which encourages those pessimistic mentalities to continue about Indigenous peoples. Grant states, "I've always tried to take a strength-based approach to my research, and I've tried to make sure that I'm reflecting the community's wants and needs"; indeed, for Indigenous peoples, balance should be what we're striving for, and when we constantly take the lens of deficit-based models of colonial mindsets, then it makes it difficult to achieve that balance. We must further explore the various strengths of Indigenous communities in brain research, to overcome some of those negative characteristics passed down through colonialism and the Residential school process.

- **Melissa Perrault:** Associate Professor, McMaster University
 - Using animal model systems, *in vitro* and *in vivo* systems electrophysiology, pharmacology, pharmacogenetics, neurochemistry, behaviour to study the molecular and cellular mechanisms involved in the pathology of neuropsychiatric disorders
 - She works to promote Indigenous initiatives and equity, diversity, and inclusion at institutional, national, and international level

Dr. Perrault spoke of what Western academic suppression looks like for Indigenous people. Although Indigenous peoples comprise 5% of the Canadian population, including students in academia; however, only 1.4% of professors are Indigenous. As well, most Indigenous professors are represented highly in Indigenous studies, but there is a lack of representation in other field and sectors, such as neuroscience. Ensuring our voices are included in all disciplines, better strengthens our own cultures while enhancing the breadth and depth of said disciplines. Bias needs to be mitigated in

research, and if there are nonindigenous researchers working in Indigenous communities, there is a potential for those negative reinforcements to be exacerbated in the research process, by continuously identifying “problems” within Indigenous communities. These deficit-based approaches, promotes the narratives that Indigenous peoples and communities are failures, deficient, and are “less-than”. It creates a notion that Western institutions need to “save” Indigenous peoples, and “solve” the Indigenous problem; leading to a foundation that Western forms of knowledge and way of living are superior to Indigenous ones. Asserting our Indigeneity in research spaces is necessary to change the research dynamic which has historically suppressed Indigenous frameworks, and we can do this by encouraging high school students and undergraduates to pursue their passions in any neuroscience field. Doing so allows for inappropriate research to cease and reduce the amount of tokenism currently occurring in academia. It’s about creating balance, by forging two forms of knowledge to create something that is better for everybody.

- **Amy Bombay:** Associate Professor, School of Nursing, Dalhousie University
 - Legacy Award for Excellence in Education for Diversity, Dalhousie, 2020
 - Postdoctoral Fellowship, CIHR 2012-2014

Amy spoke to the Intergenerational effects of the Residential School, and subsequently the long-term effects of the child welfare system. Part of her research utilized prevalence of suicidal thoughts as an indicator, or marker, of these effects over the life cycle. Dr. Bombay’s research examines how biological pathways (stress/adversity) across the lifetime (and how they continue over generations) contribute to things, such as mental health symptoms, substance use, and other negative health and social outcomes. Epigenetics has been a sensitive topic for Indigenous peoples in the past, as some historical injustices occurred by researchers not honoring the commitments of working with Indigenous peoples, such as biological samples being disrespected, and ultimately causing harm to the communities. Amy proposes that environmental factors could alter and shift our genes inherited from our parents, which can shift our perspectives on human development, and how we must emphasize the relationship between our bodies and our environment. This aligns with the Indigenous ways of knowing, specifically human development and the care needed by all in the community to raise a child. Amy further discusses her work with the Thunderbird Partnership Foundation and how epigenetics connects with Anishinaabe teachings about how we have sacred DNA, we

need to protect it, and we need to protect that across development. Changing our environments potentially holds the ability to change our outcomes. Thunderbird pilots a 3 Day Training Program, which encourages Two Eyed Seeing, by bridging Western science training and Indigenous knowledge training.

- **Allison Deer:** Senior Projects Advisor, Bimaadziwin
 - Lead, PATHWAYS, Indigenous Health Collaborations
 - MBA, Cape Breton University

Allison Deer spoke to PATHWAYS, Indigenous Health Collaborations, which is a partnership which began in 2018, between Bimaadziwin and Boehringer Ingelheim. Bimaadziwin is an Indigenous-owned consulting organization, and Boehringer Ingelheim is a one of the world leaders in research-driven pharmaceutical companies with over 130-years' experience. They have collaborated in various health ventures (8 national pilots) working with Indigenous communities across Canada, working on projects addressing diabetes, blood pressure, and mental health. PATHWAYS has developed an Indigenous Health Equity Strategy, to develop sustainability of its various pilots. They have completed a lot of work in developing frameworks around Community-based Participatory Research, with methodologies in storytelling, sharing circles, roundtable discussion, primary/secondary research, centered in both quantitative and qualitative research. Their approach speaks to how necessary it is to engage community all along the way in the research cycle. PATHWAYS has created a 4P Model (Public, Private, Philanthropic, and Partnership) to initiating new Indigenous health research projects. Further, they offer capacity building and engagement support to communities through their programs, while allowing for flexibility. They provide time for indigenous communities to lead and maintain control over their initiatives. This initiative emphasizes the need for collaboration, partnership, and connection to develop a national policy framework for brain health research.

CO-CREATING THE FUTURE OF INDIGENOUS BRAIN HEALTH RESEARCH

The theme of the second half of the Two Eyed Seeing Workshop was to delve into the practices, actions, and commitments needed for Indigenous communities to thrive and succeed in future brain health research projects. Reciprocity, knowledge sharing, and capacity building were continuously explored, and the manner to which Western institutions need to rethink their approaches to working with Indigenous communities.

Strengths of Indigenous languages, cultures, and belief systems will form the foundation to any project developing with communities. Participants contributed to a robust discussion on how projects could prosper and advance, which would allow for more vigorous, powerful, and energetic research to transpire in Canadian brain research.

- **Kris Noakes:** Board of Directors, ALS Canada
 - Advocate living with ALS
 - A citizen of the Anishinabek Nation, a member of Nipissing First Nation living with ALS

Kris speaks to her familial connections to ALS, and how her Indigeneity affects her experiences with receiving health care support. At times, there is inequitable access to health care, including NIHB (Non-insured Health Benefits); indeed, the diagnosis stage of identifying conditions can take over 10 years, which limits the quality of life. Perspectives and experiences have been dismissed, which can be very isolating for individuals. Kris Noakes sought help out-of-province, at the NEURO (Montreal Neurological Institute-Hospital), which has been a leader in open science for openness and sharing. They've been an incubator and recognized globally for that, thus have been described as unique and forward thinking. Open Science seeks to dismantle barriers, actively and systematically, which has been the approach of the NEURO. Ms. Noakes passionately advocates for the urgency of health care providers to openly engage with each other, through the exchange of knowledge with no restrictions, for the benefit of patients. She also shared her story in how she has willingly provided her genetics for the study of ALS, but did so as there was a relationship established, and continues, while mitigating her concerns via multiple safeguards. This illustrates the essentialness of bringing together patient and researchers from the onset, whilst including patients in the trial research development stage, and engaging on a continuous basis.

- **Lorrilee McGregor:** Associate Professor, Indigenous Health, Northern Ontario School of Medicine
 - Examining informed consent processes for Indigenous families in research: A Scoping Review protocol
 - Chair, Manitoulin Anishinaabek Research Review Committee (MARRC)

Lorrilee McGregor speaks to the Indigenous research process and how it has progressed since time immemorial to present day. Indigenous knowledge has been shared intergenerationally through observation and practice, as well as through experimentation. One of the ways we navigate the physical world is through interpretation of the Spiritual world, which at times can be accessed through avenues such as dreaming and ceremonies. Historically, there has been an extractive nature in working with Indigenous communities; since the 1960s, there has been a push back from Indigenous communities to ensure that there be no policies enforced upon us; and more recently, there has been shift towards a model of “nothing without us”, where Indigenous communities must give prior approval to any research being conducted and there should be continuous approval along the way of the project. Research should be collaborative and beneficial to the Indigenous communities and be based in Indigenous principles and beliefs. The Manitoulin Anishinaabek Research Review Committee has developed *Biological Sampling Guidelines*, which would be valuable in developing frameworks for future brain health research. Health research should be about healing, and if that isn’t the basis for any future research being conducted, it shouldn’t be done.

- **Lori Davis Hill:** Assistant Professor, Rehabilitation Science, McMaster University
 - Six Nations Health Services Director (May 2014-June 2022)
 - Ph.D Candidate in Social Science, Language is Medicine

Lori Davis Hill explores the dynamic between Indigenous knowledges of Canada and those people who currently reside in the various territories of Turtle Island. Indigenous community goals are to return to sovereignty while reducing the controls placed upon us via colonial and settler policies, especially in the realm of research. Indigenous peoples have always been researchers; thus, there is a shift occurring of Indigenous peoples becoming co-creators and collaborators of research questions, and concurrently becoming academic scientists. Lori Davis Hill states, “Indigenous peoples have been very preventative in dealing with wellness, and we were a very busy people; our bodies and spirits were active and stimulated by our daily activities”; thus, when the disconnection began from our original ways via colonial practices, then the disruptions to our spirits caused discord, and has repeated over generations. Indeed, Lori Davis Hill notes, “decrease in that sense of belonging and sense of purpose contributes to isolation and the reduction of wellness, so we moved from that ‘we’ of wellness to the ‘I’ in ‘illness’”. Utilizing various tools to regain and restore our language, culture, and

teachings is necessary for healing; albeit every community has its own strength and levels of each of these sacred bundle items, and we need to recognize and meet the respective community where they are at. Building capacity and reciprocity, while transforming and growing in wellness, is crucial; indeed, these processes require funding which allies can assist with by accessing funds and finding ways around existing structural barriers. Indigenous peoples need to see the interest from Western institutions in doing things in Indigenous ways, while taking the time to needed to build relationships rooted in listening and respect.

PARTICIPANT DISCUSSION ON FRAMEWORKS OF FUTURE RESEARCH

Continuous, Stable, Long-term Funding

There needs to be committed partners, who envision stability and longevity for research projects in Indigenous communities. Far too often, funding is for short-terms and doesn't allow for proper storytelling and relationships to emerge. Sustainable systems should be constructed, with allowability for co-creation and customization of each project. The academic system needs to embed permanent dollars into supporting indigenous-led initiatives.

Flexibility and Optimization of Resources

Understanding that each community varies in its capacity allows for room for pivoting and restructuring as need be. Further, creating relationships which allow for additional support, such as structural support, human capacity or funds, will ensure success. You're not waiting for approvals from others, to be able to test and ask the important questions.

Co-creating Long-term Strategy and Prioritization of Projects

There are stages in which research could occur for a community, and at times, foundations need to be built for long-term success. Working with communities to prioritize current and future projects builds capacity, while envisioning the resources required for longstanding quality research. Some projects may be ready to initiate, while others will involve more planning and strategizing.

Customization

There should not be a one-size-fits-all approach when creating research proposals with Indigenous communities. What works in one community, will not work in another; although, it should be action-oriented and allows for swift support. Not relying solely on government funding, but seeking partnerships in private and philanthropic organizations, grants the ability for projects to become flexible and dynamic in its approach. We hope to seek expertise from philanthropic and private partners, such as donors and pharmaceutical companies.

Knowledge Sharing

It is extremely beneficial for Indigenous communities to share their practices, processes, and progress in research projects, as it builds not only for the community who is participating, but for those who are interested in co-creating something for themselves. Acknowledging the community engagement aspects produces credibility, while reciprocating back and forth the knowledge learned through the process; indeed, maintaining the connections and communications will allow for prosperity.

Metrics

Evaluating something viable needs to be co-developed from the start, while recognizing the impacts on individuals, community, and relationships. Surveys are not the most effective ways to evaluate the metrics of progress, and should be supplemented by storytelling, sharing circles, and ceremonies. Urging Indigenous communities to create their own metrics, on what "success" looks like, is pertinent, while assisting to generate tools, safe spaces, and resources to do so.

Co-Creation, Connection and Knowledge Translation

One needs to take a step back and look at the community, in its entirety. Involving the community from the beginning is essential to establish a strong framework. Asking questions, such as "Are your needs being met, and are you thriving?", will assure continued uptake from the participants; if the process no longer fits or needs to be adjusted, then the framework should be reviewed. Exploring Knowledge Translation with participants, provides a space for decision making about results, via the formation of questions and how they may be interpreted. Sovereignty over the initiation, implementation, and interpretation of the research will empower it to become relevant, meaningful, and useful to the community.

Relational Accountability

Refers to necessity of working in ethical spaces with Indigenous peoples, while placing value on those relationships by ensuring needs and wants are being met. Creating safe spaces for people to share, while guaranteeing confidentiality, is a necessity so that no further trauma is inflicted, and healing has room to grow. Being mindful of language and how it is used will allow for accessibility of research; further, clarification of questions should be considered when deploying surveys. Explanation of how data will be used eases concerns and qualms of participants as well. Transparency to Elders and Community is crucial for relationship building, which includes outlining the end goal/purpose of research.

Cyclical vs Linearity

We must combat the linear nature of Western research by recognizing there is loopback system of conducting with and for Indigenous peoples. Reciprocating the good medicine realized through the research process, allows for the community to heal. Being aware that colonial constructs still exist, we must examine how to minimize and mitigate those effects. Recognizing that formation of questions will take time, and exploring emerging trends and themes through this process will grant a more robust partnership to flourish. Imposition of surveys, without community feedback, will lead to breakdown in connections.

Funding in Good Faith

Building and sustaining relationships with Indigenous communities requires long-term financing; however, at times the strict and regimented nature of fiduciary systems is in opposition to Indigenous perspectives of agreements and kinship. Being cautious of how funding is allocated and awarded, is key to maintain a good working relationship. Overreporting and underbudgeting may put a project at risk, as it places Indigenous communities in a precarious position.

CONCLUSION AND RECOMMENDATION

The Two-Eyed Seeing Through Compound Eyes Workshop marks an important milestone in the journey toward inclusive, collaborative brain health research with Indigenous Peoples in Canada. Through this workshop – and the introductory sessions, focus groups, and dialogues with funders and other organizations that paved the way – we have established foundational relationships and guiding principles, developed mutual understanding, and identified key areas for partnership and action. These dialogues have highlighted the vital contributions of Indigenous Knowledges to our national brain research strategy, emphasizing a holistic, interconnected perspective essential for addressing complex health challenges.

Moving forward, the next phase of this initiative will focus on co-developing and implementing a research program that aligns with the principles and priorities identified in this workshop. This collaborative effort will continue to involve a range of stakeholders, including researchers, Indigenous community members, health organizations, and funding bodies. Together, we aim to create a research framework that honors the values of relational accountability, reciprocity, and flexibility, ensuring that Indigenous voices are central at every stage.

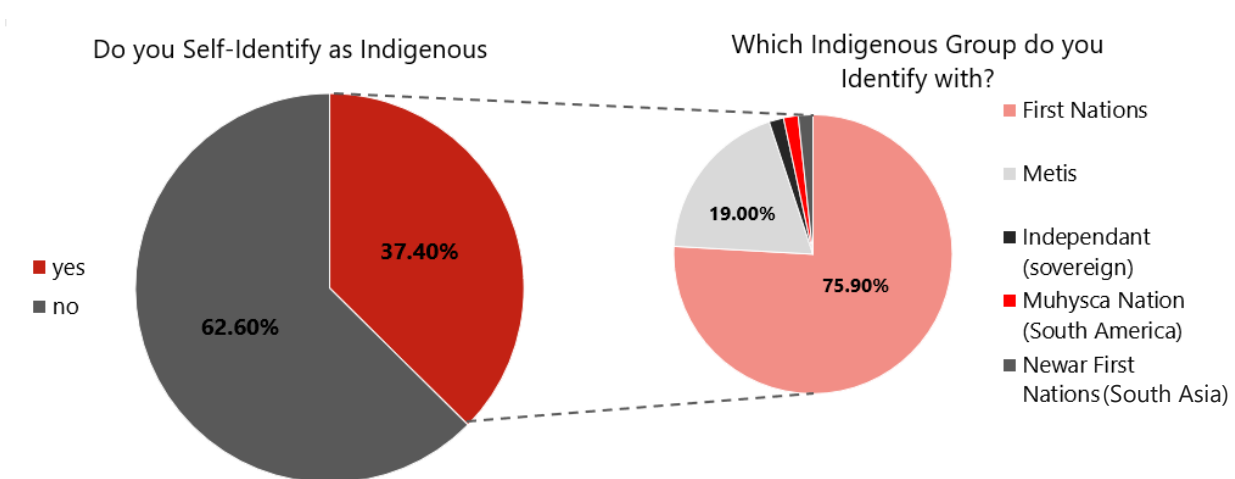
CBRS is committed to sustaining these partnerships and supporting the community-driven approaches that emerged from this workshop. As we move into the implementation phase, we will continue to prioritize open dialogue, co-creation, and capacity-building to foster an inclusive research ecosystem that benefits all. With long-term, stable funding and ongoing support, we can realize a transformative approach to brain health research in Canada—one that respects and integrates Indigenous perspectives to create lasting, meaningful change.

PARTICIPANT REPRESENTATION AND ENGAGEMENT

The Two-Eyed Seeing Through Compound Eyes Workshop brought together a diverse group of participants from across Canada, reflecting the broad spectrum of voices essential to advancing brain health research with Indigenous Peoples. Representation spanned various regions, sectors, and Indigenous backgrounds, underscoring the inclusive approach that CBRS is committed to fostering. The following summary highlights key demographics and engagement characteristics of the 156 workshop registrants, illustrating the range of expertise, perspectives, and connections to Indigenous communities that were present at the workshop.

Indigenous Representation

This pie chart shows the representation of Indigenous identities among workshop registrants, including First Nations, Métis, non-Status Indians, and other Indigenous groups.

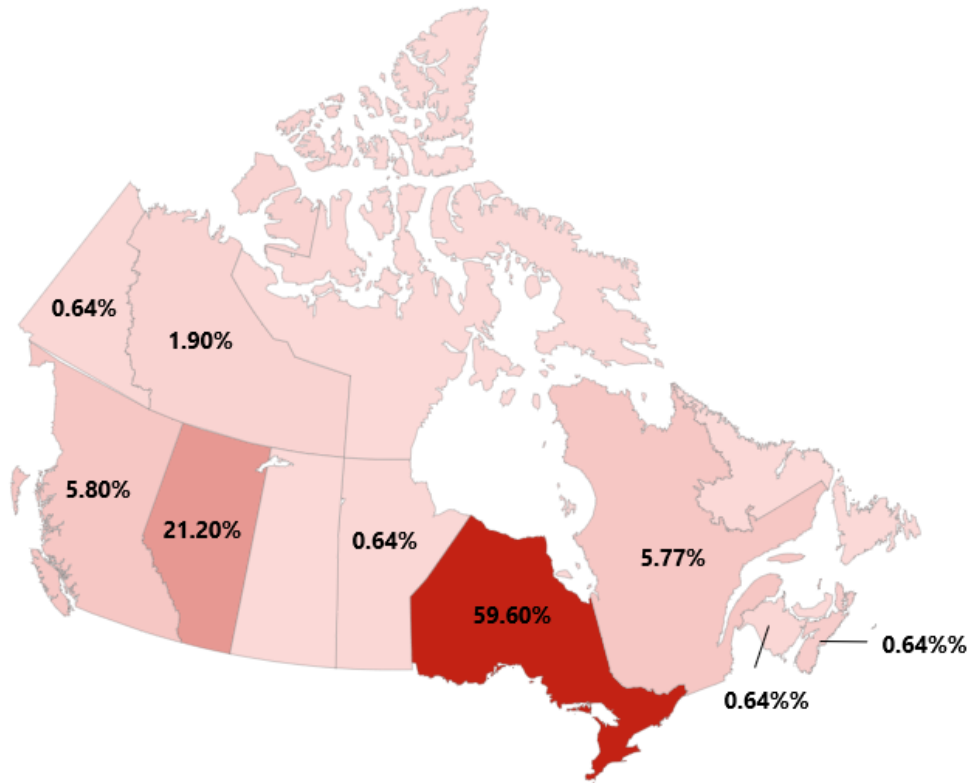


Furthermore, the majority of participants (82.4%) stated their work involves connecting with Indigenous peoples, which is the spirit, essence, and goal of the Two Eyed Seeing Workshop. We brought together individuals from differing environments into one forum, to exchange ideas, visions, and dreams.

Geographic Distribution

The map below illustrates the geographic distribution of workshop registrants, represented by percentage of attendees from each province and territory.

Provincial / Territorial Representation

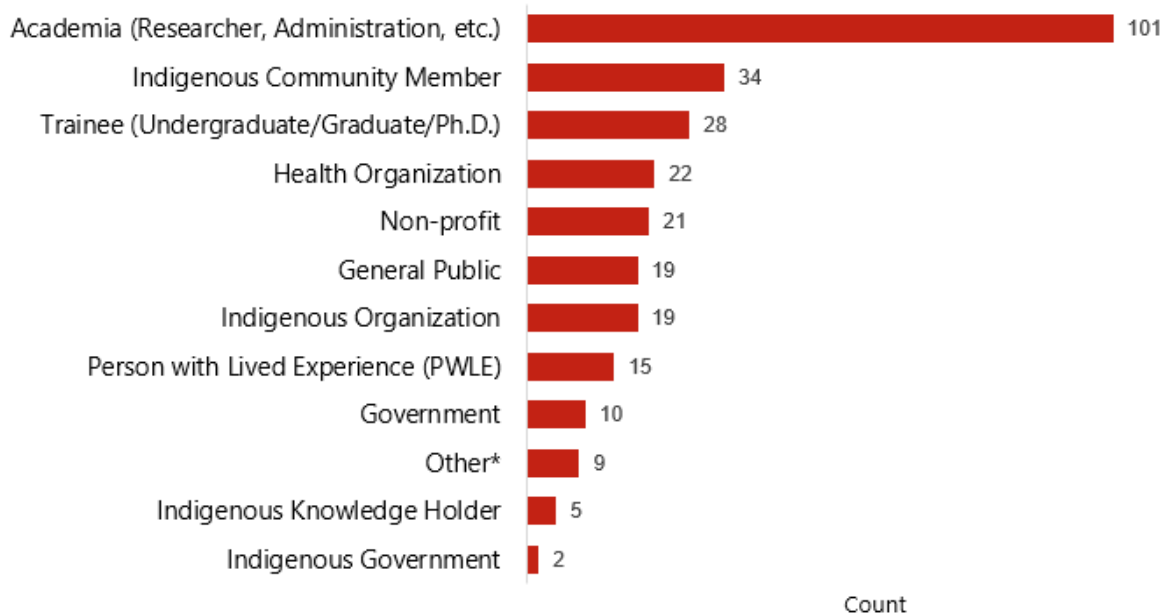


Stakeholder Sectors

This bar chart provides a breakdown of the sectors represented at the workshop, including academia, health organizations, Indigenous community organizations, and other relevant fields.

While participants represented a variety of sectors, the majority were from academia. This reflects the nature of the Two-Eyed Seeing Workshop as part of a national research strategy, where academic perspectives play a crucial role alongside contributions from Indigenous communities, health organizations, and other sectors.

Stakeholder Groups



Participants could select more than one category, indicating involvement in multiple roles. The chart reflects the total count of selections across various categories

***Other**

Education, Fundraiser, Industry, KT/Patient Engagement Specialist, International Indigenous Community Member, Research

Participant Feedback Highlights

Following the Two-Eyed Seeing Workshop, a small group of participants provided feedback via a survey, offering insights on the workshop's effectiveness and areas for future focus. Overall, participants rated the quality, structure, and organization of the workshop very positively, noting the importance of centering Indigenous voices and fostering inclusive dialogue.

Key takeaways from the workshop included:

- **Relationship-Building and Reciprocity:** Many attendees appreciated the focus on building partnerships based on mutual respect and reciprocity, with practical insights on collaborating "in a good way" with Indigenous communities.
- **Indigenous Leadership and Experience Sharing:** Participants valued hearing directly from Indigenous leaders and scholars about their experiences and perspectives, highlighting the importance of these voices in guiding future research.

- Need for Expanded Discussions:** Several respondents noted that the time constraints limited opportunities for deeper discussions and suggested more time for breakout sessions and Q&A.

A word cloud generated from survey responses visually captures recurring themes, with common phrases such as "relationship-building," "respect," and "engagement," reflecting the spirit and goals of the workshop.

