AI NORTH

Evidence Report

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Executive Summary

AI-North brings together researchers, practitioners, and communities to advance socially accountable, place-based Artificial Intelligence (AI) in Northern Ontario. Guided by three objectives–(1) understanding socially accountable AI, (2) identifying strengths and gaps, and (3) building AI research capacity–this initiative assessed the landscape and identified opportunities for action.

This report aims to consolidate the findings from the various projects that AI-North has completed in recent years, highlighting the key results and implications. Additionally, recommendations and next steps from each project are highlighted and integrated into three overarching objectives to guide AI-North.

A summary of the key findings from our collective AI projects include:

- **Equity in AI design:** AI must embed social accountability principles, with policies and governance that consider and include a diversity of voices.
- **Funding disparities:** Current federal funding structures reinforce inequities; new place-based funding models are urgently needed.
- **Community & Indigenous leadership:** Data sovereignty, co-design, and culturally relevant governance are essential for ethical AI.
- **Workforce development:** Training programs, embedded AI researchers, and curriculum integration are needed to prepare healthcare teams.
- **Trust in AI:** Building trust requires transparency, AI literacy, and demonstrable value for providers and patients.

Northern Ontario is not an area of deficit, but a hub of resilience and innovation. With equitable investment and community-driven strategies, the region can lead in demonstrating how AI can be implemented responsibly and inclusively in Canada.

The three key recommended actions as a result of this work include:

1. Develop and implement a community-driven, rural-specific AI adoption framework that combines ethical guidelines, infrastructure assessment, and targeted training to ensure AI-scribes–and other AI tools– are socially accountable
2. Create a dedicated Northern Ontario AI Research & Training fund
3. Build long-term AI capacity in Northern Ontario

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What is AI-North?

AI-North, is an interdisciplinary research network of academics, practitioners, and community stakeholders based in Northern Ontario and housed at the Dr. Gilles Arcand Centre for Health Equity at NOSM University**.** AI-NORTH includes a growing network of professionals dedicated to advancing the ethical, equitable, and socially accountable use of Artificial Intelligence (AI) in healthcare.

AI-NORTH's mission is to explore both the promise and limitations of AI-powered healthcare innovation, promote place-based implementation, address community concerns through outreach, and equip healthcare stakeholders with the tools to integrate AI safely and responsibly in the North.

AI-North aims to respond to the following objectives:

Objective 1:
- Advance equity-orientated and socially accountable Artificial Intelligence

Objective 2:
- Identify strengths and gaps in Artificial Intelligence research in Northern Ontario

Objective 3:
- Help to build capacity for Artificial Intelligence research in Northern Ontario

AI-North's purpose is to provide space to come together on common ground and explore what Artificial Intelligence means for the people of Northern Ontario.

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Who is AI-North?

We are an interdisciplinary team of researchers, practitioners, and community leaders from across Northern Ontario. Our work is place-based, community informed and rooted in Northern voices. We are a broad group of people from many different organizations, disciplines and communities, who share a common vision for equity-driven AI for all.

This report summarizes key work completed to date, and recognizes many of the valuable contributors that have made it possible. A special thanks to:

Alex Anawati
Jillian Bertrand
Sophia Myles
Joseph Leblanc
Brian Ross
Dougie Newhouse
Dominique Cava
Brianne Wood
Tiana Bressan
Amanda Bakke
Michael Cotterill
Kelvi Toskovich
Rae Jewett
Div Patel
Gavin Shields
Holly Fleming
Jennifer Dumond
Renald Carrier
Andrew Austin
Daniel Lamoureux
Michelle Spadoni

AI-North is supported by the following:

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2025 Evidence Report

Report Overview

This evidence report brings together the collective findings of recent AI-North projects to provide a clear picture of how artificial intelligence (AI) is shaping healthcare in Northern Ontario. Its purpose is to summarize key insights, highlight emerging implications, and offer integrated recommendations that address both the opportunities and challenges of AI in this context.

The report is guided by AI-North's three core objectives:

1. To advance understanding of socially accountable AI in healthcare.
2. To identify strengths and gaps in Northern Ontario's AI research landscape.
3. To build capacity for AI research and innovation in the region.

By synthesizing evidence and outlining actionable steps, the report aims to support policymakers, healthcare leaders, and researchers in making informed decisions. The overall goal is to ensure that AI development in Northern Ontario is equitable, socially accountable, and responsive to the unique needs of Northern, rural, and Indigenous communities.

Land Acknowledgment

AI-North would like to acknowledge the First Peoples on whose traditional territories we live and work. AI-North is grateful for the opportunity to have our offices located on these lands and thank all the generations of people who have taken care of this land.

Our Main Offices:

- Thunder Bay is on Robinson-Superior Treaty territory and the land is the traditional territory of the Anishnaabeg and Fort William First Nation.
- Sudbury located on the traditional lands of the Atikameksheng Anishnawbek and the traditional lands of the Wahnapitae First Nation.

We recognize and appreciate the historic connection that Indigenous peoples have to these territories. We support their efforts to sustain and grow their nations. We also recognize the contributions that they have made in shaping and strengthening local communities, the province, and Canada.

RESEARCH REPORT

AI Rapid Review

Funding Acknowledgments: Associated Medical Services (AMS)

Authors: Alex Anawati, Holly Fleming, Megan Mertz, Jillian Bertrand, Jennifer Dumond, Sophia Myles, Joseph Leblanc, Brian Ross, Daniel Lamoureux, Div Patel, Renald Carrier, Erin Cameron

2025

Objective

Situated within a larger project entitled "Exploring the Need for a Uniquely Different Approach in Northern Ontario: A Study of Socially Accountable Artificial Intelligence," this rapid review provides a broad look into how social accountability as an equity-oriented health policy strategy is guiding artificial intelligence (AI) across the Canadian health care landscape, particularly for marginalized regions and populations. This review synthesizes existing literature to answer the question: How is AI present and impacted by social accountability across the health care landscape in Canada?

Key Findings

Unless there is a course correction, AI in the Canadian health care landscape will worsen the digital divide and health inequity. Social accountability as an equity-oriented strategy for AI could catalyze many of the changes required to prevent a worsening of the digital divide caused by the AI revolution in health care in Canada and should raise concerns for other global contexts. An overview of the 3 main themes identified are summarized below.

Impact

The impact of social accountability and linked health equity concepts on AI in health care remains relatively underdeveloped in Canada. No studies explicitly referenced using a comprehensive, equity-oriented social accountability strategy to guide AI for health care. The study's design included a diverse, expert, multidisciplinary advisory panel grounded in Northern and rural Canadian contexts. The methods were designed for rigor and reproducibility. The search strategy, critical search concepts, and terms were kept broad to capture the breadth and depth of social accountability and AI in health care.

Research Question

How is AI present and impacted by social accountability across the health care landscape in Canada?

Main Themes

1. Designing equity into AI
2. Policies and regulations for AI
3. Inclusion of community voices in the implementation of AI in healthcare

Conclusions

AI developers must consider the importance of designing greater equity into AI, the urgent need for policies and regulations, and including community voices during the implementation of AI technologies. This reflects the importance of centering on equity, prioritizing marginalized populations and engaging with communities and partners in their co-design.

RESEARCH REPORT

Environmental Scan

Funding Acknowledgments:
Associated Medical Services (AMS)

Authors: Ghislaine Attema, Megan Mertz, Alex Anawati, Andrew Austin, Jillian Bertrand, Dougie Newhouse, Ray Jewett, Erin Cameron

2025

Project Overview

This project describes how research funding for AI was allocated and distributed in Canada from 2011–2022. It is based on a rapid environmental scan using publicly available funding reports from CIHR, NSERC, SSHRC, CRC, AMS, NFRF, and CFI.

Key Findings

Publicly Funded AI Projects

2011 - 2022

$$$

Total Funding Amount

$384,933,265.74

4112 projects

Average Funding Per Project

$93,612.18

per project

Most Funded Provinces

2011 - 2022

Ontario ····· **$173 million**

Quebec ····· **$87 million**

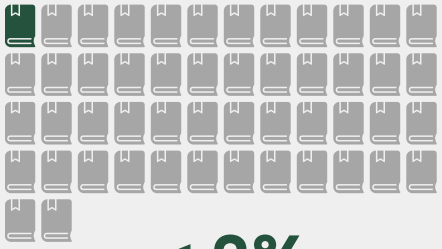
British Columbia ··· **$59 million**

AI Funding Trends

2020 - 2021

0.68%

allocation of federal AI research dollars to Northern Institutions



< 2%

funding allocated towards French language projects

Leading Funding Agencies

2011 - 2022

NSERC — $155,267,817

CIHR — $136,594,644

CFI — $58,317,627

Main Themes

1. **AI-research funding has increased steadily since 2011, peaking in 2020**

2. **The most populous provinces (Ontario, Quebec, British Columbia) received 82% of total AI-related research funding**

3. **From 2011 to 2022, Northern Institutions received only 0.68% of total federal research dollars allocated to Ontario institutions**

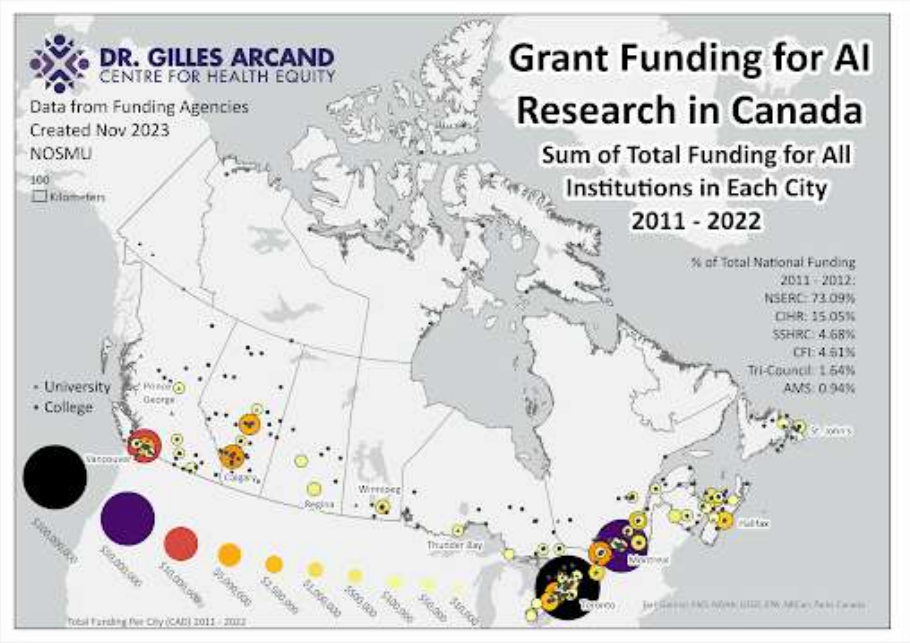
4. **There is a need for place-based funding strategies to support equitable innovation**

5. **French-language projects received a small fraction of the total funding awarded, highlighting a significant disparity**

6. **Current federal funding structures may reinforce systemic biases, with limited publicly available data highlighting challenges in transparency, equity, and rural representation**

As AI continues to shape the future of Canadian research, ensuring transparent, equitable funding allocation will be essential to uphold social accountability and address systemic disparities across regions and populations.

Maps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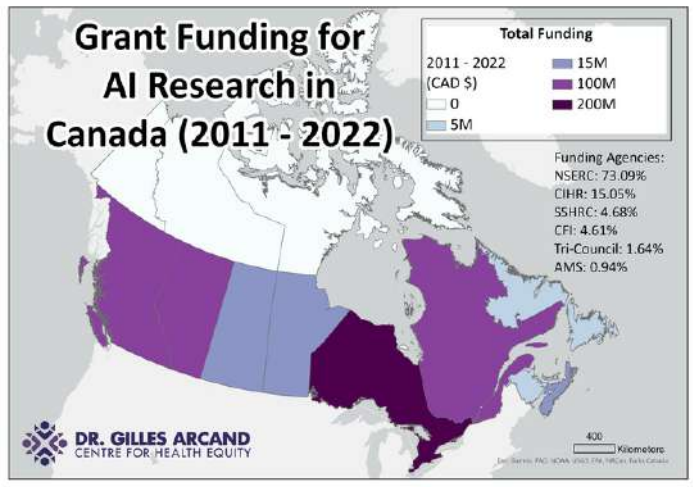
Data from Funding Agencies
Created Nov 2023
NOSMU
Grant Funding for AI Research in Canada
Sum of Total Funding for All Institutions in Each City
2011 - 2022
% of Total National Funding
2011 - 2012:
NSERC: 73.09%
CIHR: 15.05%
SSHRC: 4.68%
CFI: 4.61%
Tri-Council: 1.64%
AMS: 0.94%
• University
• College


Grant Funding for AI Research in Canada (2011 - 2022)
Total Funding
2011 - 2022 (CAD $)
0
5M
15M
100M
200M
Funding Agencies:
NSERC: 73.09%
CIHR: 15.05%
SSHRC: 4.68%
CFI: 4.61%
Tri-Council: 1.64%
AMS: 0.94%
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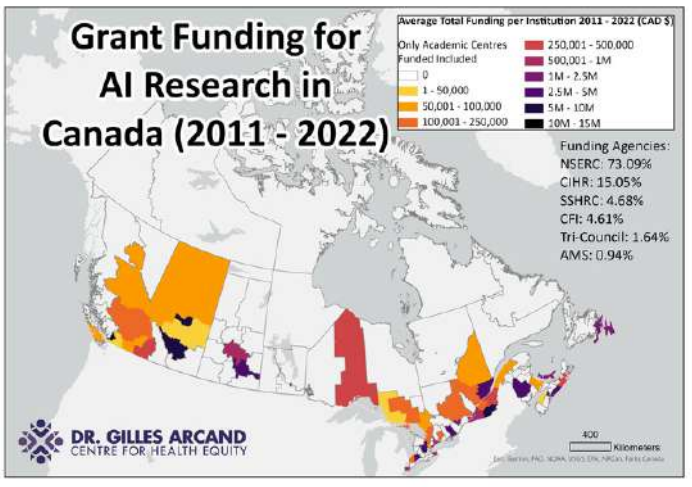
Grant Funding for AI Research in Canada (2011 - 2022)
Average Total Funding per Institution 2011 - 2022 (CAD $)
Only Academic Centres Funded Included
0
1 - 50,000
50,001 - 100,000
100,001 - 250,000
250,001 - 500,000
500,001 - 1M
1M - 2.5M
2.5M - 5M
5M - 10M
10M - 15M
Funding Agencies:
NSERC: 73.09%
CIHR: 15.05%
SSHRC: 4.68%
CFI: 4.61%
Tri-Council: 1.64%
AMS: 0.94%
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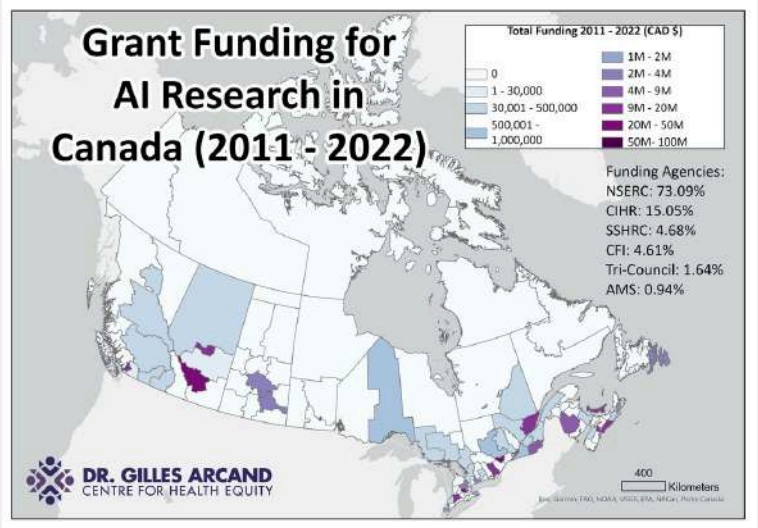
Grant Funding for AI Research in Canada (2011 - 2022)
Total Funding 2011 - 2022 (CAD $)
0
1 - 30,000
30,001 - 500,000
500,001 - 1,000,000
1M - 2M
2M - 4M
4M - 9M
9M - 20M
20M - 50M
50M - 100M
Funding Agencies:
NSERC: 73.09%
CIHR: 15.05%
SSHRC: 4.68%
CFI: 4.61%
Tri-Council: 1.64%
AMS: 0.94%
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RESEARCH REPORT

AI4PH Workshop

Funding Acknowledgments: IKT Research Network, Associated Medical Services (AMS), Northern Ontario Heritage Fund Corporation (NOHFC)

Authors: Brianne Wood, Andrew Austin, Holly Fleming, Megan Mertz

2025

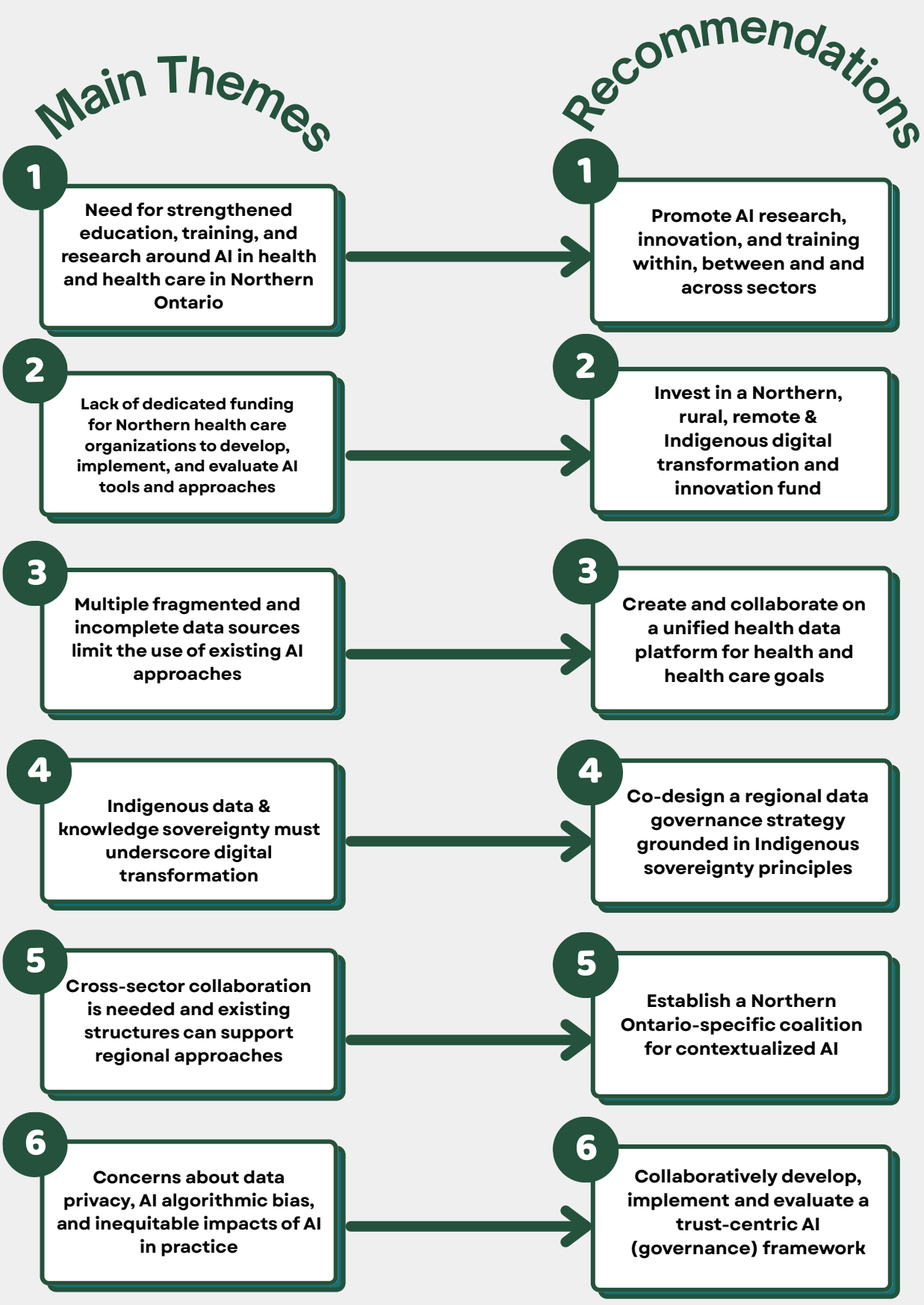
In October 2023, a two-day workshop was held to explore the integration of artificial intelligence (AI) in Northern Ontario health care.

The event brought together 40 leaders from across the region to collaborate on the challenges of data management, collection, and sharing in an effort to create a Pan-Northern Ontario Data & AI Strategy

Northern Ontario presents unique challenges and opportunities for using technology to improve health and healthcare. Geographic barriers, workforce shortages, and the need for Indigenous-led services shape access to care, but existing data tools often overlook this context. Infrastructure gaps and funding inequities also hinder the adoption of advanced technologies like artificial intelligence

Six main themes that were synthesised from the discussions that are mapped to action-oriented recommendations. These main themes and associated recommendations are summarized on Page XX

To access the full report, click here!


Main Themes
Recommendations
1
Need for strengthened education, training, and research around AI in health and health care in Northern Ontario
1
Promote AI research, innovation, and training within, between and and across sectors
2
Lack of dedicated funding for Northern health care organizations to develop, implement, and evaluate AI tools and approaches
2
Invest in a Northern, rural, remote & Indigenous digital transformation and innovation fund
3
Multiple fragmented and incomplete data sources limit the use of existing AI approaches
3
Create and collaborate on a unified health data platform for health and health care goals
4
Indigenous data & knowledge sovereignty must underscore digital transformation
4
Co-design a regional data governance strategy grounded in Indigenous sovereignty principles
5
Cross-sector collaboration is needed and existing structures can support regional approaches
5
Establish a Northern Ontario-specific coalition for contextualized AI
6
Concerns about data privacy, AI algorithmic bias, and inequitable impacts of AI in practice
6
Collaboratively develop, implement and evaluate a trust-centric AI (governance) framework

RESEARCH REPORT

AI Scribes in Primary Care

Funding Acknowledgments: Northern Ontario Academic Medicine Association (NOAMA) & the Wawa Local Education Group

Authors: Tiana Bressan, Amanda Bakke, Barbara Zelek, Michael Cotterill, Brianne Wood

2025

Project Overview

AI is rapidly entering healthcare with the promise of improving efficiency, but its rapid implementation–especially in under-supported northern, rural, and remote communities–raises concerns about equity, regulation, and unintended consequences. As Canada prioritizes AI scribes to ease administrative burdens, questions remain about whether this technology will bridge or deepen the existing digital divide. This study explored the perceptions of primary care providers (PCPs)–including nurse practitioners, physician assistants, and physicians–toward AI scribe technology in northern, rural, and remote (NRR) communities.

Main Findings

Using a mixed-methods design, we found that AI scribes were seen as beneficial in reducing administrative burden, cognitive load, and improving care delivery, especially in the context of provider shortages and burnout. Key barriers included funding, infrastructure, and medico-legal concerns. There was strong interest in AI training, though time and institutional support remain barriers. Focus group discussions also pointed to opportunities for integrating AI tools into medical education.

Conclusions

In conclusion, AI scribes, have the potential to ease administrative burden, improve healthcare delivery, and address workforce shortages in northern, rural, and remote areas. Successful implementation requires context-specific considerations like infrastructure, training, and equitable access for all PCPs and healthcare teams. Challenges, such as digital divides, privacy concerns, and health inequities, must be addressed through rural research, inclusive co-design strategies, and strong regulatory frameworks.

RESEARCH REPORT

AI Workforce Investments

Acknowledgments: Thunder Bay Regional Health Science Centre & Thunder Bay Regional Health Research Institute

Authors: Dominique Cava & Brianne Wood

2025

Context

Fragmented data systems in Northern Ontario hinder progress toward learning health system (LHS) goals. AI researchers with broad, generalist skills who understand the region's unique context can critically and effectively guide the development and use of AI to support equitable and resource-conscious healthcare improvement.

Overview

Exploring the integration of an embedded AI researcher - the "AI researcher" into northern and rural health systems is essential to support context-specific, culturally informed AI adoption. The professional would aim to strengthen local learning health systems while contributing to broader advances in ethical and equitable AI use.

Core Activities of the AI-Researcher

Core Activity #1

Research and development - Ensure that AI tools meet technical standards and reflect the uniqueness of the systems.

Core Activity #2

Implementation and testing - Elevate regional successes to influence provincial and national health strategies.

Core Activity #3

Capacity building and community engagement - Ensure equity-deserving communities are represented in decision-making.

Conclusions

In the long term, northern and rural health systems would benefit from investing in an AI researcher as a workforce development and system learning strategy that could improve health outcomes, attract additional funding, optimize resource utilization and build a diversified team of people with AI skill sets.

RESEARCH REPORT

AI & Trust

Funding Acknowledgments: Associated Medical Services (AMS)

Authors: Megan Mertz, Kelvi Toskovich, Gavin Shields, Ghislaine Attema, Jennifer Dumond, Erin Cameron

2025

INTRODUCTION

This rapid review examines how trust between human users and AI systems develops in healthcare, identifying key influencing factors and highlighting the importance of data privacy and security. It offers a foundation for practical strategies to support responsible and trusted AI adoption in clinical settings. Strengthening human-machine trust is essential to ensure meaningful, ethical, and sustainable integration of AI in health systems.

RESULTS

Three main themes were identified: the first theme, AI literacy, identifies the need for user understanding of AI inputs, processes, and outputs to build trust among patients and physicians. The second theme, AI psychology, outlines the demographic and experiential factors that shape trust, including age, gender, and experience with AI. Lastly, the theme AI utility underscores the importance of system efficiency, compatibility, and perceived value in fostering trust. Additional considerations including anthropomorphism, privacy concerns, and trust repair mechanisms following system errors are discussed as they relate to trust in high-risk clinical applications.

CONCLUSION

It was found that trust is essential for the successful integration of AI in healthcare, shaped by complex factors such as AI literacy, perceived utility, system transparency, and user experience. Building and maintaining trust requires attention to issues like privacy, anthropomorphism, and ethical design, with collaboration across developers, clinicians, and policymakers. Trustworthy AI has the potential to improve clinical decision-making and foster a more equitable and inclusive healthcare system.

RESEARCH REPORT

AI & Rural Health Equity

Acknowledgments: Northern Ontario School of Medicine University

Authors: Yifan Zhang, Sarah Newbery, David W. Savage, Brian M. Ross

2025

Overview

This article details a mixed-methods study exploring the perceptions of healthcare-associated workers in Northern Ontario about implementing Artificial Intelligence (AI) in healthcare settings. Data was collected from a total of 68 participants using an anonymous online survey featuring structured and open-ended questions. The primary goal was to identify perceived barriers and enablers to AI implementation, focusing on contextual factors (I.e., geography, infrastructure, culture, etc.).

Main Findings

Three major findings emerged from the analysis. Participants displayed widespread uncertainty and limited exposure to AI, despite general interest and optimism about job workflow and performance improvements. Further, barriers to AI adoption were noted, particularly concerning training and infrastructure. Those in remote communities were more likely to cite language and internet access as barriers. Participants emphasized the need for additional resourcing, noting that current clinics are overburdened, without capacity to integrate new technology unassisted. The findings support place-based, contextualized AI development to champion local communities and protect regional health equity.

Conclusions

This article concludes that the integration of AI in rural and remote health settings (I.e., Northern Ontario) imposes diverse challenges related to local readiness, infrastructure (E.g., lack of internet access), and dangers of “urban-derived, one-size-fits-all” implementations. These findings underscore the risk for marginalized rural and remote communities being overlooked in AI-driven health progress. To avoid adverse outcomes, healthcare AI must be locally contextualized, guided by equity considerations, and shaped by the experiences of rural practitioners to effectively meet local community needs.

Key Recommendations & Next Steps

2025

While Northern Ontario has historically been perceived as slow to adopt emerging technologies, this pace reflects not a lack of innovation but a lack of resources. In fact, it is often precisely in these resource-limited contexts that some of the most creative and impactful innovations emerge. For decades, Northern Ontario has pioneered novel healthcare delivery models out of necessity, long before artificial intelligence entered mainstream conversations. Yet, despite this leadership, Northern institutions continue to be systematically underfunded, receiving less than 1% of federal AI research dollars, and are frequently excluded from national decision-making tables.

Our work illustrates that Northern Ontario is not an area of deficit but one of resilience, insight, and innovation. We have led and will continue to lead in reimagining healthcare with socially accountable, place-based AI. Moving forward, equitable recognition and investment must follow—ensuring the North has not only a seat at the table but the support to shape the future of healthcare in Canada.

Key Recommendations

1. Develop and implement a place-based, rural AI adoption framework that combines ethical guidelines, local input, infrastructure assessment, and training to ensure AI tools (E.g., AI scribes) are socially accountable
2. Create a dedicated Northern Ontario AI Research & Training fund
3. Build long-term AI capacity in Northern Ontario

Collective Works

Reports and Publications

Anawati A, Fleming H, Mertz M, Bertrand J, Dumond J, Myles S, Leblanc J, Ross B, Lamoureux D, Patel D, Carrier R, & Cameron, E. (2024). Artificial intelligence and social accountability in the Canadian health care landscape: A rapid literature review. *PLOS Digital Health, 3*(9), e0000597. https://doi.org/10.1371/journal.pdig.0000597

Bressan T, Bakke A, Zelek B, Cotterill M, & Wood B. (2025). AI scribes in rural and remote primary care: an antidote to physician burnout or Pandora's Box? *Rural and Remote Health*, 25. https://doi.org/10.22605/RRH9430

Cava D, Wood B. (2025). Workforce Investments to Accelerate Learning Health Systems With Artificial Intelligence in Northern and Rural Settings. *Healthcare Papers, 22*(4):69-73. doi: 10.12927/hcpap.2025.27567. PMID: 40391482.

Wood B, Austin A, Fleming H, Mertz M, on behalf of the AI-North & AI4PH collaboration. *Contextualizing AI in Northern Ontario*. Dr. Gilles Arcand Centre for Health Equity: Thunder Bay, Ontario. 2024.

Zhang Y, Newbery S, Savage, D, & Ross, B. (2025). Artificial intelligence and rural health equity: Perspectives from Northern Ontario. *Journal of Rural and Community Development*, 20(3). doi: https://doi.org/10.63315/jrcd.v20i3.2876

Publications in Progress

Attema G , Mertz M, Anawati A, Austin A, Bertrand J, Newhouse D, Jewett R, & Cameron, E. (2025). Public Funding for AI in Canada 2011-2022: An Equity-Focused Environmental Scan. *Journal of Rural and Community Development*. Submitted.

Mertz M, Toskovich K, Shields G, Attema G, Dumond J, & Cameron, E. (2025). Exploring Trust Factors in AI-Healthcare Integration: A Rapid Review. *Frontiers in Artificial Intelligence*. Accepted.

Toskovich K, Mertz M, Attema G, & Cameron, E. (2025). Introducing Students to Artificial Intelligence (AI) in Medicine Through Interactive Scenarios. *Canadian Medical Education Journal*. Submitted.

Presentations/Workshops/Community Outreach Events and Learning Activities

"Visiting Virelux: Exploring the Ethics of AI in Healthcare" on July 14th, 2025

Development of AI Micro-credential Course "Artificial Intelligence for Health Systems Transformation" To be launched winter 2026

"Emerging Leaders in Northern AI Research" on July 7th, 2025

"Leaders in Northern AI Research" on September 29, 2025

AMS Healthcare's "Health Data in the Age of AI" panel on November 6, 2025

Newsletters

AI-NORTH Fall 2025 Newsletter (Sept 29, 2025)

AI-NORTH Summer 2025 Newsletter (Aug 19, 2025)

AI-NORTH Spring 2025 Newsletter (June 2, 2025)

AI NORTH

Join the AI-NORTH Network!

Get involved with the AI network for inclusive and ethical AI innovation in Northern Ontario Healthcare through:

Connect with us on LinkedIn here.

For general inquiries, email us at ai.north@nosm.ca

Sign up for our mailing list here.