



What can AI do for Population Health?

Exploring the Role of Artificial Intelligence in Population Health Risk Assessment Symposium

Wednesday, November 14th, 2018

Hart House, University of Toronto, 7 Hart House Circle, Toronto, Ontario

Overview:

This symposium is the final of a three-part series of CIHR-funded collaborative interdisciplinary workshops entitled, "Collaboration on Artificial Intelligence (AI) for the Public's Health". This interactive symposium will explore the role of AI methods, including machine learning, in the context of population risk prediction and decision-making. This meeting is hosted by the Population Health Analytics Lab at the Dalla Lana School of Public Health, University of Toronto, and the Ottawa Hospital Research Institute in collaboration with the Vector Institute for Artificial Intelligence.

Meeting Co-Chairs:



Dr. Laura Rosella
University of Toronto



Dr. Douglas Manuel
University of Ottawa

Meeting Objectives:

1. Bring together experts in population risk prediction and AI methods to discuss methodological issues and applications
2. Inform the debate on the implications of AI for predictive analytics in population health
3. Identify the core elements of a population/public health-AI training program to build capacity in Canada

TIME (Room)	DESCRIPTION
7:30am – 8:30am	Registration & Breakfast <i>Great Hall (outside). Breakfast served at 8:00am.</i>
8:30am <i>Great Hall</i>	Brief welcome & opening remarks <ul style="list-style-type: none"> • Laura Rosella <i>Associate Professor and Canada Research Chair in Population Health Analytics, Dalla Lana School of Public Health, University of Toronto; Adjunct Scientist, ICES; Faculty Affiliate, Vector Institute</i> • Douglas Manuel <i>Senior Scientist, Ottawa Hospital Research Institute and ICES; Professor, Department of Family Medicine, University of Ottawa</i> Welcome from the Dean <ul style="list-style-type: none"> • Adalsteinn Brown <i>Dean and Professor, Dalla Lana School of Public Health, University of Toronto</i> Opening address <ul style="list-style-type: none"> • Vivek Goel <i>Vice President, Research and Innovation, University of Toronto; Professor, Institute of Health Policy, Management and Evaluation, University of Toronto</i>
9:00am <i>Great Hall</i>	Setting the Stage <p>These presentations come from the perspectives of computer scientists, statisticians, and population and public health researchers. By demonstrating examples of how these scholars are working with these methods, including applying different methods to population-level data, comparing different approaches, and summarizing the current state of the literature, they will motivate our discussions and deliberations for the day.</p> <ul style="list-style-type: none"> • Peter Austin <i>Ensemble-based machine learning vs. logistic regression for predicting cardiovascular mortality Senior Scientist, ICES; Professor, Institute of Health Policy, Management and Evaluation, University of Toronto</i> • Daniel Lizotte <i>AI Tools to Support Population Health Stakeholders Assistant Professor, Department of Computer Science and Department of Epidemiology & Biostatistics, University of Western Ontario</i> • Thérèse Stukel <i>Predicting High Need, High Cost Users: A Comparison of Modern Statistical Methods with Machine Learning Methods Senior Scientist, ICES; Professor, Institute of Health Policy, Management and Evaluation, University of Toronto</i> • Jason Morgenstern <i>Scoping Out the Machine Learning Applications in Population Health Public Health and Preventive Medicine, McMaster University</i>

10:00am	Break
10:20 am <i>Great Hall</i>	<p>Recap from previous “Collaboration on AI for the Public’s Health” workshops</p> <p>We will hear the highlights and learnings from the previous two workshops from this series.</p> <ul style="list-style-type: none"> • Jennifer Gibson – <i>“Ethics and AI for good health”</i> <i>Director, Joint Centre for Bioethics;</i> <i>Associate Professor, Dalla Lana School of Public Health</i> • Natasha Crowcroft - <i>“Planning for Syndemics: Synergies in data science for epidemic infectious disease control in Canada”</i> <i>Chief, Applied Immunization Research and Evaluation, Public Health Ontario;</i> <i>Professor, Laboratory Medicine and Pathobiology, and Dalla Lana School of Public Health, University of Toronto; Adjunct Scientist, ICES</i>
10:30am <i>Great Hall</i>	<p>What can AI do for population health?</p> <p><i>Drawing the map for where we are going</i></p> <p>This interactive session will explore the value and challenges of applying AI and machine learning in population health risk prediction and decision-making. This session will draw from different viewpoints of leading experts and decision-makers to critically assess and debate how AI will advance predictive analytics for population health outcomes. The key issues for debate will include the extent to which AI will support new developments and applications that are not possible with conventional approaches and the benefits and trade-offs in using AI generated algorithms for population health decision-making, among other considerations.</p> <p>Panelists:</p> <ul style="list-style-type: none"> • Audrey Durand <i>Postdoctoral Fellow, Reasoning and Learning Lab (RLLab), School of Computer Science, McGill University</i> • Rodney Jackson <i>Professor of Epidemiology, Section of Epidemiology & Biostatistics, School of Population Health, University of Auckland, New Zealand</i> • Thérèse Stukel <i>Senior Scientist, ICES; Professor, Institute of Health Policy, Management and Evaluation, University of Toronto</i> • Zenita Hirji <i>Senior Manager, Health & Public Service, Accenture</i> <p>Moderator</p> <ul style="list-style-type: none"> • Douglas Manuel <i>Senior Scientist, Ottawa Hospital Research Institute and ICES;</i> <i>Professor, Department of Family Medicine, University of Ottawa</i>
11:45 am <i>Great Hall</i>	Lunch & Networking
12:45pm <i>Great Hall</i>	<p>How will AI benefit population health risk prediction?</p> <p><i>Navigating the map - how are we going to get there?</i></p> <p>This interactive session will dive deeper into methods and consider how this impacts the field of population health predictive analytics. We will inform the debate by drawing from the perspectives of experts with experiences in using machine learning approaches in different domains. The speakers will reflect on the most important contributions from their respective fields that should be incorporated to move forward in integrating AI into population health risk prediction.</p>

Panelists:

- Robert Platt
Professor, Department of Epidemiology, Biostatistics, and Occupational Health, McGill University
- Anna Goldenberg
Faculty Member, Vector Institute for Artificial Intelligence; Scientist, Genetics and Genome Biology Lab, SickKids Research Institute; Assistant Professor, Department of Computer Science, University of Toronto
- Ewout Steyerberg
Professor, Clinical Biostatistics and Medical Decision Making, Leiden University Medical Center, Netherlands
- Peter Austin
Senior Scientist, ICES; Professor, Institute of Health Policy, Management and Evaluation, University of Toronto

Moderator:

- Laura Rosella
Associate Professor and Canada Research Chair in Population Health Analytics, Dalla Lana School of Public Health, University of Toronto

2:00pm**Break****2:15pm***East Common Room***Building capacity for a population and public health-AI training program**

There is a need for a workforce equipped with the foundational knowledge, skills, competencies, access to data and infrastructure necessary to enable use of AI in population health contexts. The speaker will discuss the current state of health data science programs and seek input about the elements that would be relevant for a data science training program that builds capacity for AI competencies in a public health context. Meeting participants will provide feedback about the requirements and opportunities for integrating AI learning experiences into the core training of public health programs.

Panelists:

- Brenda Brouwer
Head, Academic Partnerships, Vector Institute for Artificial Intelligence
- Nancy Baxter
Associate Dean, Academic Affairs, Dalla Lana School of Public Health; Professor, Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health
- Matt Medland
Director, Professional Programs & External Relations; Assistant Professor, Teaching Stream Department of Computer Science, University of Toronto
- Claudia Sanmartin
Chief and Senior Researcher, Health Services Research, Statistics Canada

Moderator:

- Alison Paprica
Vice President, Health Strategy and Partnerships, Vector Institute for Artificial Intelligence

3:15pm**Closing Remarks****3:30pm****Adjourn**