Land acknowledgements:
I work and raise my family in Toronto, Canada. Toronto is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples.

Picture source: https://www.advancedpelvic.ca/land-acknowledgement/
Acknowledgements

OncoSim is led and supported by the Canadian Partnership Against Cancer, with model development by Statistics Canada, and is made possible through funding by Health Canada.

Conflict of interest

Jean is an employee for the Canadian Partnership Against Cancer.

Disclaimer

The views expressed here do not represent the views of the three organizations.
Objectives

- Cancer microsimulation models
- Overview about OncoSim
- Learnings
Significance

- Planning cancer services
- Need more than just clinical trials data
ONCOSIM

- Free, web-based cancer simulation tool
- Projects health and economic outcomes and attributes them to 19 risk factors
- Currently provides high-level projections for 30+ cancer sites
- Models breast, colorectal, lung, and cervical cancers and related screening programs in detail
A free tool built using Canadian data collaboratively by a team of experts to advance cancer control.

**Data**

Inputs represent Canadian population, and reflect disease progression, treatment pathways and costs in Canada. Sources: Canadian Cancer Registry, Canadian Community Health Surveys, Stat Can Demography, healthcare admin database, etc.

**Insights**

OncoSim projects provincial and national-level estimates: # eligible for screening, # screening tests, # colonoscopies, # biopsies, cancer incidence, mortality, costs, etc.

Users can modify the existing inputs and assumptions to answer questions.
ONCOSIM is 15 years old!

- Lung Cancer
- Colorectal Cancer
- Cervical Cancer
- Breast Cancer

2008: Lung & colorectal
2009/10: HPV & cervical
2013: Cervical Cancer
2018: Breast

Risk factors:
- Smoking
- Physical inactivity
- Excessive drinking

Cancers:
- Lung
- Breast
- Colorectal
- Cervical
- All cancers
ONCOSIM IN NUMBERS

A free tool built using Canadian data collaboratively by a team of experts to evaluate cancer control strategies

200+ Individuals/organizations contributed

50+ Organizations and networks across Canada have used OncoSim

400+ Reports, papers, technical briefs, conference abstracts have used OncoSim
Topics (2022)
Screening, prevention, cancer projections

Screening
- Clinical guidelines
- Implementation planning
- Business case
- Screening backlog

Prevention
- Tobacco control
- Physical activity
- Healthy eating
- Alcohol

Forecasting
- Canadian Cancer Statistic report
- Economic burden of cancer
- Future cancer incidence, prevalence, deaths, costs
40 requests completed in 2022

Most requests are non-research
Most requested analysis support

- Provincial cancer agencies
- National networks
- Not-for-profits

73% Research grants

80% Analysis

Model
WHAT IS IMPORTANT TO US?

TRUSTED
Validity and acceptance among policy makers and scientific community.

RESPONSIVE
Responsive to policy makers' needs; build upon existing work to provide timely evidence to support different jurisdictions.

COLLABORATIVE
Work together with end users to produce relevant evidence to inform policy decisions.
Building and supporting OncoSim

Content experts
User interface
IT infrastructure
User support
Documentations
Marketing
Product management

Informing policy decisions
GOVERNANCE
The Canadian Partnership Against Cancer and Statistics Canada lead the ongoing maintenance of OncoSim.

DESIGN
Technical working groups include clinical and methods experts meet regularly to advise on model design and analyses.

DEVELOPMENT
Statistics Canada leads the model development and analyzes data to populate model. The web platform is built and maintained by another organization.

OPERATION
The Partnership supports users, with help from Statistics Canada and others, to keep the web tool running.

STRATEGY
The Partnership prioritizes model development/revisions and knowledge dissemination efforts based on inputs from various partners, such as the cancer screening networks and policy makers at cancer agencies.
Current focus

1. Adding/updating data continuously
   - Process for regular updates & efficient calibration methods

2. Aligning with other efforts
   - Canadian Cancer Statistics
   - Statistics Canada data portal and modelling platform
   - Tobacco control

3. More collaborations
   - Matthew Warkentin’s R-library (pre-conference workshop)
   - CISNET
Key Learnings
Policymakers want to use analytic tools like OncoSim.

Key ingredients for success:
1. Support
2. Partnership
3. Long-term commitment
A flexible model that answers many questions is by default complex and can be

1. Resource intensive to build
   - Can't decide what assumptions to simplify

2. Challenging to maintain
   - As models get become more flexible over time to accommodate different use case, they also become more complex

3. Complicated to use
   - Too much details in some areas & not detailed enough to answer some questions
   - Need expert guidance to ensure appropriate use
When?
When to consider building a model that answers different questions?

1. Big decisions that affect many people
   - Population-based cancer screening programs can affect millions of people in Canada every year
     - >12 million people eligible for colorectal cancer screening in Canada every year

2. Potential for reusing the model
   - Healthcare policies are not often made at the same time across provinces/territories due to varying priorities
   - Need to revisit policies due to emerging data
     - New tests, follow-up and surveillance pathways
What to consider when building a model that answers different questions:

1. Appropriate partners
   - Do the organizational mandates align?
   - Is there a conflict of interest?

2. Sustainability
   - Long-term resources to maintain the tool

3. Potential long-term impact
   - How best to maximize the impact?

4. How to work with users?
   - Designing for and guiding appropriate use
   - Working with stakeholders
"Alone we can do so little, together we can do so much."
--Helen Keller
Thank you.

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