Canadian Institutes of Health Research

Institute of Population and Public Health (IPPH)

Accelerating Population Health Intervention Research to Promote Health and Health Equity

Symposium Report

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# Table of Contents

**Acknowledgement**

**Introduction** .........................................................................................................................1

**Day One:** ..................................................................................................................................2

  Welcoming Remarks ....................................................................................................................2
  Opening Presentations..................................................................................................................3
    *Health Equity Matters: How Equity and Interventions Collide* ...........................................3
    *Driving Agendas in Support of Population and Health Intervention Research: Lessons
     Learned from Canada, the US, and the UK* ..................................................................4

**Interactive Poster Session** .....................................................................................................8

**Day Two:** ..................................................................................................................................8

  Key Note Address .......................................................................................................................8
    *Driving Social Change in the Face of Imperfect Evidence: Health Inequity and
     Population Health Intervention Research* ....................................................................8

**Concurrent Session #1** ..........................................................................................................11

  *Shifting Gears: From Demonstration to Scale-Up* ..............................................................11
  *Where Two Roads Meet: Community-Based Participatory Research and PHIR* ..........15

**Funding Announcement** ..........................................................................................................18

**Concurrent Session #2** ..........................................................................................................18

  *Paving the Way: Built Environment and Health Equity* ....................................................18
  *Who’s Left at the Side of the Road? Income Interventions and Inequalities* ...............22

**Discussion** ................................................................................................................................23

  *Intended Users and What Would Be Useful to Them* .......................................................24
  *How Researchers Can Advance PHIR* ...........................................................................25
  *Infrastructure Needed to Support PHIR* ...........................................................................26

**Closing Remarks** ......................................................................................................................29

**Appendices** ................................................................................................................................30

  Appendix I: Agenda ..................................................................................................................30
  Appendix II: List of Participants ...............................................................................................33
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Introduction

On November 29 and 30, 2010, more than 130 decision makers, public health practitioners, students, and researchers from Canada, the United States, the United Kingdom, France, Portugal, and Australia took part in an inaugural symposium on population health intervention research (PHIR) that was held in Toronto.

The event—entitled Accelerating Population Health Intervention Research to Promote Health Equity—was organized by the Canadian Institutes of Health Research–Institute of Population and Public Health (CIHR-IPPH) in partnership with the Population Health Intervention Research Initiative for Canada (PHIRIC), which aims to increase the quality, quantity, and use of PHIR. It was organized with the guidance of an expert Planning Committee and sponsored by CIHR-IPPH, the Public Health Agency of Canada (PHAC), and the CIHR Institute of Nutrition, Metabolism, and Diabetes.

The rationale behind the symposium was to bring together experts from around the world to reflect on how evidence from PHIR influences decision making and could be better used to address the pressing population health problems facing nations today. Opportunities were also afforded to discuss challenges in PHIR and how best to work toward collective solutions.

The symposium had three main objectives:

- to identify issues relevant to advancing the science of PHIR;
- to identify emergent PHIR priorities and related data infrastructure requirements; and
- to showcase PHIR examples from Canada and other countries.

This report contains highlights of the discussions that took place during the symposium as well as brief summaries of the presentations made—the complete PowerPoint versions of which are available on the IPPH website.
Day One

Welcoming Remarks

Nancy Edwards, Scientific Director of CIHR-IPPH, welcomed participants from across Canada and abroad to the symposium, noting how pleased she was that such a diverse array of colleagues had come together to help expand thinking about PHIR. She extended thanks to the Planning Committee and IPPH staff for conceptualizing and organizing the event.

Dr. Edwards said “health equity matters” had been part of the IPPH’s mantra since its second strategic plan was launched in 2009. PHIR was also an explicit strategic research priority for the Institute, building naturally on the Institute’s leadership in and secretariat support for the area through the Population Health Intervention Research Initiative for Canada (PHIRIC).

Dr. Edwards noted that the Symposium built on the results of a Funder’s Forum that was held in Toronto in 2009. The Forum identified several structural impediments to conducting and using PHIR—including the dominant culture of scientific inquiry, a lack of diversity of funding mechanisms, a lack of infrastructure, limited incentives and drivers, and the lack of a forum for generating the “big policy questions”. Some of the questions envisioned at the Forum focused on how to create health to sustain the economy and the types of interventions that could redistribute resources and modify circumstances that affect health and health equity. At the same time, a number of key challenges were raised: the large number of players required for success; how to tell strong causal stories with routinely collected data sets; implementing and replicating interventions from one setting/context to another; scaling-up interventions; and reducing the tendency for some interventions to amplify health disparities.

A number of structural impediments to PHIR have been identified, including the dominant culture of scientific inquiry, a lack of diversity of funding mechanisms, a lack of infrastructure, limited incentives and drivers, and the lack of a forum for generating the “big policy questions”.

In addition to ideas and input on these and other issues related to PHIR, Dr. Edwards noted that more thinking was needed around ways to restructure the CIHR’s granting system to encourage better use of open grants—as the number of
PHIR-related grants funded through the open competition had leveled off and dropped over the past 10 years, while the number of strategic grants continued to increase as a result of targeted investments in PHIR by IPPH and other CIHR Institutes. In closing, she highlighted some of the IPPH’s PHIR-related activities over the past year, including the launch of several new Requests for Applications, the development and pilot testing of new peer-review guidelines for PHIR-related grant applications, and the development of frequently asked questions and a casebook documenting PHIR success stories and lessons learned.

**Opening Presentations**

*Health Equity Matters: How Equity and Interventions Collide*  
- Nancy Edwards, CIHR-IPPH

Dr. Edwards stressed that it could not be assumed that the population health interventions that were already out there were necessarily the right ones or were reaching the right populations because there were many contextual influences at play. These influences were pervasive, diffuse yet specific, and structurally embedded, and included historical contexts that had produced ongoing health inequities, global contextual forces, and socio-political structures.

Several examples of Canadian work in the areas of health equity and population health were highlighted. They included projects to map socio-economic health inequalities in rural and urban Manitoba and the effects of disparities on childhood development in British Columbia; assess the reach and impact of an income supplement and community support program on babies born to lower income families in Manitoba; and identify the best intervention strategies for tackling coronary heart disease and diabetes.

*Three distinct prongs of PHIR need to be pursued: discovery research, impact research, and implementation research.*

Dr. Edwards noted that the IPPH’s Institute Advisory Board (IAB) recently identified three distinct prongs of PHIR that needed to be pursued—discovery research, impact research, and implementation research. She identified several major conundrums that existed in the areas of funding, data infrastructure, innovation, and capacity building and expressed her hopes that participants would assist in tackling them over the next few days.
Eduardo Simoes, Director of the Prevention Research Centers (PRC) program at the US Centers for Disease Control (CDC), provided an overview of the PRC program, which had been in place for 26 years and involved nearly 40 American universities—all of them accredited schools of public health or schools of medicine with a preventive medicine residency program. He explained how distinct funding was awarded to the PRCs for core research, pilot projects, infrastructure, and community engagement, and additional money provided for specific research areas (e.g., special interest projects and comparative effectiveness research). The program budget had increased from $1.5 million to about $41 million over the past 25 years, with activities focused on building capacity for prevention research, nurturing research diversity, and conducting intervention research. Examples of evidence-based prevention research and its challenges were provided, along with details of the model used to assess the external and internal validity of interventions based on criteria such as acceptability, effectiveness, feasibility, and sustainability. Twenty interventions identified as the “most promising” evaluated to date are posted on the CDC website at www.cdc.gov.

The program budget for the Prevention Research Centers program at the US Centers for Disease Control has increased from $1.5 million to $41 million over the past 25 years.

Key Discussion Points:

- Most PRCs are led by someone with a PhD (about half in behavioural sciences), about 10 percent by MDs, and about 20 percent by a mix. About 60 percent of PRCs collaborate with one or more departments, not necessarily in their health area (e.g., urban planning, engineering, art). The type of research is concentrated in hard-core epidemiology; however, there is a lot of innovation in research designs to address modern challenges of evaluating complex interventions in public health.

- In some cases, internal validity of research is a political issue and may be necessary for certain kinds of funding. But there are also gains to be had that are good for science and for intervention development. For example, even with external validity there may still be a lot of unanswered questions about
the populations served and the mix of providers involved. More rigorous research helps answer that sort of thing.

- It is a requirement of the CDC PRC Program to demonstrate partnership with the local and state health department: that is monitored and mandatory. In terms of the participatory process, there are many different kinds of bodies involved and they are all involved in the process in different ways. There are many ways of engaging communities in research because every community is unique.
- The aims of the research program are to address priority health issues of the community in a participatory manner, so that health promoting and prevention strategies developed are not only evidence-based but acceptable by community and partners. This increases the likelihood of sustainability.

Discussant Jane Billings, Senior Deputy Minister of the Program Sector at the Public Health Agency of Canada (PHAC), responded to the presentation by commenting on the value of assessing the sustainability of interventions and ensuring that the dissemination of results was built into the research structure. She noted that Chief Public Health Officer David Butler-Jones believed that the key to PHIR was to identify the most pressing questions, frame them properly, and conduct research to get answers quickly. She added that PHAC was making more of a concerted effort to ensure that the research it funded was geared clearly toward addressing policy gaps and finding evidence-based options to inform and influence ministerial decision-making.

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Peter Craig spoke about the UK Medical Research Council’s Population Health Sciences Research Network, a group of 13 MRC research units and centres that worked together and with other research groups to promote methodological knowledge transfer and the identification, refinement, and dissemination of best practices in the population health sciences. One of the network’s projects was to develop guidance on the use of natural experiments to evaluate population health interventions. He noted that John Snow’s 19th-century study of the pattern of cholera infection in south London was one of the earliest natural experiments because it determined that the disease was waterborne by comparing infection rates among households that obtained their water from different sources.
Today, he said, the study of natural experiments as recognized in many government reports as the way forward for evaluating large scale interventions—for example, to reduce obesity or tackle health inequalities. However their limitations, especially in relation to preventing the bias resulting from selective exposure to the intervention, had to be kept in mind. Dr. Craig explained that a natural experiment was a characteristic of an intervention and the way it was implemented and not a type of study design—and that unlike a true experiment, the introduction of the intervention could not be motivated by research purposes.

Natural experiments, said Dr. Craig, were used for many different reasons, including to identify causes of disease or changes in population health and to evaluate the impacts (even subtle ones) of public health and non-health interventions. They worked best when they satisfied four conditions: the size or nature of the intervention’s effects were uncertain; it was impractical, unethical, or politically unwelcome to introduce the intervention as an experiment; the relevant data were obtainable from an appropriate study population; and the intervention or its principles had potential for replication, scalability, or generalizability. Essential to their usefulness was the application of methods to eliminate potential bias.

Dr. Edwards, the discussant, responded to the presentation with the observation that the new MRC guidelines, which were to be published in spring 2011, were eagerly awaited. She asked Dr. Craig how he would respond to claims that randomized control trials (RCTs) were the “gold standard”, and whether there were circumstances in which a natural experiment was superior to an RCT. Dr. Craig admitted that, although bias was a pervasive problem, there were many cases where the study of natural experiments closed important gaps and offered better evidence than RCTs (e.g., that public smoking bans had dramatic effects on population exposure and that changes in alcohol prices greatly affected consumption). Both agreed that natural experiments and RCTs had different advantages and disadvantages in evaluating interventions—and that there were times when a natural
experiment was a better choice than the supposed gold standard (e.g., when large populations were involved).

Discussion Synthesis:

Research Design

- Areas such as the confluence of different discourses of risk, what’s valued, what’s right to do, political and economic conditions, and access to resources can’t be properly captured using historical methods. It is critical to engage multi-disciplinary tools to grapple with these questions.
- Every kind of design should be considered when moving from efficacy to translation.
- RCTs aren’t the gold standard because they often involve highly selected populations. Other studies, such as natural experiments and often quasi-experiments, capture the imagination of policy makers and can be very powerful stories.
- Outcomes are affected by the fact that intervention groups are often over-controlled, while control groups are left to do whatever they like.
- Prevention work that has been demonstrably effective may not have been compartmentalized into an intervention that can be tested with an RCT.
- Looking at an externally valid intervention backward is very effective and takes less time.
- Different kinds of experiments are needed to answer different questions. More discussion is needed about methodologies and designs for such experiments.
- Most trials are studies of effectiveness and very few are set up to look for rare adverse outcomes.
- Research methods sometimes steer thinking away from potentially powerful aspects of interventions because decision making is focused on adaptation.

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Knowledge Translation

- A knowledge translation (KT) bias occurs when results show positive effects because there is an affinity for evidence that works—and that deforms policy and funding decisions.

Interactive Poster Session

The IPPH, in partnership with the CIHR-Institute of Nutrition, Metabolism, and Diabetes, hosted an interactive poster session on the evening of November 29. The purpose of the event was to showcase PHIR examples from Canada and other countries. Participants were highly engaged in the presentations, thanks to the lively presenters and the efforts of the event moderators, Drs. Slim Haddad and Gilles Paradis. The event promoted interaction by enabling the presenters to share their personal experiences and providing time and opportunity for questions from the audience. A list of the posters and presenters is found in Appendix I of this document.

Day Two

Key Note Address

Driving Social Change in the Face of Imperfect Evidence: Health Equity and PHIR
- Margaret Whitehead, University of Liverpool

Dr. Whitehead offered a European perspective on tackling health inequities that focused on four main messages: the need to look for evidence in different places, with different disciplinary lenses, using a range of different methods; the value of cross-country learning in evaluating natural policy experiments; the importance of tracking differential impacts of policies and interventions; and the need to capture policy context and underpinning values when assessing population-wide and focused interventions. There was growing agreement that concerted action was needed to tackle health inequities in European countries by evaluating and monitoring both wider population-level policies that influenced social determinants of health and deliberate strategies and interventions focused on tackling the determinants of health inequities. Dr. Whitehead noted, however, that the availability of evidence tended to vary inversely with the potential impact of the intervention. She said that several international studies had shown that universal
policies could have a significant beneficial impact on poorer socioeconomic groups, but more effort needed to be put into determining exactly who did and didn’t benefit, who paid, and how the most vulnerable were affected.

In tackling health inequities, we must look for evidence in different places, with different disciplinary lenses, and using a range of different methods. We must consider the value of cross-country learning in evaluating natural policy experiments, the importance of tracking differential impacts of policies and interventions, and the need to capture policy context and underpinning values when assessing population-wide and focused interventions.

Dr. Whitehead also touched on some of the issues raised in evaluating focused interventions to help the disabled and chronically ill return to work in five countries with advanced welfare systems and universal health services—including the need for qualitative studies to understand why they did or didn’t work; the importance of considering the country context; the problems of biased participant selection or participation by unintended groups; the inappropriate or premature measurement of outcomes; how impact is compromised due to inadequate resources; and few interventions that measure differential impact by socio-economic status. Remedying the “inverse evidence law”, said Dr. Whitehead, required conceptual and methodological development to assess the differential impact of population-wide policies; advocacy among researchers and research funders to support the most appropriate approaches; and the fostering of research-policy links in countries to test and apply approaches to real-life policy changes of concern.

There is a need for conceptual and methodological development to assess the differential impact of population-wide policies; advocacy among researchers and research funders to support the most appropriate approaches; and the fostering of research-policy links in countries to test and apply approaches to real-life policy changes of concern.

Discussant Cordell Neudorf, Chief Medical Health Officer of Saskatoon Health Region, gave some examples of how his organization was using natural experiments to track policy and intervention outcomes. He stressed the importance of producing and translating knowledge so decision-makers and members of the public could relate to and act on the evidence at the local level. He said there was a need for evidence (even imperfect) to initiate public discourse and also for political will and
public support to bring about action. He cited an effort by the Urban Public Health Network to identify and adapt evidence-based policy options that had succeeded elsewhere in the world for use in a Canadian context. The results of the study had been translated for use by a regional group with the authority to create change (the regional intersectoral committee), which was now in the final stages of seeking broad-based community support for a small subset of the options. A monitoring and evaluation committee had been struck to capture the context and outcomes of the resulting changes and an audit process had been developed to assess inequalities and address them. The aim was to make public health the bridge between existing evidence and policy/program action.

**Discussion Synthesis**

**Evidence and Decision Making**

- Governments coming into power don’t value scientific evidence. We need to better understand how policy decisions are made in order to influence them.
- Policy makers often decide on the policy first and then find evidence to support it.
- Evidence is percolated up to government through lobbyists and bureaucrats, so researchers need to give them support.
- The definition of evidence varies depending on the audience. Often, it is contextual information (e.g., how it will work in a particular setting, location, or group of people) that is required, not basic evidence of whether it works.
- Researchers have a role to play in fighting against outrageous propaganda and distortions of evidence.
- Uptake is more likely if those in the political realm are involved in the research questions at the outset.
- Researchers have to be nimble enough to provide answers quickly, while at the same time stress the need for investment in research that requires a longer timeframe.
- Governments are not necessarily the place for creativity. If all researchers do is respond to what they want, science is dead.
- It is smart business to throw government a bone every now and again because it ensures the interface is there.
- The better approach is to affect the opinions of the general public, because their demands drive changes and investments in public health programming.
- If we continue to regard government, decision makers, and policy makers as a homogeneous, monolithic group, we will continually run up against a wall.
• A better conceptual framework for setting goals and priorities is needed so researchers can focus on the shifting curve rather than on its tail.
• Researchers need to be more aggressive in their strategic goal-setting.

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Values

• In addition to philosophical work, there is “values work” that needs to be done to achieve buy-in for policy options. It is important to understand how and which values frame discourse, because words can inadvertently portray an ideology that is not intended. Having communication scientists involved is critical to framing messages properly.

Evaluation

• Part of the problem with PHIR is that it doesn’t get at questions about relative impact, so from a policy-making perspective it is all about cost-efficiency. A more robust analysis is needed to promote an all-of-government approach and identify optimum policy linkages.
• A parallel discussion is needed about priorities in evaluation and the wastefulness of putting a lot of resources into evaluating an initiative that could never have a big impact.
• There is much to be done to assess the impact of wider policies on people’s lives and to use that information to inform decisions.

Concurrent Session #1

Shifting Gears: From Demonstration to Scale-Up
- Jim Dunn, McMaster University; Geoffrey Fong, University of Waterloo; Marie DesMeules, Public Health Agency of Canada

Jim Dunn’s presentation, entitled Easy-Bake Scaling-Up: Natural Experiments in Housing and Health, offered interesting findings from five natural experiments. One was a longitudinal study of children with psychiatric disorders that found that income supplements from a new casino reduced formerly higher rates of conduct and operational disorders among previously poor children living on the reservation
to the same level as those who had never been poor. Another showed that folic acid supplementation in bread and grain products reduced the rate of neural tube defects in babies. Others provided evidence that the fluoridation of community water supplies resulted in lower levels of dental caries, that heart disease risk factors and mortality in Hiroshima survivors were worse in those who emigrated to California and Hawaii than in those who stayed in Hiroshima, and that indoor smoking bans in Scotland reduced children’s hospital admissions for asthma.

The talk covered the benefits and challenges of natural experiments compared to other types of studies. The former include benefits arising from the longitudinal aspects of natural experiments, which helped to control for confounders, eliminate causal uncertainty, increase the ability to detect small changes, and improve understanding of the time it took for change to occur and how long it lasted. Several natural experiments currently underway to look at the link between housing and health in Canada were highlighted—one of them focused on the 10-year, $1-billion Regent Park housing redevelopment in downtown Toronto. The study was looking at the impact of moving from temporary housing into Phase I of the development on the mental and physical health of adults and children and the behavioral and developmental competencies of children. The first of its kind in Canada, it would help inform future redevelopment efforts both in Regent Park and other parts of the country.

Geoffrey Fong’s presentation was on The International Tobacco Control Policy Evaluation Project (ITC Project) as an Approach to Evaluating and Understanding the Impact of Population Health Interventions. He opened by describing the global nature of the tobacco problem: 1.1 billion to 1.3 billion people smoked worldwide, over 80 percent lived in low- or middle-income countries, and about 500 million would die of smoking-related disease (with numbers expected to increase dramatically in the future). The WHO Framework Convention on Tobacco Control (FCTC), the first-ever health treaty, was unanimously adopted in 2003 to address the problem and 172 countries had since become Parties to the FCTC, which obligated them to implement policies ranging from graphic health warnings and bans on advertising to smoke-free laws and higher tobacco taxation. Recognizing the need to go beyond treaty monitoring to determine whether these policies were working and how and why
they were having their impact, Fong and his colleagues created the ITC Project in 2002 to evaluate FCTC policies across 20 countries (including Canada) inhabited by over 70 percent of the world’s tobacco users. ITC cohort surveys, which included a mixture of surveillance and policy content, were conducted by telephone or in person.

Recognizing the need to go beyond treaty monitoring to determine if and how policies under the Framework Convention on Tobacco Control are having an impact, public health researchers launched the International Tobacco Control Policy Evaluation Project to evaluate FCTC policies across 20 countries.

ITC findings provided evidence of a need to revise Canada’s labeling efforts and strengthen policies in China—which was not only the home to 30 percent of the world’s smokers but also had the lowest percentage of smokers who had attempted to quit. ITC findings, said Dr. Fong, were disseminated through ITC national reports, country summaries, policy reports, a working paper series, and a handbook on methods for evaluating tobacco control policies—as well as through presentations and close relations with key stakeholders. ITC data were used to inform and support a variety of policy decisions related to global tobacco control, with future objectives to expand coverage of the existing cohort survey, increase knowledge transfer and dissemination efforts, and apply the ITC paradigm in other population-health domains such as policies and programs to reduce obesity.

Marie DesMeules’ presentation, *Shifting Gears: Accelerating Innovative and Promising Interventions*, looked at PHAC’s role in developing and sharing practical knowledge in public health promotion and prevention. She explained that PHAC funded both internal and external programs across Canada and recognized the need to enhance outcome evaluation, shift to larger initiatives to test interventions in a variety of settings and populations, and facilitate the link between research and practice. Its Innovation Strategy (IS) aimed to strengthen alignment with Agency priorities, target long-term funding on key public health issues, focus on high-quality evaluation and synthesis of results, and develop, adopt, or adapt innovative interventions with strong potential.

Ms. DesMeules suggested that the following were needed to support PHIR: robust theories and methods; strong links across sectors and among researchers, practitioners, and communities; good understanding of populations of interest; uncluttered mechanisms for working across government departments; effective funding mechanisms and intelligible funding partnerships among sectors; effective
use of existing data; time to address important issues; flexibility and risk tolerance; and rigorous and innovative evaluation. Equity (both health equity and equity across social determinants of health) was a core principle and a requirement built into IS calls for proposal. Research priorities included exploring and strengthening key implementation issues, systematic analyses of the costs and cost-effectiveness of interventions, and assessment of the health outcomes of non-health interventions and non-health outcomes of health-related interventions.

**Needed to support PHIR are robust theories and methods; strong links across sectors and among researchers, practitioners, and communities; good understanding of populations of interest; uncluttered mechanisms for working across government departments; effective funding mechanisms and intelligible funding partnerships among sectors; effective use of existing data; time to address important issues; flexibility and risk tolerance; and rigorous and innovative evaluation.**

**Discussion Synthesis**

**Common Measures**

- Infrastructure is needed to support the development of common measures. People doing an intervention in a particular community need to be able to share data with people in other communities who are using common indicators. That would prove a better understanding of issues related to scaling-up.
- Common measures are necessary, so that even if programs are slightly different, their objectives are similar and their outcomes can be compared.
- Even with common measures, in some countries the correlations and linkages that explain the policy will vary based on cultural and other differences.
- There is incredible power in using the same or functionally identical measures because it enables us to identify and understand what is universal and what is particularistic.
- Data should be collected in such a way that they can also be analyzed by sex and gender.
Scaling Up

- The intervention and how it works may differ due to different contexts.
- Often, what makes an intervention successful is the institution that delivers it.
- There is a need to create a systematic description of the ingredients of scaling-up: to identify political, organizational, social, and other factors that would allow small, successful experiences to be adapted to the regional or national level. A global network under the World Health Organization is promoting good standards of practice in this area.
- Three dichotomies need to be considered: 1) differences in what influences population behavior versus individual behavior; 2) concepts that work for both children and adults; and 3) the need for intervention and dissemination research to apply what has been learned elsewhere and at a larger scale.
- The notion of the science of scaling-up is similar to that of the science of sustainability. We’re not only scaling-up science and interventions but also the capacity for ongoing learning.
- The science of scaling-up is linked inherently to the science of evaluation. A good theory and good conceptual framework for testing it will identify active ingredients at a lower level that can be used to determine if scaling-up would touch on those same ingredients.

There is a need to create a systematic description of the ingredients of scaling-up: to identify political, organizational, social, and other factors that would allow small, successful experiences to be adapted to the regional or national level.

Where Two Roads Meet: Community-Based Participatory Research and PHIR

- Chris Lalonde, University of Victoria, Sarah Flicker, York University, and Nyla Obaid, Toronto Teen Survey Advisory Committee

Chris Lalonde began his presentation by reflecting on the title of the session and asking participants to consider that roads both meet and diverge. He challenged the notion of the “epidemic” of suicide in Aboriginal communities, noting that aggregate suicide data from B.C. told one story while a second set of data demonstrated tremendous variability in suicide rates across different communities. Dr. Lalonde used these data to pursue community-based participatory research projects to study the cultural continuity factors (e.g., self-government, land claims, education,
health/police/fire services, elder/youth interaction, women in government, cultural facilities) within Aboriginal communities that could be used to understand these variabilities. He not only found a relationship between individual cultural continuity factors and suicides but also discovered that communities with a greater cumulative number of any combination of these factors had lower suicide rates. In fact, those with six or more had no suicides at all. He concluded by reflecting on the changing ethical landscape for conducting research with Aboriginal communities and the importance of engaging with communities—including the importance of good practice and not just good guidelines for practice.

When it comes to engaging communities in research, good practice is important—not just good guidelines for practice.

The second part of the session involved a co-presentation by Sarah Flicker and Nyla Obaid of the Toronto Teen Survey. Dr. Flicker opened by presenting a definition of community-based participatory research and illustrating how this approach had been used in two projects: Taking Action HIV Prevention and the Toronto Teen Survey. She demonstrated how participatory approaches had been particularly successful, in particular the engagement of youth in every step of the Toronto Teen Survey. She reflected on the need to “be where youth are”, which involved proactive outreach through social media, community organizations, and youth centres. Significant academic, policy, and media outcomes resulted from the project, which also involved extensive partnerships with the Ontario Ministry of Education, Toronto Public Health, Planned Parenthood, and others to ensure that research results would impact both policy and practice.

The process of meaningfully engaging youth in the project every step of the way was rewarding to both those involved and the resulting research.

Nyla Obaid complemented Dr. Flicker’s presentation by discussing how she had been involved in the Toronto Teen Survey Youth Advisory Committee and how engagement in the research process had influenced her. She benefitted personally through the formation of lasting relationships and professionally through exposure to research methods and by understanding the impact of research in the real world. The process of meaningfully engaging youth in the project every step of the way was rewarding to both those involved and the resulting research.
Discussion Synthesis:

**Users of Research**

- Participatory research can better link researchers and end-users of research, including youth and policy-makers. When it’s of interest, it can make a huge difference.
- Relationship-building and trust are critical and take time to develop – you need to earn credibility with communities.
- You can leverage media advocacy to catch the attention of politicians.
- Political factors such as timing, public opinion, and the role of interest groups can influence implementation of research findings.

**Heterogeneity of Communities**

- “Lumping” communities is insulting. Youth are not all the same, nor are Aboriginal communities.

**Access to Communities**

- Sometimes alternative paths (other than geography) can be used to find communities, such as “friendship centers” or talking with the band or community that has links to external boundaries.
- Go to where youth are: reach out to them and meet them.
- Community-based participatory approaches take time.

> “Lumping” communities is insulting. Youth are not all the same, nor are Aboriginal communities.

**Intervention**

- Research has a negative connotation in some Aboriginal communities, and intervention may also be a negative word. What can community-based participatory research teach us about how the language of intervention research can be introduced into communities?
- Genuine community engagement around intervention is important. Don’t just parachute an intervention in.
Ethics

- When working in multiple communities, there may be many different ethics review processes to go through. This is not a streamlined process and can take a lot of time.

Funding Announcement

Dr. Pierre Chartrand, Vice-President of Research at CIHR, brought remarks on behalf of CIHR President Dr. Alain Beaudet. He welcomed participants and thanked Dr. Edwards and her staff for assembling such an outstanding group of researchers. He noted that CIHR had spent $63 million dollars on population and public health research since 2000 and had also helped build capacity in this area by funding seven Centres for Research Development across Canada.

After providing a number of examples of the many projects CIHR had supported over the years, Dr. Chartrand announced the formal request for applications (RFA) for the first funding opportunity supported by the Global Alliance for Chronic Diseases. The RFA focused on implementation science on hypertension, with applications due in 2011 and funding anticipated in 2012. He also announced $2.8 million in CIHR funding for 14 research projects in the area of population and public health. He stressed that the grant system at CIHR was pressure driven and that the same success rate was applied to all committees—therefore, the more applications that were received, the more grants there would be awarded in a particular area. While as few as 10 applications per competition could be sufficient to initiate a committee review, the ideal number was at least 30 or 40.

Concurrent Session #2

Paving the Way: Built Environment and Health Equity
- Mark Petticrew, London School of Hygiene and Tropical Medicine; Lise Gauvin, Université de Montréal; Tina Atva, AECOM

Moderator Richard Lessard, of the Montréal Public Health Department, opened the session by noting that public health problems began when people started living together in cities—and that designing cities for cars created the environment to foster obesity, cardiovascular disease, and other health problems. He added that since people created the built environment, however, they could also change it by developing and applying strong scientific evidence to create solutions.
There are a number of significant barriers to PHIR: it is not popular with researchers; it is methodologically challenging; it is regarded as “evidence-based” and “biomedical” and the idea of a hierarchy of evidence is widely misunderstood; it is often considered politically unacceptable or unhelpful; and there is no guarantee that the findings will be used.

Mark Petticrew’s presentation, *Paving the Way: Evidence in the Built Environment*, opened with a discussion of some of the main barriers to PHIR: it was not popular with researchers; it was methodologically challenging; it was regarded as “evidence-based” and “biomedical” and the idea of a hierarchy of evidence was widely misunderstood; it was often considered politically unacceptable or unhelpful; and there was no guarantee that the findings would be used.

Ogilvie et al. (2004) undertook a systematic review to identify interventions to promote a “modal shift” in transport choices that showed that targeted behavior change could be effective; however, there was little evidence that financial and engineering measures had a significant effect. In looking at the evidence produced by different types of studies involved in the review (e.g., RCT, panel survey, repeated cross-sectional survey, retrospective survey, case study), several conclusions were reached: that the type or level of intervention being evaluated and the choice of study design were not independent; that, because RCTs tended to assess the impact of individual-level interventions and non-RCTs of area-level interventions, synthesizing experimental evidence alone would have biased the review toward intensive, focused interventions aimed at individuals; and that evaluations of social determinants of health inequalities were often non-experimental because interventions were upstream and area-level. Given resource limitations for PHIR, Dr. Petticrew advocated for more discussion of priorities based on the identification of what uncertainties we could live with, areas where there was consensus but little evidence, and areas where studies were not currently being done but could be.

Given resource limitations for PHIR, there needs to be more discussion of priorities based on the identification of what uncertainties we can live with, areas where there is consensus but little evidence, and areas where studies are not currently being done but could be.

Lise Gauvin’s talk on *Reflections on the Conceptualization and Conduct of a PHIR Project* focused on a research project to examine the impact of a public bicycle-share
program on people’s travel practices. BIXI was launched in 2009 and involved the seasonal installation of some 4500 bicycles at 450 docking stations in Montréal. Data for the pre/post-design project would come from three independent samples surveyed in 2009-10, a GPS study of travel patterns, and on-site requests about origins and destinations. The methodology had evolved to include the addition of several measures on favourability to government changes in the neighbourhood environment (e.g., parking taxes), the use of helmets, and BIXI’s perceived impact on Montreal’s image. An ancillary project on media uptake had also been integrated.

Early findings included challenges harnessing exposure to the intervention and disentangling exposure from socio-demographic factors. Approximately 72 percent of Montréalers knew about the program by fall 2009; however, exposure was greater among those living near stations and those with higher incomes and education. This latter trend was also reflected in usage. The complexity of the intervention and joint effects of exposure and social inequalities were such that many more analyses were needed to understand impacts on travel patterns, risk of injury, and public opinion about sustainable development.

Some of the ways health researchers can become more involved in urban planning are by engaging a diversity of city-building professions and decision-makers (e.g., engineers, architects, planners), linking with planners on current projects, participating in planning conferences, writing articles for planning journals, and meeting planners on an individual basis.

Vancouver planner Tina Atva’s presentation on Health Equity and Planning focused on the relationship between urban planning and public health, noting their shared connection to the built environment and often overlapping mandates related to creating healthy environments and a better quality of life. Planners could benefit from public health research focused on elements of the built environment. For example, some recent research that had been useful to planners included projects related to understanding cycling infrastructure preferences and the health benefits of higher intersection densities. Potential research questions were raised about the benefits of exercising in 5- versus 10-minute increments (e.g., as it related to the design of walkable, compact communities) and about air quality and land use. Ms. Atva noted that a number of good toolkits and guidebooks had been created by the health sector in recent years for use by planners. Since planners were often stretched for time, the more user-friendly these guidebooks were and the more graphics they contained, the more likely they were to be read. There were a number of strategies for getting health researchers involved in urban planning, including engaging the
diversity of city-building professions and decision makers (e.g., engineers, architects, developers, landscape architects) in research, linking with planners on current projects, participating in planning conferences, and writing for planning journals. Equally important was meeting planners on an individual basis, as there were many looking to forge partnerships with colleagues in other sectors and to work with researchers on real planning projects.

Discussion Synthesis

Research Opportunities

- A qualitative research project could be undertaken on introducing BIXI to low-income residents and the impact that would have on various aspects of their lives and well-being.
- It would be helpful to compare BIXI users and non-users in the same environment, to see what the differences are.
- There is a lot of conventional wisdom on how cars are bad and bikes are good but few actual evaluation studies on transportation. Affordable housing is another area that is understudied.
- More research is needed on social norms and how they can be changed.
- National Building Codes are a form of public health intervention, yet nobody is studying them. Every five years a new edition of the codes is adopted, creating an ongoing series of interventions.
- With building codes, large-scale pragmatic trials might be of interest—particularly where there is uncertainty about whether to bring in a new code and health is a consideration.

With social interventions, a methodological approach is needed that allows us to accept a range of health and non-health outcomes—intended or not.

Research Challenges

- A persistent issue in research around the built environment is sorting people into locations that in themselves might actually predict outcome.
- With social interventions, a methodological approach is needed that allows us to accept a range of health and non-health outcomes—intended or not.
- The cost of no intervention also has to be considered.
Researchers need to make better connections to the policy world, because there is a real chasm between the two that is problematic when it comes to bringing evidence to technical review committees.

**Who’s Left at the Side of the Road? Income Interventions and Inequalities**

- Evelyn Forget, University of Manitoba, Tim Aubry, University of Ottawa, Jean-Pierre Voyer, Social Research and Demonstration Corporation

Evelyn Forget described a social experiment from the 1970s called MINCOME, in which all residents of Dauphin, Manitoba, were guaranteed a certain level of income as a means of alleviating poverty. Curious about the impacts of this community-wide intervention—in particular, whether it improved population health—Dr. Forget used health administration data and a retrospective, quasi-experimental study design to look at it more closely. She found that health care utilization declined over the course of the experiment for the Dauphin residents relative to a matched comparison group. Specifically, hospitalizations for “accidents and injuries” and “mental health issues” decreased, as did physician contact for mental health complaints. Dr. Forget also observed that more Dauphin adolescents were staying on to finish high school. Since education fostered a variety of social benefits (including health benefits), those who completed high school may have reaped benefits that lasted not only a lifetime but extended into subsequent generations. Other outcomes of the project included reduced fertility rates in Dauphin women; women had their first child later, and women had fewer children over their lifetime compared to controls. The presentation concluded with first-hand testimonials from Dauphin residents about the benefits of the guaranteed income experiment.

Contrary to what many economists feared, a guaranteed income experiment did not cause most people to drop out of the labour market—but rather encouraged youth to finish school and resulted in women having fewer children.

Dr. Aubry opened his presentation by noting that reports suggested that there were between 150,000 and 300,000 homeless people in Canada. Serious mental illness, substance abuse, and suicidal behaviours were more common among the homeless than the general population, and many people experiencing homelessness were marginalized or isolated from society. The At Home/Chez Soi project, launched in 2008 with $110 million in federal funding over five years, was a multi-site demonstration project aimed at evaluating Housing First approaches for assisting people with significant mental health problems who had experienced chronic
homelessness in five major Canadian cities. Dr. Aubry described a variety of mental health and homelessness research studies that used both qualitative and quantitative methods, most of them involving housing and service provision projects. He described the research questions, research design (which entailed an experimental design in each city), and the mixed methods being used for data collection. He also provided an overview of areas of focus in the five project sites—for example, addictions in Vancouver, Aboriginal health in Winnipeg, ethnocultural groups in Toronto, housing in Montréal, and rural areas in Moncton. He concluded by listing conceptual, political, and methodological challenges faced to date by researchers conducting the project.

Using the 1999 Community Employment Innovation Project (CEIP) as an example, Jean-Pierre Voyer described how governments and community organizations could collaborate to address poverty and income-inequality issues. High unemployment in the Cape Breton Regional Municipality of Nova Scotia provided the rationale for CEIP, which was an active re-employment strategy that took the form of a “community wage” paid to unemployed individuals who volunteered to work on locally developed community-based projects. Beyond fulfilling the need for immediate employment, CEIP aimed to influence participants’ longer-term employability by helping them preserve and possibly improve their human and social capital. The project was sponsored by Human Resources and Skills Development Canada and the Nova Scotia Department of Community Services. The Social Research and Demonstration Corporation evaluated CEIP under real-world operating conditions using rigorous evaluation methods.

An active re-employment strategy that provided a wage to unemployed individuals who volunteered to work on community-based projects resulted in a variety of benefits, including fewer low-income households and improved job quality.

CEIP produced a sustained reduction in the proportion of households with incomes below 75 percent of the low-income cut-off (from 63.8 to 49.1). While the early impact on employment levels were not sustained once the project ended, there was an observed improvement in job quality, with a 10 percent increase in the number of participants working in high-skilled positions. The social capital impacts (defined as resources accessible within social networks) that developed over the course of CEIP were also sustained over time. Finally, a cost-benefit analysis showed that CEIP was cost-effective and resulted in $1.39 net benefits per dollar spent by the program on income-assistance recipients. Mr. Voyer concluded by revisiting research questions
that were crucial to addressing today’s poverty-related issues—such as, could communities develop projects that provided meaningful work for the unemployed and also benefited the communities themselves?

Discussion Synthesis

Population Health Interventions

- Population health interventions should target not only those at the bottom of the distribution but also those at the top and in the middle. Growing inequality is not just toxic because of who is left behind but also because the middle is being “hollowed out”: the rich are becoming self-referential in their experiences, thereby forming their own nation.

Research

- While challenging to finance and conduct, there is a need for longitudinal analysis.

Discussion

Facilitator Judith Ottoson asked participants to give some thought to priority areas for PHIR and how best to move forward on them, so that the symposium organizers would have some ideas for future directions. People were pre-assigned to multi-disciplinary, multi-sectoral tables to discuss three main areas: intended users of PHIR (e.g., decision-makers, public, practitioners) and what would be useful to them; how researchers can advance PHIR; and the infrastructure needed to support PHIR. The results of their deliberations, which were presented in plenary, are grouped under key headings.

Intended Users and What Would be Useful to Them

- The public is the main stakeholder and needs to be well informed.
- Citizens, policy makers, and practitioners are both users and co-creators of research.
- Research is often focused on disadvantaged or marginalized groups, so they must be included as users.
- “Missing persons” who should also be at the table include health economists, political scientists, peer reviewers, journal editors, and others.
• Defining “users of research” means indicating who is included and who is excluded; they should all be thought of as individuals with a vested interest.
• The needs of users depend on the level of inquiry into the interventions (e.g., at the population level, main issues are prioritization, impact, equity, ethics, policy-maker engagement; at the intervention level, they focus on effectiveness, mix, scale-up, community engagement).
• Interventions can empower communities and become social movements if the people targeted are involved in the process.

**How Researchers Can Advance PHIR**

**By working with communities and the public**

• Build trust and strengthen relationships with other groups, who may have different cultures, power structures, values, etc.
• Take an interdisciplinary approach to working with communities.
• Develop innovative ways to communicate complicated and sometimes sparse information to the public.

**By working with decision- and policy-makers**

• Serve as advocates to advance the PHIR agenda with government and ensure that its principles are embedded in calls for proposals.
• Develop and convey powerful, evidence-based (based on quantitative and qualitative) stories to influence policy-makers and media messaging—taking into consideration the importance of cost drivers to decision-makers.
• Pressure committees and submit operating grant applications to improve the visibility of PHIR.
• Conduct research on how policy takes up research and effective strategies for encouraging this.
• Compare and contrast interventions to garner political support.
• Engage with policy makers using their language and at their level (e.g., most use the decision-analysis process) and bring together different kinds of evidence and information to address questions.

**By working with the private sector**

• Develop links to the business community and use them to “sell” research.
• Engage the private sector in research.
By improving research

- Overcome the dichotomy between RCTs and quasi-experimental research design.
- Develop questions around research users as co-producers (e.g., the Institute for Clinical Evaluative Sciences has model levers to link data to questions sought by decision makers).
- Develop consensus around indicators to enable comparisons (e.g., local, regional, national, international).
- Randomize the lagged implementation of policies to provide comparison groups.
- Undertake PHIR that critically analyzes the unintended effects of interventions, particularly the deepening of social inequities of health.
- Consider social justice as a principle of PHIR.
- Look for understandings beyond health outcomes.
- Be forward-thinking about research questions (e.g., Best Brains).
- Take advantage of opportunities to bring research to the fore at resonating moments.
- Study the higher end of socio-economic status as well as the lower end, because the higher end uses most of our health care resources.
- Be more explicit about quality and rigor when it comes to evidence and research designs.
- Take a more collaborative approach to interpreting findings.

**Infrastructure Needed to Support PHIR**

**Data**

- Work with international partners to develop a global population health surveillance system.
- Support the development of multi-level databases with different information sources (through funding from Canadian Foundation for Innovation?).
- Establish regional and pan-Canadian networks.
- Put in place infrastructure to support the needs of large datasets.
- Create data repositories to produce evidence for decision makers.
- Establish data-sharing agreements across governments and across sectors within governments (good models are needed).
- Develop databases and data networks at the community level for scaling-up.
- Collect more geographical data (e.g., postal codes).
• Collect common data that are comparable across contexts.
• Create easily accessible, user-friendly health databases.
• Build new data platforms and make existing ones more useful; move away from investigator-driven platforms toward larger research and data platforms that are for the common good of the whole research community.
• Bring back the census long form as a critical source of information for PHIR.

Funding

• Provide long-term funding for research and travel support for community engagement during and post research.
• Ensure core funding at research centres that will enable work to continue between grants.
• Promote applications for operating grants.
• Provide funding for baseline data collection and follow-up (pre- and post-intervention) on natural experiments.
• Improve the funding of research centres.
• Take a more integrated approach at the funding-body level (e.g., tri-council cooperation around RFA creation to promote interdisciplinary partnerships).
• Consider Canada Foundation for Innovation funding for programs (e.g., interventions) and relational infrastructure (e.g., teamwork, collaboration).
• Adopt a different mindset in reviewing grants: consider potential benefits as opposed to methodological flaws.

Community Engagement

• Implement mechanisms, including new research models and funding, to enable the co-production of research with community organizations.
• Establish guiding principles for community engagement/citizen participation.
• Consider creating community knowledge centres (e.g., Aboriginal model) to serve as community-accessible repositories for research findings.
• Document how community input is utilized and the outcomes of collaborations.

Capacity Building

• Identify research priorities that bridge the gap between the needs identified by researchers and communities—set priorities based on sustainable issues
• Fill capacity gaps through researcher training.
• Train other disciplines (e.g., journalists) in public health.
• Support the new culture change at funding agencies and universities.
• Create supportive environments for reviewing research.
• Update membership on CIHR grant peer review committees to ensure appropriate ability to evaluate proposals (interdisciplinary).
• Create an infrastructure that supports the relationship between researchers and policy-makers (e.g., mid-career chairs; centres to provide support for policy- and community-engaged research).
• Create Centres of Excellence in population and public health.
• Provide greater incentives for academics to participate in PHIR, work on multi-disciplinary teams, and conduct applied research.
• Establish mechanisms to make intervention research more productive and to overcome barriers (e.g., problematic university structures).

Other

• Forge a partnership between IPPH and PHAC to develop priorities/strategies and fund PHIR research (the Global Health Research Initiative may be a model).
• Have the CIHR establish key words around population and public health.
• Narrow the divide between the Social Sciences and Humanities Research Council of Canada (SSHRC) and CIHR by fostering interagency collaboration.
• Develop program research platforms that embed systematic approaches throughout the planning and evaluation cycle.
• Remove the term “intervention” from the glossary due to its negative connotation.
• Improve understanding of actionable evidence.
• Do more public relations work around the history and achievements of public health.
• Conduct collaborative and collective research.
• Build knowledge translation science into research efforts.
• Fund chairs that are policy relevant but academically oriented (e.g., SSHRC model).
• Do more innovative messaging (e.g., breakfast on the Hill).
Closing Remarks

Dr. Edwards closed the Symposium by thanking staff for their team effort in organizing the event and the participants, speakers, moderators, and facilitator for their contributions to the discussions. She said that she had learned a lot and looked forward to bringing what she had heard to the next CIHR Scientific Council meeting and conversations surrounding the International Review. She reminded researchers to increase their number of applications to the open grants program and encouraged all in attendance to continue building the connections forged at the Symposium—adding that their participation in the event was part of making history.
### Appendix I: Agenda

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<tr>
<th>TIME</th>
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<tr>
<td>3:00 p.m.</td>
<td>Registration</td>
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| 4:00 p.m. | Welcoming Remarks and Review of Symposium Agenda  
*Health Equity Matters: How Equity and Interventions Collide*  
Nancy Edwards, Scientific Director, CIHR-Institute of Population and Public Health (IPPH) |
| 4:30 p.m. | Driving Agendas in Support of Population Health Intervention Research: Lessons Learned from Canada, the US and UK  
*Session Chair:* Jeannie Shoveller, University of British Columbia - PHIRIC Co-chair  
*Speakers:* Eduardo Simoes, CDC  
Peter Craig, MRC UK  
*Discussants:* Jane Billings, Senior Assistant Deputy Minister, Programs Sector  
Public Health Agency of Canada and Nancy Edwards, Scientific Director, Institute of Population and Public Health  
*Questions and Discussion* |
| 6:30 p.m. | Reception and Interactive Poster Session  
6:30 – 7:15 p.m.: Group 1 Track A and Group 1 Track B  
7:15 – 8:00 p.m.: Group 2 Track A and Group 2 Track B  
*Track A*  
*Moderator:* Gilles Paradis, McGill University  
1. Geri Dino “Quit and Fit: The Effects of Physical Activity on Adolescent Smoking Cessation”  
2. Louise Fournier “Improving Quality in Primary Mental Healthcare: A Knowledge Application Program”  
4. Therese Riley “Designing an evaluation for an intervention to strengthen ‘soft’ infrastructure (e.g. networks, partnerships, resources) in Victoria, Australia: empirical and theoretical challenges”  
5. Paula Goering “A Canadian Research Demonstration Project exploring ‘Housing First’ for people who are experiencing homelessness and mental health issues”  
### Track B
Moderator: Slim Haddad, Université de Montréal

1. Kim Raine “Healthy Alberta Communities: A Community-University-Government Partnership for Obesity and Chronic Disease Prevention”
2. Rhona Hanning “School Nutrition Programs in Remote First Nation Communities of the Western James Bay Region: Impact, Challenges and Opportunities”
5. Claire Crooks “The Fourth R: Promoting Youth Well-being through Healthy Relationships”
6. Paul Veugelers “Population health interventions within schools: investment in health and learning”
7. Patricia O’Campo, Erika Khandor "Valuing Context and Collaboration in PHIR: A Realist Review of Community Treatment Approaches for Homeless Adults with Concurrent Disorders"

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### Day Two: Tuesday, November 30th

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<th>Time</th>
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<tr>
<td>8:00 a.m.</td>
<td>Networking Breakfast</td>
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<td>8:30 a.m.</td>
<td>Session Chair: Louise Potvin, Université de Montréal</td>
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<td>Driving Social Change in the Face of Imperfect Evidence: Health Inequity and Population Health Intervention Research</td>
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<td><strong>Key Note Address:</strong> Margaret Whitehead, University of Liverpool</td>
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<td><strong>Discussant:</strong> Cory Neudorf, Chief Medical Health Officer, Saskatoon Health Region Questions and Discussion</td>
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<td>10:00 a.m.</td>
<td>Networking Break</td>
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<td>10:30 a.m.</td>
<td><strong>CONCURRENT SESSION #1</strong></td>
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<td><strong>Theme:</strong> Shifting Gears: From Demonstration to Scale-up</td>
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<td></td>
<td><strong>Moderator:</strong> Richard Massé, Director, School of Public Health, Université de Montréal</td>
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<td><strong>Speakers:</strong></td>
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<td>1.  Jim Dunn, McMaster University</td>
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<td>2.  Geoffrey Fong, University of Waterloo</td>
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<td>3.  Marie DesMeules, Public Health Agency of Canada</td>
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<td>12:00</td>
<td>NETWORKING LUNCH</td>
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| 12:30  | **Time to Take the Wheel: We demand evidence for medicine, should we expect anything less for population health interventions?**  
Speaker: Pierre Chartrand, Canadian Institutes of Health Research |
| 1:00   | **CONCURRENT SESSION #2**                                                       |
|        | **Theme: Who’s Left at the Side of the Road? Income Interventions and Inequalities**  
**Moderator:** Armine Yalnizyan, Canadian Centre for Policy Alternatives  
**Speakers:**  
1. Evelyn Forget, University of Manitoba  
2. Tim Aubry, University of Ottawa  
3. Jean-Pierre Voyer, Social Research and Demonstration Corporation |
|        | **Theme: Paving the Way: Built Environment and Health Equity**                  |
|        | **Moderator:** Richard Lessard, Montréal Regional Health                        |
|        | **Speakers:**  
1. Mark Petticrew, London School of Hygiene & Tropical Medicine  
2. Lise Gauvin, Université de Montréal  
3. Tina Atva, AECOM |
| 2:30   | Break                                                                           |
| 2:45   | Roundtable Discussions & Reporting Back                                         |
| 4:45   | Closing Remarks – Fast Lane or Scenic Route?  
Nancy Edwards |

**Theme: Where Two Roads Meet: Community-based Participatory Research and PHIR**  
**Moderator:** Simon Brascoupe, National Aboriginal Health Organization  
**Speakers:**  
1. Chris Lalonde, University of Victoria  
2. Sarah Flicker, York University  
3. Nyla Obaid- Toronto Teen Survey Youth Advisory Committee
Appendix II: Participants

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