



# Research and Infrastructure to Support Innovations in Population Health

## When Innovation Meets Transformation....

Nancy Edwards, RN, PhD, FCAHS

Scientific Director, CIHR-IPPH

Professor, University of Ottawa

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# Population health

complex interactions (biological, social, cultural, environmental), which determine the health of individuals, communities, and global populations



# Population health interventions

programs, policies and resource distribution approaches that have the potential to impact health and health equity at the population level



# Population health intervention research

the use of scientific methods to produce knowledge about policy and program interventions that operate within or outside of the health sector and have the potential to impact health at the population level



# Why Innovations Important

- **Health-related programs:**
  - reduce health inequities
  - challenges of intersectoral action and policy coherence among sectors and jurisdictions.
  - difficulties scaling up
  - era of wicked problems, that do not respect borders
- **Research generation:**
  - abundance of research in the field of public health that is descriptive rather than intervention-oriented
  - use of research designs that are not compatible with complex problems or characteristics of social causation



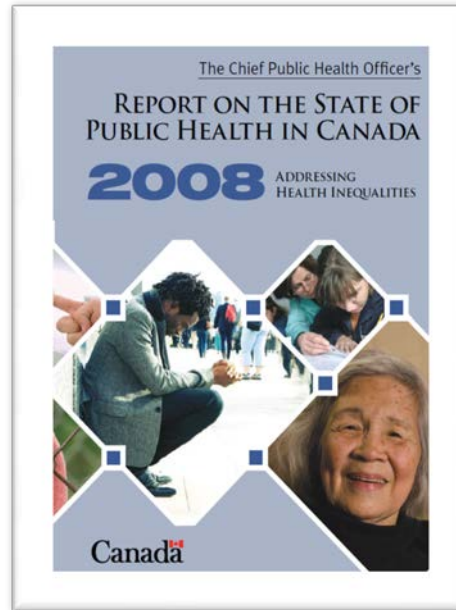


# Action on health equity requires rigorous science...



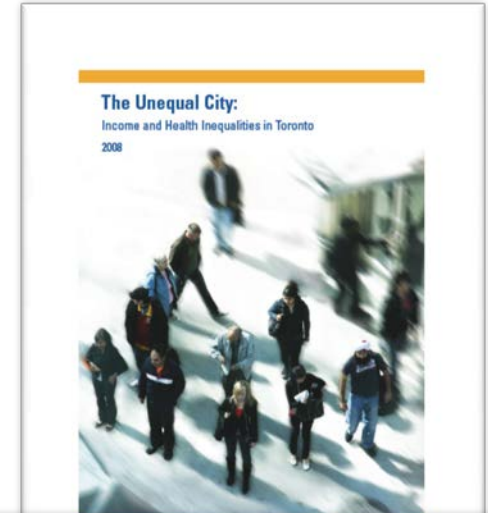
Dr. Mark Lemstra  
Senior Epidemiologist  
Saskatoon Health Region

Dr. Cory Neudorf  
Chief Medical Health Officer  
Saskatoon Health Region



The Chief Public Health Officer's  
REPORT ON THE STATE OF  
PUBLIC HEALTH IN CANADA  
**2008** ADDRESSING  
HEALTH INEQUALITIES

Canada



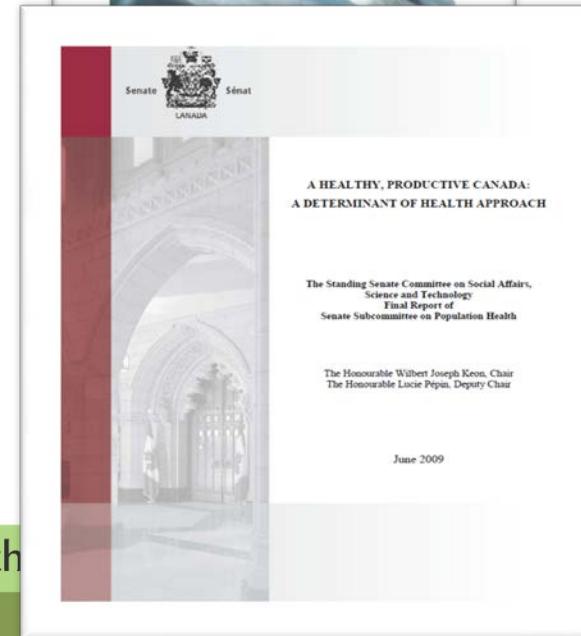
The Unequal City:  
Income and Health Inequalities in Toronto  
2008



Stepping It Up:  
Moving the Focus from Health Care in Canada  
to a Healthier Canada

*Years  
To: All of  
government  
To: Working  
together for a  
Healthier  
Canada*

Health Council of Canada / Conseil canadien de la santé



Senate / Sénat  
CANADA

A HEALTHY, PRODUCTIVE CANADA:  
A DETERMINANT OF HEALTH APPROACH

The Standing Senate Committee on Social Affairs,  
Science and Technology  
Final Report of  
Senate Subcommittee on Population Health

The Honourable Wilbert Joseph Keon, Chair  
The Honourable Lucie Pépin, Deputy Chair

June 2009



# Important Advances

- “Roster” of social and societal conditions across life course produce illness trajectories
- Re-conceptualization of health risk (nested socio-ecological models, socio-political influences, risk regulators)
- Organizational, environmental and policy levers interact to influence behaviour change





# Characteristics of Social Causation

(Hertzman & Boyce, Ann Rev Public Health, 2011).

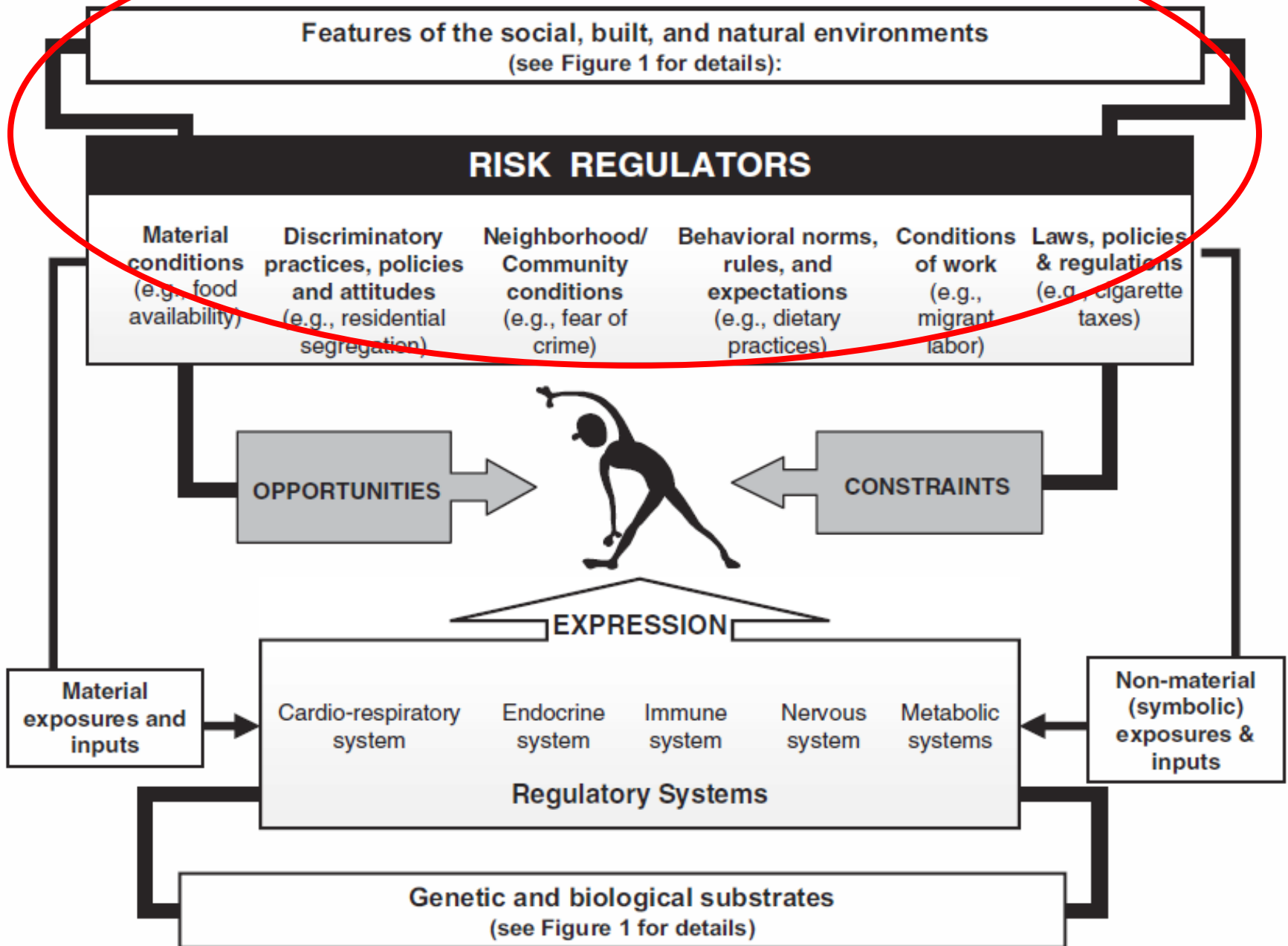
- Non-linear
- Non-specific links between putative causes and effects
- Iterative and recursive – repeated self-amplifying exposure over time
- Mundane rather than exceptional exposures







Source: Glass & McAtee, 2006





# Connections Between Inner and Outer Worlds

- The underlying complexity of population health interventions:
- ***“Specific diseases, specific exposures, and the process of biological embedding matter, as do societal, ecological, spatiotemporal, geographic and historical contexts.”***  
(Krieger, 2011)







# Population health interventions in the era of wicked problems...





# Features of Wicked Problems

- “A problem that is difficult or impossible to solve because of **incomplete, contradictory, and changing requirements that are often difficult to recognize.**
- Because of **complex interdependencies**, the effort to solve one aspect of a wicked problem may reveal or create other problems.”
- no immediate and no ultimate test of a solution to a wicked problem
- every wicked problem is a symptom of another problem.

• Rittel & Webber, 1973

Wikipedia, 2010

Institute of Population and Public Health



CIHR IRSC



# Intersectoral Action on Vexing Public Health Issues

Walk Score **87** Very Walkable  
302-304 Newtownards Rd Belfast  
Out of 100

Overview More Amenities Your Commute

- Restaurants**
  - Amigos 0.04mi
- Coffee**
  - Conniecheewa's 0.05mi
- Groceries**
  - Iceland Foods Ltd 0.13mi
- Shopping**
  - Inson Clothing Agen 0.05mi
- Schools**
  - Steelheel M.M.A 0.14mi
- Parks**
  - Victoria Park 0.73mi
- Books**
  - Handmade Greeting C. 0.09mi
- Pubs**
  - The Great Eastern 0.08mi
- Entertainment**
  - Strand Cinema 0.57mi
- Banking**
  - Santander 0.25mi

[View more amenities](#)

**Public Transportation**  
Why isn't public transit showing? [About transit data](#)



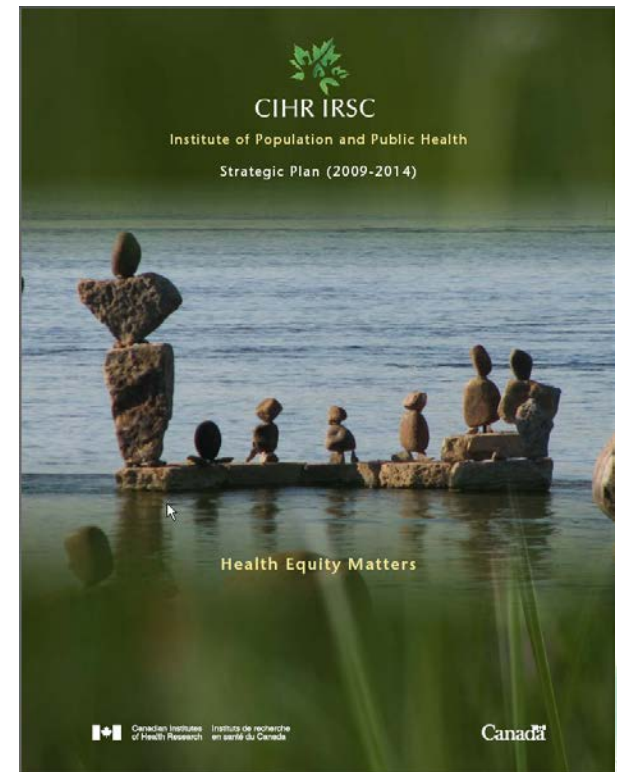
**Curbing Childhood Obesity**  
A Federal, Provincial and Territorial Framework for Action to Promote Healthy Weights





# CIHR-IPPH Strategic Research Priorities

- Pathways to health equity
- Population health interventions
- Systems for implementing population health interventions in public health & other sectors
- Theoretical & methodological innovations







# Reflecting Shifting State of the Science

- From understanding determinants to examining the impact of coherent, multi-level interventions and policy
- From describing socioeconomic gradients to interrogating health inequities and their mitigation
- From controlling context to understanding the influence of context on interventions
- From studying intervention components to examining complex interventions within complex adaptive systems

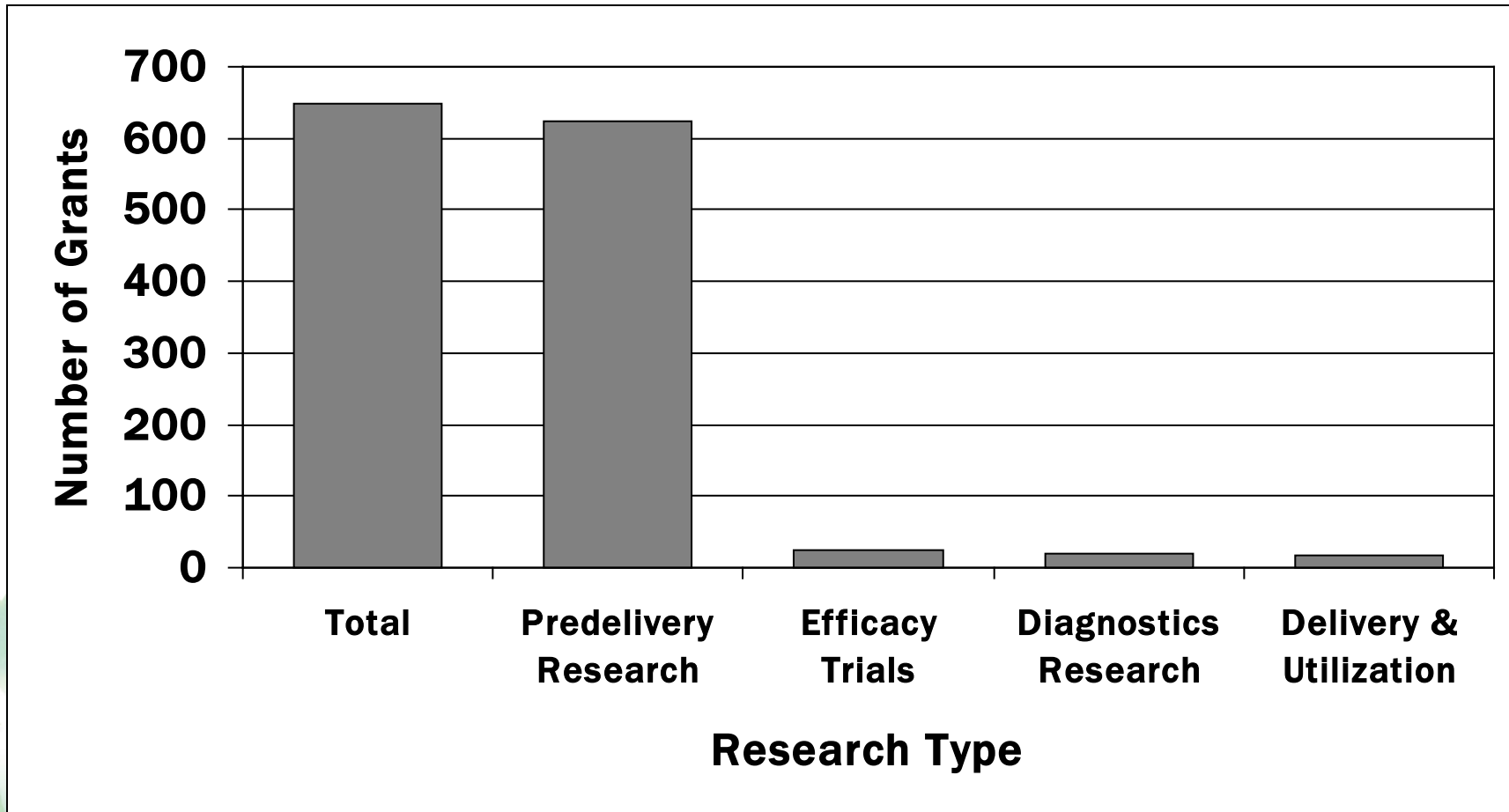


# ...But, a Paucity of Intervention Studies & Publications

<p><b>Milward, Kelly &amp; Nutbeam, 2003</b></p>	<p>Public health research for UK</p>	<p>&lt;0.4% of academic and research output relevant to PH interventions</p>
<p><b>Sanson-Fisher et al., 2008</b></p>	<p>Intervention research tobacco, alcohol &amp; physical activity, 2005-6</p>	<p>78-79% descriptive 4-10% measurement 12-15% intervention</p>
<p><b>McNamara et al., 2011</b></p>	<p>Intervention Research on Type 2 Diabetes, Indigenous Populations, UK, NZ, Australia, Canada, 20 year period</p>	<p>87% descriptive 7% measurement 7% intervention</p>



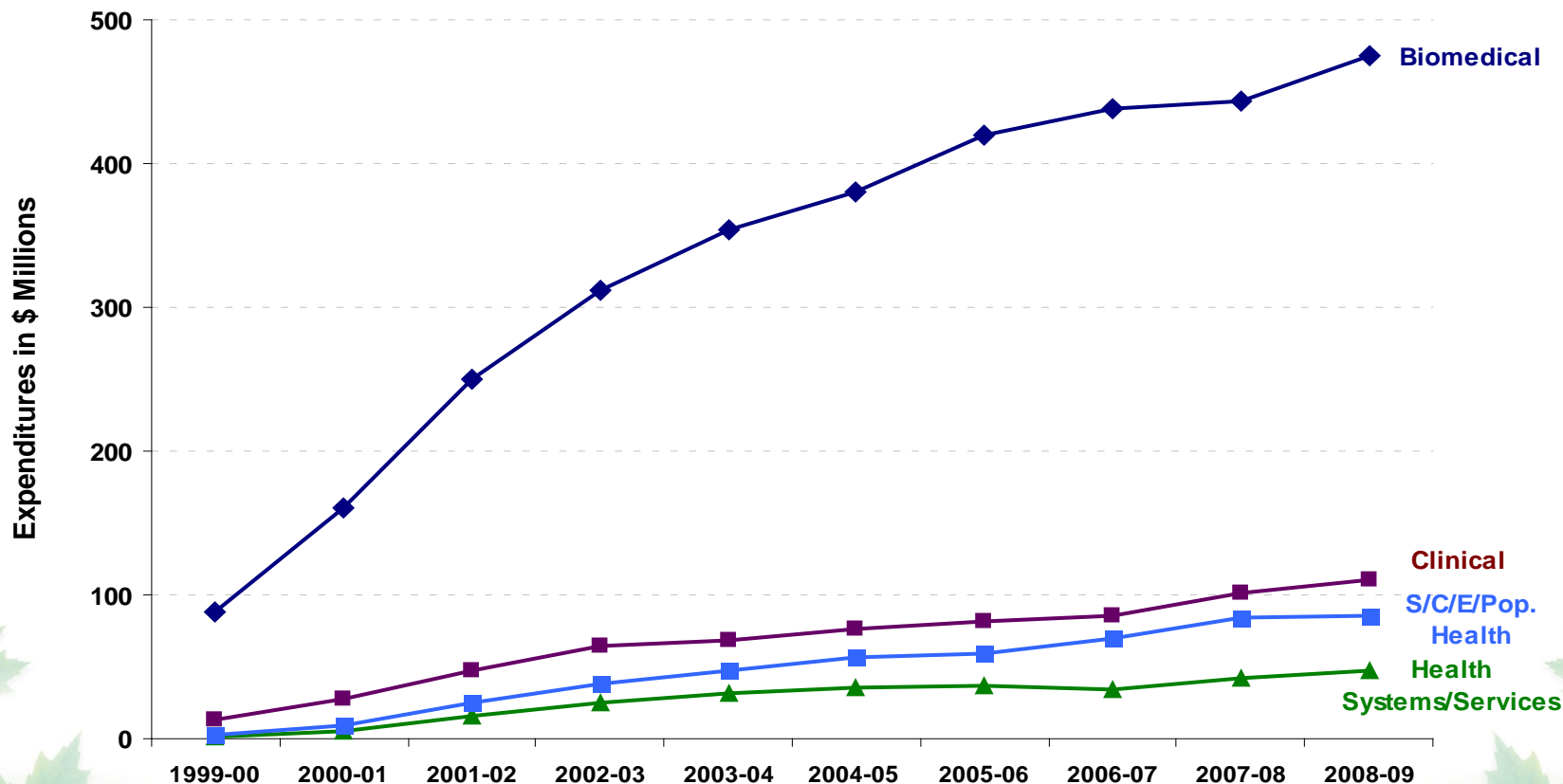
# The 3/97 Gap: Relative Proportion of Grants Funded in Delivery and Utilization, and Development Respectively (Child Health)



Source: Leroy, et al. (2007). Current priorities in health research funding and lack of impact on the number of child deaths per year. *American Journal of Public Health*, 97 (2), 219-223.



# CIHR Funding per Research Themes 1999-00 to 2008-09 \*



\* Excludes Canada Research Chairs, Centres of Excellence for Commercialization and Research, Networks of Centres of Excellence, and portion of funding where themes are not specified (EIS)



## Capacity and funding mechanisms

1. Operating grant in PHIR
2. Programmatic research
3. Theories and methods
4. STIHRs
5. Applied PH Chairs
6. Priority announcements

# IPPH: Building the field of population health intervention research

## Partnerships

1. PHIRIC consortia
2. Funding partners (CIHR Institutes and branches, PHAC, CPHI)
3. International collaborations

## Knowledge translation and communications

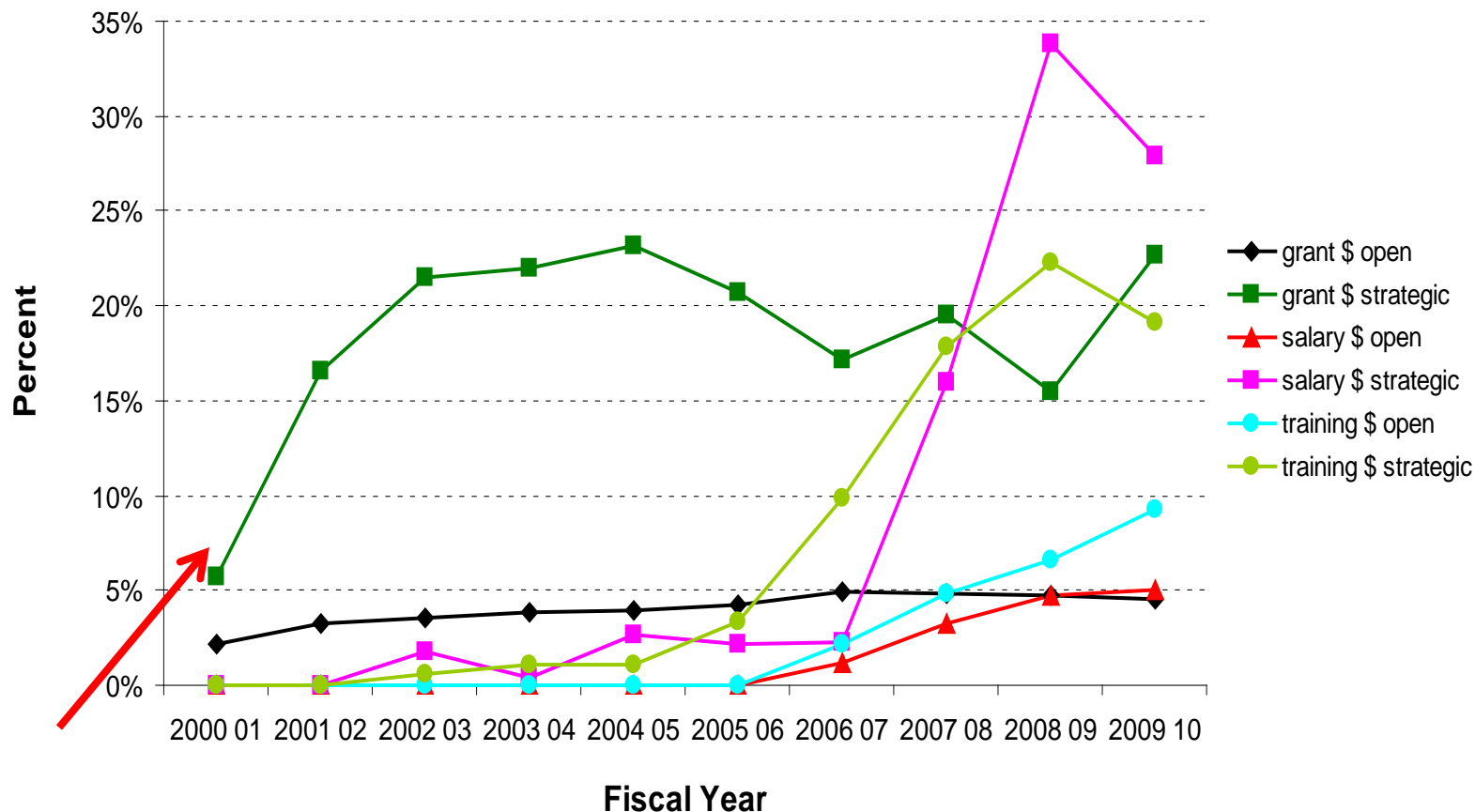
1. PHIRIC website, FAQ's, profiles, podcasts
2. IPPH-CPHI casebook
3. Adapt K2A framework
4. Manuscripts and presentations

## Advancing theories and methods in PHIR

1. Symposia and workshops
2. Improved review and reporting of PHIR – guideline development
3. Ethics of population health interventions



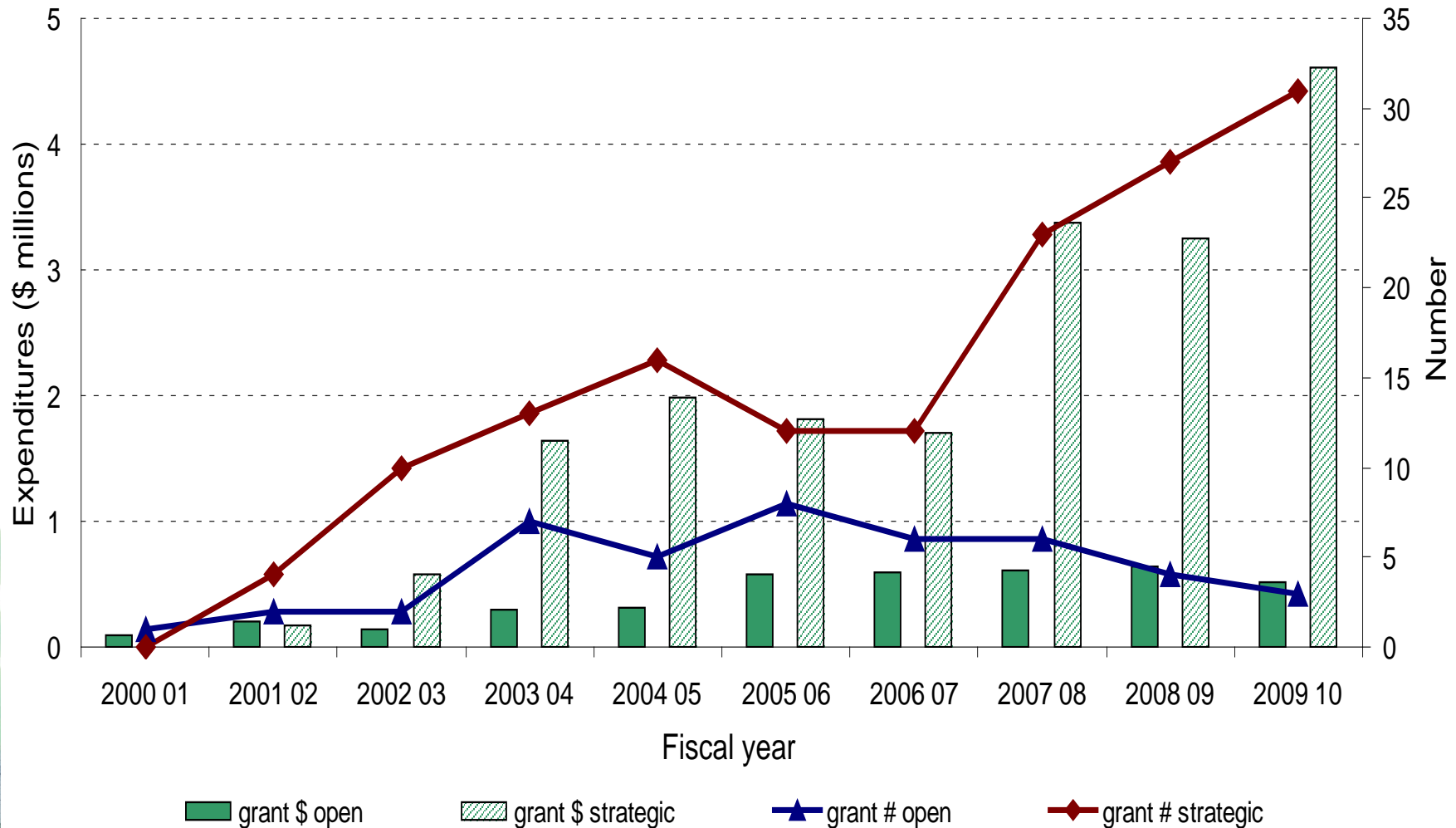
# Percentage of Total CIHR Expenditures Related to Theme IV Over Time





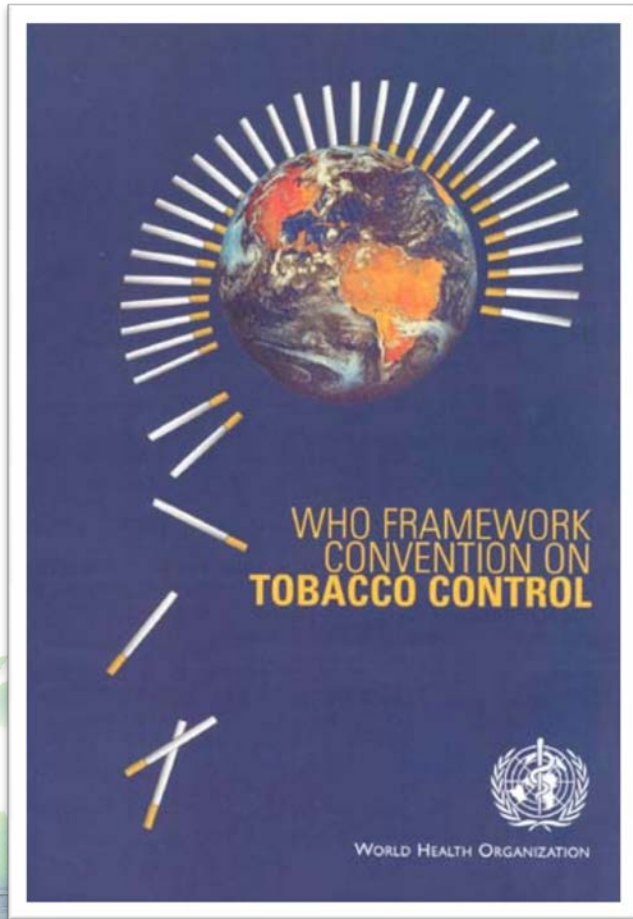
# Population Health Intervention Research-related Theme

## IV Expenditures and Number of Grants by Fiscal Year





# FCTC: Global policy frameworks



- PI: Geoffrey Fong
- Co-I: David Hammond (CIHR Young Researcher of the Year)
- Comparative policy research in 20+ countries to measure effectiveness of FCTC policies
- Holds funds from 25+ international funding agencies





# PHIR Funding Tools

- **Population Health Intervention Research to Promote Health and Health Equity**
  - Prompt initiation of intervention research on rapidly unfolding programs, policies and resource distribution approaches
  - Research projects that are “out of the control of the researcher” (researcher not responsible for designing or implementing the intervention)
- **Programmatic grants in health and health equity**
  - Provides flexibility for researchers to respond to changes and opportunities in the policy and program environment





# Global Alliance for Chronic Disease First Joint Research Activity – Hypertension

- Implementation research in low and middle income countries and in Aboriginal communities (Canada and Australia)
- Objective: improve effective approaches to the prevention and control of hypertension
- Foster joint learning across funded teams
- <http://www.cihr.ca/e/43520.html>



# The Open Grants Competition

- Open Grants competition - approximately 70% of CIHR research funds
- Open grants reform process under discussion
- College of Reviewers proposed
  
- Differences in patterns of application and peer review across pillars:
  - Pillar 1 & 2 committees appear to focus on productivity and track record, while Pillar 3 & 4 focus more on methodology
  - <3% of renewal applications submitted by pillar 4 scientists





# The 'perfect' storm

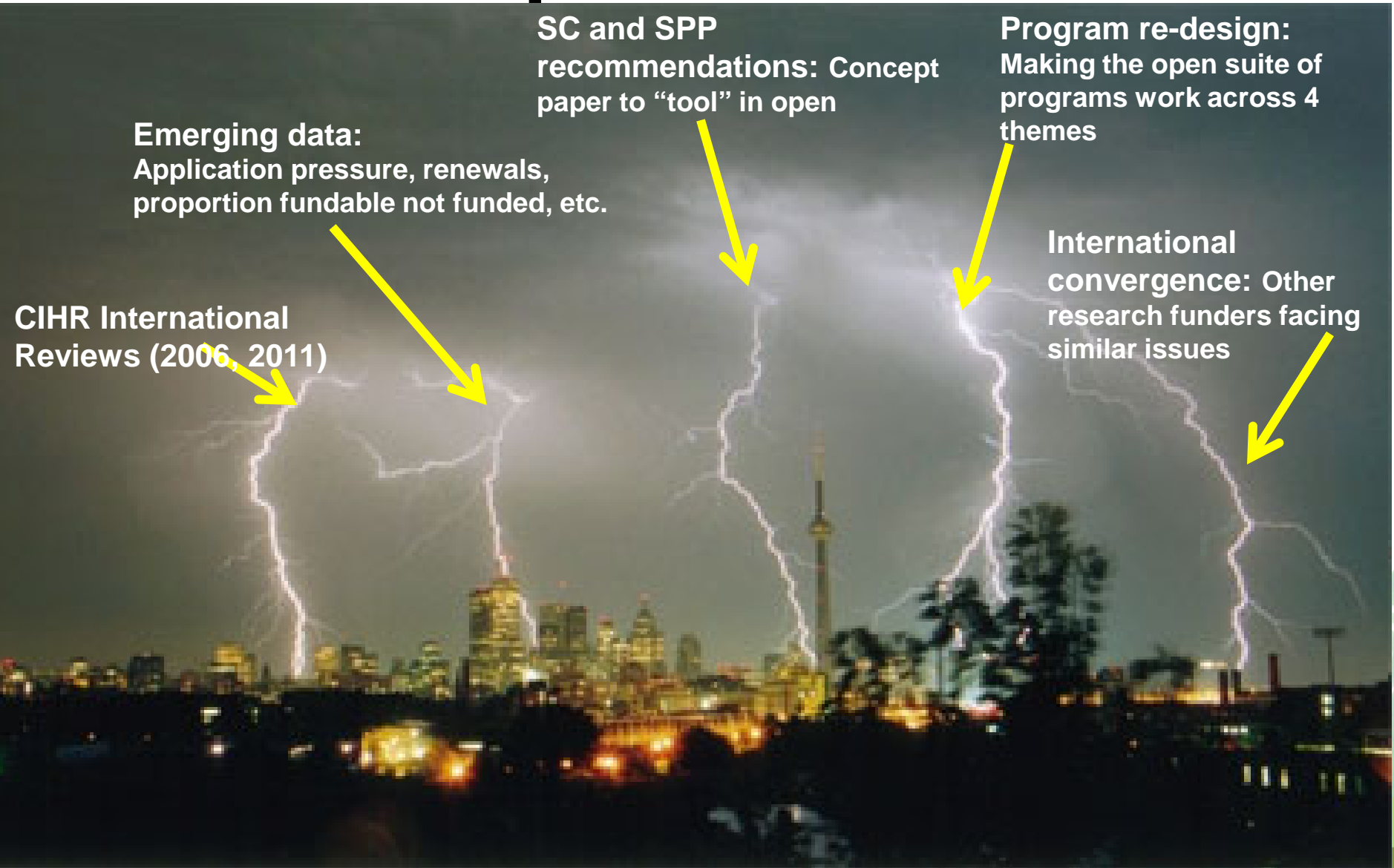
**Emerging data:**  
Application pressure, renewals,  
proportion fundable not funded, etc.

**SC and SPP  
recommendations:** Concept  
paper to "tool" in open

**Program re-design:**  
Making the open suite of  
programs work across 4  
themes

**International  
convergence:** Other  
research funders facing  
similar issues

**CIHR International  
Reviews (2006, 2011)**





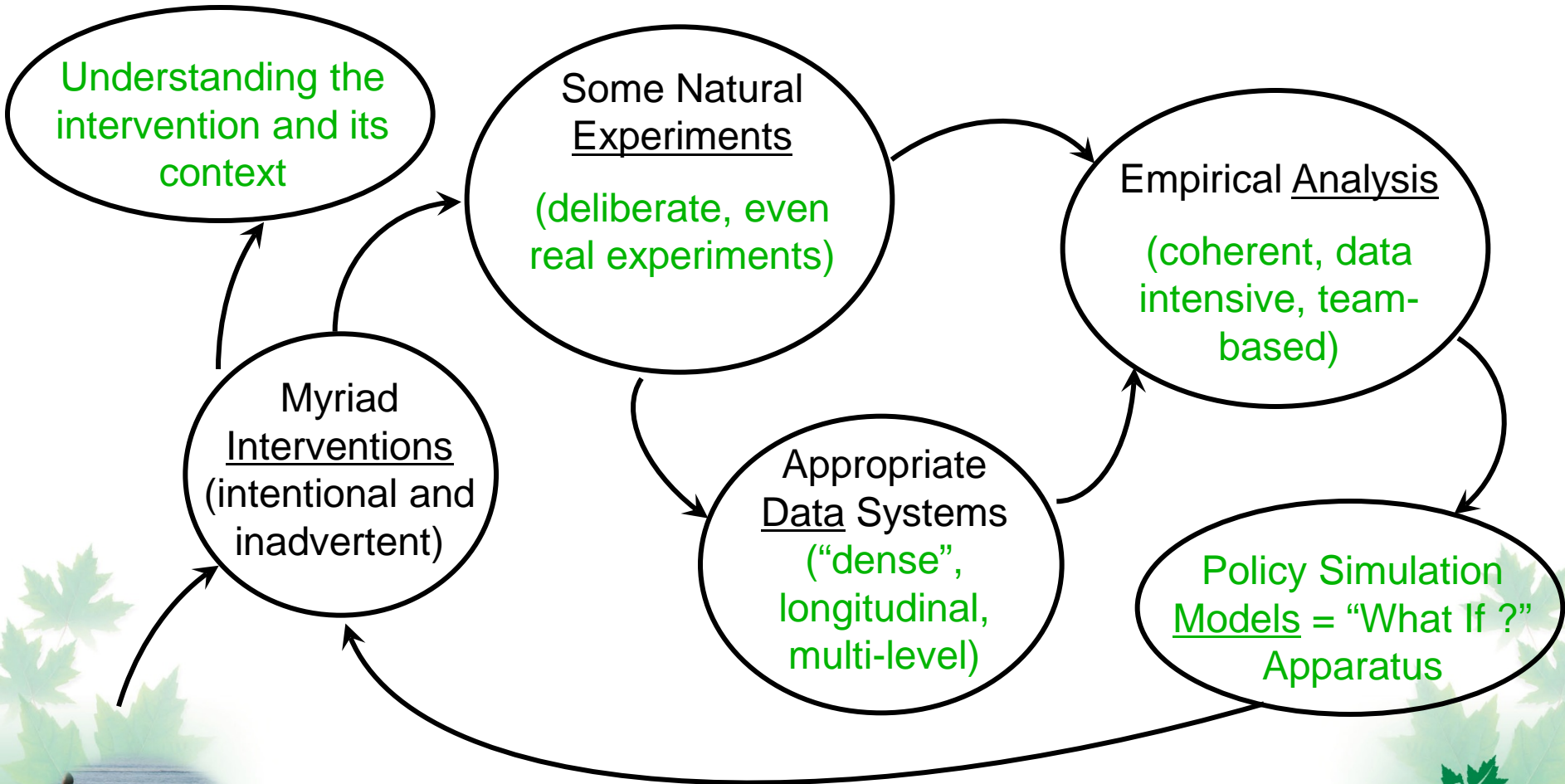
# Harness existing infrastructure....differently

- Data platforms and access agreements
- Capitalize on longitudinal cohort data
- Fully use linked administrative data sets (health and other sectors)
- Make the shift from a “cottage industry”





# Population Health Intervention Research







# Partnership Models

- Examine population health interventions targeting structural determinants
- Jointly fund intervention-research costs
- Foster comparative research (national and international)
- Strengthen complementarities of evaluation and research





# Conclusion

- Changes in funding structures, use of infrastructure and new partnership models required to address “wicked” population health issues
- Population health innovations can help catalyze transformation in health research

