

# The role of Family Doctors in dealing with Climate Change

Department of Family Medicine

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**University  
of Manitoba**



# TRADITIONAL TERRITORIES — ACKNOWLEDGEMENT —

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation.

We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.



## Objectives:

1. Recognize drivers of climate change, global projections, and targets to minimize the impact of climate change.
2. Recognize the direct health impacts of climate change related weather events expected in Manitoba (e.g. wildfires, effects on clean water and flooding) and other rapid ecosystem changes.
3. Recognize the downstream effects of climate change and their indirect health impacts due to changes in infectious disease patterns (e.g. Lyme disease, malaria), air pollution, food insecurity, poverty and mental illness).
4. Consider what Family doctors can do to mitigate and address climate change related health impacts.
5. Advocate for local, regional, and national strategies that will reduce greenhouse gas admissions and/or mitigate the impacts of climate change.
6. Advocate for strategies to reduce the negative impact of healthcare provision on the environment.

*“Climate change is no longer some far-off problem; it is happening here, it is happening now.”*

**Barack Obama** on Climate Change

Former President of the United States of America





## WHAT MAKES CANADIANS SICK?

50%

### YOUR LIFE

INCOME  
EARLY CHILDHOOD DEVELOPMENT  
DISABILITY  
EDUCATION  
SOCIAL EXCLUSION  
SOCIAL SAFETY NET  
GENDER  
EMPLOYMENT/WORKING CONDITIONS  
RACE  
ABORIGINAL STATUS  
SAFE AND NUTRITIOUS FOOD  
HOUSING/HOMELESSNESS  
COMMUNITY BELONGING

25%

### YOUR HEALTH CARE

ACCESS TO HEALTH CARE  
HEALTH CARE SYSTEM  
WAIT TIMES

15%

### YOUR BIOLOGY

BIOLOGY  
GENETICS

10%

### YOUR ENVIRONMENT

AIR QUALITY  
CIVIC INFRASTRUCTURE



THESE ARE CANADA'S SOCIAL DETERMINANTS OF HEALTH #SDOH

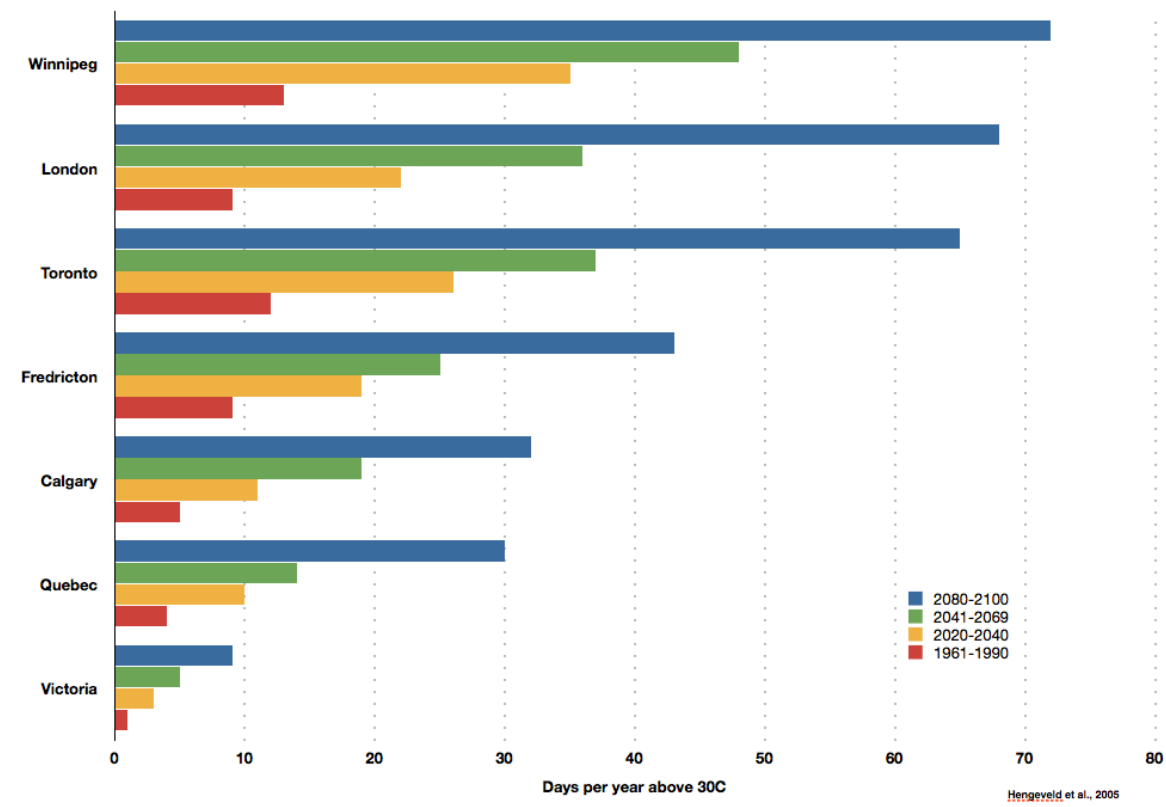
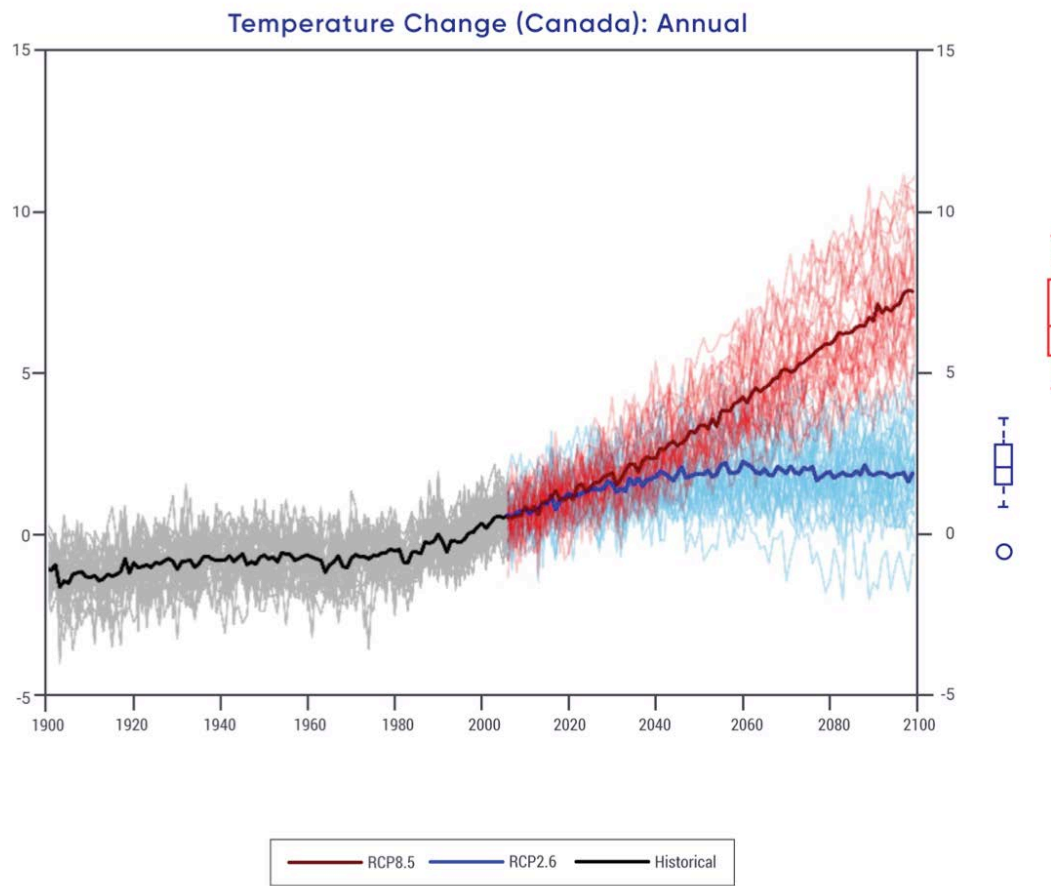


Figure 4.8: Projected annual temperature changes

# 1. Extreme Weather Events

## Wildfires

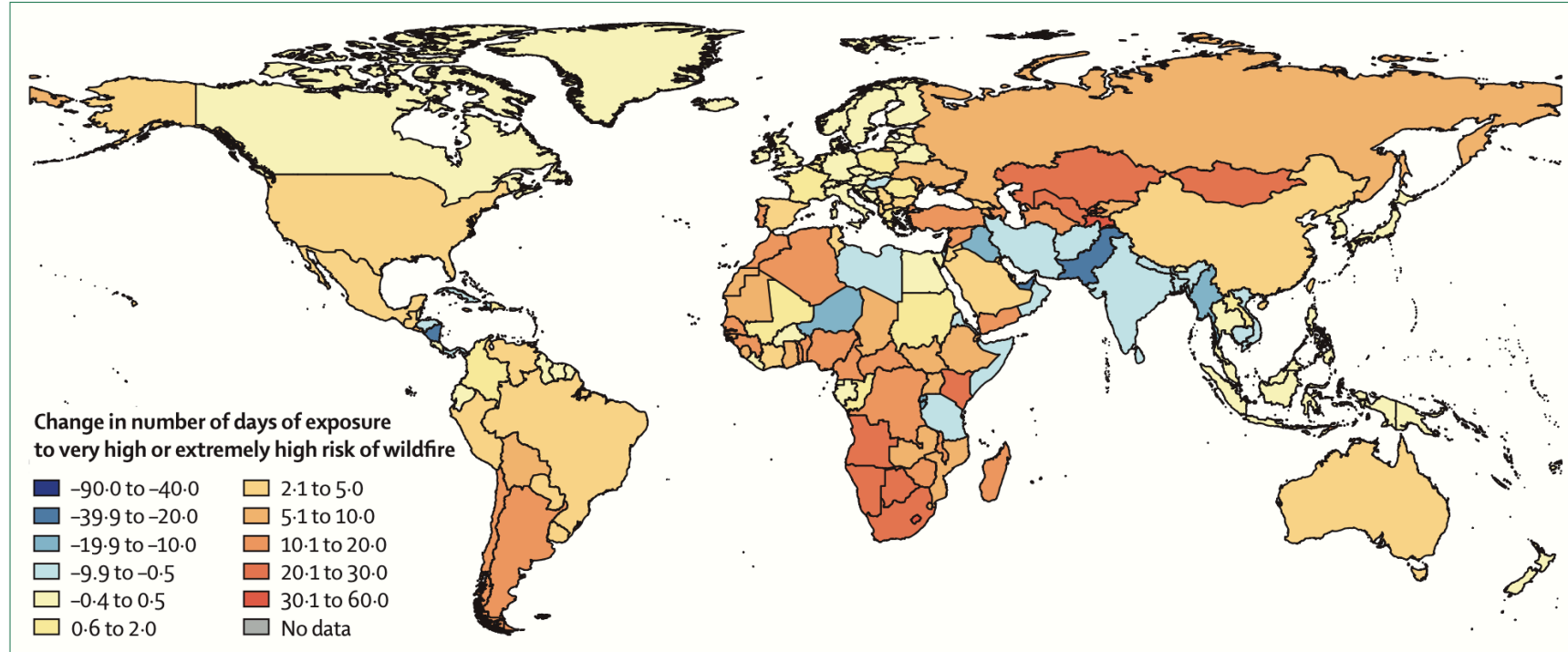
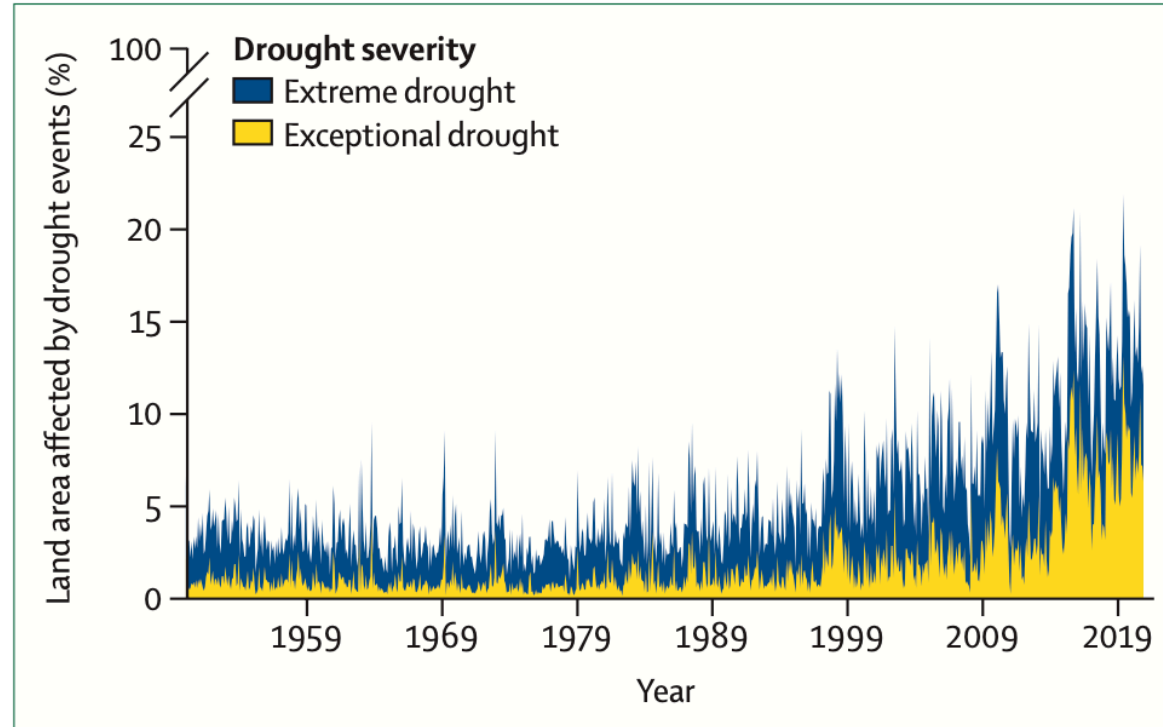


Figure 6: Annual population-weighted mean change in the number of days with very high and extremely high risk of wildfire from 2001-04 to 2017-20 for each country or territory



# 1. Extreme Weather Events

## Drought

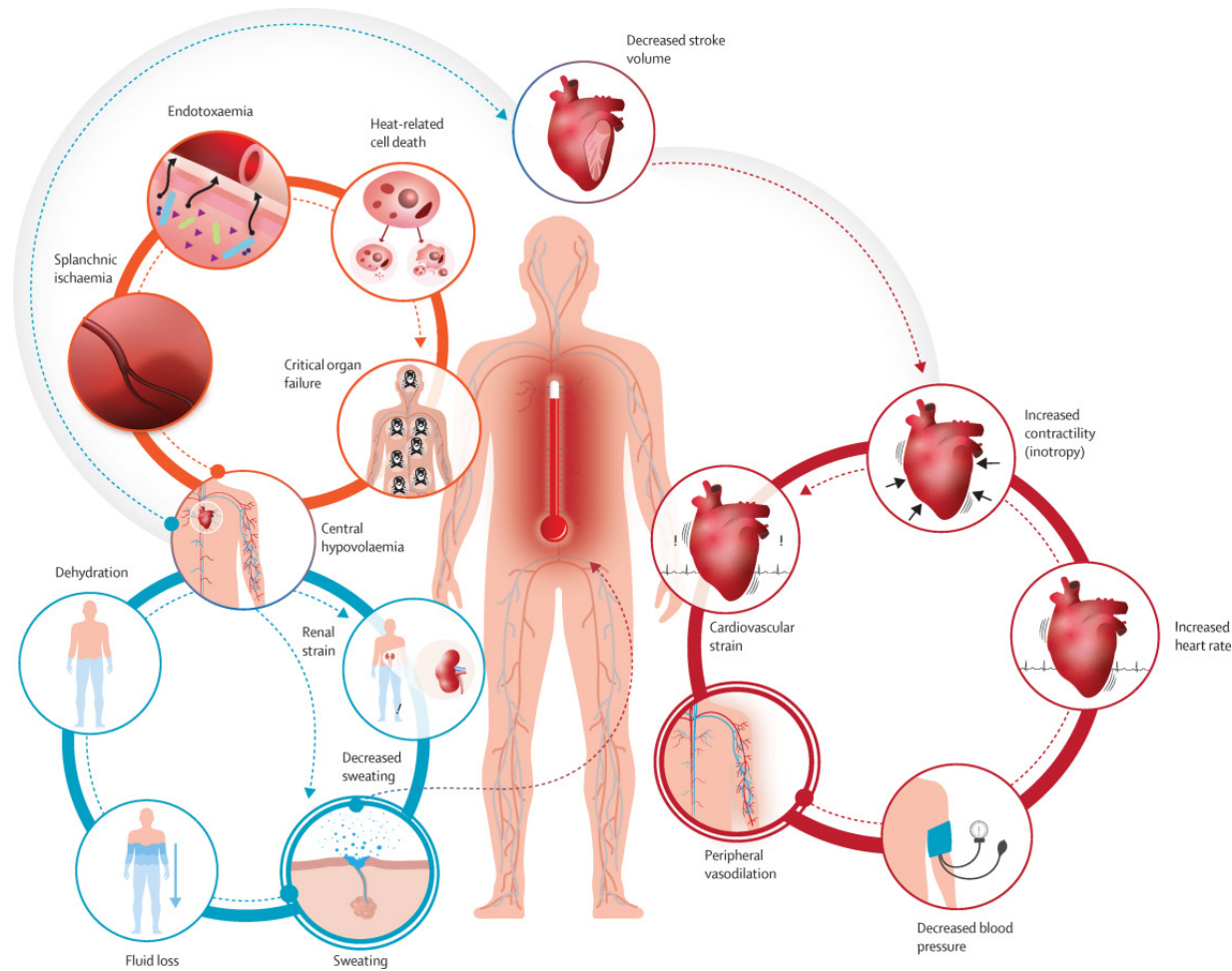


**Figure 7: Global land area affected by drought events per month**

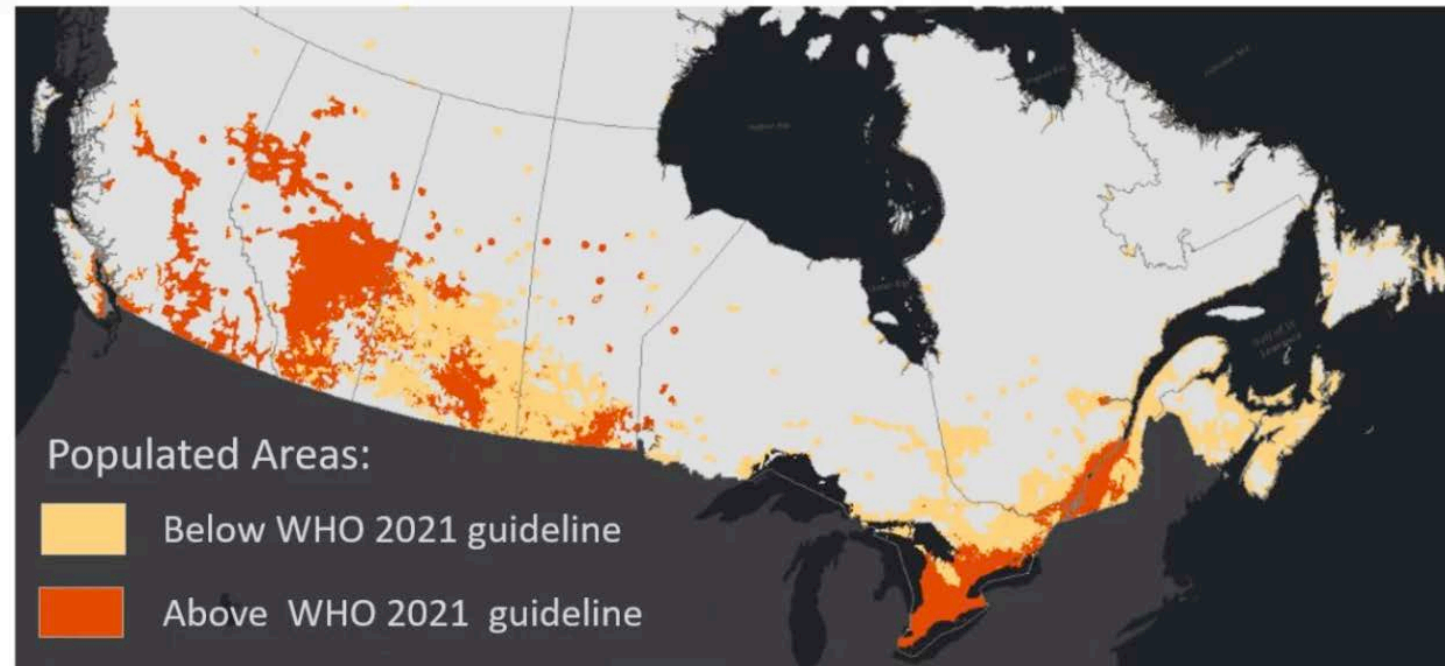
Extreme drought is defined by a SPEI of  $\leq -1.6$  and exceptional drought is defined by a SPEI of  $\leq -2$ . SPEI=standardised precipitation-evapotranspiration index.



## 2. Physiological Impacts of Global Warming

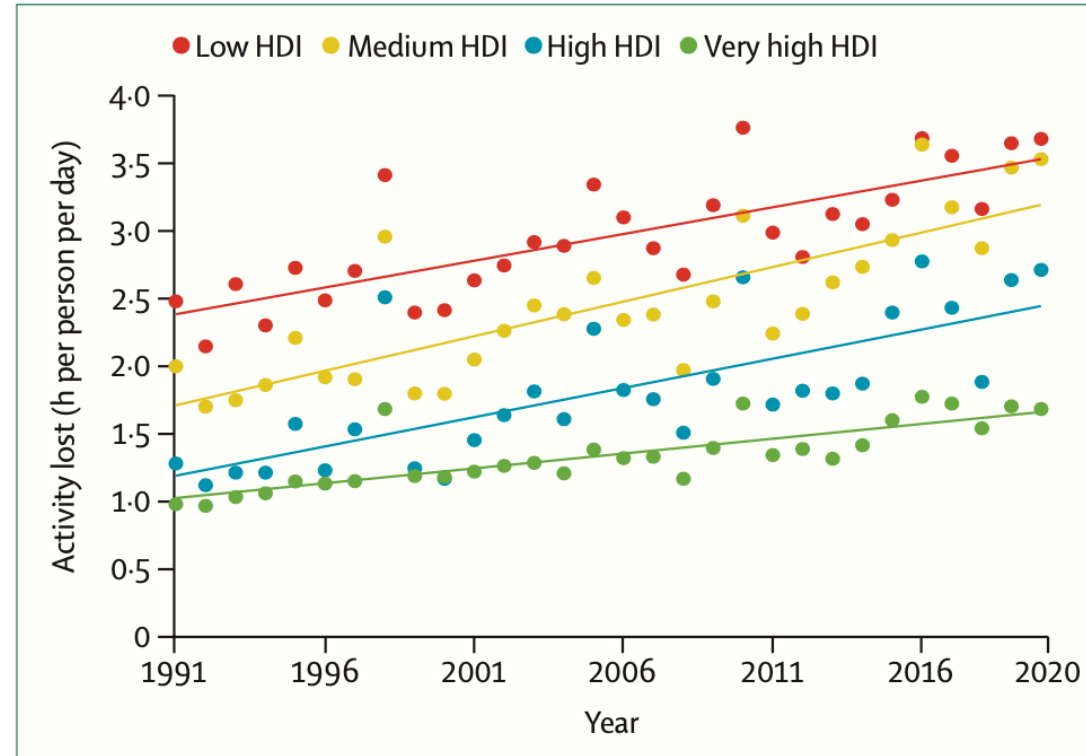


### 3. Allergy and Asthma Exacerbations



A map showing areas that exceed WHO guidelines on fine particulate matter. Based on 2018 Annual Average PM<sub>2.5</sub> data from the Atmospheric Composition Analysis Group, Department of Physics and Atmospheric Science, Dalhousie University; Statistics Canada 2016 Dissemination Block file and Population Ecumene file. **Map prepared by the Canadian Urban Environmental Health Research Consortium (<https://canue.ca/>)**

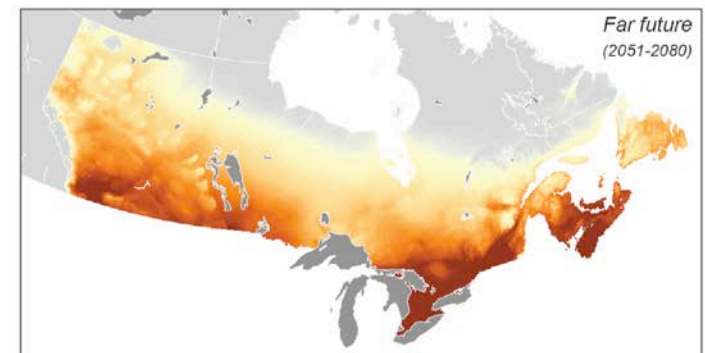
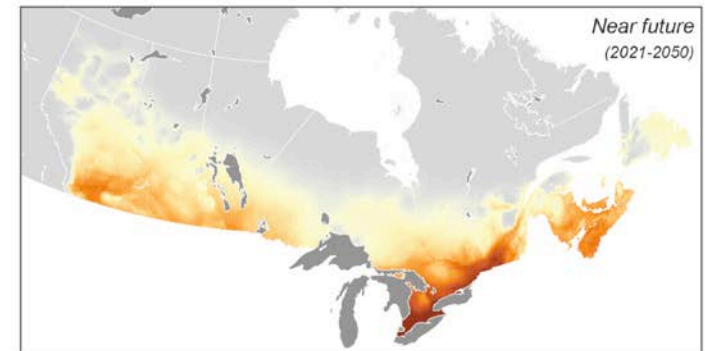
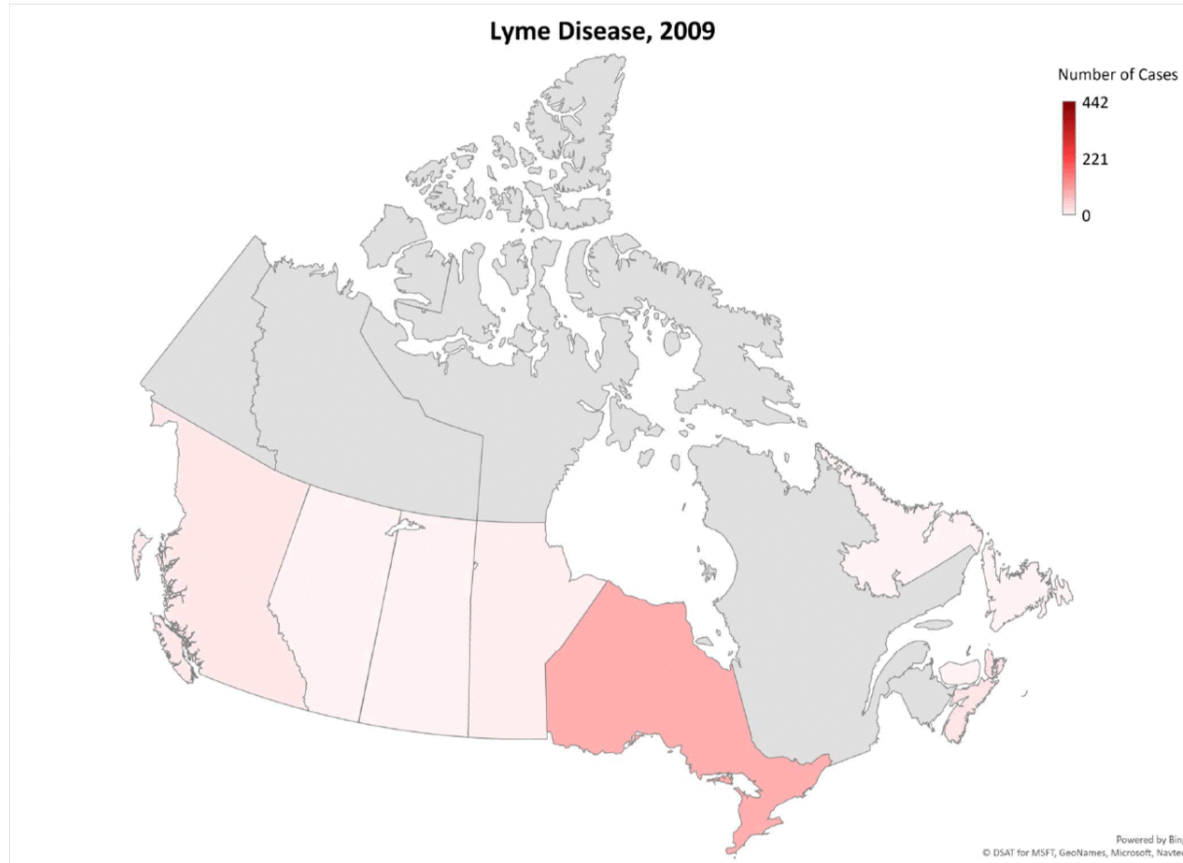
## 4. Mental Health



**Figure 2: Average hours of safe physical activity lost per person due to high wet bulb globe temperature by 2019 HDI country group (1980–2020)**  
HDI=human development index.

## 5. Infectious Diseases

### Lyme Disease



Minimum temperatures for growth  
and development of ticks

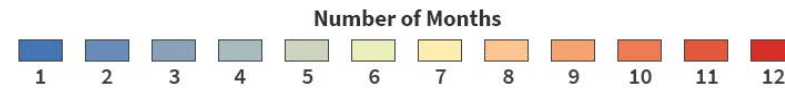
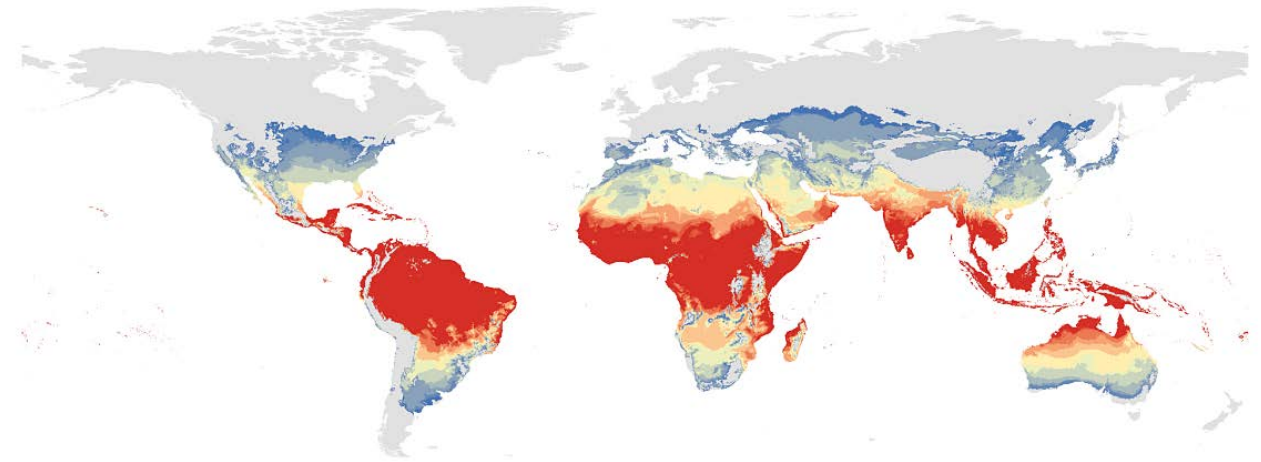


More than enough heat to support the  
growth, development and spread of ticks

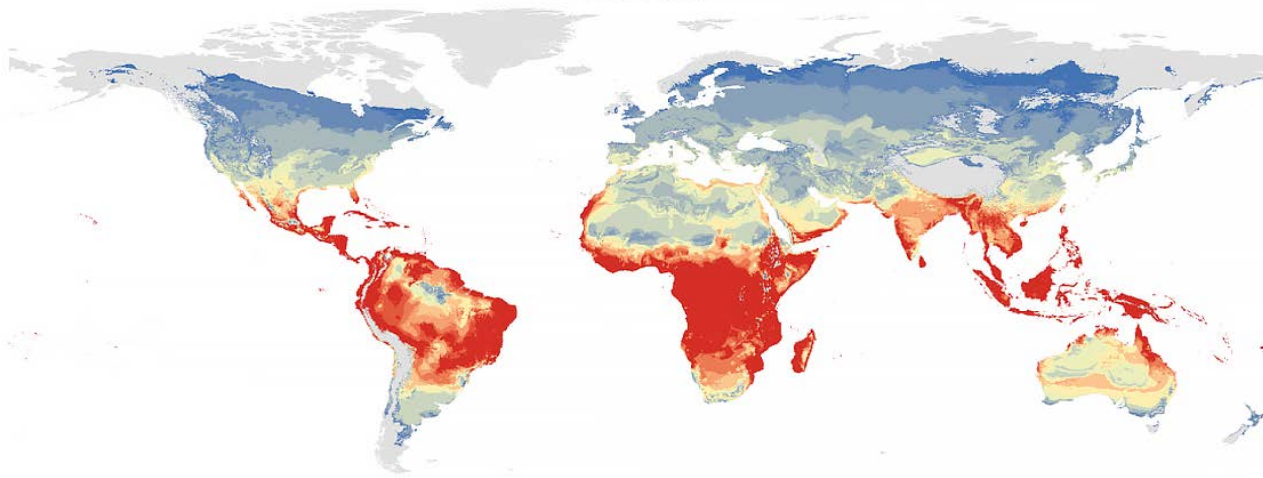


## 5. Infectious Diseases

### Mosquito-Borne Diseases



Year 2080

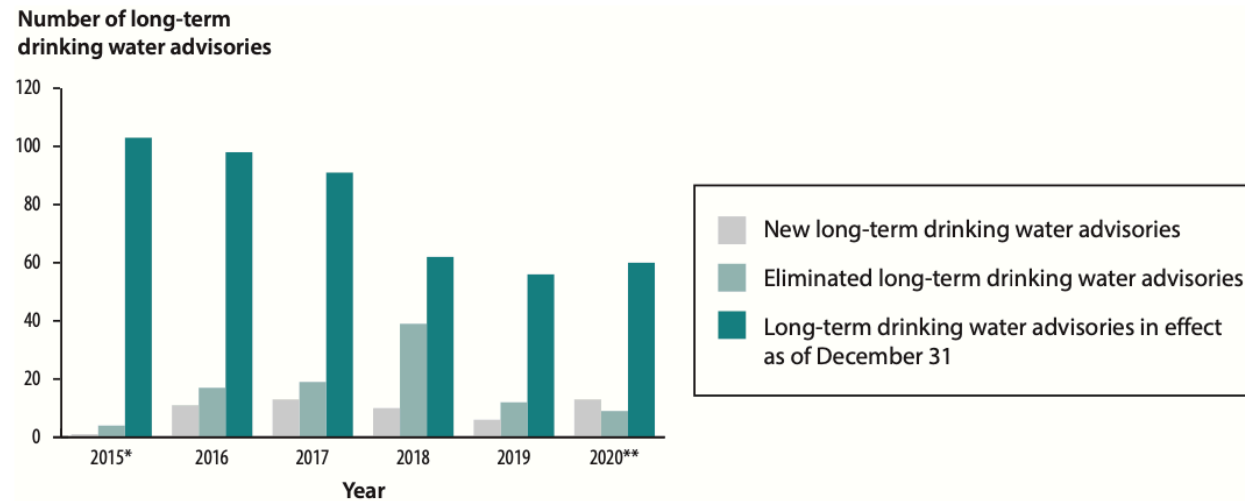


Business as usual



## 6. Clean Drinking Water

**Exhibit 3.2**—On 1 November 2020, 60 long-term drinking water advisories were still in effect

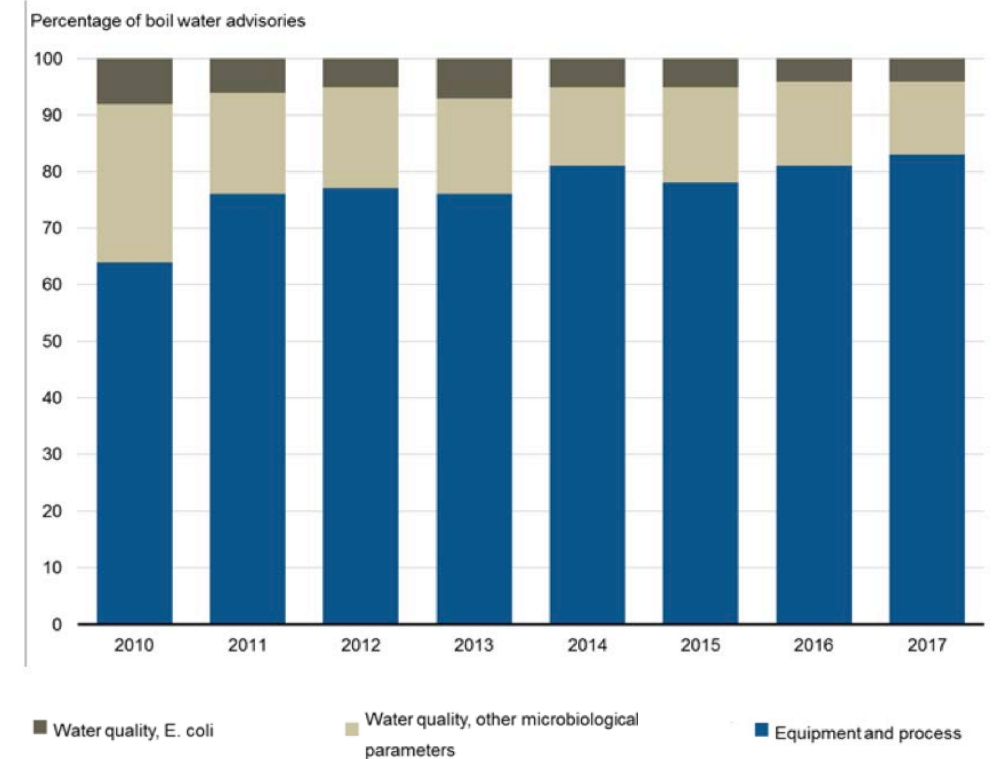


\* For 2015, the data covers the period from November 1 to December 31, which corresponds to when the commitment came into effect.

\*\* For 2020, the data covers the period from January 1 to November 1, which corresponds with the end of the period covered by the audit.

Source: Based on data provided by Indigenous Services Canada

**Figure 1. Causes of boil water advisories, Canada, 2010 to 2017**



## 7. Food Safety and Security

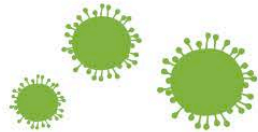
### Contamination

#### THE COMMON CULPRITS IN CANADA ARE:

*\*Estimated number each year*

##### NOROVIRUS

The leading cause of food-borne illnesses and hospitalizations.



Illnesses: **1 million**  
Hospitalizations: **1,180**  
Deaths: **21**

##### LISTERIA

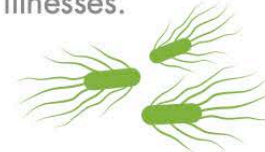
The leading cause of deaths related to food-borne illness each year.



Illnesses: **178**  
Hospitalizations: **150**  
Deaths: **35**

##### SALMONELLA

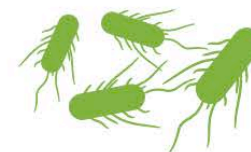
Contributes to 1 in 4 hospitalizations of all food-borne illnesses.



Illnesses: **88,000**  
Hospitalizations: **925**  
Deaths: **17**

##### E. COLI O157

One of the top food-borne bacteria causing severe illness.



Illnesses: **12,800**  
Hospitalizations: **245**  
Deaths: **8**

##### CAMPYLOBACTER

The third leading cause of food-borne illnesses and hospitalizations.

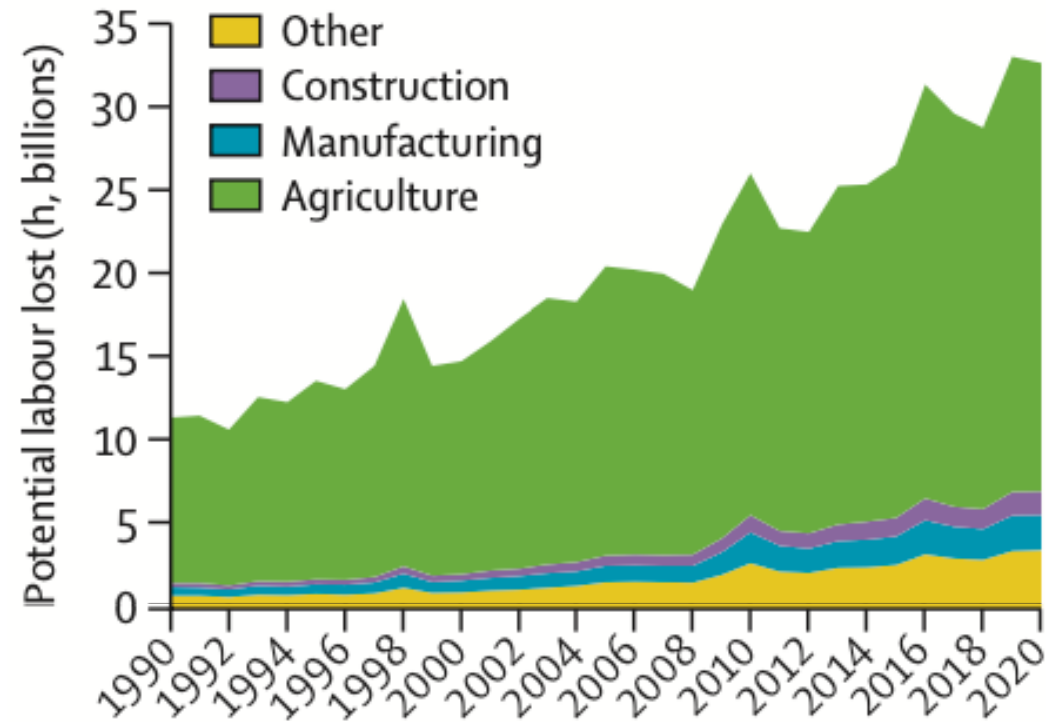


Illnesses: **145,000**  
Hospitalizations: **565**  
Deaths: **5**



## 7. Food Safety and Security

### Income



# CLIMATE CHANGES HEALTH IN CANADA

Climate change is the biggest global  
health threat of the 21st century.

— Lancet<sup>1</sup>

## IMPACTS ON MENTAL HEALTH<sup>8</sup> AND AVAILABILITY OF TRADITIONAL FOODS IN THE NORTH<sup>7</sup>

Due to arctic warming (3x Global Rate)<sup>5</sup>.

## WILDFIRE-RELATED ASTHMA<sup>9</sup> & EVACUATION

Healthcare facilities evacuated:  
• Fort McMurray: 105 patients<sup>10,11</sup>  
• Interior BC 2017: 880 patients<sup>12,13</sup>  
Anxiety & PTSD following  
evacuation.<sup>14</sup>

## FLOOD-RELATED DEATHS AND DAMAGE

2013 Alberta flood<sup>15</sup>:  
• 5 deaths<sup>16</sup>  
• Healthcare facilities  
closed due to flooding.<sup>17</sup>

## DROUGHTS<sup>18,19</sup>

Uneven impact on crops.<sup>20</sup>  
Socioeconomic stress.<sup>21</sup>

## ALLERGIES

Increased severity &  
duration of pollen  
seasons.<sup>22</sup>

## TICK-BORNE DISEASE

2017: 3x higher rate  
Lyme Disease in  
Ontario than 2012-  
2016 average.<sup>23</sup>

## HEAT-RELATED ILLNESS<sup>24</sup>

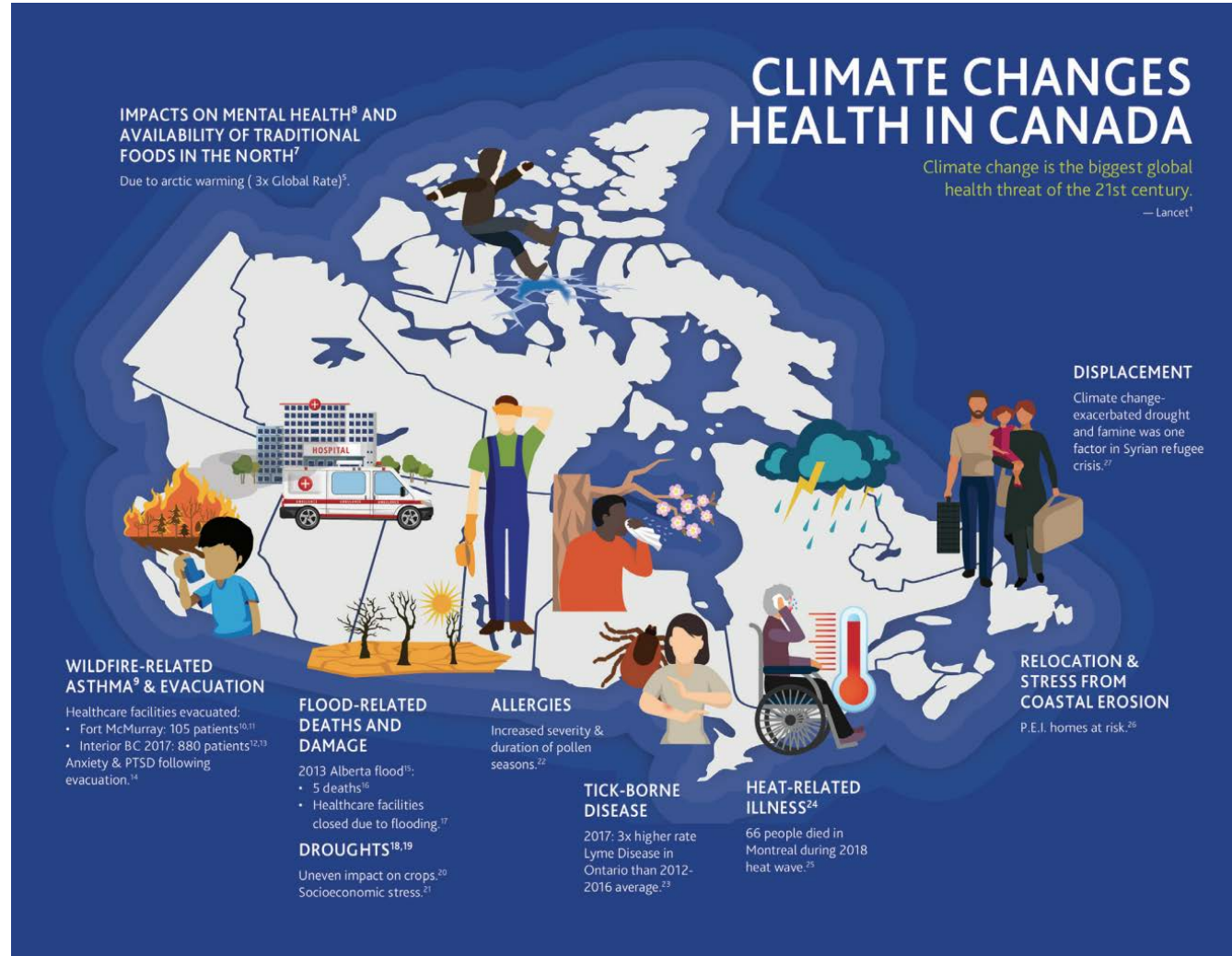
66 people died in  
Montreal during 2018  
heat wave.<sup>25</sup>

## DISPLACEMENT

Climate change-  
exacerbated drought  
and famine was one  
factor in Syrian refugee  
crisis.<sup>27</sup>

## RELOCATION & STRESS FROM COASTAL EROSION

P.E.I. homes at risk.<sup>26</sup>



## Most of Manitoba under air quality advisories due to wildfires



Smoky conditions expected to persist for a few days depending on wind dir

CBC News · Posted: Jul 19, 2021 10:23 PM CT | Last Updated: July 19, 2021



Smoke from nearby forest fires creates a haze over Winnipeg. (Tyson Koschik/CBC)

## Heat wave leads to severe drought in rural Manitoba

7 months ago | News | 2:02 CC

Manitoba's Rural Municipality of St. Laurent has declared an agricultural state of disaster as a heat wave and drought dries up wells and crop yields tank.

Manitoba

## Drought lowers river levels to the point where Manitoba Hydro expects \$200M deficit



Export revenue down dramatically for Crown corporation after more than a year of drought

Bartley Kives · CBC News · Posted: Nov 10, 2021 2:44 PM CT | Last Updated: November 10, 2021

Manitoba

## Prairie drought drives Canada's canola, wheat production down more than 35%: StatsCan



99% of Prairie agriculture land 'abnormally dry' or in drought, says Agriculture and Agri-food Canada



Marina von Stackelberg · CBC News ·

Posted: Dec 15, 2021 5:00 AM CT | Last Updated: December 15, 2021

Manitoba

## Heat wave breaks 22 records in Manitoba



Municipality of McCreary heats up to 20.2 C, hottest spot in province

CBC News · Posted: Nov 04, 2016 7:35 AM CT | Last Updated: November 4, 2016

Manitoba

## Lyme disease threat increasing in Manitoba as black-legged tick population expands north



54 confirmed or probable cases were recorded in 2018; most since tracking began

chuk · CBC News · Posted: May 01, 2019 5:00 AM CT | Last Updated: May 1, 2019



Deer ticks, also known as black-legged ticks, can carry and transmit Lyme disease. (CDC)

Manitoba

## Another Manitoba municipality declares state of agricultural disaster due to drought and heat



Rural Municipality of Armstrong is 2nd community to declare state of disaster

CBC News · Posted: Jul 12, 2021 8:27 PM CT | Last Updated: July 12, 2021



Dry Manitoba are looking much like this — dry, barren and not very productive. (Tyson Koschik/CBC)

Science

## Heat waves are increasing across Canada — and hotter nights are also dangerous



Manitoba

Rising nighttime temperatur



Nicole Mortillaro · CBC News

## More than 1,600 evacuees leaving 4 Manitoba First Nations as wildfires burn near Ontario border



Entire populations of Little Grand Rapids and Pauingassi will be flown to Winnipeg



Marina von Stackelberg · CBC News · Posted: Jul 20, 2021 4:00 AM CT | Last Updated: July 20, 2021

Manitoba

## Manitoba infrastructure won't withstand climate change, expert says



Storms last longer, occur more frequently and deliver more precipitation, which has economic fallout

CBC News · Posted: May 07, 2015 6:26 PM CT | Last Updated: May 8, 2015

Manitoba

## 3 Manitoba wildfires converge into one as suppression efforts east of Bloodvein First Nation continue



10 new fires since Monday include blaze near Katimik Lake between lakes Winnipeg and Winnipegosis

CBC News · Posted: Jul 27, 2021 7:16 PM CT | Last Updated: July 27, 2021



Fire near Bloodvein First Nation. The community was evacuated last week and has no way to return home. (Submitted by Ryan Klassen)

*“Climate change is no longer some far-off problem; it is happening here, it is happening now.”*

**Barack Obama** on Climate Change

Former President of the United States of America

So what can we do?



If the global health care sector  
were a country, it would be  
**the 5th largest emitter  
on the planet.**

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a new report:  
**HEALTH CARE'S  
CLIMATE FOOTPRINT**





## Canada's new climate plan demonstrates the price we pay for procrastination



Actions taken a decade ago would be bearing fruit now. We're running out of time.



[Aaron Wherry](#) · CBC News · Posted: Mar 30, 2022 4:00 AM ET | Last Updated: March 30



## Canada releases plan for a 40 per cent cut in carbon emissions by 2030

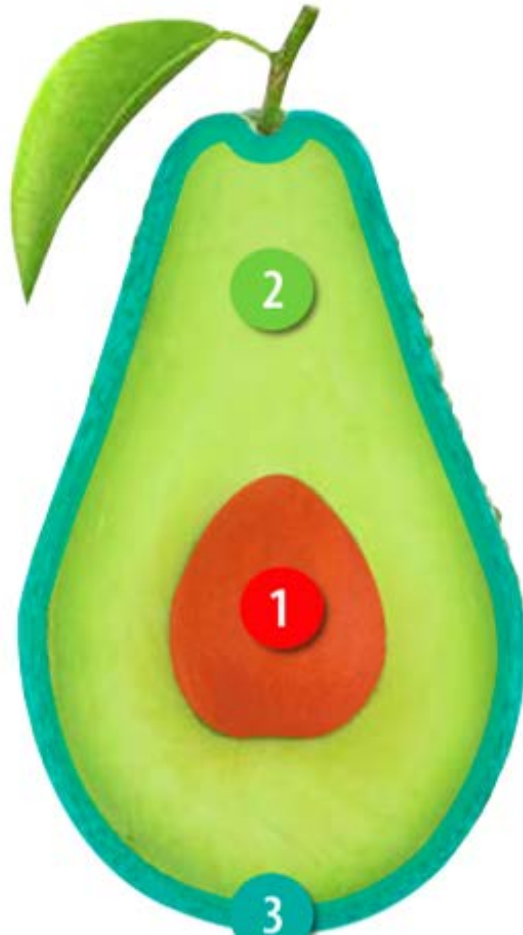


Feds pledge to dramatically curb emissions in oil and gas and transportation sectors to reach 2030 targets



[John Paul Tasker](#) · CBC News · Posted: Mar 29, 2022 1:16 PM ET | Last Updated: March 29





1. **Micro:** The clinical environment; encompasses both the individual family physician–patient relationship and the inter-professional, team-based care setting.



2. **Meso:** The local community; the geographic context in which clinical and academic medical work are situated. Includes education, training, and continuing professional development (CPD).



3. **Macro:** The broader realm of policies and their impact on population and public health, where family physicians act as advocates for healthy public policy.



Buchman S, Woollard R, Meili R, Goel R. Practising social accountability. From theory to action. Can Fam Physician 2016;62:15-8. (Eng), 24–7 (Fr).



# Micro – Learn and Make Personal Changes



## SCIENTIFIC REPORTS

OPEN

### Spending at least 120 minutes a week in nature is associated with good health and wellbeing

Mathew P. White<sup>1</sup>, Ian Alcock<sup>1</sup>, James Grellier<sup>1</sup>, Benedict W. Wheeler<sup>1</sup>, Terry Hartig<sup>2</sup>, Sara L. Warber<sup>1,3</sup>, Angie Bone<sup>1</sup>, Michael H. Depledge<sup>1</sup> & Lora E. Fleming<sup>1</sup>

Received: 8 May 2018

Accepted: 8 May 2019

Published online: 13 June 2019

Spending time in natural environments can benefit health and well-being, but exposure-response relationships are under-researched. We examined associations between recreational nature contact in the last seven days and self-reported health and well-being. Participants ( $n = 19,806$ ) were drawn from the Monitor of Engagement with the Natural Environment Survey (2014/15–2015/16); weighted to be nationally representative. Weekly contact was categorised using 60 min blocks. Analyses controlled for residential greenspace and other neighbourhood and individual factors. Compared to no nature contact last week, the likelihood of reporting good health or high well-being became significantly greater with contact  $\geq 120$  mins (e.g. 120–179 mins: ORs [95% CIs]: Health = 1.59 [1.31–1.92]; Well-being = 1.23 [1.08–1.40]). Positive associations peaked between 200–300 mins per week with no further gain. The pattern was consistent across key groups including older adults and those with long-term health issues. It did not matter how 120 mins of contact a week was achieved (e.g. one long vs. several shorter visits/week). Prospective longitudinal and intervention studies are a critical next step in developing possible weekly nature exposure guidelines comparable to those for physical activity.



### A Resilient Future

To achieve a true and adequate resilience, Manitoba needs to focus on feeding ourselves, moving ourselves, and sheltering ourselves without the use of fossil fuels.



### Transportation

We need to move all goods and people without gasoline or diesel



### Food

We need to feed ourselves locally without fossil fuel fertilizers or diesel for machinery



### Shelter

We need to heat all of our buildings (old and new) affordably without natural gas

# Areas for personal action

- Driving
- Heating our homes
- Flying
- Eating beef



25



## AROUND THE HOUSE

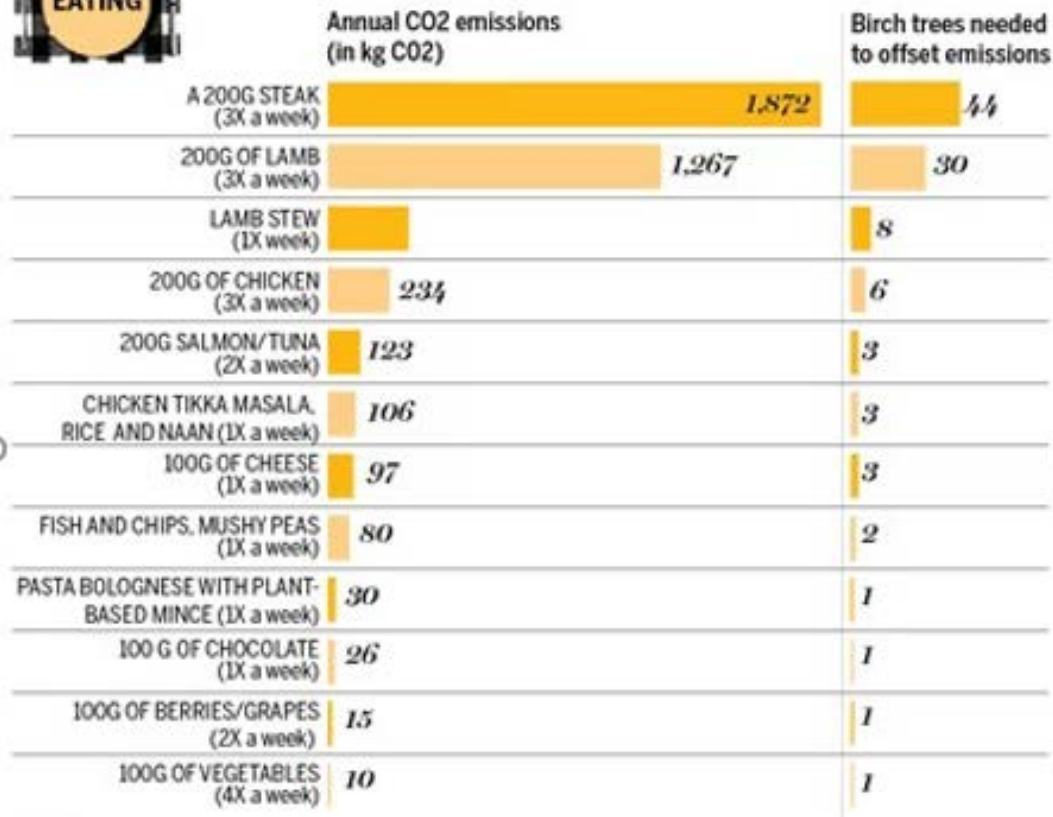
Annual CO<sub>2</sub> emissions  
(in kg CO<sub>2</sub>)

Birch trees needed  
to offset emissions

SHOWER (1X a day)	308	8
BATH (1X a day)	283	7
DISHWASHER (1500W) (1 hr. per day)	248	3
OVEN (2,000 MW) (20 minutes per day)	248	3
TOILET (2X a day)	99	3
MICROWAVE (1,000 MW) (5 minutes a day)	14	1
TOILET PAPER (2X a day)	7	1

# YOUR CONSUMPTION CHOICES HAVE CARBON CONSEQUENCES

*What are you willing to give up?*



SOURCE: CREDIT SUISSE

GIGI SUHANIC / FINANCIAL POST





# Climate co-benefits = healthy lifestyles/choices



**PaRx**  
A Prescription  
for Nature



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# Meso level – health systems



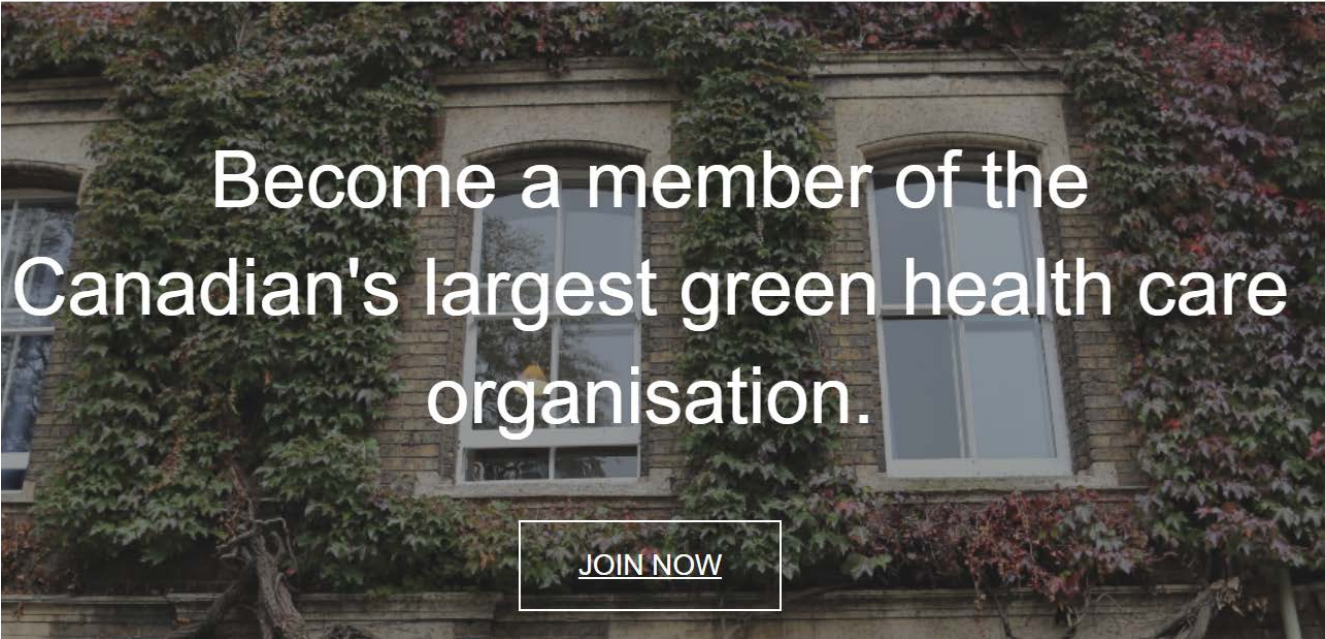
The Canadian Coalition  
for Green Health Care  

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Coalition canadienne pour  
un système de santé écologique

[Home](#) » [Membership](#) » [Become a Member](#)

Become a Member





# PPE Waste!

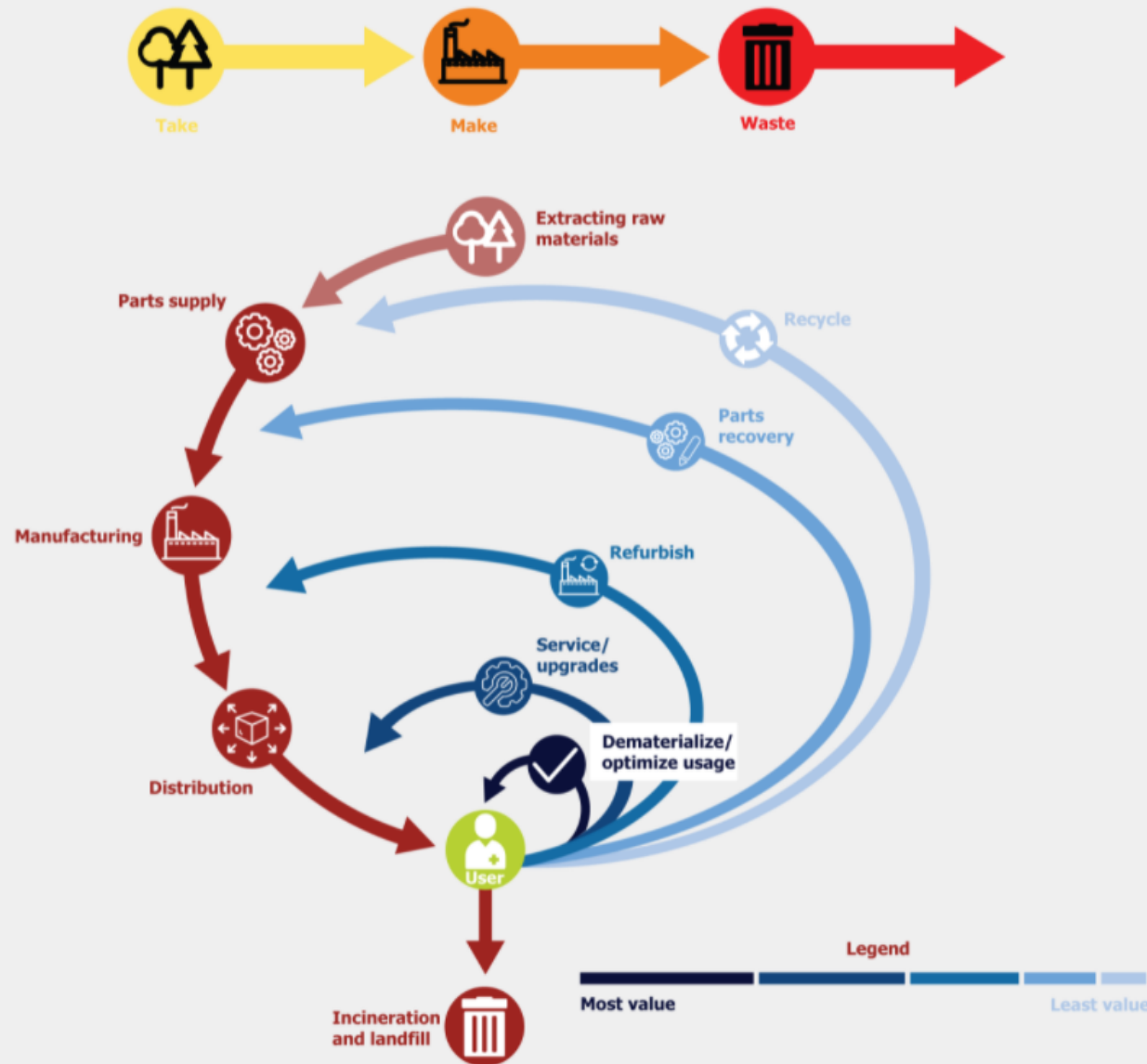
## Project Objective

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A newly launched project, of the Canadian Coalition for Green Health Care (Coalition), ***Reducing Health Care-Related PPE and Medical Single Use Plastic Waste Through Circular Economy Principles***, will demonstrate that hospital-generated PPE and mSUP materials can be successfully managed by applying the principles of a circular economy: reduce, reuse and recycle as much as possible before the materials are disposed of. This project will explore and identify reuse and reduction opportunities for PPE and selected mSUPs, which will complement and enable resource conservation.

# PPE Circular Economy

A linear economy holds no sustainable value for health care. Health care's participation in a circular economy (CE), however, would provide a major opportunity to yield direct benefits to the sustainability and efficiency of the delivery of health care services and indirect benefits from reducing harmful environmental impacts of hospital-generated waste (WHO, 2018). [6]



# Embedding Environmental Sustainability Pillar into QI work

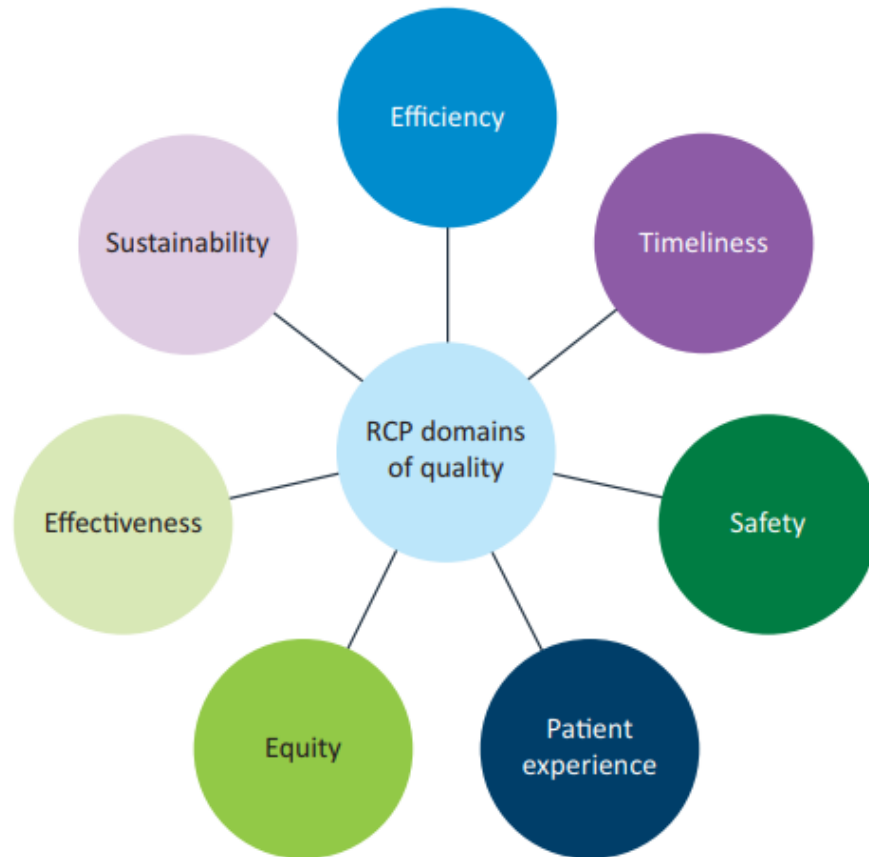


Fig 1. Domains of quality (adapted by the Royal College of Physicians from the Institute of Medicine).<sup>1</sup>

[umanitoba.ca](http://umanitoba.ca)

$$\text{Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts ("triple bottom line")}}$$

Mortimer et al., Future Healthcare Journal 2018, Vol 5, No 2: 88-93



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# End of the roll for examination table paper?

Eugenie Waters MD CCFP

**Choosing Wisely Canada**

**The report found that up to 30% of the tests, treatments and procedures associated with the 8 selected CWC recommendations are potentially unnecessary.**



## Seven Tests and Treatments to Question

by  
Canadian Society for Medical Laboratory Science  
Last updated: July 2020








### Recommendations

Resources for clinicians by health specialty

### Make a Change

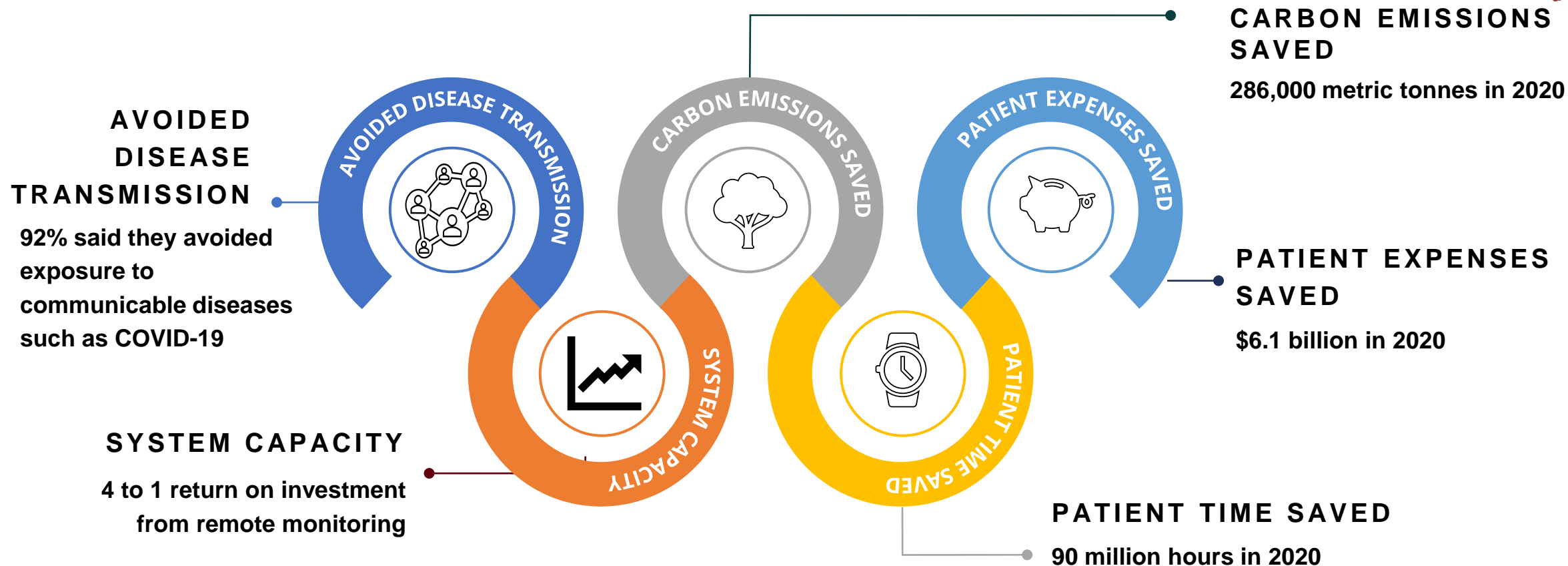
Choose implementation options for your sector

- |   |  |   |
|---|--|---|
| 1 | Don't collect more blood than what is needed. Use short draw tubes, consider add-on testing, and reduce or combine duplicate orders. |    |
| 2 | Don't proceed with testing or reporting when sample quality or identification is suspect.  |    |
| 3 | Don't collect extra blood tubes in anticipation of test orders.  |  |
| 4 | Don't support repeat test ordering (re-testing) at a frequency that is not backed by evidence.                                       |  |
| 5 | Don't routinely repeat critical results for most common analytes before reporting.   |  |



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# Value Emerging from Virtual Care



Source: 1. Canada Health Infoway, "Analysis of the current and potential benefits of virtual care in Canada,"

2. Canada Health Infoway, Blog: Infoway Connects Telehomecare: Receiving high marks from patients while providing significant value for the health care system

Note: Methodology for carbon and financial estimates available upon request







Editor's pick: Inhalers and climate change

PRACTICE

**Five things to know about metered dose inhalers and climate change**

pMDIs contribute 3% of health care's greenhouse gas emissions, while dry powder and soft mist inhalers have a lower impact.

## Metered Dose Inhalers



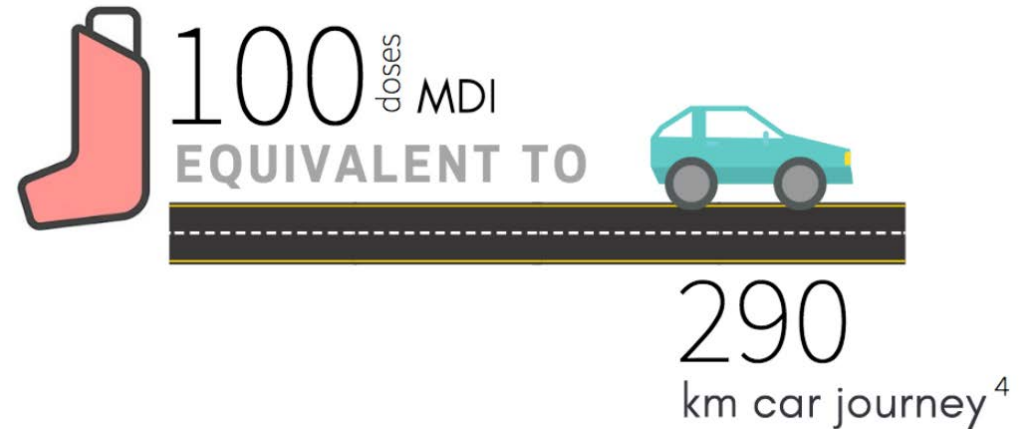
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# Low carbon alternatives – asthma inhalers

- Metered dose inhalers
  - Metered dose inhalers represent 3.1% of the carbon footprint of the English National Health Service (NHS)

**NICE** National Institute for Health and Care Excellence



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## Patient decision aid

### Inhalers for asthma

Information to help people with asthma and their healthcare professionals discuss their options for inhaler devices.

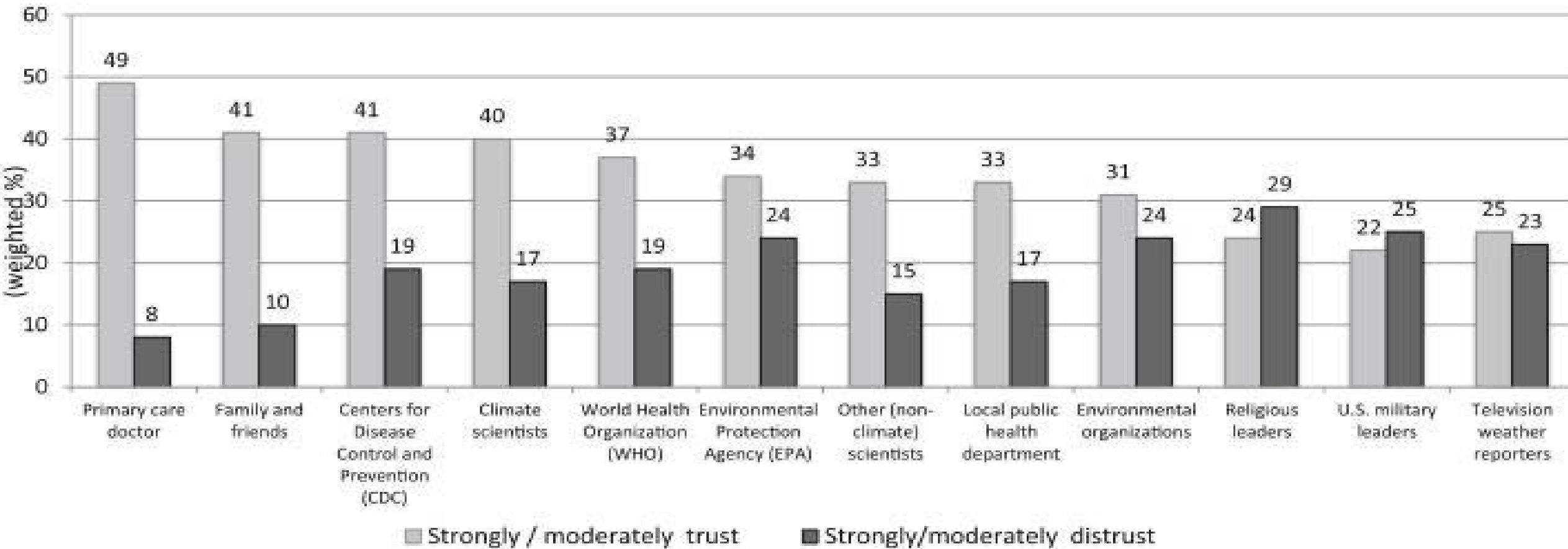
It is suitable for use by people aged 17 years and over.

vanHove M, Leng G. A more sustainable NHS. BMJ 2019;366:l4930 doi: 10.1136/bmj.l4930  
(Published 2 August 2019)

# Macro Level Change



# We Are Trusted...



(N = 1,275)







📌 Pinned Tweet



**Doctors for XR** @DoctorsXr · Oct 24

\*BREAKING\*

The editor of [@TheLancet](#), one of the most prestigious medical journals in the world, has come out officially asking all health professionals to engage in non-violent social protest to protect people from the climate & ecological breakdown.

Yes you heard that right.



💬 348

↻ 7.6K

❤️ 13.3K



[Show this thread](#)





**Adaptation** involves modifying our decisions, activities and ways of thinking to adjust to a changing climate

### Goals



Increasing our capacity to adapt



Improving our ability to thrive under different climate conditions



Building resilience to extreme weather and climate changes

### Examples



Forest protection



Infrastructure and building design



Flood protection



**Changing agricultural practices**  
Planting different crops to respond to changing growing seasons and temperatures, or planting a variety of crops to reduce damage from pests that could migrate northward

### Overlapping examples



Green infrastructure



Water and energy conservation

**Mitigation** aims to reduce the causes of climate change

### Goal



Cut down greenhouse gas emissions

### Examples



Energy efficient technology



Sustainable transportation



Industrial process improvements



Renewable energy



**Creating community and home gardens**  
Increasing local agricultural capacity helps reduce the need to import food over long distances, and by extension the consumption of fossil fuels

# Climate Change: Adaptation and Mitigation

For the whole Canada in a Changing Climate report, visit [Adaptation.NRCan.gc.ca](http://Adaptation.NRCan.gc.ca)



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## Manitoba's Road to Resilience



A COMMUNITY CLIMATE ACTION PATHWAY TO A FOSSIL FUEL FREE FUTURE

[umanitoba.ca](http://umanitoba.ca)

# The time to start doing something is now!



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