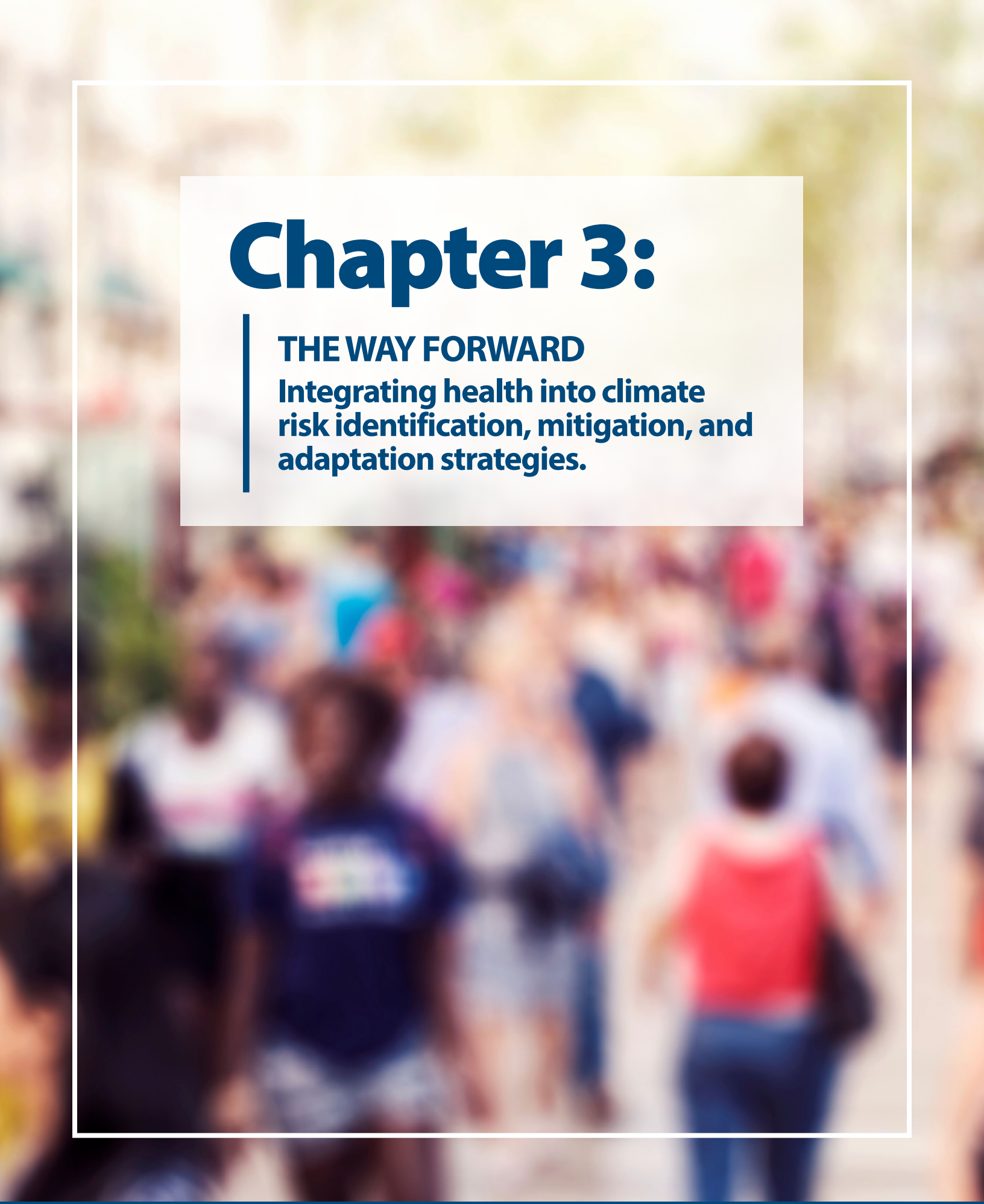


Chapter 3:

THE WAY FORWARD

Integrating health into climate risk identification, mitigation, and adaptation strategies.

Key Messages

- **Evidence shows that climate change poses significant risks to human health.**
- **There is a need to better understand local health risks to Durham Region residents.**
- **A regional climate change and health vulnerability assessment (CCHVA) is an essential step toward preventing, reducing, and addressing climate-related health impacts in Durham Region.**
- **The Region's CCHVA is composed of several stand-alone reports exploring the potential health impacts of extreme heat, extreme weather, poor air quality, vector-borne diseases, ultraviolet radiation, and food and water insecurity.**
- **Climate equity is prioritized in all reports to improve local understanding of who may be most affected and least protected.**

Acronyms

CCHVA	Climate change and health vulnerability assessment
DRHD	Durham Region Health Department
GTA	Greater Toronto area
HEIA	Health Equity Impact Assessment
HVAs	Health vulnerability assessments
MOHLTC	Ministry of Health and Ministry of Long-Term Care
OCC	Ontario Climate Consortium
OPHS	Ontario Public Health Standards
RCPs	Representation Concentration Pathways
UVR	Ultraviolet radiation
VA	Vulnerability assessment

Terms & Definitions

Adaptation

The process of modifying our decisions, activities, and ways of thinking to be proactive and better prepared, as well as reactive and better able to respond to a changing climate and its impacts on health. [1] There are two main types of adaptation, anticipatory (before an event) and institutional (after an event).

Adaptive Capacity

The ability to adjust to or take protective measures against climate hazards and respond to or cope with the health consequences of climate hazards. Existing social inequities mean not all communities or populations have the support, tools, strategies, or financial resources to implement needed climate change and health adaptation actions. [4, 5, 6]

Baseline

The baseline or reference is the starting level that change is measured against. It can be a "current baseline" which represents measurable present-day conditions, or a "historical baseline" which represents conditions from the past.

Climate Change

Refers to a change in the state of the climate that can be identified by changes in statistical measures like the average (mean) and/or variability in weather and atmospheric conditions that persists for an extended period, typically decades or longer. [1, 2, 3]

Climate Change and Health Vulnerability Assessment

This is a tool used to identify and understand the impacts climate change may have on the health of a population or community. It can help identify local health impacts associated with climate change as well as populations or communities who may experience disproportionate health burdens.

Climate Hazard

The potential occurrence of climate-related physical events or trends that may cause damage including negative health impacts. Examples include extreme heat events, extreme weather and an increase in vector borne diseases.

Climate Vulnerability

The predisposition for health to be adversely affected by climate change. Climate vulnerability is determined by differential exposure, sensitivity, and capacity to adapt to climate hazards. In public health, the concept of vulnerability can be highly stigmatizing, so it is important to emphasize that vulnerability is not a label for communities or populations. [1, 7, 8]

Ecological Determinants of Health

The elements of nature that are vital for life on Earth, including food sources, fresh water, oxygen, materials to construct shelters and tools, abundant energy, and a reasonably stable global climate with temperatures conducive to human and other life forms. Maintaining the integrity, stability, and equitable distribution of these natural systems is an essential condition for health, survival, and prosperity. [9, 10]

Exposure

The degree to which an individual or community encounters climate hazards. It is influenced by underlying social and economic conditions that result in some individuals or communities experiencing more exposure to climate hazards than others.

Health Equity

Health equity means that everyone has a fair opportunity to enjoy their full health potential and are not disadvantaged by unfair social, economic, and environmental conditions. Many factors outside the health care system influence health. Health equity is achieved when health disparities between groups due to unfair social and structural factors are eliminated. [2, 11]

Health Equity Impact Assessment

A systematic approach used to evaluate the potential impact of policies, programs, or interventions on health equity. It aims to identify and address any potential differential impacts that these initiatives may have on different populations or groups, particularly those experiencing health inequalities.

Health Inequity

Differences in health outcomes that are unfair, unjust and avoidable. Health differences result from social, economic, demographic, geographic, or environmental disadvantages.

Health Neighbourhoods

Durham Region has 50 Health Neighbourhoods and tracks 96 indicators of health to better understand the demographics and health of Durham communities.

Impacts

This term is used to refer to the effect of climate events and changes on natural and human-made environments. These impacts often refer to effects on lives, livelihoods, health, ecosystems, societies, economies, service delivery and infrastructure. Impacts are also sometimes called consequences or outcomes.

Intersectionality

Intersectionality recognizes that the experience of multiple forms of discrimination and disadvantage (e.g., racism, classism, sexism, homophobia) has a cumulative negative effect that is greater than the sum of the parts. An intersectional approach to public health recognizes that health equity must address interwoven systems of power and oppression. [11]

Maladaptation

When unintended health risks are accidently or inadvertently caused when implementing adaptation measures. For example, planting pollen-producing trees in an urban area to increase green space can cause health problems for individuals with allergies. Another example is when climate protective housing upgrades result in rent increases for tenants with fixed incomes. Health equity impact assessments (HEIAs) are often recommended to avoid maladaptation.

Mitigation

An intervention that aims to reduce the causes of climate change, remove heat-trapping greenhouse gases from the atmosphere, and stabilize their levels. [1]

Natural Heritage Area

These are areas in our environment that have important natural heritage features that support key ecological processes within a watershed. Natural heritage features include:

- Woodlands
- Grasslands
- Savannahs
- Lakeshores
- Lakes
- Watercourses and valley lands
- Wetlands
- Stormwater management features, ponds, and other water bodies
- Groundwater
- Glacial features
- Areas of natural and scientific interest
- Agricultural lands
- Wildlife

Risk Factor

Any characteristic, attribute or exposure that increases a person's likelihood of loss, trauma, illness, injury, or death.

Sensitvity

How much individuals or a population are affected by the health impacts of climate change. It is influenced by biologic and social factors within the population such as age, sex, chronic illness, or socioeconomic status.

Social Determinants of Health

Forces and systems that shape the conditions of people's daily lives (e.g., income, education, employment) and influence their health and well-being outcomes. These include economic, social, and political policies and systems, as well as social norms. [12]

Chapter 3

THE WAY FORWARD

Integrating health into climate risk identification, mitigation, and adaptation strategies.

3.1 Background

To take local action to prevent climate related health impacts, there is a need to assess the risks and health vulnerabilities of Durham Region residents. [13]

The rapid rate of global climate change poses a threat to the health of all Canadians that is expected to intensify over time. The good news is that many of the health impacts from climate change can be prevented or minimized if communities are able to effectively adapt.

There is increasing awareness of the urgent need for public health interventions to address climate change.

> ***"There are many competing public health challenges but given that climate change threatens the livability of the planet, compounds existing health issues, and widens health inequities, it must be a public health priority. This requires public health action in climate mitigation, adaptation, advancing co-benefits, and preventing maladaptation."***
>
> *- The Chief Public Health Officer of Canada's Report on the State of Public Health in Canada 2022 [21]*

The Paris Climate Accord urges countries to take action to mitigate climate change and find ways to adapt to it. [14] Mitigation refers to strategies for reducing greenhouse gas emissions and corresponds to primary prevention. [15, 16, 17]

In the context of health, adaptation refers to policies, measures and strategies which are designed to reduce the impacts of climate change and support resilience to these changes. [18] Adaptation corresponds to strategies aimed at enhancing a system's ability to adjust to and reduce vulnerability to the effects of climate change. [16] Both mitigation and adaption are required to meet global health needs and are complementary to one another. [19]

Addressing climate change requires a deep understanding of several factors [20] including the:

- Risks posed by current climate variability;
- Possible impacts associated with future climate change;
- Unique vulnerabilities facing specific populations, communities, or regions;
- Measures to protect health through mitigation and adaptation; and
- Impact of the ecological and social conditions that shape health in a changing climate (i.e., the ecological and social determinants of health).

Health authorities in communities across Canada need to act now to prepare for climate threats that may be familiar (e.g., increased frequency or severity of current climate events like flooding, extreme heat, and wildfires) or unfamiliar (e.g., exotic infectious diseases, catastrophic impacts from multiple events) which may impact both individuals and health systems. Evaluating climate change and health vulnerabilities is particularly important for identifying and preparing for future climate risks. [21]

There are many tools and methods to assess and integrate health into climate change risk identification, adaptation, and mitigation strategies. These include: [22]

1. Impact assessment tools
2. Tools for integrating health into adaptation policies and strategies
3. Models
4. Conceptual frameworks (including climate and health vulnerability assessments)
5. Other methodological approaches

Climate and health vulnerability assessments (CCHVA) are recommended by Health Canada and the Ministry of Health and Long Term Care (MOHLTC) for assessing and integrating health into climate change planning within a Canadian context.
[7, 20, 23, 24, 25, 26, 27, 28, 29]

3.2 Climate Change and Health, Vulnerability Assessments

A regional CCHVA can help identify and interpret information needed to prepare health systems and communities for the impacts of climate change. [20]

CCHVAs identify health risks associated with climate change and those who may experience more risk than others. Vulnerability assessments can enhance adaptive capacity through the identification of both mitigation and adaptation strategies to decrease the health impacts of these risks. Research suggests that health vulnerability assessments for climate change can help identify root causes of vulnerability, such as food insecurity, inadequate income and social exclusion. [20] They can also be used to identify unintended, health impacts of a planned policy, program or initiative on marginalized populations. [20]

Why Vulnerability Assessments are Important

Although climate change affects everyone, some individuals and communities will be more susceptible to climate risks, whereas others may have a greater capacity to cope and adapt to these changes. [20, 21, 24]

The purpose of completing a climate change and health vulnerability assessment is usually three-fold:

1. Identify potential climate-sensitive health outcomes expected to occur because of climate change within a community.
2. Determine populations vulnerable to these climate-sensitive health outcomes.
3. Identify policies and actions to help mitigate the impact of climate change on climate-sensitive health outcomes in the community and support adaptation planning efforts.

CCHVAs can help to:

- Gather evidence and improve understanding of the link between climate and health and broaden understanding of the impact climate change may have on health.
- Provide valuable information on the severity and trends of current and future risks to health and well-being.
- Develop baselines to be able to measure future change.
- Identify opportunities to include climate-focused concerns into existing programs and policies.
- Facilitate collaboration between different project and community partners, governments, industries, and communities, to improve health outcomes and aid programs at local levels to support efforts to prepare for or mitigate for potential health impacts. [15]
- Address evolving knowledge needs of government decision makers, civil society organizations and individual community members by providing evidence-based and, when possible, quantitative information to help people understand Canadian's climate is changing, the effects on health and health systems, including implications for those most at risk in society.

3.2.1 Assessing Climate Health Risks in Canada

Climate-related health outcomes vary widely by geographic location, environmental factors, and specific characteristics and vulnerabilities of the populations living in the area.

In the past 20 years there have been two comprehensive Canada-wide assessments of vulnerabilities and adaptive capacity to climate change:

- Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity (2008) [30]
- Health of Canadians in a Changing Climate: Advancing our knowledge for action (2022) [7]

Both assessments highlighted the following climate hazards categories that are expected to impact the health and wellbeing of Canadian communities in the years to come:

- Natural hazards (e.g., extreme weather events, extreme heat, drought, rainstorms, freezing rain, flooding, permafrost melting)
- Air quality (e.g., exposure to air pollution, including wildfire and aeroallergens);
- Infectious diseases
- Water quality, quantity, and security
- Food safety and security
- Stratospheric ozone depletion

In addition to the climate hazards listed above, the 2022 report also highlighted the mental health impacts of climate variability and change, and identified important factors that support psychological well-being. [7] The relationship between mental health and climate change was identified as a data/knowledge gap in the 2008 report. [24]

A significant focus of the 2022 report, which was absent from the 2008 report, is an analysis of the relationship between climate change and important determinants of health, which can affect adaptive capacity and health equity to influence vulnerability to health impacts. [7] The report also highlighted that addressing inequities and strengthening determinants of good health is required to increase climate change resilience and provided a climate change and health equity framework.

To help develop capacity among Canadian health authorities to assess and adapt to the health impacts of climate change, Health Canada released their Climate Change and Health Vulnerability and Adaptation Assessment: Workbook for the Canadian Health Sector in concert with the 2022 National assessment. [20] This workbook was developed to provide step-by-step information on how to conduct a climate change and health vulnerability and adaptation assessment.

3.2.2 Assessing Climate Health Risks in Ontario

The 2018 Healthy Environments and Climate Change Guideline requires Ontario's public health units (PHUs) to assess health impacts related to climate change and monitor these impacts within their jurisdiction to inform local vulnerability plans using relevant and appropriate indicators. [31]

The purpose of this guideline is to help boards of health in developing approaches for promoting healthy built and natural environments to exchange population health and mitigate environmental health risks. [31] The guideline identifies approaches that must be used, or at least considered, to achieve the following within the communities they serve. The guideline also includes "Enhance public health capacity to address factors in the environment, including the impacts of climate change, using population-based activities (e.g., vulnerability assessments)". Climate Change Adaptation was identified in the standard as an approach required for use by boards of health.

3.2.2.1 Reference to the Ontario Public Health Standards

Ontario PHUs are mandated by the province to assess and the address the local health impacts of climate change

The Ontario Public Health Standards (OPHS) which apply to climate change vulnerability assessments and adaptation planning are outlined in **Table 3.1** below.

Table 3.1 | OPHS requirements related to climate change health, risk, and vulnerability assessments as per the 2018 Healthy Environments and Climate Change Guideline. [31]

POPULATION HEALTH ASSESSMENT	HEALTHY ENVIRONMENTS
• **Requirement 2:** "The board of health shall interpret and use surveillance data to communicate information on risks to relevant audiences in accordance with the Healthy Environments and Climate Change Guideline, 2018…"	• **Requirement 1:** "The board of health shall a) conduct surveillance of environmental factors in the community; b) conduct epidemiological analysis of surveillance data… c) use information obtained to inform… programs and services in accordance with the Healthy environments and Climate Change Guideline, 2018" • **Requirement 2:** "The board of health shall assess health impacts related to climate change in accordance with the Healthy Environments and Climate Change Guideline, 2018" • **Requirement 7:** "The board of health shall, as a part of its strategy to reduce exposure to health hazards and promote healthy natural and built environment, effectively communicate with the public by: … c) Addressing the following topics based on an assessment of local needs: … ii) Climate change…iv) exposure to radiation, including UV light… v) extreme weather… vii) outdoor air pollutants"

Source: Population and Public Health Division, Ministry of Health and Long-Term Care, 2022 [31]

Required approaches to meet the requirements above include:

- Engaging municipalities in healthy environment strategies including "collaborating with municipalities under the Ontario Planning Act to address local impacts of climate change and reduce exposure to environmental health hazards in the community."
- Climate Change Adaptation:
  - "Boards of health shall consider the use of the Ontario Climate Change and Health Toolkit, 2016, or other equivalent tool when assessing the health vulnerability status of their communities. [24, 26] Assessments should address rising temperatures, vector-borne illness, food and waterborne illness, forest fires, and air pollution"
  - "Boards of health shall monitor the impacts of climate change within their jurisdiction to inform local vulnerability plans using indicators…"
  - "Boards of health shall engage in actions to mitigate heat health impacts"

Although communities across Ontario share many health vulnerabilities, sensitivities and exposure to climate hazards, local assessments are essential to providing appropriate evidence tailored actions that protect the health of the communities being served and avoid maladaptation.

The Environmental Health Climate Change Framework for Action

In 2016, the MOHLTC developed The Environmental Health Climate Change Framework for Action to meet the public health challenges of a changing climate in Ontario.

The framework was developed to support an adaptive and resilient public health system that can anticipate, address, and mitigate emerging risks and impacts of climate change. It was intended to help improve the public health system in Ontario and its ability to:

- Reduce incidence of adverse health outcomes from the impacts of climate change.
- Reduce public exposure to health hazards related to a changing climate.
- Identify interventions that reduce exposure to climate change impacts.
- Enhance capacity to address the risk factors associated with climate change.

To help Ontario PHUs assess and address the health impacts of climate change, a toolkit was developed in conjunction with The Environmental Health Climate Change Framework for Action. The toolkit provides a technical document [26], workbook [28], and report [29] to support local PHUs to:

- Identify vulnerabilities within their communities by completing climate change and health vulnerability assessments as part of the OPHS standards and regulations.
- Raise awareness about the health hazards of climate change.
- Reduce public health vulnerability to climate change.

Since this framework and toolkit were developed, several PHUs across Ontario have undertaken assessments of climate change, health vulnerability, and adaptation to gather evidence to begin taking measures to protect their community's health.[1]

---

1 To date, HVAs have been completed by five Ontario PHUs (PHUs (Middlesex-London Health Unit [25], Simcoe Muskoka Health Unit [21], Peel Public Health, Windsor-Essex County Health Unit, [39] and York Region Public Health [40]).

3.3 Assessing Climate Change and Health Risks in Durham Region

Durham Region recognizes the need to address climate change mitigation and adaptation from a corporate and community perspective.

This commitment is identified in the Durham Region Strategic Plan, the Durham Region Corporate Climate Action Plan, and the Durham Community Climate Adaptation Plan. Durham Region Health Department's (DRHD) vulnerability assessment complements these plans by identifying current and future health risks from climate change.

The purpose and objectives of DRHD's vulnerability assessment are outlined in **Figure 3.1**. Information gathered though the process will be used to support evidence-informed adaptation plans, policies, and programs. Results and materials may also support community and municipal partner's climate change planning and adaptation processes.

Figure 3.1 | Purpose and objectives of Durham Region Health Department's CCHVA.

3.3.1 Assessment Process

DRHD carried out the CCHVA process based on an adapted version of the MOHLTC's Guidelines for Ontario [26, 28, 29] and Health Canada's adaptation workbook [20].

Additionally, findings from the 2022 National assessment [7] and completed HVAs from other Ontario PHUs (e.g., London Middlesex [27], Simcoe Muskoka [23], York [32], and Windsor Essex [33]) were consulted to help identify climate change needs and vulnerabilities.

3.3.1.1 Assessment Scope

Prior to starting this process for Durham Region, the assessment was framed and scoped to determine the geography, timeframes, and health outcomes to be included.

GEOGRAPHY: THE REGIONAL MUNICIPALITY OF DURHAM

The assessment focuses primarily on data for Durham Region as a whole. However, when available and appropriate to do so, climate projections and health information were presented at finer geographic scales, like municipality or neighbourhood level.

Timeframe

Historical data

The time periods used for analysis were chosen on a case-by-case basis, based on data availability and comparability. To allow sufficient time for review, analysis and reporting, available data after the year 2022 were not included in this assessment.

Projections of potential futures: Baseline, 2020s, 2050s, and 2080s

Examining the immediate, short-term, and long-term changes to our climate is essential for accurately assessing potential health risks, as well as determining appropriate mitigation and adaptation strategies.

Durham Region-specific climate projections were created for the near, short, and long term by the Ontario Climate Consortium (OCC). [5] The Ontario Ministry of Health provides model estimates for various climate-sensitive health hazards (like skin cancer rates, heat alerts) based on climate projections for the 2050s and 2080s. To align with these projections, similar timeframes were employed by DRHD while carrying out the CCHVA process.

Unless otherwise specified, the following time periods are used to examine projection data:

- **Baseline:** 1990s (1971 to 2010)
- **Near future:** 2020s (2011 to 2040)
- **Short-term:** 2050s (2041 to 2070)
- **Long-term:** 2080s (2071 to 2100)

Climate Projections

All the climate projections for Durham Region were generated by the OCC. These projections are based on the representation concentration pathway (RCPs) 8.5 scenario using biased-corrected climate data specific to Durham Region. [5, 34]

Climate Hazards

Priority climate hazards were chosen based on those previously identified as having the greatest potential impact to Ontario communities in coming years due to our changing climate within the MOHLTC Ontario guidelines [26], as well as the climate hazards identified in the Canada-wide adaptation and vulnerability assessment released by Health Canada. [2] [7]

Based on these sources, the following climate hazards were chosen as the focus of DRHD's CCHVA process:

- Extreme heat
- Extreme weather
- Poor air quality
- Vector borne disease
- Ultraviolet radiation
- Access and quality of food and water

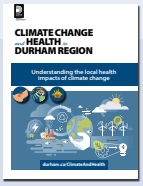
3.3.1.2 Assessment Format

The health impacts of climate change are immense and complex. Durham Region's CCHVA has been developed and organized as a series of stand-alone reports for each identified climate hazard.

These reports will be released individually to support a clear and managed communication of findings. By understanding and communicating key findings by each climate hazard, we can better identify local communities, partnerships, and adaptation measures most relevant to reducing local health risks. **Figure 3.2** list the planned vulnerability assessments. As these reports are released, they will be made available at **durham.ca/ClimateAndHealth**. **Appendix 3.1** describes the process used to carry out Durham's CCHVAs.

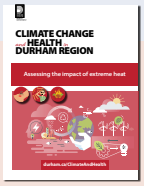
2 Excluding any that are not directly relevant to Durham's community (e.g., rising sea levels or permafrost thaw).

Primer

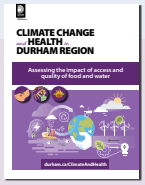


Understanding the local health impacts of climate change

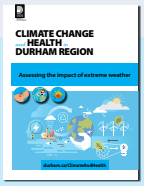
Upcoming Vulnerability Assessments



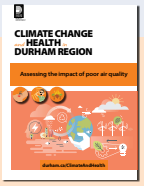
Assessing the impact of extreme heat



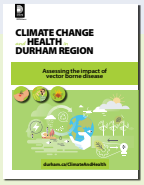
Assessing the impact of access and quality of food and water



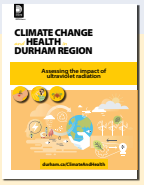
Assessing the impact of extreme weather



Assessing the impact of poor air quality



Assessing the impact of vector borne disease



Assessing the impact of ultraviolet radiation

Figure 3.2 | Overview of Durham Region Health Department's upcoming CCHVA reports.

3.3.1.2 Assesment Limitations and Considerations

As with all scientific research, there are some general limitations to consider when interpreting the results of the CCHVAs.

These include the following:

Data availability

Although assessing the potential health impacts of climate hazards on the health of community members for each Durham Region municipality would be beneficial, this was not feasible due to several data limitations and analytical concerns. Examples include lack of data at the municipal level, and small sample sizes and case numbers. Additionally, the ability to distinguish differences in potential outcomes based on individual municipalities may not be possible due to small sample sizes.

Regional climate data is only consistently available at one Environment Canada and Climate Change weather monitoring station located within Durham Region (Oshawa), which may not provide representative weather information for other area locations, especially areas in north and east Durham Region. There were also instances of incomplete historic data, which was filled in with data from other weather stations in the areas. This limits the accuracy of baseline measures and comparisons between climate and health data at the Durham Region-level.

Since the CCHVA process relied on data form a variety of sources and research areas, there are instances when the timelines used to summarize or report the data do not align. In addition, the availability of recent climate data summaries and climate normal were not accessible since the update frequency of these data sources is approximately every 30 years. Additionally, there are many climate and environmental indicators for which data are not currently available within the region (e.g., pollen counts, lightning, or extreme weather events), which reduced the ability to assess or examine climate hazards and their potential health impact.

Although climate trends were described alongside health status data to demonstrate the relationship between the environment and population health when appropriate, these findings are not intended to prove causation between climate and health. The health measures presented in the CCHVA reports are complex and result from a variety of interconnected factors at the individual and community levels. It is not possible to assess the causal relationships between climate hazards and health without exploring other social, political, economic, and biological factors, which were not included within the scope of these assessments.

Data analysis

In most cases, the CCHVA does not account for health outcomes associated with multiple compounded climate hazards. For example, it is expected that extreme heat days may also coincide with poor air quality days and extreme storms. When these hazards occur together or in succession, they can intensify each other's effects and create additional challenges for communities and health systems.

Language

When possible, we attempted to use standardized, inclusive, and culturally appropriate language when drawing on evidence related to different communities and their experiences of health. However, in some instances we relied on the terminology included in the source documents (e.g., visible minorities, immigrants), if appropriate alternative language could not be identified.

Literature review

Systematic review criteria such as database selection, search terms, inclusion and exclusion criteria were not employed due to time and capacity limitations related to the COVID-19 pandemic. Instead, the health vulnerability assessments employ an iterative review process, aligned with provincial and federal vulnerability assessment guidance.

Due to the rapid advancement of climate and health knowledge, it is expected that these assessments will not reflect an exhaustive review of all relevant evidence and data.

Helpful Resources

Want to learn more?

This section provides a summary of key resources to help understand the methods and tools available for integrating health and equity into climate change risk assessment, adaptation and mitigation policies and strategies. While this list provides an overview of existing literature, it is not an exhaustive list. Instead, it is intended as a jumping off point for learning and perhaps inspiring discussion and collaboration.

CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT: WORKBOOK FOR THE CANADIAN HEALTH SECTOR [20]

Public Health Agency of Canada

2022

This workbook supports health officials to develop climate change and health vulnerability assessments and adaptation plans through participatory processes that engage partners from multiple sectors and organizations.

HEALTH OF CANADIANS IN A CHANGING CLIMATE: ADVANCING OUR KNOWLEDGE FOR ACTION [7]

Berry, P., Schnitter, R. (ed.)

2022

This report provides a comprehensive overview of climate risks to the health of Canadians so that government decision makers, health practitioners, researchers, and individual Canadians can take effective measures to protect health now and in the future.

HEALTHY ENVIRONMENTS AND CLIMATE CHANGE GUIDELINE [31]

Ministry of Health and Long-Term Care

2018

These guidelines support Ontario health units in developing approaches for promoting healthy built and natural environments to enhance population health and mitigate environmental health risks. The Standards identify the minimum expectations for public health programs and services.

MOBILIZING PUBLIC HEALTH ACTION ON CLIMATE CHANGE IN CANADA: The Chief Public Health Officer of Canada's Report on the State of Public Health in Canada 2022 [21]

Public Health Agency of Canada

2022

The 2022 Chief Public Health Officer of Canada (CPHO) annual report on the state of public health in Canada focuses on the impacts of climate change in and the role that public health systems can play in taking climate action.

ONTARIO CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT GUIDELINES: TECHNICAL DOCUMENT [26]

Ministry of Health and Long-Term Care

2016

The technical document provides detailed guidance for conducting a climate change and health vulnerability assessment.

ONTARIO CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT GUIDELINES: WORKBOOK [28]

Ministry of Health and Long-Term Care

2016

This workbook provides a stepwise approach for following the technical guidance and completing a climate change and health vulnerability assessment.

TOOLS AND METHODS FOR INTEGRATING HEALTH INTO CLIMATE CHANGE ADAPTATION AND MITIGATION POLICIES AND STRATEGIES [22]

National Collaborating Centre for Healthy Public Policy

2021

This report presents the results of a scoping review of the literature on existing tools and methods for integrating health concerns into climate change adaptation and mitigation policies and strategies. It is intended for public health professionals who are involved in the development of these types of polices and strategies. It may also be of interest to others who are interested in further integrating the health dimension into their actions aimed at combating climate change.

This review provides details, hyperlinks, and use case examples for thirteen tools and methods, which were grouped into five categories:

1. Impact assessment tools
2. Tools for integrating health into adaptation policies and strategies
3. Models
4. Conceptual frameworks
5. Other methodological approaches

TOWARDS RESILIENCE: DURHAM COMMUNITY CLIMATE ADAPTATION PLAN (DCCAP) 2016 [35]

The Regional Municipality of Durham

2016

This document outlines Durham's Community Climate Adaptation Plan, including 18 proposed programs approved in principle by Durham Regional Council on behalf of the Durham community.

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APPENDIX 3.1

Overview: DRHD's Climate Change and Health Vulnerability Assessment Process

The following process was used to carry out each CCHVA, based on an adapted version of the provincial [1, 2] and federal [3] toolkits.

Step 1:

Identify Available And Relevant Data and Information For The Assessment

Relevant data included sources such as peer reviewed literature, grey literature, climate and weather data, provincial and community reports, as well as local health service and health outcome risk, knowledge, and behaviour data.

Use this information to identify and define relevant indicators and metrics based on available data.

Step 2:

Describe Current Risks Including Vulnerabilities and Adaptive Capacity

The purpose of this step is to describe current climate change and health and equity risks. This involves documenting climate hazards and vulnerabilities, which are a function of sensitivities, and individual and community level capacities to cope or adapt.

Step 2a:

A literature review was conducted to describe and understand the following:

- Current climate trends.
- Environmental, community, behavioural, social, and structural factors that impact exposure to climate hazards.
- Links between health outcomes and climate hazards.
- Populations experiencing increased vulnerability to the health impacts of climate change.
- Current gaps in knowledge.

The following sources of information were included within the scope of each literature review:

- Existing evidence reviews such as the Intergovernmental Panel on Climate Change Reports [170], the Health of Canadians in a Changing Climate Report [2] and the Canada Health Brief [156]
- Peer reviewed research studies and research summaries
- Grey literature and other public health reports from trusted sources such as public health organizations, climate researchers, governmental publications, and relevant national collaborating centers for public health

Where available, this review prioritized local Canadian reports, literature, evidence and data. All information sources reviewed were published in English.

Step 2b:

Describe historical trends in climate hazards of interest

Data was collected and analyzed for climatic hazards of interest. When available, data were explored at a regional level. When not available, provincial, or national historic trends were reported for context. If relevant to important health outcomes, how the geographic range, intensity and duration of weather events have changed over recent decades were documented and described.

Step 2c:

Estimate current relationships between weather patterns and climate-sensitive health outcomes

The purpose of this step is to describe any existing exposure-response relationships and determine the associations (if any) between the exposures of interest and health and well-being outcomes of Durham Region residents.

This included an analysis of:

- Historical climate trends and the occurrence of climate related hazards and impacts
- Local health service utilization data
- Health and well-being (i.e., morbidity, mortality, self-rated health) data

When local data were not available for analysis, associations between climate and health were gathered from the literature review conducted in Step 2A.

Step 2d:

Characterize vulnerability factors that influence individual and community health risks.

Climate vulnerability is determined by the degree of exposure, sensitivity, and adaptive capacity to climate hazards (see **Chapter 2**, **Figure 2.4**). When possible, intersectionality and health equity analyses were conducted to explore the relationship between the EDOH and SDOH on climate-sensitive health outcomes and exposures to climate hazards.

Step 3:

DESCRIBE PROJECTED FUTURE HEALTH RISKS

This focuses on a consideration of how the current magnitude and pattern of climate-sensitive health burdens may change in a changing climate. The MOHLTC's climate change and health modeling study were used where available to provide information on the projected climate-related health impacts in 2020, 2050, and 2080. [4]

Resources

CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT: WORKBOOK FOR THE CANADIAN HEALTH SECTOR [3]

Public Health Agency of Canada

2022

This workbook supports health officials to develop climate change and health vulnerability assessments and adaptation plans through participatory processes that engage partners from multiple sectors and organizations.

ONTARIO CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT GUIDELINES: TECHNICAL DOCUMENT [1]

Ministry of Health and Long-Term Care

2016

The technical document provides detailed guidance for conducting a climate change and health vulnerability assessment.

ONTARIO CLIMATE CHANGE AND HEALTH VULNERABILITY AND ADAPTATION ASSESSMENT GUIDELINES: WORKBOOK [2]

Ministry of Health and Long-Term Care

2016

This workbook provides a stepwise approach for following the technical guidance and completing a climate change and health vulnerability assessment.

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