



# **CLIMATE CHANGE AND HEALTH IN DURHAM REGION**

## **Assessing the Impacts of Extreme Heat**

**Council for the Township of Brock**

**January 13, 2025**

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# Report objectives

- Improve understanding
- Report on available data
- Prioritize equity
- Establish baselines

## Primer



Understanding the local health impacts of climate change

## 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



## Primer report: key features



Current and future health impacts



Equity-focussed



Guidance from the Mississaugas of Scugog Island First Nation



# 2024

### CLIMATE CHANGE and HEALTH in DURHAM REGION

Understanding the local health impacts of climate change





## Why assess climate and health vulnerability?



**Ontario Public Health  
Standards mandate**



**Health impacts of  
climate change are  
on the rise**



**Many health impacts  
and health inequities  
are preventable**



## Extreme heat report

- Extreme heat vulnerability assessment
  - Assessment framework
  - Key findings
  - Knowledge gaps
  - Regional strengths
  - Next steps



2024

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## Report features



Current and future health impacts



Equity-focussed



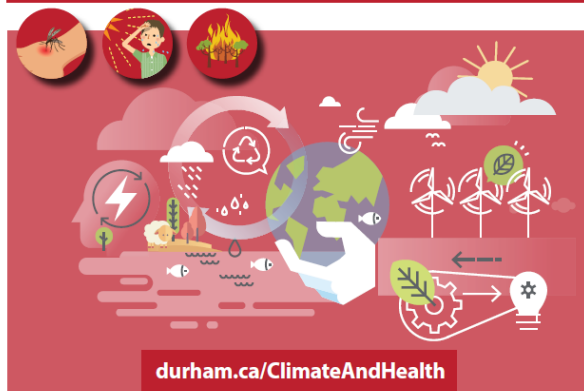
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# 2024

## CLIMATE CHANGE *and* HEALTH *in* DURHAM REGION

Assessing the impact of extreme heat



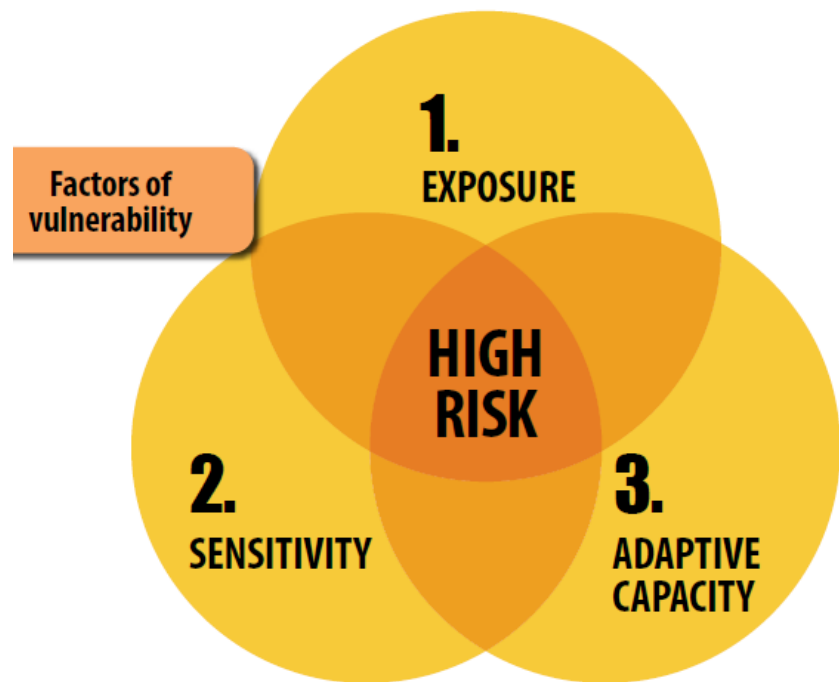


# What is extreme heat vulnerability?

## Priority Populations

- **Older adults**, 60 years+
- Infants and young **children**
- **Pregnant** individuals
- **Indigenous Peoples**
- **Chronic health challenges**
- Socially or materially **disadvantaged**
- **Newcomers**
- **Work** or are physically active **outdoors**

## Factors of heat vulnerability





## Overview of extreme heat in Brock



Extreme heat events in Durham Region are expected to more than double in the coming decades



Heat will be experienced differently across the municipalities, with the greatest increases expected in the North

Projections for the Township of Brock	Baseline (1971 to 2000)	2050s	2080s
Extreme heat days (max >30°C)	8	34	54
Summer days (max >25°C)	42	86	106
Tropical nights (min >20°C)	101	136	151





## Overview of extreme heat in Brock



Processes such as deforestation and land-use change have contributed to local extreme heat vulnerability



High land surface temperatures are spreading into the more rural areas of Brock because of urban sprawl with low-density residential housing



Strain on natural environment points to need for heat tolerant, nature-based solutions that can cool neighborhoods and increase heat resilience



## What is known about local health impacts?

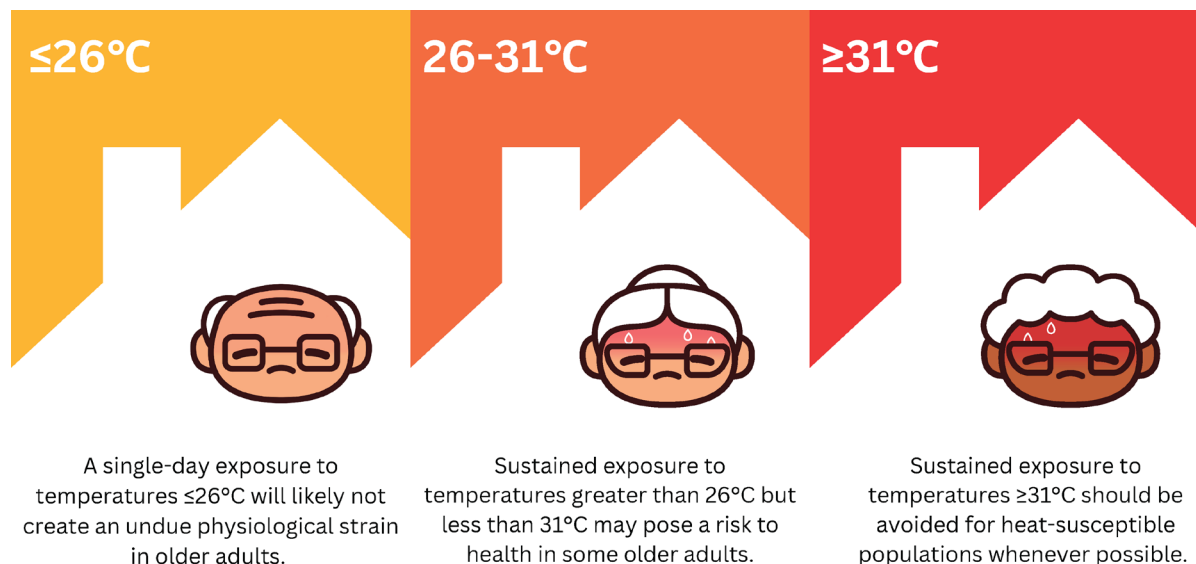


Figure used with permission from G.P. Kenny, University of Ottawa (2023)

- $30^{\circ}\text{C} +$  associated with increased emergency room visits
- Increased health risks from overnight heat
- Increased risk of illness and death at beginning of heat season
- Health burden likely underreported among older adults



# Where are more severe health impacts expected?

## Building characteristics associated with high indoor temperatures



• Face south (with south facing windows that increase solar heat gain) [32]

• Lack mechanical cooling: a lack of mechanical cooling is associated with:  
○ Living alone [41]  
○ Living in a low-income or materially deprived neighbourhoods [40]  
○ Living in a rented home [41]



• Located in an urban heat island [34, 35, 36, 23]

- The seven **priority Health Neighbourhoods**
- Urban **heat islands**
- Homes at risk of **hot indoor temperatures**

“  
*It's super-hot, there are trails with no trees, it's not walkable.*  
 ”  
 - Ajax SNAP Resident



## Who should be prioritized?

### Brock has:

- The highest proportion of older adults
- High proportion of older adults living with low income and a high percentage that live alone
- Higher prevalence of some chronic illnesses compared to the regional and provincial averages

**High Risk: Priority populations that live alone, with a low/no income and/or dependent on caregiver(s)**





## What are our strengths and resources?



Existing forests, wetlands, and grasslands; crucial to mitigating extreme heat



Tree planting incentive programs



Strong shade policies



## What are our strengths and resources?



DRHD's Heat Warning and Information System (HWIS)



Region-wide Durham Greener Homes Program



The Region's energy efficiency and resilience strategy for the Durham Regional Local Housing Corporation (DRLHC)



## What are our knowledge gaps?



Local health burden of heat-related illness



Methods for reaching and supporting high-risk individuals during a heat wave (isolated, living with disability)



Information on access to cooling (at home, cooling centres etc.)



Community spaces with high-need for shade, green space and/or water features



## Knowledge gaps and needs specific to Brock



Unique needs of rural residents

e.g., well water access, farm animals, livestock, risk to livelihood



Unique strengths of rural residents

e.g., skills, knowledge, social networks, equipment



Community engagement





## Next steps





## Key messages



Durham Region should be prepared for increasing frequency and intensity of extreme heat events due to climate change



Health impacts can overwhelm local health systems



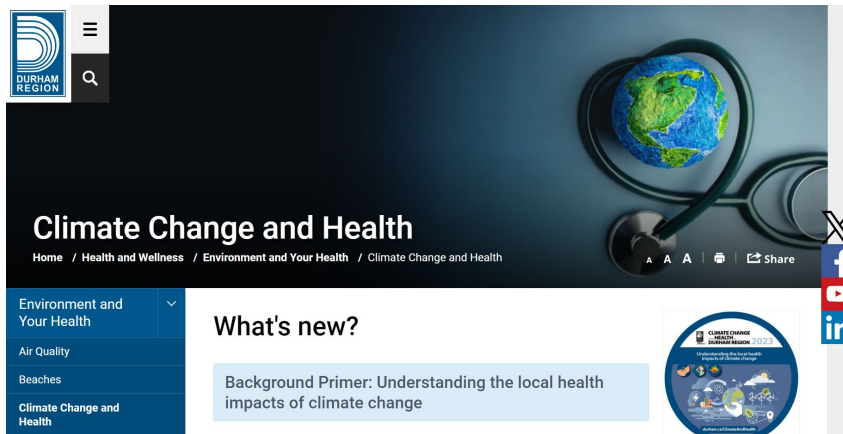
Need to engage with community to support prevention; especially those at risk of indoor overheating



Health impacts are severe but often preventable



# Thank you



[www.durham.ca/ClimateAndHealth](http://www.durham.ca/ClimateAndHealth)

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