

# Vector Borne Diseases in Halton

Climate change & health

## Climate change

is affecting the risk of exposure to infectious diseases. An individual's risk of becoming infected by a vector-borne disease is affected by three factors: presence of the disease, protective behaviours by the individual, and their sensitivity to the pathogen. Climate change directly or indirectly impacts all three factors.

## Vector Borne Diseases

The incidence of vector borne diseases, such as West Nile Virus and Lyme disease, is expected to increase due to the geographic expansion of their vectors' ranges. Warmer temperatures, changes in precipitation, and sea level rise impacts the distribution, seasonality, mating and reproduction cycles, and competence of disease-carrying vectors like mosquitoes, ticks, and mice.<sup>1</sup>

### Lyme disease



Lyme disease is a bacterial infection spread by the bite of an infected blacklegged tick. Blacklegged ticks have only recently become established in Halton Region.



As our climate gets warmer, blacklegged ticks, which used to only be found in more southern areas, can now survive further north, including most of Halton Region.<sup>2</sup>



Ticks are known to carry a variety of different pathogens. As our climate continues to get warmer, it is likely we will see both an increase in the number and variety of ticks, but also in the diseases they carry.

### Priority Populations



Hikers and other outdoor enthusiasts



Children, as they tend to spend more time outdoors



Farmers and other outdoor workers



Golfers, hunters and those who spend time outdoors

Since 2019, Halton Region has been considered an established risk area for blacklegged ticks

### Positivity Rate

Since 2018, Halton Region Public Health staff have been conducting active surveillance twice a year. Testing of ticks identified during tick surveillance can identify the proportion of ticks that carry tick-borne pathogens (positivity rate). The positivity rate increased from 0% in 2018 to 17% in 2023

|      |     |
|------|-----|
| 2018 | 0%  |
| 2019 | 4%  |
| 2020 | -   |
| 2021 | 8%  |
| 2022 | 7%  |
| 2023 | 17% |

- Testing not conducted

The figure below shows the number of Lyme disease cases among Halton residents between 2014 and 2023. There is a clear increasing trend in the number of cases over time.

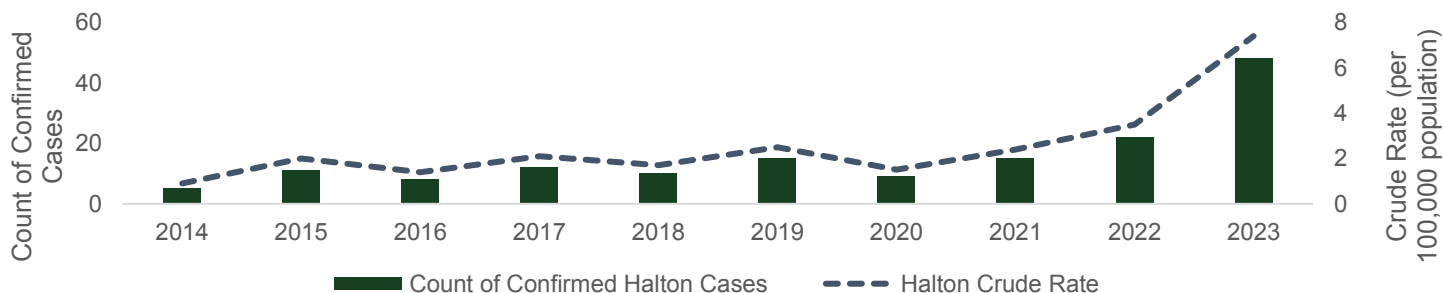


Figure 1. Lyme disease rates and cases for all ages and sexes, Halton, 2014-2023, Public Health Ontario using the Integrated Public Health System (iPHIS)

## West-Nile Virus



West Nile Virus (WNV) is a mosquito-borne viral disease that is transmitted to humans. Certain species of mosquitoes acquire the virus through biting an infected bird.

The first human case of West Nile Virus (WNV) in all of Canada occurred in 2002.<sup>3</sup> In 2002, 60 residents of Halton were confirmed to have WNV infection.

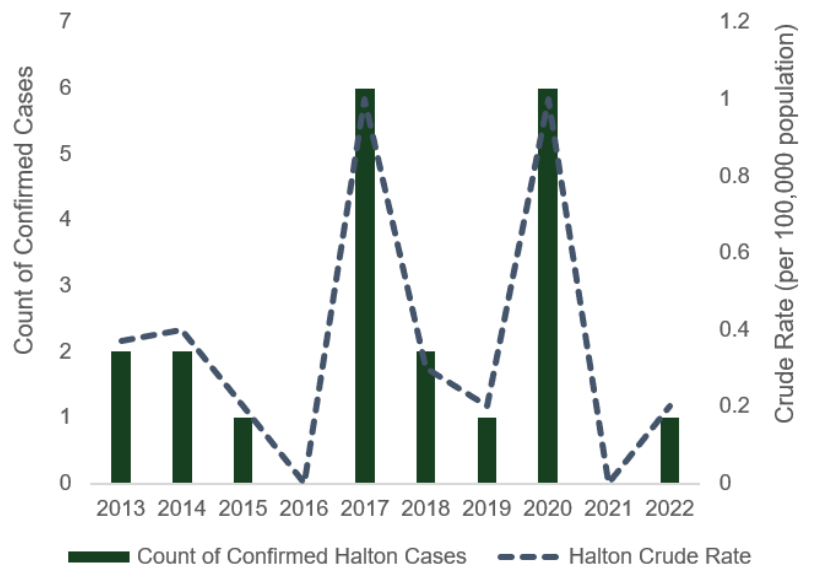


Figure 2. West Nile virus illness rates and cases for all ages and sexes, Halton, 2013-2022, Public Health Ontario using iPHIS

## Action

### Individuals can take precautions to protect themselves from the spread of climate-sensitive vectors:



Covering up by wearing long-sleeved, light-coloured shirts and pants with tightly woven fabric.



Wearing shoes that cover the entire foot, avoiding sandals or open shoes.



Spraying clothing and exposed skin with an insect repellent containing DEET or Icaridin



Checking clothing and body for ticks, especially around the groin, armpit, and hairline, after spending time outdoors.



Showering or bathing within two hours of being outdoors to wash away loose ticks



Keeping bushes and shrubs clear of overgrowth and debris.



Avoiding areas with known harmful vector (e.g., blacklegged ticks).



Avoiding outdoor activities during dusk and dawn when mosquitoes are most active.



Checking pets regularly for ticks as they could carry them inside.



Removing standing water. Water that sits for more than seven days creates an ideal breeding ground for mosquitoes.

## Data Notes

Data retrieved from the Integrated Public Health System (iPHIS) was extracted April 16, 2024. iPHIS is a dynamic disease reporting system which allow ongoing updates to data previously entered. Therefore, data in this report may differ from previous or subsequent reports and should not be compared to previous versions.

An established risk area is a location where blacklegged ticks have been identified or are known to occur and where people have the potential to encounter infective ticks.

## References

1. Paz S. (2015). Climate change impacts on West Nile virus transmission in a global context. Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 370(1665), 20130561. <https://doi.org/10.1098/rstb.2013.0561>
2. Public Health Ontario. (2024). Ontario Blacklegged Tick Established Risk Areas 2024. Retrieved from [https://www.publichealthontario.ca/-/media/Documents/O/24/ontario-blacklegged-tick-established-risk-areas-2024.pdf?rev=d7dafd390245466483d51e910f02c882&sc\\_lang=en](https://www.publichealthontario.ca/-/media/Documents/O/24/ontario-blacklegged-tick-established-risk-areas-2024.pdf?rev=d7dafd390245466483d51e910f02c882&sc_lang=en)
3. Public Health Agency of Canada. (2024). Surveillance of West Nile virus. Retrieved from <https://www.canada.ca/en/public-health/services/diseases/west-nile-virus/surveillance-west-nile-virus.html>

This highlight report provides a high-level overview of this impact category. The full Climate Change and Health in Halton Region report is available upon request by contacting 311 or 905-825-6000 or by emailing [accesshalton@halton.ca](mailto:accesshalton@halton.ca).

For more information on Halton Region's climate change initiatives visit [halton.ca](http://halton.ca).