2023

Halton Region Cancer Report

Reference

Halton Region Public Health Department, 2023 Halton Cancer Report. Oakville, Ontario, March 2023.

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An important mandate of public health is to reduce the burden of chronic diseases, including cancer, in the community. Public Health works towards this through cancer prevention efforts, such as developing policies and legislation, promoting screening programs, conducting health promotion campaigns, and providing immunizations and other clinical services.

The 2023 Halton Cancer Report provides a summary of cancer incidence, mortality, screening, risk factors, and sociodemographic factors related to cancer in Halton residents, based on reviewing the Ontario Cancer Profiles with a Halton lens.

Among Halton residents, in 2018 there were:

3,245
new cases of cancer diagnosed

1,050
cancer-related deaths

Between 2014 and 2018, the highest rates of new cancers were for:

Breast cancer
Prostate cancer
Lung cancer
Colorectal cancer

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Background on cancer

Cancer refers to a collection of related diseases in which cells of the body begin dividing uncontrollably, forming abnormal growths called tumours. Unlike benign (non-cancerous) tumours that stay in one place in the body, malignant (cancerous) tumours invade surrounding tissues. Cancer can occur almost anywhere in the human body.[1] While we don't fully understand all of the factors that lead to cancer diagnoses and cancer deaths, a variety of mechanisms may make a person more or less likely to develop cancer or to die from it, including genetics, environmental exposures, occupational exposures, infectious agents, medical conditions and treatments, behavioural risk factors, and participation in immunization and screening programs.[2] Cancer represents a significant burden of illness and is the most common cause of death in both Halton and Ontario. It is important to monitor cancer-related indicators so that prevention efforts can be appropriately targeted. Relevant cancer indicators include:

Cancer incidence

Cancer mortality

Rates of participation in cancer screening programs

Prevalence of lifestyle and behavioural risk factors

Prevalence of sociodemographic factors

About this report

This document reports on cancer-related indicators for Halton Region, including incidence, mortality, cancer screening, cancer risk factors, and sociodemographic factors that may have an association with cancer. Where possible, comparisons have been made between Halton Region and Ontario. Trends over time have also been presented for some indicators.

The data presented in this report was obtained from Cancer Care Ontario's Cancer Profiles,[3] which are publicly available. The most recently available data for which reliable numbers can be obtained is presented. At times this means that several years of data have been grouped together. It also means that different indicators draw from different years of data. For example, the most recent years of data consistently available for cancer incidence and mortality are 2014-2018 combined, while the most recent data available for cancer screening is as of December 31st, 2020.

Incidence rates for leading cancers in Halton and Ontario

Age-standardized incidence rates (ASIRs) are one measure of the burden of cancer.

Age-standardized incidence rates are used to compare rates between different populations. Incidence rates are standardized to the 2011 Canadian population. Standardization ensures that any differences in rate observed between populations are not due to differences in the age structure of the populations. Age-standardized rates do not provide an accurate representation of the actual incidence rates in the population, but rather what the rates would be in the year used for standardization, enabling comparisons between populations.

Halton's average annual ASIR for all cancers in both sexes combined (535.7 new cases per 100,000 people per year) was lower than Ontario's (547.0), and this difference was statistically significant. For all cancers combined, females in Halton had a similar ASIR (512.6 new cases per 100,000 people per year) to females in Ontario (520.1). For all cancers combined, males in Halton had a similar ASIR (572.9 new cases per 100,000 people per year) to males in Ontario (588.0).

There were some notable differences in ASIRs between Halton and Ontario for specific cancer types. The average annual ASIRs for lung cancer, colorectal cancer, and liver cancer were significantly lower in Halton than in Ontario. However, the average annual ASIRs for melanoma and testicular cancer were significantly higher in Halton than in Ontario.

Did you know?

Studies have found an increased risk for melanoma among populations of higher socioeconomic status. However, there is an increased risk for advanced stages of melanoma among populations of lower socioeconomic status. This may represent inequities in access to dermatology consultations.[4]

Health literacy refers to an individual's ability to access, understand, appraise, and apply health related information.[26,27] High health literacy has been linked with several cancer outcomes.[27] Men in Halton may have high health literacy, and be more likely than men in Ontario to engage in self-examination for testicular cancer, leading to higher incidence. However, it is a relatively uncommon cancer, which makes this difficult to determine for certain.

Between 2014 and 2018 there were

535.7

diagnoses per 100,000 people per year for all types of cancers combined among Halton residents

- 512.6 diagnoses for all types of cancer per 100,000 women
- 122.0 diagnoses of prostate cancer per 100,000 men
- 572.9 diagnoses for all types of cancer per 100,000 men
- 54.5 diagnoses of lung cancer per 100,000 people
- 151.9 diagnoses of breast cancer per 100,000 women
- 50.3 diagnoses of colorectal cancer per 100,000 people

Comparison to Ontario

Table 1 shows the average annual ASIRs for cancers in Ontario and Halton residents for 2014-2018 combined. It also shows rate ratios for the incidence of each type of cancer, which were calculated by dividing the Halton rate by the Ontario rate. A rate ratio of 1 indicates that the rates in Ontario and Halton are the same. A rate ratio less than 1 indicates that the rate is lower in Halton in comparison to Ontario. A rate ratio greater than 1 indicates that the rate is higher in Halton in comparison to Ontario. Statistically significant differences in rates are shown in **bold** with an arrow to indicate whether the rate is lower in Halton (↓) or higher in Halton in comparison to Ontario (↑).

Did you know?

Across Ontario, there has been a decline in colorectal cancer diagnoses since 2010. While this trend is expected to continue until 2030, rates are then expected to increase again, driven by an increasing prevalence of risk factors (inactivity, unhealthy diets) in currently young cohorts. Risk for being diagnosed with colorectal cancer can be reduced by quitting smoking, limiting alcohol consumption, maintaining a healthy body weight, being physically active, eating a diet high in fibre, and limiting intake of red and processed meat.[6]

Table 1: Annual age-standardized cancer incidence rates (per 100,000 people per year) for Halton and Ontario, 2014-2018

Type	Sex	Ontario	Halton	Rate ratio	Significance
All cancers	**Males & females**	**547.0**	**535.7**	**0.98**	↓
Lung	**Males & females**	**66.2**	**54.5**	**0.82**	↓
Colorectal	**Males & females**	**56.6**	**50.3**	**0.89**	↓
Non-Hodgkin lymphoma	Males & females	28.2	30.4	1.08	
Bladder	Males & females	28.0	26.3	0.94	
Melanoma	**Males & females**	**25.7**	**31.3**	**1.22**	↑
Thyroid	Males & females	22.1	23.7	1.07	
Kidney	Males & females	16.4	15.3	0.93	
Leukemia	Males & females	16.3	15.7	0.96	
Pancreatic	Males & females	13.5	13.1	0.97	
Oral	Males & females	12.4	11.6	0.94	
Stomach	Males & females	10.2	9.9	0.97	
Myeloma	Males & females	9.3	9.3	1.00	
Liver	**Males & females**	**8.7**	**6.5**	**0.75**	↓
Brain and other nervous system	Males & females	7.6	8.4	1.11	
Esophageal	Males & females	5.3	4.6	0.87	
Larynx	Males & females	2.7	2.3	0.85	
All cancers	Females	520.1	512.6	0.99	
Breast *	Females	146.3	151.6	1.04	
Uterine	Females	36.2	35.6	0.98	
Ovarian	Females	16.3	15.9	0.98	
Cervical	Females	8.1	7.8	0.96	
All cancers	Males	588.0	572.9	0.97	
Prostate	Males	120.7	122.0	1.01	
Testis	**Males**	**6.7**	**9.0**	**1.34**	↑

* Breast cancer in men is not included in this report; less than 1% of all breast cancers occur in men.[5]
NR: Not Reportable due to insufficient data.
Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Number of new cancer diagnoses in 2018 for the top cancers in Halton residents

Breast	**485**	Melanoma	**195**
Prostate	**350**	Bladder	**160**
Lung	**345**	Thyroid	**145**
Colorectal	**295**	Brain & other nervous system	**145**
Non-Hodgkin lymphoma	**195**	Uterine	**110**

Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Trends over time

In order to assess whether trends in age-standardized incidence rates (ASIRs) are improving or worsening in Halton over time, comparisons in ASIRs were made between 2010-2012 and 2016-2018.

For all cancers and both sexes combined, the average annual ASIR in Halton decreased from 574.0 cases per 100,000 people per year in 2010-2012 to 543.1 in 2016-2018.

For all cancers combined, the average annual ASIR for females in Halton decreased from 541.3 cases per 100,000 people per year in 2010-2012 to 519.4 in 2016-2018.

For all cancers combined, the average annual ASIR for males in Halton decreased from 627.2 cancer cases per 100,000 people per year in 2010-2012 to 581.3 in 2016-2018.

Table 2 shows the ASIRs for cancer types for which there was a statistically significant difference between 2010-2012 and 2016-2018. Cancers for which there was no significant change in ASIR are not shown. An arrow has been used to indicate whether the rate was lower in 2016-2018 (↓) or higher in 2016-2018 (↑) in comparison to 2010-2012.

Did you know?

Incidence rates are impacted by the implementation of screening measures for detecting cancers. As guidelines for screening change over time, this impacts the detection, diagnosis, and incidence of some cancers. For example, guidelines for prostate cancer screening have evolved considerably over the past 25 years. Prostate-specific antigen (PSA) testing was introduced in 1993, but as a test that was not highly specific, screening led to over-diagnosis of prostate cancer in men. In 2014, new Canadian guidelines recommended against screening in certain populations. This has led to a decline in diagnoses and incidence rates for prostate cancer, without having an impact on the detection of high-risk cases or mortality rates.[7]

Table 2: Annual age-standardized cancer incidence rates (per 100,000 people per year) for Halton Region, 2010-2012 and 2016-2018.

Type	Sex	2010-2012 (Rate per 100,000 people per year)	2016-2018 (Rate per 100,000 people per year)	Rate ratio	Significance
All cancers	Males & females	574.0	543.1	0.95	↓
Colorectal	Males & females	60.2	49.6	0.82	↓
Thyroid	Males & females	28.6	22.8	0.80	↓
Myeloma	Males & females	7.0	10.4	1.49	↑
All cancers	Females	541.3	519.4	0.96	↓
All cancers	Males	627.2	581.3	0.93	↓
Prostate	Males	160.6	127.4	0.79	↓

Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Mortality rates for leading cancers in Halton and Ontario

Age-standardized mortality rates (ASMRs) are another measure of the burden of cancer.

Age-standardized mortality rates are used to compare rates between different populations. Mortality rates are standardized to the 2011 Canadian population. Standardization ensures that any differences in rate observed between populations are not due to differences in the age structure of the populations. Age-standardized rates do not provide an accurate representation of the actual mortality rates in the population, but rather what the rates would be in the year used for standardization, enabling comparisons between populations.

The average annual ASMR for all cancers in both sexes combined was lower in Halton (175.1 cancer deaths per 100,000 people per year) than in Ontario (190.1), and this difference was statistically significant. Similarly, for all cancers combined, females in Halton had a lower average annual ASMR (151.9 cancer deaths per 100,000 people per year) than females in Ontario (164.4), and this difference was statistically significant. For all cancers combined, males in Halton had a lower average annual ASMR (208.9 cancer deaths per 100,000 people per year) than males in Ontario (225.8), and this difference was statistically significant.

There were also three notable differences in ASMRs between Halton and Ontario for specific cancer types. The average annual ASMRs for lung cancer, colorectal cancer, and liver cancer were significantly lower in Halton than in Ontario. There were no specific types of cancer for which the ASMR was significantly higher in Halton in comparison to Ontario.

Between 2014 and 2018 there were

175.1

deaths per 100,000 people per year from all types of cancers combined among Halton residents

151.9 deaths from all types of cancer per 100,000 women

208.9 deaths from all types of cancer per 100,000 men

24.1 deaths from breast cancer per 100,000 women

26.7 deaths from prostate cancer per 100,000 men

38.1 deaths from lung cancer per 100,000 people

18.3 deaths from colorectal cancer per 100,000 people

Comparison to Ontario

Table 3 shows the average annual ASMRs for cancers in Ontario and Halton residents for 2014-2018 combined. It also shows rate ratios for the mortality rates of each type of cancer, which were calculated by dividing the Halton rate by the Ontario rate. A rate ratio of 1 indicates that the rates in Ontario and Halton are the same. A rate ratio less than 1 indicates that the rate is lower in Halton in comparison to Ontario. A rate ratio greater than 1 indicates that the rate is higher in Halton in comparison to Ontario. Statistically significant differences in rates are shown in **bold** with an arrow to indicate whether the rate is lower in Halton (↓) or higher in Halton in comparison to Ontario (↑).

Number of new cancer deaths among Halton residents in 2018, for the top five cancers

Lung	**240**
Colorectal	**110**
Breast	**80**
Prostate	**70**
Pancreatic	**65**

Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Table 3: Annual age-standardized cancer mortality rates (per 100,000 people per year) for Halton and Ontario, 2014-2018

Type	Sex	Ontario	Halton	Rate ratio	Significance
All cancers	**Males & females**	**190.1**	**175.1**	**0.92**	↓
Lung	**Males & females**	**44.9**	**38.1**	**0.85**	↓
Colorectal	**Males & females**	**20.4**	**18.3**	**0.90**	↓
Pancreatic	Males & females	12.1	11.6	0.96	
Liver	**Males & females**	**7.6**	**6.3**	**0.83**	↓
Non-Hodgkin lymphoma	Males & females	7.3	6.6	0.90	
Leukemia	Males & females	7.0	6.5	0.93	
Brain and other nervous system	Males & females	5.6	6.3	1.13	
Bladder	Males & females	5.5	5.6	1.02	
Esophageal	Males & females	5.1	4.9	0.96	
Stomach	Males & females	5.0	4.0	0.80	
Kidney	Males & females	4.0	4.3	1.08	
Myeloma	Males & females	3.7	3.0	0.81	
Oral	Males & females	3.5	2.9	0.83	
Melanoma	Males & females	3.3	3.4	1.03	
Larynx	Males & females	0.9	0.7	0.78	
Thyroid	Males & females	0.6	0.7	1.17	
All cancers	**Females**	**164.4**	**151.9**	**0.92**	↓
Breast *	Females	24.6	24.1	0.98	
Ovarian	Females	8.4	8.6	1.02	
Uterine	Females	5.6	5.5	0.98	
Cervical	Females	2.1	1.3	0.62	
All cancers	**Males**	**225.8**	**208.9**	**0.93**	↓
Prostate	Males	24.4	26.7	1.09	
Testis	Males	0.2	NR	NR	

* Breast cancer in men is not included in this report; less than 1% of all breast cancers occur in men.[5]
NR: Not Reportable due to insufficient data.
Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Trends over time

In order to assess whether trends in age-standardized mortality rates (ASMRs) are improving or worsening in Halton over time, comparisons in ASMRs were made between 2010-2012 and 2016-2018.

For all cancers and both sexes combined, the average annual ASMR in Halton decreased from 199.0 cancer deaths per 100,000 people per year in 2010-2012 to 172.1 in 2016-2018.

For all cancers combined, the average annual ASMR for females in Halton decreased from 177.0 cancer deaths per 100,000 people per year in 2010-2012 to 150.9 in 2016-2018.

For all cancers combined, the average annual ASMR for males in Halton decreased from 234.5 cancer deaths per 100,000 people per year in 2010-2012 to 203.4 in 2016-2018.

Table 4 shows the ASMRs for cancer types for which there was a statistically significant difference between 2010-2012 and 2016-2018. Cancers for which there was no significant change in ASMR are not shown. An arrow has been used to indicate whether the rate was lower in 2016-2018 (↓) or higher in 2016-2018 (↑) in comparison to 2010-2012.

Did you know?

Cancer mortality has been decreasing across Canada since 1988.[8] In 2019, cancer was the leading cause of death in Canada and was responsible for

28.2%

of all deaths.[9]

Table 4: Annual age-standardized cancer mortality rates (per 100,000 people per year) for Halton Region, 2010-2012 and 2016-2018.

Type	Sex	2010-2012 (Rate per 100,000 people per year)	2016-2018 (Rate per 100,000 people per year)	Rate ratio	Significance
All cancers	Males & females	199.0	172.1	0.86	↓
Lung	Males & females	42.3	36.0	0.85	↓
All cancers	Females	177.0	150.9	0.85	↓
Breast	Females	30.5	22.5	0.74	↓
All cancers	Males	234.5	203.4	0.87	↓

Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

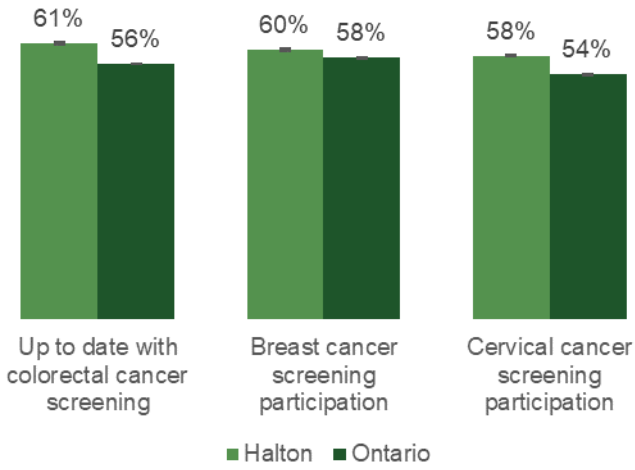
Cancer screening rates in Halton and Ontario

Comparison to Ontario

Cancer screening is available for colorectal, breast, and cervical cancer. **Figure 1** shows the rate of cancer screening participation for each of these types of cancer for eligible people in Halton and Ontario as of December 31st, 2020.

- 61% of screen eligible people in Halton between the ages of 50 and 74 were up to date on receiving colorectal cancer screening.
- 60% of screen eligible people in Halton between the ages of 50 and 74 had completed at least one mammogram to screen for breast cancer within the previous 30 months.
- 58% of screen eligible people in Halton between the ages of 21 and 69 had completed at least one Pap test to screen for cervical cancer within the previous 42 months.

Screening participation was significantly higher in Halton than in Ontario for all three types of cancer.



Sources: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Figure 1: Percent of screen eligible population in Ontario and Halton Region participating in cancer screening in the previous recommended period as of December 31st, 2020

Trends over time

Cancer Care Ontario[3] noted that screening for all three types of cancer had declined in 2020 in comparison to earlier years due to the COVID-19 pandemic. **Table 5** shows that in 2020, cancer screening rates were lower than 2018 and 2019 for both Halton and Ontario. These differences were statistically significant.

Table 5: Percent of screen eligible population in Ontario and Halton Region participating in screening in the previous recommended period as of December 31st, 2018, December 31st, 2019, and December 31st, 2020

	2018		2019		2020	
	Halton	Ontario	Halton	Ontario	Halton	Ontario
Up to date with colorectal cancer screening	66	62	65	61	61	56
Breast cancer screening participation	66	64	66	64	60	58
Cervical cancer screening participation	64	60	63	59	58	54

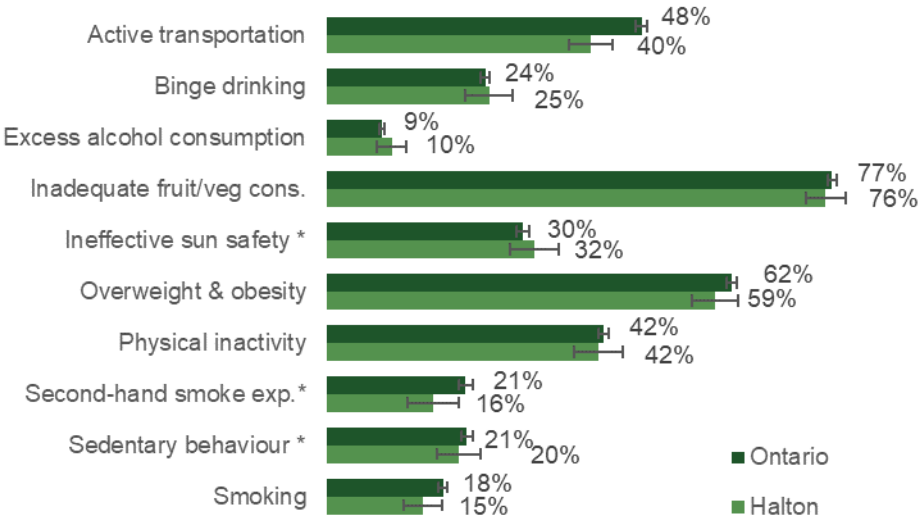
Sources: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Cancer risk factors in Halton and Ontario

Several lifestyle factors are associated with an increased risk for cancer, including excess alcohol consumption, binge drinking, inadequate fruit and vegetable consumption, overweight and obesity, physical inactivity, second-hand smoke exposure, sedentary behaviour (including not using active transportation), smoking, and ineffective sun safety.[3] The appendix at the end of this document provides in-depth definitions for each of these risk factors. **Figure 2** shows the percent of individuals in Halton and Ontario with each of these risk factors. For most risk factors, percentages are reported for the years 2015-2017. However, data were only available from 2015-2016 for second-hand smoke exposure, sedentary behaviour, and ineffective sun safety.

Comparison to Ontario

Active transportation was the only risk factor for which there was a significant difference between Halton and Ontario. Only 40% of adults in Halton reported using active forms of transportation (walking or cycling) at least once in the past week, compared to 48% of adults in Ontario.



*Data were only available for 2015-2016
Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Figure 2: Percent of population in Ontario and Halton Region reporting risk factors for cancer 2015-2017* (risk factors listed in alphabetic order)

While there were no other significant differences between Halton and Ontario, there was a high prevalence of some risk factors in both Halton and Ontario:

- 76% of adults in Halton and 77% of adults in Ontario reported eating vegetables and fruit fewer than 5 times per day;
- 59% of adults in Halton and 62% of adults in Ontario reported being overweight or obese with a BMI of 25 or greater;
- 42% of adults in Halton and 42% of adults in Ontario reported engaging in less than 150 minutes of moderate-to-vigorous physical activity per week; and
- 15% of adults in Halton and 18% of adults in Ontario reported being current daily or occasional smokers.

Did you know?

Public Health Ontario estimates that in an average year, there are 239 deaths, 306 hospitalizations, and 106 emergency department visits for cancers that are attributable to smoking among Halton residents aged 35 and older.[10]

Public Health Ontario also estimates that in an average year, there are 39 deaths, 77 hospitalizations, and 18 emergency department visits for cancers that are attributable to alcohol consumption among Halton residents aged 15 and older.[10]

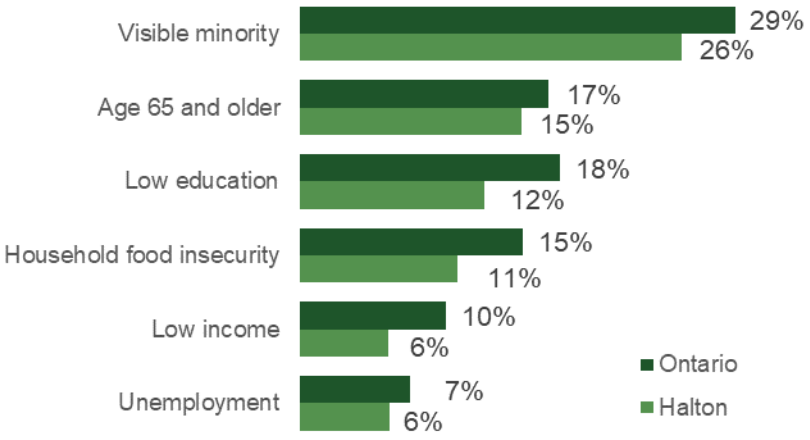
There are synergistic harms created when smoking and alcohol are combined, and the risk of disease is much greater when someone smokes cigarettes and drinks alcohol together.[11]

Sociodemographic factors in Halton and Ontario

Existing evidence suggests that incidence and mortality for some cancers, such as lung, oral, liver, colorectal, and cervical cancer may be negatively associated with socioeconomic status indicators, meaning that as socioeconomic status increases, incidence and mortality associated with the cancer decrease.[8,12-18] For other cancers, such as melanoma, prostate, and breast cancer, some studies find incidence may be positively associated with socioeconomic status indicators in Canada, meaning that as socioeconomic status increases, incidence associated with the cancer also increases.[18-20] Socioeconomic status has also been found to be positively associated with overall survival among cancer patients in Ontario.[20] For many cancers, as income increases, the 5-year survival rate also increases, and while there has been an improvement in 5-year survival since 1993, improvement has been greater for those with higher income.[20] Data limitations mean that cancer incidence and mortality rates by socioeconomic status for Halton specifically are not available at this time.

Comparison to Ontario

Figure 3 shows the prevalence of socioeconomic and demographic factors that may have an association with cancer incidence and cancer survival, among both Halton and Ontario residents. In comparison to Ontario, a smaller proportion of the population in Halton is over the age of 65 (14.9% vs. 16.7%), is unemployed (6.0% vs. 7.4%), has low educational attainment (12.4% vs. 17.5%), has low income (5.9% vs. 9.8%), is a visible minority (25.7% vs. 29.3%), or is food insecure (10.6% vs. 15.0%).



Source: Cancer Care Ontario. Ontario Cancer Profiles.[3]

Figure 3: Percent of population in Ontario and Halton Region with sociodemographic factors that show a relationship with cancer incidence and survival, 2016

Did you know?

Health inequity is a difference that finds lower-income people, racial or ethnic minorities, rural residents, or other socially disadvantaged groups systemically experiencing worse health than more advantaged social groups. Inequity in cancer care takes place at various levels: primary and secondary prevention, diagnosis, treatment, and cancer research. Ensuring equitable access to cancer care is crucial because of the time sensitivity of care and complex treatment.[21]

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Appendix: Data notes and limitations

Definitions for cancer risk factors

Smoking: the percentage of Ontario adults age 20 and older who report smoking cigarettes daily or occasionally.

Excess alcohol consumption: the percentage of Ontario adults age 19 and older exceeding the maximum recommended level of alcohol consumption for cancer prevention. The maximum recommended alcohol consumption for men is 2 drinks per day and for women is 1 drink per day, as specified by the World Cancer Research Fund and the American Institute for Cancer Research (WCRF/AICR).[22] Note that this differs from recently released Canadian guidelines on alcohol and health, which are less permissive.[23]

Overweight and obesity: body mass index (BMI) estimates are based on respondents' self-reported height and weight. This indicator refers to the percentage of Ontario adults age 18 and older who are overweight (BMI 25.0 to 29.99) or obese (BMI ≥ 30.0) corrected for biases in using self-reported height and weight based on sex-specific equations developed by Statistics Canada.

Inadequate vegetable and fruit consumption: the percentage of Ontario adults age 18 and older who reported eating non-starchy vegetables and fruit less than 5 times per day. Respondents who reported consuming fruit juice more than once daily were counted as having consumed it only once to align with the recommendations by the WCRF/AICR.[22]

Physical inactivity: the percentage of Ontario adults age 18 and older that reported less than the recommended level of moderate-to-vigorous physical activity. The Canadian Physical Activity Guidelines define moderate-to-vigorous physical activity as physical activity causing a person to sweat at least a little and to breathe harder. Recommended levels of moderate-to-vigorous physical activity are 150 minutes or more a week in bouts of 10 minutes or more.

Second-hand smoke exposure: the percentage of non-smokers in Ontario age 20 and older who reported exposure to second-hand smoke at home every day, or almost every day or who were exposed in the past month to second-hand smoke in a private vehicle or in public places every day or almost every day. Data on second-hand smoke exposure were only available for 2015 and 2016.

Binge drinking: the percentage of Ontario adults age 19 and older who have consumed at least 1 drink and had heavy consumption of alcohol at a single occasion (5 drinks for males and 4 drinks for females) at least once a month in the past 12 months.

Active transportation: the percentage of Ontario adults age 18 and older who reported using active forms of transportation (walking or cycling) at least once in the past week.

Sedentary behaviour: the percentage of Ontario adults age 18 and older engaging in 6 hours or more of leisure time sedentary behaviour a day. Sedentary behaviour was defined as performing sedentary activity, such as reading, watching TV, using electronics while sitting or lying down, or engaging in other inactive screen time during leisure hours in the past 7 days. Data on sedentary behavior were only available for 2015 and 2016.

Ineffective sun safety: percentage of Ontario adults age 18 and older who did not limit sun exposure or use protection against the sun on a typical day. Sun safety behaviour was defined as limiting sun exposure (such as seeking shade or avoiding being outside during peak hours) and using protection against the sun (such as wearing sunscreen, sunglasses, long sleeves or hats) on a typical day. Data on sun safety behaviour were only available for 2015 and 2016.

Appendix: Data notes and limitations

Definitions for socioeconomic and demographic risk factors

Age 65 and older: percentage of the population age 65 and older.

Income ("low income"): prevalence of low income after tax is the proportion or percentage of economic families or people not in economic families in a given classification that falls below the after-tax income cut-offs. The low income cut-off is a statistical measure, adjusted for community size and family size, of the income threshold that Canadians fall below when they are estimated to spend at least 20% more of their income than the average family on necessities of food, shelter and clothing. These prevalence rates are calculated from unrounded estimates of economic families and people age 15 and older who are not in economic families.

Highest level of educational attainment ("education"): percentage of the Ontario population age 15 and older without a high school diploma.

Unemployment: people were considered unemployed if they were not employed during the week before the census day, but were searching for a job in the past 4 weeks, waiting for recall from a temporary lay-off or waiting to begin a new job that started within the next 4 weeks. To be counted as unemployed, a person must have been available for work in the reference week. The unemployment rate refers to unemployed expressed as a percentage of the labour force. The labour force does not include students, homemakers, retired workers, seasonal workers in an "off" season who were not looking for work, and people who could not work because of a long-term illness or disability.

Visible minority: percentage of the population age 15 and older who self-identify as non-Caucasian in race or non-white in skin colour.

Household food insecurity: the percentage of Ontario households that were identified as food insecure at any point in the past 12 months due to lack of money. This measure is based on a set of 18 questions in the CCHS and responses are categorized by Statistics Canada into 3 kinds of situations: food secure, moderately food insecure and severely food insecure. Included in this indicator are people who were categorized as moderately food insecure (indication of compromise in quality and/or quantity of food consumed) or severely food insecure (indication of reduced food intake and disrupted eating patterns).

Data Sources

Data for this report was extracted from the Ontario Cancer Profiles, which Ontario Health (Cancer Care Ontario) has made publicly available:[3] https://www.cancercareontario.ca/en/data-research/view-data/cancer-statistics/ontario-cancer-profiles

Incidence: Ontario Cancer Profiles: Cancer Incidence, extracted January 2023 from: https://profiles.cancercare.on.ca/incidence/

Data for this profile is populated using the Ontario Cancer Registry.[3]

Mortality: Ontario Cancer Profiles: Cancer Mortality, extracted January 2023 from: https://profiles.cancercare.on.ca/mortality/

Data for this profile is populated using the Ontario Cancer Registry.[3]

Cancer screening: Ontario Cancer Profiles: Cancer Screening, extracted January 2023 from: https://profiles.cancercare.on.ca/screening/

Data for this profile is populated using the Integrated Client Management System; OHIP Claims History Database; CytoBase; Colonoscopy Interim Reporting Tool; Gastrointestinal Endoscopy Data Submission Portal; Laboratory Reporting Tool; Ontario Cancer Registry; Registered Persons Database; Postal Code Conversion File Plus.[3]

Cancer risk factors: Ontario Cancer Profiles: Cancer Risk Factors, extracted January 2023 from: https://profiles.cancercare.on.ca/riskfactors/

Data for this profile is populated using the 2015-2017 Canadian Community Health Survey (CCHS), Ontario Share File, Statistics Canada.[3]

Socioeconomic and demographic factors: Ontario Cancer Profiles: Socio-demographic Factors, extracted January 2023 from: https://profiles.cancercare.on.ca/sociodemographics/

Data for this profile is populated using the 2016 Census of the Population's mandatory long form questionnaire, Statistics Canada, and the 2017 Canadian Community Health Survey (CCHS), Ontario Share File, Statistics Canada.[3]

Appendix: Data notes and limitations

Coding rules for multiple primary cancers

The Ontario Cancer Registry (OCR) adopted the Surveillance, Epidemiology and End Results (SEER) Program's rules[24] for counting multiple primaries and assigning histology for cases diagnosed after January 1st, 2010. These are site-specific rules for lung, breast, colon, melanoma of the skin, head and neck, kidney, renal pelvis/ureter/bladder, non-malignant central nervous system (CNS)/brain, and malignant CNS/brain, as well as general rules for all other sites. To identify multiple primary cancers, the SEER counting rules take into account histology, site, laterality and time since the initial diagnosis. The SEER rules are more liberal than the rules previously used in the OCR for counting multiple primaries, which did not recognize the existence of two or more primary cases based on timing, laterality, or subsite within an organ. Prior to January 1st, 2010, the OCR used a modified version of the International Agency for Research on Cancer/International Association of Cancer Registries (IARC/IACR) rules, which are more conservative that the SEER rules. Under the IARC/IACR rules, only 1 tumour was registered for an organ, irrespective of time, unless there were histological differences. Since the SEER rules are more liberal than the IARC/IACR rules, applying the SEER rules results in an increase in the number of cases included in incidence counts. This is a result of using a different methodology and does not reflect an actual increase in the number of people diagnosed with cancer.[25] This change in methodology should be considered when making comparisons across reports that report cancer cases before 2010 and after 2010.[25]

Statistical significance

Statistical significance was determined by calculating 95% confidence intervals for incidence, mortality, screening, and risk factors. A 95% confidence interval (CI) represents a range of values that 95% of the time will contain the true value. 95% CIs are presented by "I" shaped bars on a graph. When CIs do not overlap between two or more groups (such as when comparing an Ontario rate to a Halton rate), this indicates that the difference between the groups is statistically significant and is therefore unlikely due to chance alone.