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Generating Regional Cancer Statistics: Using the Ontario Cancer Registry SEER*Stat Package

Ontario Health and APHEO

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NOVEMBER 30TH, 2022



Ontario Health
Cancer Care Ontario

By the end of this webinar...

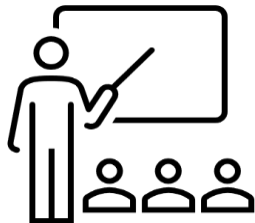
Understand the
Package

Produce ON &
PHU-level statistics

Outline



Ontario cancer surveillance



Ontario Cancer Registry SEER*Stat
Package

- Background
- Hands-on training



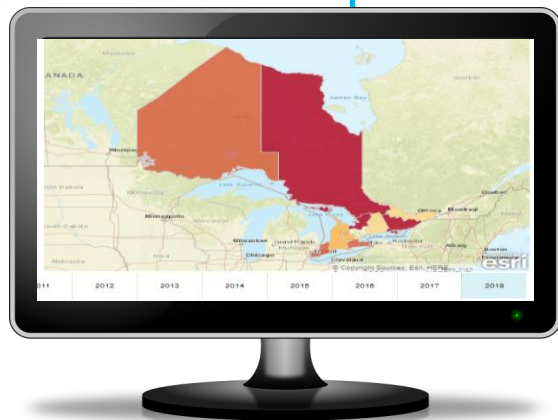
Ontario cancer surveillance

Who we are

The [Surveillance Program](#) analyzes and interprets cancer data and reports on Ontario's cancer burden, using the [Ontario Cancer Registry](#) as the main data source.

Products

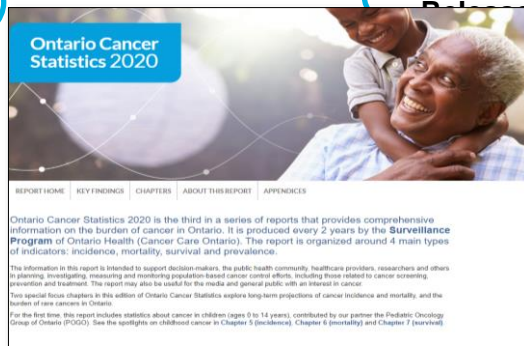
Evaluation



Ontario Cancer Profiles

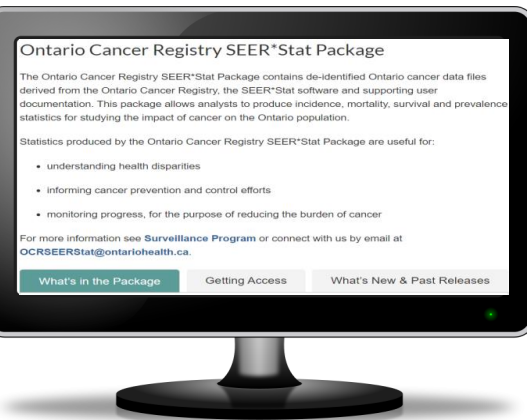
<https://www.cancercareontario.ca/ontariocancerprofiles>

2022



Ontario Cancer Statistics

<https://www.cancercareontario.ca/en/statistical-reports/ontario-cancer-statistics-2020>



OCR SEER*Stat Package

<https://www.cancercareontario.ca/seerstat>



OCR SEER*Stat Package: Background

Purpose

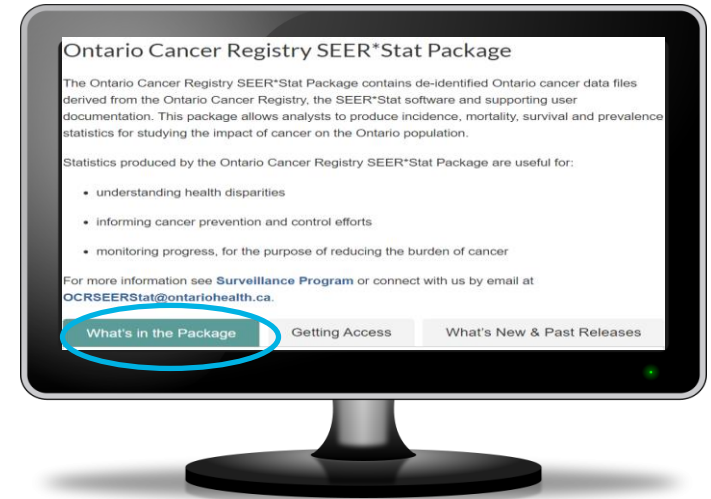
Provide users with the ability to **produce customized Ontario cancer burden** statistics at different regional levels and over time

Content

1. Data: Ontario Cancer Registry

2. Software: SEER*Stat¹

3. Support: User materials



¹US National Cancer Institute SEER Program. SEER=Surveillance, Epidemiology, and End Results

Content

1. Data:

- Incidence and mortality: 1981 to *Up-to-date*
- All cancers except non-melanoma skin cancers
- Ontario, PHU, (former) LHIN, CD levels

2. Software: Incidence, mortality, survival, prevalence

3. Support: Training videos, webinar, user documents



History

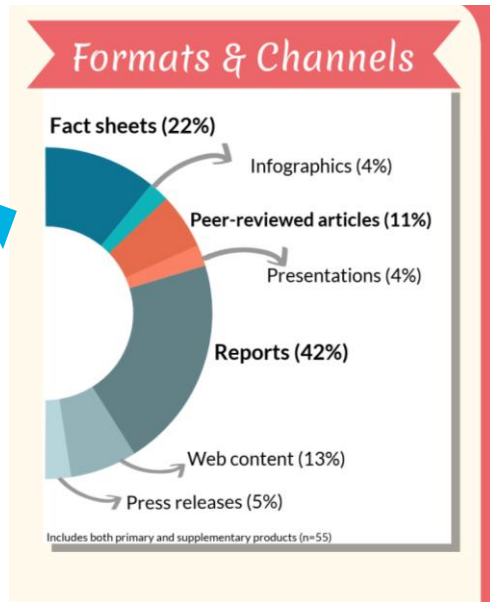
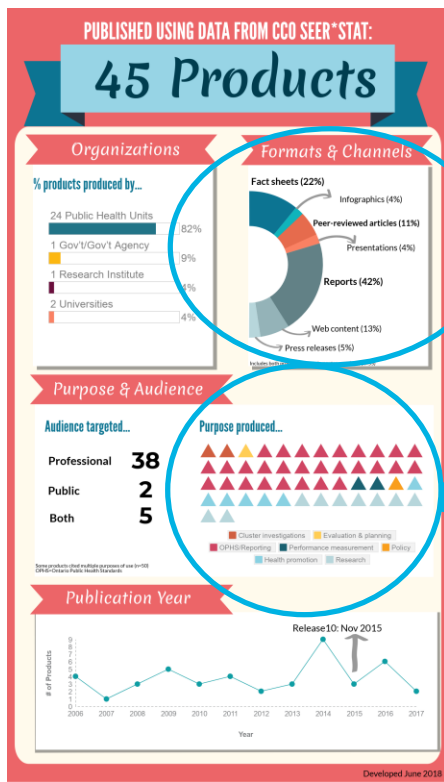
- 10 Releases
 - Release 12 (1981-2018)
- Evaluation-Release 10
 - Survey, web analytics, user profile, scan*
- Improvements-Release 11
 - New sessions
 - Training videos

Opportunities

- Peer-led training
- Health equity indicators



Value



Environmental scan

Value

Peel Public Health > health status data > chronic diseases > cancer

health status data

home about us contact us search Go

- all sites of cancer
 - all sites of cancer incidence
 - all sites of cancer mortality

Data Sources, Methods and Limitations

Contact Peel Public Health to submit:

- comments/feedback about this website, or
- Questions about health data.

Need help understanding the data contained on this site?

- For each data source, information about data collection and analytical methods, limitations, the citation and additional resources can be found on the [Data Sources and Methods](#) page.

[All Sites of Cancer \(peelregion.ca\)](http://peelregion.ca)

[Female Breast Cancer Incidence \(simcoemuskokahealthstats.org\)](http://simcoemuskokahealthstats.org)

HealthSTATS simcoe muskoka

Home / Topics / Maps Resources Reports Contact Search simcoemuskokahealth.org

Home / Topics / Cancer / Cancer Incidence / Female Breast Cancer Incidence

Female Breast Cancer Incidence

Overall
By Age Group

Select a Topic

Cancer

- Cancer Incidence
- Cancer Screening
- Cancer Mortality

Cancer incidence data are derived from the Ontario Cancer Registry (OCR) operated by Cancer Care Ontario. The OCR contains information on Ontario residents who have been newly diagnosed with all types of malignant cancers, with the exception of basal cell and squamous cell (non-melanoma) skin cancers. Cancer sites were coded using the Third Edition of the International Classification of Diseases for Oncology (ICDO-3). Beginning in 2014, the OCR adopted the National Cancer Institute (NCI) SEER standards for counting multiple primaries for cancer cases diagnosed in 2010 and beyond. This

Durham Region Health Department

Durham Region Cancer Data Tracker

Cancer Overview

Date Last Update

Snapshot Incidence Mortality Compared to Ontario T

This Dashboard is best viewed on a computer or tablet as not all features to select or view certain data are available on mobile devices.

The Cancer at a Glance dashboard provides information about cancer incidence (diagnosed cases of cancer) for Durham Region and Ontario. We present cancer rates for males and females, by cancer site and year. Although all cancers are characterized by uncontrolled growth and spread of abnormal cells, cancer is not one disease, but many. Each type of cancer has different causes, risk factors, preventive factors and

There were 31,763 newly diagnosed cases of cancer and 10,795 cancer deaths among Durham Region residents between 2010 and 2018.

Top Five Cancers in Durham Region (2010-2018)

Five Most Common Cancers

Breast Lung Prostate Colorectal Lymphoma

[Microsoft Power BI](#)



Remington Park Cancer Cluster Investigation

WINDSOR-ESSEX COUNTY
HEALTH UNIT

September, 2016



[Remington Park Cancer Cluster Investigation Report \(wechu.org\)](http://wechu.org)



Poll #1



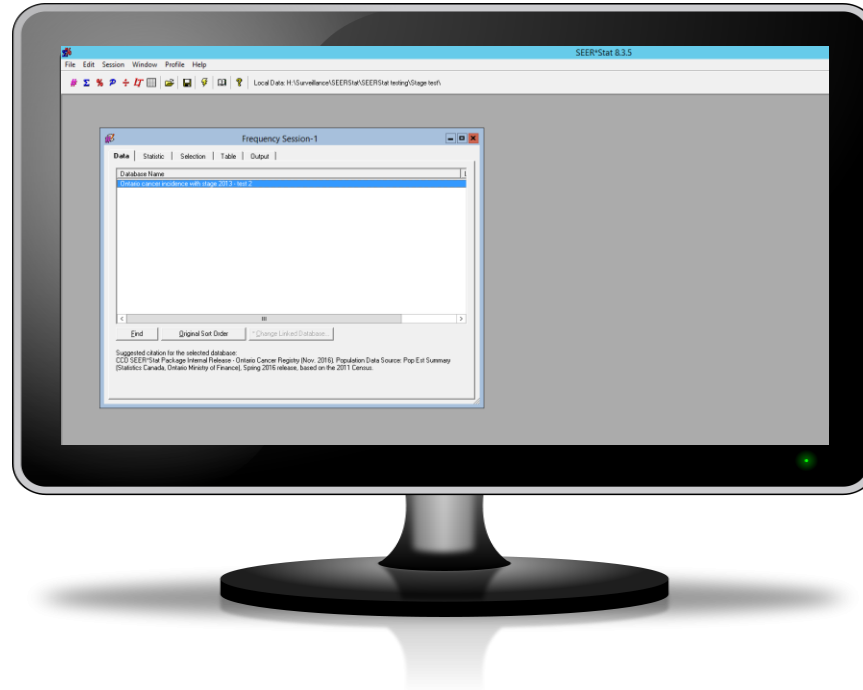


OCR SEER*Stat Package: Hands-on training



Orientation

Software



Data notes

- Analyses spanning 2010: select **IACR Multiple Primary flag**
- Comparing ON to a region: **exclude “Unknown” residence**
- Basal cell and squamous cell carcinomas of the skin are **not registered in Ontario**



Incidence and mortality

FREQUENCY AND RATE SESSIONS

Example 1:

- How many deaths due to lung cancer occurred in each Public Health Unit (PHU) in Ontario in 2018?

Example 1:

- *How many deaths due to lung cancer occurred in each Public Health Unit (PHU) in Ontario in 2018?*

Component of question	SEER*Stat selection
<i>Deaths (counts)</i>	Frequency session; Mortality database (Data tab)
<i>Public Health Unit</i>	PHU database (Data tab)
<i>Lung cancer</i>	Cancer site (Selection tab)
<i>In 2018</i>	Death year (Selection tab)
<i>Each PHU</i>	Stratified by geography (Table tab)



SEER*Stat – Example 1

Example 2:

- What were the annual incidence rates of female breast cancer from 1986 to 2018 in Toronto HU compared to Ontario, age-adjusted to the 2011 Canadian Standard population?

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- What were the annual incidence rates of female breast cancer from 1986 to 2018 in Toronto HU compared to Ontario, age-adjusted to the 2011 Canadian Standard population?

Component of question	SEER*Stat selection
<i>Incidence rates... in Toronto HU</i>	Rate session; PHU Incidence database (Data tab)
<i>2011 Canadian standard population</i>	Standard population (Statistic tab)
<i>Female breast cancer</i>	Cancer site and sex (Selection tab)
<i>Toronto <u>HU</u> compared to Ontario</i>	Stratified by geography (Table tab); <u>User-defined variable</u> (Dictionary)
<i>annual <u>incidence</u>... from <u>1986</u> to <u>2018</u></i>	Stratified by diagnosis year (Table tab); <u>Multiple primary flag</u> (Selection tab)





SEER*Stat – Example 2



Survival

SURVIVAL SESSION

Cancer survival

“How does a cancer diagnosis affect the longevity of people at the population level?”

Measuring cancer survival

Types measures

Observed Survival

Probability of surviving **all causes of death** among people with a cancer diagnosis:

$$\frac{\text{\# of people with cancer still alive (at end of period)}}{\text{Total \# of people with cancer (at start of period)}}$$

Net Survival

Probability of surviving a **cancer diagnosis** in the absence of other causes of death

Measuring cancer survival

Net Survival ...survival *in the absence of other causes of death*

Cause-specific survival: estimates probability of surviving cancer by using detailed cause of death data to identify and include deaths due to cancer and censor deaths due to other causes

Measuring cancer survival

Net Survival ...survival *in the absence of other causes of death*

Relative survival ratio (RSR): estimates survival by taking the ratio of **observed survival** among people with a cancer diagnosis to **expected survival** (obtained through life expectancy tables) among people matched on age, sex, and calendar year in the general population

$$\frac{\text{Observed survival (among cancer patients)}}{\text{Expected survival* (general population)}}$$

*Obtained from Ontario life tables

Example 3:

- What was the 5-year RSR for colorectal cancer in Ontario for the most recent time period?

Example 3:

- *What was the 5-year RSR for colorectal cancer in Ontario for the most recent time period?*

Component of question	SEER*Stat selection
<i>Ontario</i>	Ontario database (Data tab)
<i>RSR</i>	Relative survival (Statistic tab)
<i>Most recent time period</i>	2018, Period survival (Statistic tab)
<i>Colorectal cancer</i>	Cancer site (Selection tab)
<i>5-year</i>	Interval (Parameters tab)



SEER*Stat – Example 3



Prevalence

LIMITED-DURATION PREVALENCE SESSION

Cancer prevalence

“How many people are living with a cancer diagnosis?”

Limited-Duration Prevalence

- Describes the number of people with a past cancer diagnosis who are alive on a specific date and whose cancer diagnosis occurred within a specific time frame prior to that date.

Short-term limited-duration prevalence (e.g. 2-year, 5-year)

- Assessing healthcare system resource impact

Long-term limited-duration prevalence (e.g. 10-year, 30-year)

- Informing long-term care needs and understanding patient outcomes
- Proxy for lifetime prevalence (30-year)

Example 4:

- How many people as of January 1, 2019 were living with cancer diagnosed in the previous 5 years in each Public Health Unit?

Example 4:

- *How many people as of January 1, 2019 were living with cancer diagnosed in the previous 5 years in each Public Health Unit?*

Component of question	SEER*Stat selection
<i>Each Public Health Unit</i>	PHU database (Data tab) Stratifier (Table tab)
<i>As of Jan 1, 2019</i>	Index date (Statistic tab)
<i>Diagnosed in the previous 5 years</i>	Prevalence duration (Statistic tab)
<i>How many people... living</i>	Prevalence count (Statistic tab)





SEER*Stat – Example 4

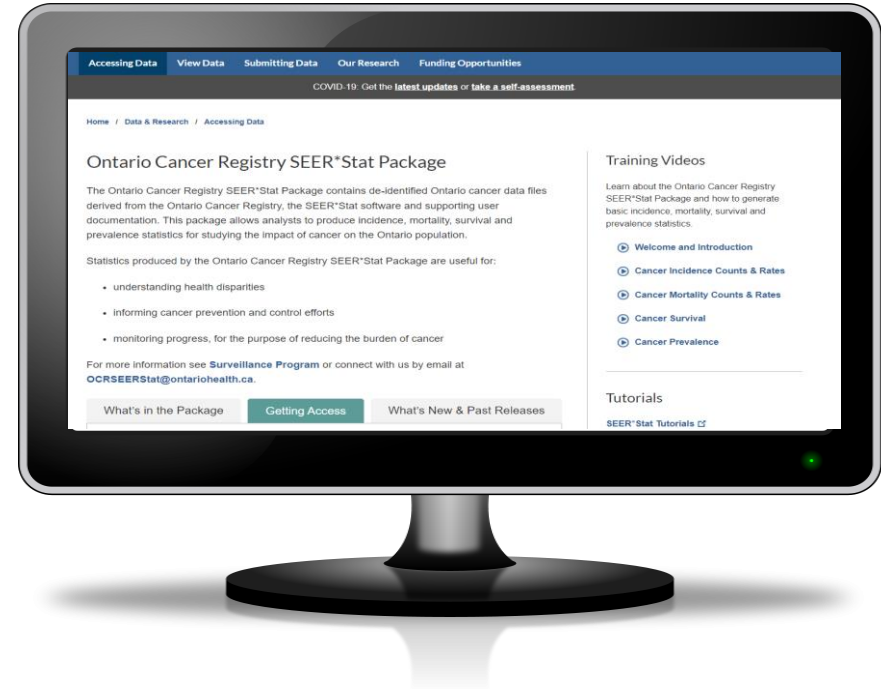


Poll #2



Wrap-up

- Getting Access
 - [Confidentiality agreement](#)
- Release 13
 - 2019 & 2020 years of data
- Future Release
 - Health equity indicators





Thank you!



cancercareontario.ca/seerstat



ocrseerstat@ontariohealth.ca



Appendix

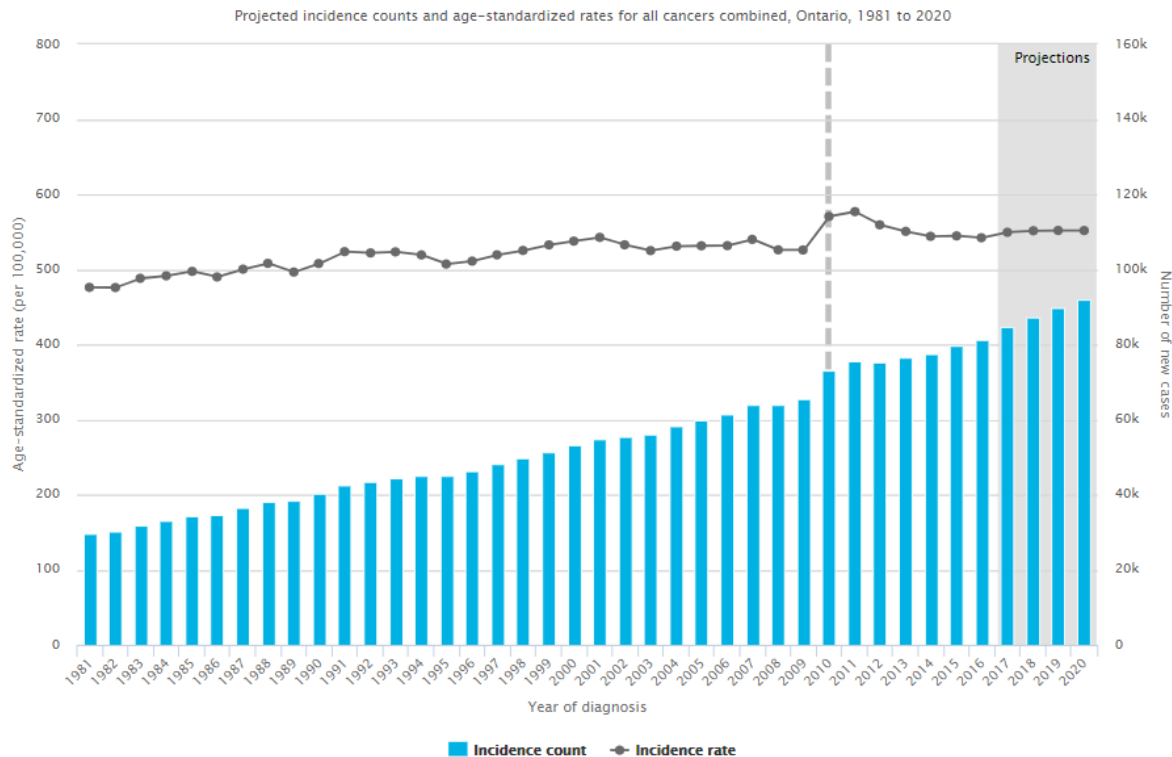
Multiple primary cancers

- Different rules exist to determine if a cancer is a new (multiple) primary cancer or an extension of a previous cancer.
 - Up to 2009: **IACR*** rules (fewer cancers counted as MPs)
 - 2010 onward: **NCI SEER Rules** (more cancers counted as MPs)
- Change in rules resulted in increase in cases from 2010

**International Agency for Research on Cancer*

Multiple primary cancers

Figure 1.1



For incidence over time (spanning 2010), need to select cases meeting IACR counting rules with the **IACR Multiple Primary** flag