Public Health Ontario | Santé publique Ontario

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

Ontario Health and APHEO

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Ontario Health
Cancer Care Ontario

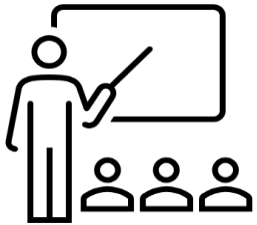
By the end of this webinar…

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

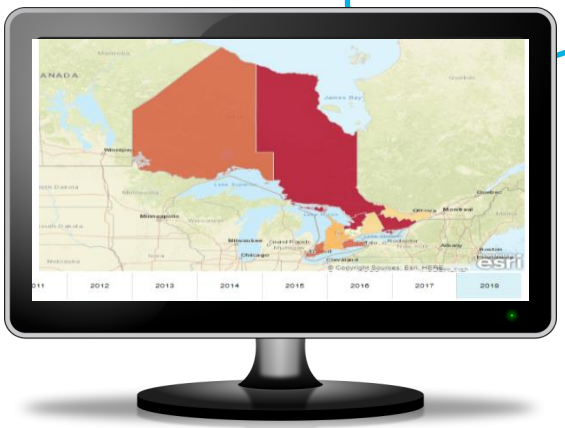
Who we are

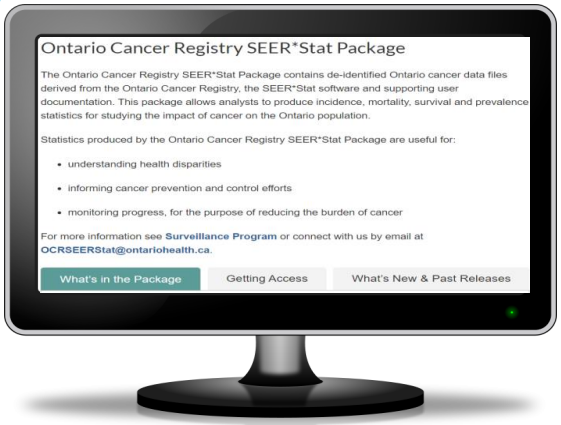
The **Surveillance Program** analyzes and interprets cancer data and reports on Ontario's cancer burden, using the **Ontario Cancer Registry** as the main data source.

Products

Evaluation

2022





Ontario Cancer Profiles

https://www.cancercareontario.ca/ontariocancerprofiles

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

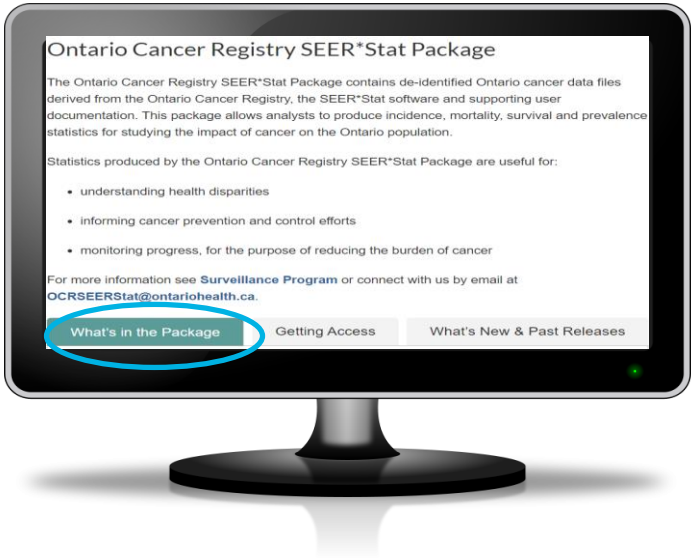
Provide users with the ability to **produce customized Ontario cancer burden** statistics at different regional levels and over time

Content

1. Data: Ontario Cancer Registry

2. Software: SEER*Stat[1]

3. Support: User materials



[1] US 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

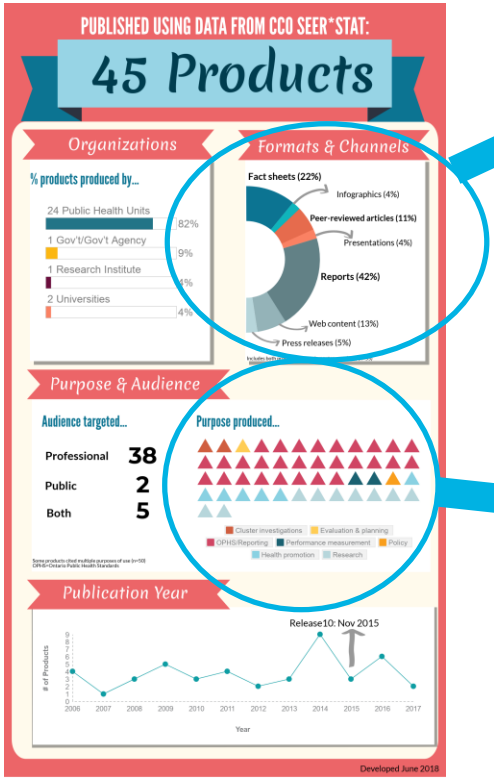
History

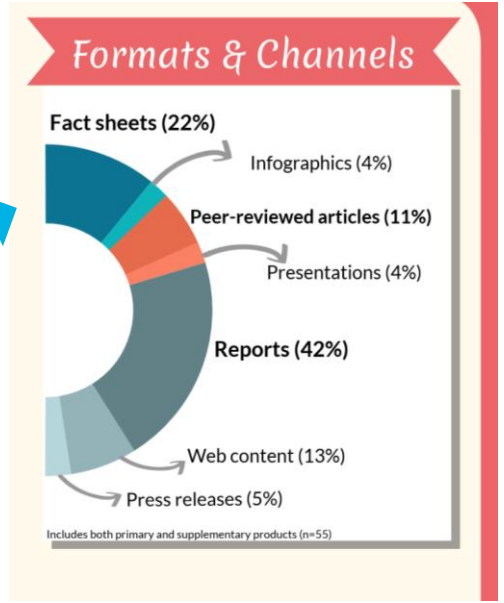
- 10 Releases
  - Release 12 (1981-2018)
- Evaluation-Release 10
  - Survey, web analytics, user profile, scan*
- Improvements-Release 11
  - New sessions
  - Training videos

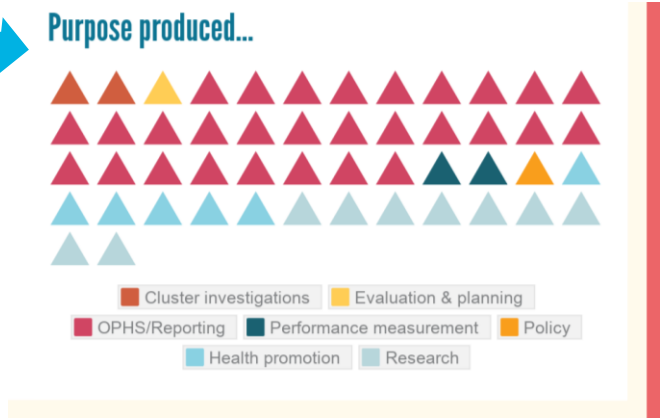
Opportunities

- Peer-led training
- Health equity indicators

Value





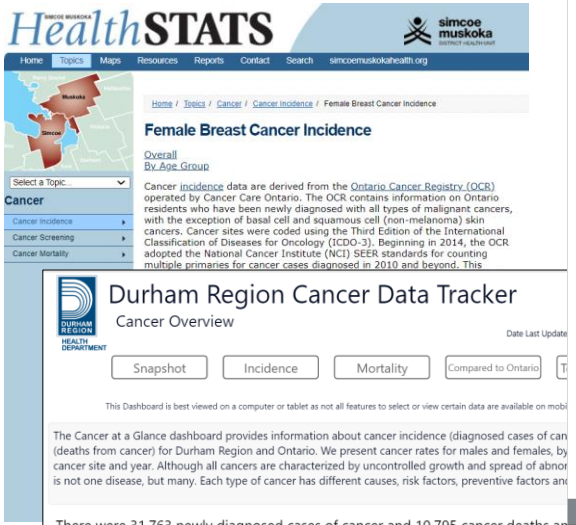


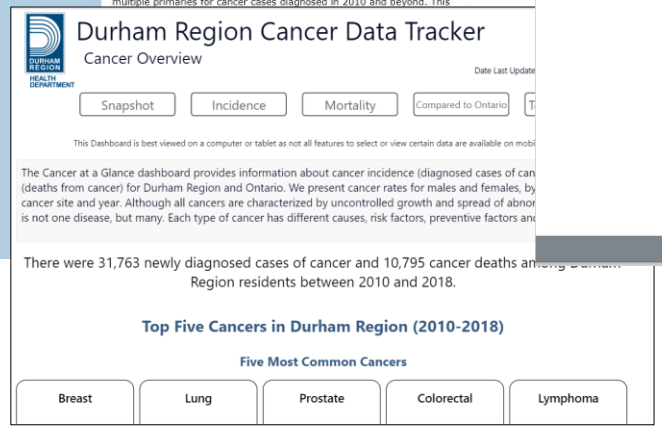
Environmental scan

Value

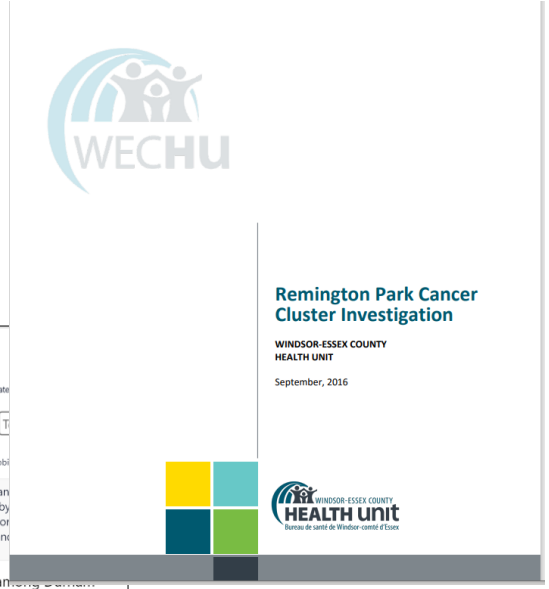
All Sites of Cancer (peelregion.ca)

Female Breast Cancer Incidence (simcoemuskokahealthstats.org)





Microsoft Power BI



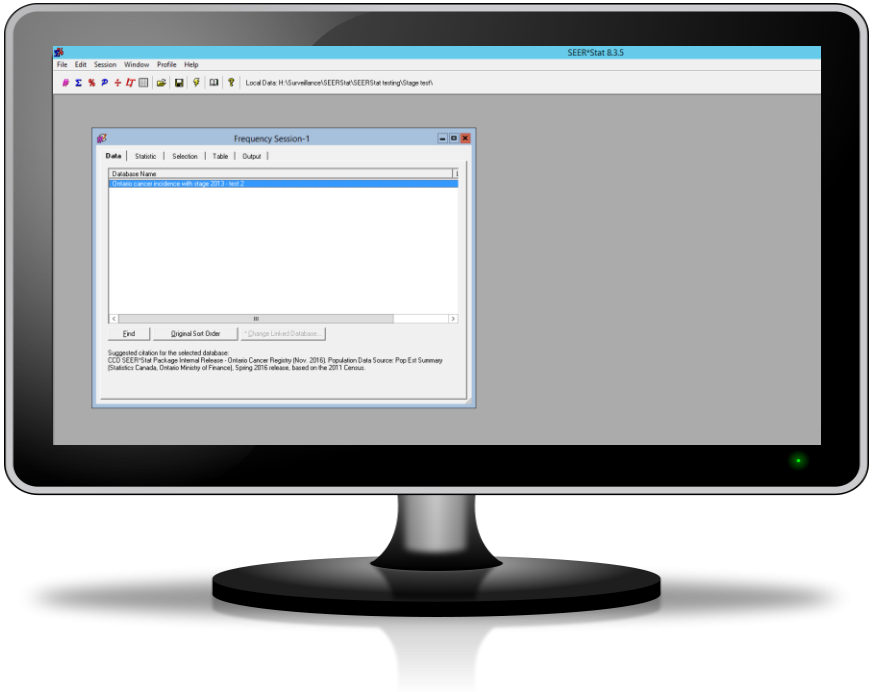
Remington Park Cancer Cluster Investigation Report (wechu.org)

Poll #1

OCR SEER*Stat Package:
Hands-on training

Orientation

Software



Ontario Health
Cancer Care Ontario

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
Deaths (counts)	Frequency session; Mortality database (Data tab)
Public Health Unit	PHU database (Data tab)
Lung cancer	Cancer site (Selection tab)
***In** 2018*	Death year (Selection tab)
***Each** PHU*	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?

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?

Component of question	SEER*Stat selection
Incidence rates… in Toronto HU	Rate session; PHU Incidence database (Data tab)
2011 Canadian standard population	Standard population (Statistic tab)
Female breast cancer	Cancer site and sex (Selection tab)
Toronto HU compared to Ontario	Stratified by geography (Table tab); *User-defined variable (Dictionary)*
annual incidence... from 1986 to 2018	Stratified by diagnosis year (Table tab); *Multiple primary flag (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
Ontario	Ontario database (Data tab)
RSR	Relative survival (Statistic tab)
Most recent time period	2018, Period survival (Statistic tab)
Colorectal cancer	Cancer site (Selection tab)
5-year	Interval (**Parameters** tab)

SEER*Stat – Example 3

Prevalence

LIMITED-DURATION PREVALENCE SESSION

Cancer prevalence

“How may 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?*

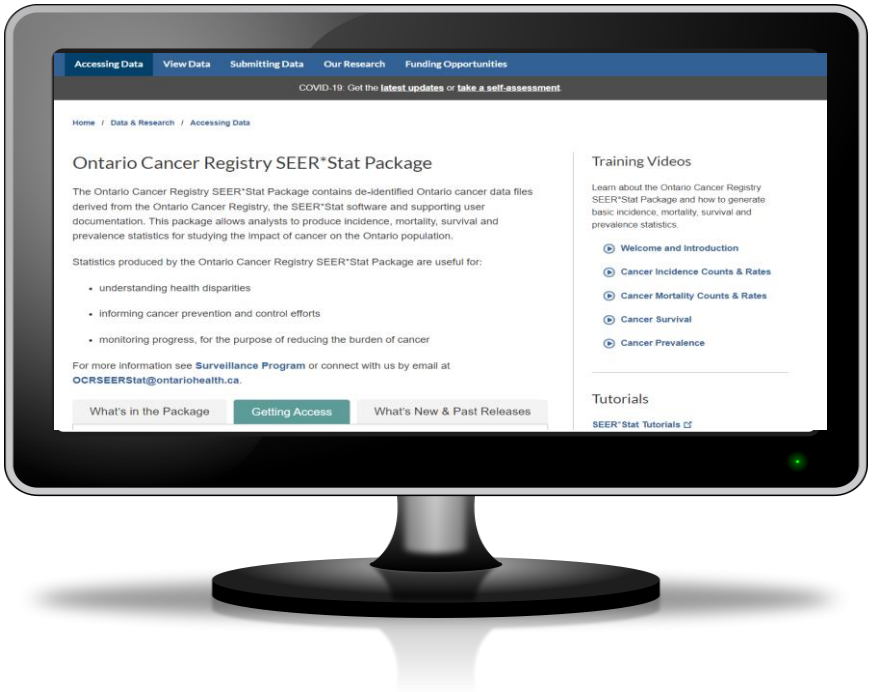
Component of question	SEER*Stat selection
Each Public Health Unit	PHU database (Data tab) Stratifier (Table tab)
As of Jan 1, 2019	Index date (Statistic tab)
Diagnosed in the previous 5 years	Prevalence duration (Statistic tab)
How many people… living	Prevalence count (Statistic tab)

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

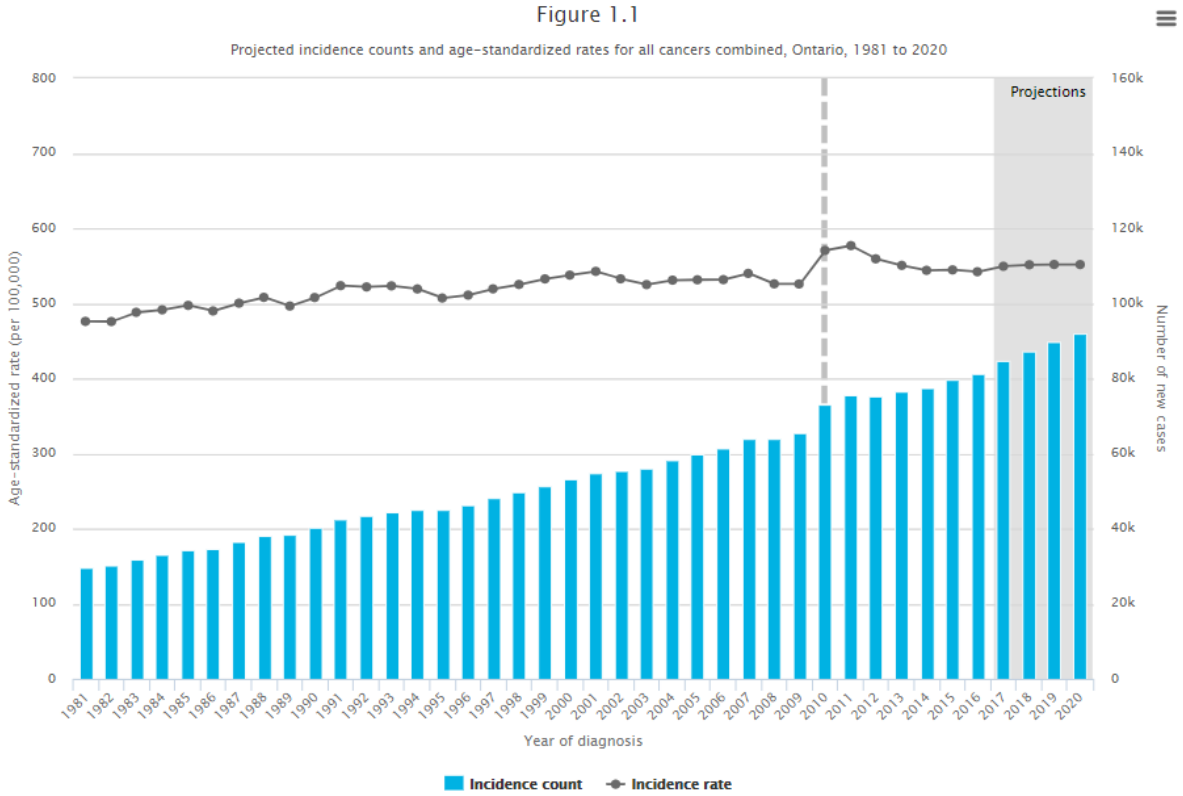
Appendix

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



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

Ontario Cancer Statistics 2020

Chapter 1: Estimated current cancer incidence