





Canadian Substance Use Costs and Harms online data visualization tool

User Guide

Explore the costs and harms of substance use in Canada and create customized charts and tables

Data available in the tool

There are four categories of costs and harms data in the tool. Each category has different outcomes available:

Categories	Health 	Lost productivity 	Criminal justice 	Other 
Outcomes	All health Inpatient hospitalizations Day surgeries Emergency department visits Paramedic services Specialized treatment events Deaths Physician time Prescription drugs	All lost productivity Potential years of productive life lost Long-term disability Short-term disability	All criminal justice Policing Courts Corrections	All other costs Research and prevention Fire damage Motor vehicle damage Employee-assistance programs Workplace drug testing Workers' compensation administrative costs Social assistance

There is also a total costs category that is the sum of all four study categories (health, lost productivity, criminal justice, and other costs).

Total Costs
Sum of all health + All lost productivity + All criminal justice + All other

The different outcomes can be plotted by costs (either total or per capita), and in some cases by counts and rates (both unstandardized and standardized rates). Their definitions are as follows:

Costs	Counts and Rates
<p>Total (\$): Estimates of the costs in 2020 Canadian dollars associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.).</p> <p>Per capita (\$): The cost in 2020 Canadian dollars for each individual in a given region (i.e., Canada-wide or in an individual province or territory), calculated by dividing the total cost by the total number of persons in the population of interest.</p>	<p>Total counts: Refer to estimates of the number of cases associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.).</p> <p>Unstandardized rates: Calculated by dividing the total number of cases in a given time period by the total number of persons in the population of interest, multiplied by 100,000.</p> <p>Standardized rates: As with unstandardized rates, calculated by dividing the total number of cases in a given time period by the total number of persons in the population interest, multiplied by 100,000, but further adjusted to reflect the standard Canadian age and sex distribution. This measure should be selected when making comparisons between provinces and territories in order to control for age and sex differences in population.</p>

Within any of the outcomes, you can then explore by:

- **Substance:** alcohol, tobacco, cannabis, opioids, other central nervous system (CNS) depressants, cocaine, other CNS stimulants (including ecstasy) and all other substances (including hallucinogens and inhalants)
- **Province or Territory**
- **Year:** data currently available from 2007 to 2020




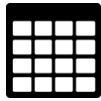
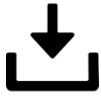



For some¹ harms and costs outcomes you can also explore by the variables:

- **Age group:** data grouped in the following ranges: 0–14, 15–34, 35–64, 65 and over
- **Sex:** for both men and women
- **Health condition:** data broken down by health conditions wholly- or partially-attributable to substance use.

See pages 24–28 for a full listing of data available in the tool.

¹ Age, sex and health condition data available for in-patient hospitalizations, day surgeries, deaths and potential years of productive life lost. Age and sex data available for emergency department visits, physician time and long-term disability. Sex data available for policing, courts and corrections.

Icon reference guide

Type	Icon	Function
Chart or table options		Bar chart: presents categorical data by using rectangular bars with heights or lengths proportional to the values that they represent. In this tool, you can create side-by-side or stacked bar graphs when looking at multiple variables.
		Time series: presents the value of an outcome over time so your x-axis will be the years 2007–2020.
		Map of Canada: presents one selected outcome (cost or count/rate) using different shading in the provinces and territories to indicate the average of that outcome in the region. Users can hover over the map to see values for each province or territory. In this tool, you can use the play button to animate the map and see any changes to the values over time.
		Table: presents the data for your selected outcome as numerical values.
User controls		Export: download the chart or table. The tool will provide a list of file formats available. Users have the option to select “Remember for this session” to save your preferred file type and not be prompted again during the same visit.
		Definitions: toggle this icon to access definitions.
		User Guide: access the user guide for more resources on how to use this tool by selecting this icon. The user guide will open in a new window.
		Reset: selecting this icon will reset the tool. Alternatively, you can reload the page using your browser reload button.

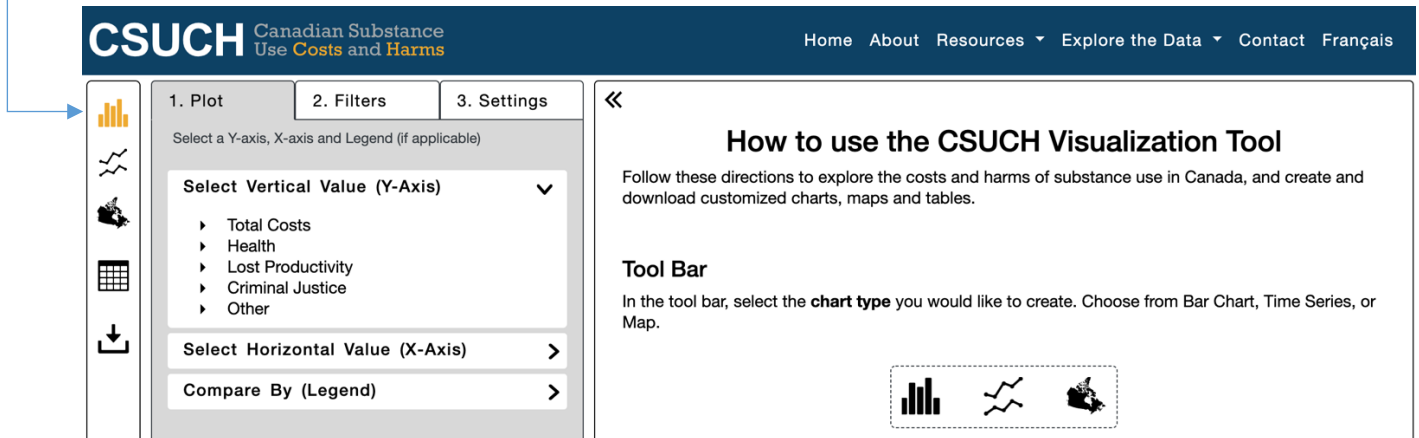
How to use the tool

Overview

The tool allows users to explore the costs and harms of substance use in Canada, and create and download customized charts, maps and tables.

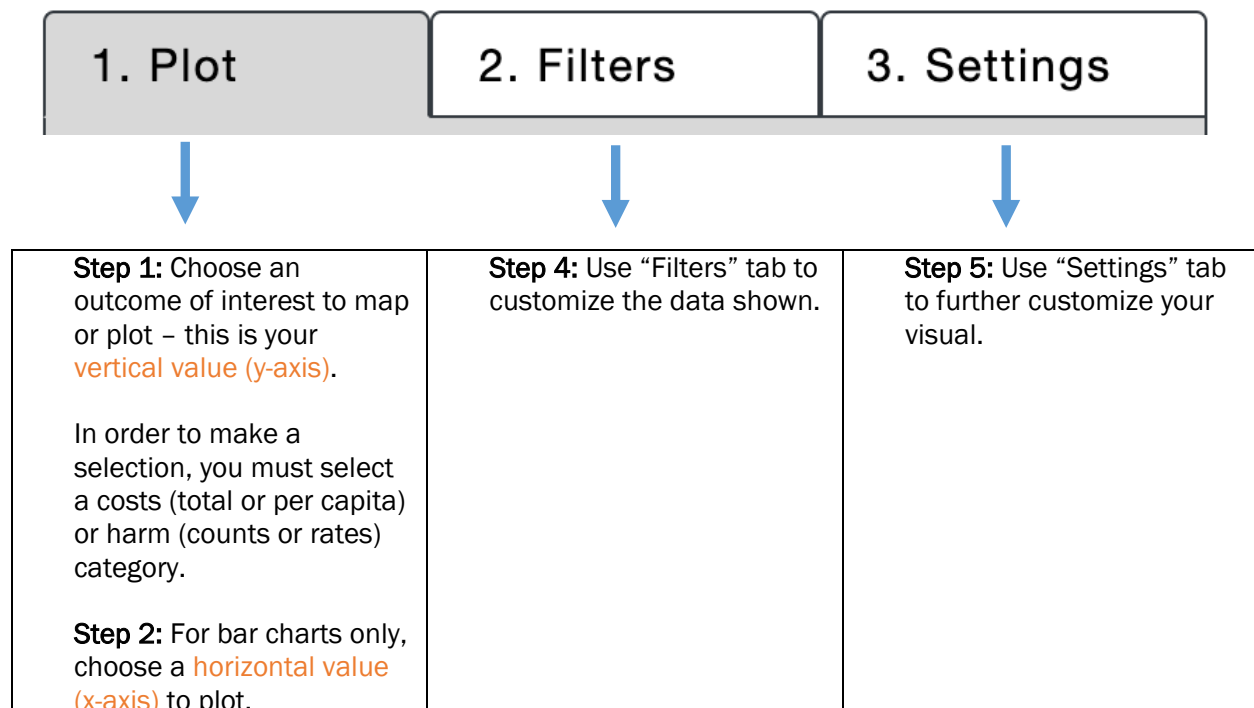
First, select the type of chart you would like to create. The default setting is a bar chart.

Here's where you make your selection



The screenshot shows the CSUCH (Canadian Substance Use Costs and Harms) Visualization Tool interface. The top navigation bar includes 'Home', 'About', 'Resources', 'Explore the Data', 'Contact', and 'Français'. The main interface is divided into three tabs: '1. Plot', '2. Filters', and '3. Settings'. The '1. Plot' tab is active, showing options to 'Select a Y-axis, X-axis and Legend (if applicable)'. Under 'Select Vertical Value (Y-Axis)', there is a dropdown menu with options: Total Costs, Health, Lost Productivity, Criminal Justice, and Other. Below this are fields for 'Select Horizontal Value (X-Axis)' and 'Compare By (Legend)'. To the right, a 'Tool Bar' section explains that users can select a chart type (Bar Chart, Time Series, or Map) from a set of icons.

Next, there are three tabs in the user interface tray you can use to build, filter and customize your charts, maps and tables. The following steps are common across chart types:



<p>Step 3: Choose a plot parameter to compare by in the legend (if applicable).</p>		
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Step 6: Export, refresh and start again.

Hints:

- Use “Select All” in the drop down menu to both select and de-select the full list.

Examples to illustrate key features of the tool

A few illustrative examples are provided below:

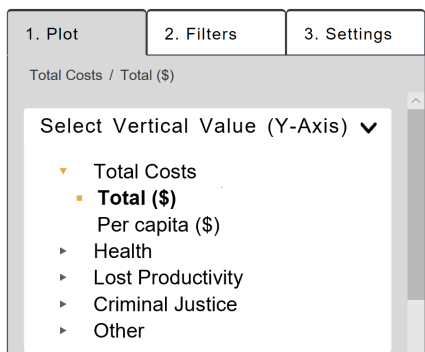
Example	Task	Page numbers
1	Creating a stacked bar chart to show the total cost of substance use by substance and cost category in 2020	7-9
2	Creating a time series to show the total criminal justice costs of substance use by province and downloading the data as both a graph and table	10-13
3	Creating a map to show standardized rate of inpatient hospitalizations for alcohol across the provinces and territories	14-16
4	Exploring per capita costs of inpatient hospitalizations by province/territory to see: <ul style="list-style-type: none"> a. Differences between male and female b. Differences by age categories c. Differences by health condition – cancer vs cardiovascular conditions 	17-20
5	Comparing per capita costs from long-term disability to total costs from short-term disability for alcohol and tobacco from 2007-2020	21-25

Example 1: Creating a stacked bar chart to show the total cost of substance use by substance and cost category in 2020

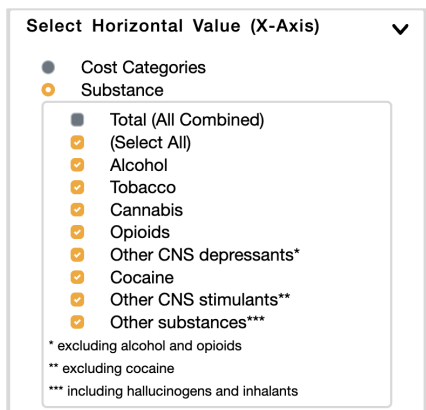
Chart type: bar
Outcome of interest – vertical value (y-axis): Total Costs>Total (\$)
Horizontal value: Substance
Compare by (Legend): Cost categories

Filters
Year: 2020 (by default)

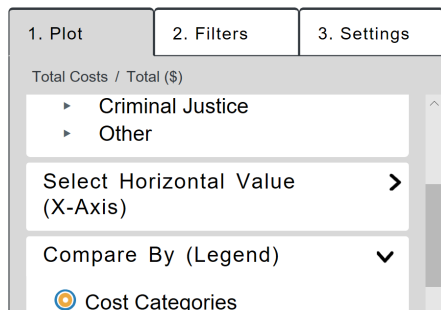
Step 1: In “Plot” tab, select Total Costs>Total (\$) as your Vertical Value



Step 2: In “Plot” tab, select Substance as your Horizontal Value



Step 3: In “Plot” tab, select Cost categories as your Compare By (Legend) value



Step 4: In “Filters” tab, ensure 2020 is selected for Year.

Province / Territory >

Year v

- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020

Step 5: In “Settings” tab, select “Stack Bars”

1. Plot 2. Filters 3. Settings

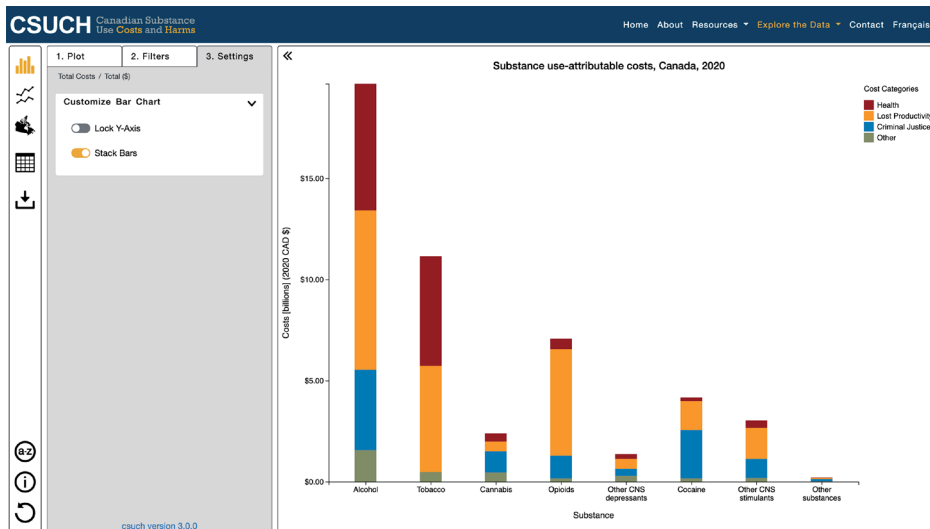
Total Costs / Total (\$)

Customize Bar Chart v

Lock Y-Axis

Stack Bars

Step 6: Download as a PDF



You will be prompted to select a file format for your download. Please select from the available options and see the explanation below your selection.

Choose a file format



PDF

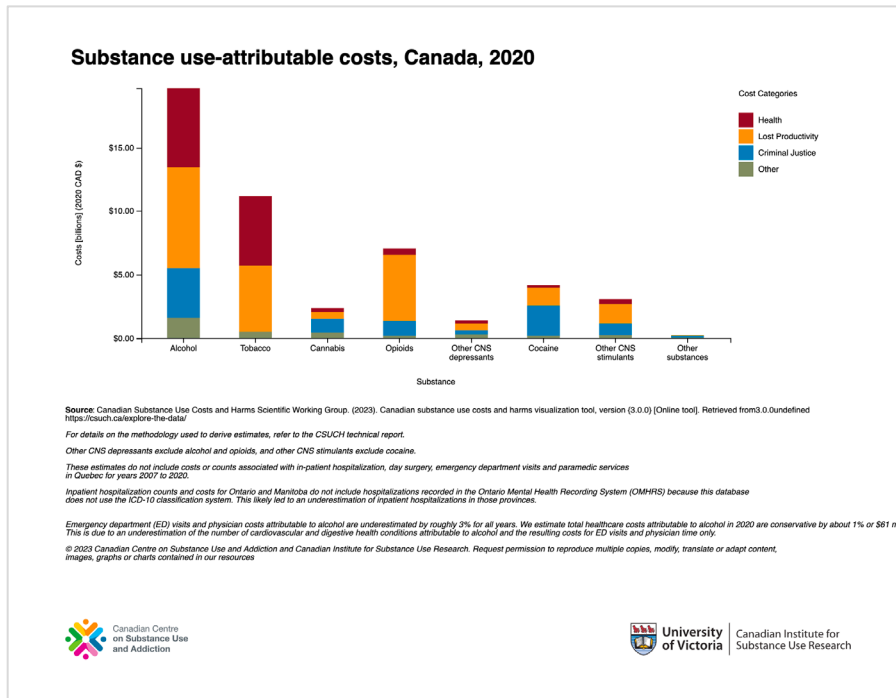
This file is in a **Portable Document Format (PDF)** from Adobe. It is a standalone, fixed-layout, flat document that includes text and images, and is ideal for **archiving, sharing or printing**. PDF was standardized as an open format in 2008.

Remember for this session

Close

Download

Save your PDF for use!



Use the reset button to reload your browser and start a new chart.



Example 2: Creating a time series to show substance use attributable total number of deaths by province and downloading the data as both a graph and table.

Chart type: time series

Outcome of interest – vertical value(y-axis): Health>Deaths>Counts and Rates> Total counts

Horizontal value: Year (time series are always over years)

Compare by (Legend): Provinces

Filters: None

First, select “Time Series” as your chart type.



Step 1: In “Plot” tab, select Health>Deaths>Counts and Rates>Total Counts

Select Vertical Value (Y-Axis) ▼

- ▶ Total Costs
- ▼ Health
 - ▶ All health
 - ▶ Inpatient hospitalizations
 - ▶ Day surgeries
 - ▶ Emergency department visits
 - ▶ Paramedic Services
 - ▶ Specialized treatment events
 - ▼ Deaths
 - ▼ Counts and rates
 - **Total counts**
 - Unstandardized rates
 - Standardized rates
 - ▶ Physician time
 - ▶ Prescription drugs
 - ▶ Lost Productivity
 - ▶ Criminal Justice
 - ▶ Other

Step 2: In a time series, the x-axis is locked to years so there’s no need to make a selection for the horizontal value.

Step 3: In “Plot” tab, select Province/Territory as your Compare By (Legend) value.

1. PLOT 2. Filters 3. Settings

Health / Deaths / Counts and rates / Total counts

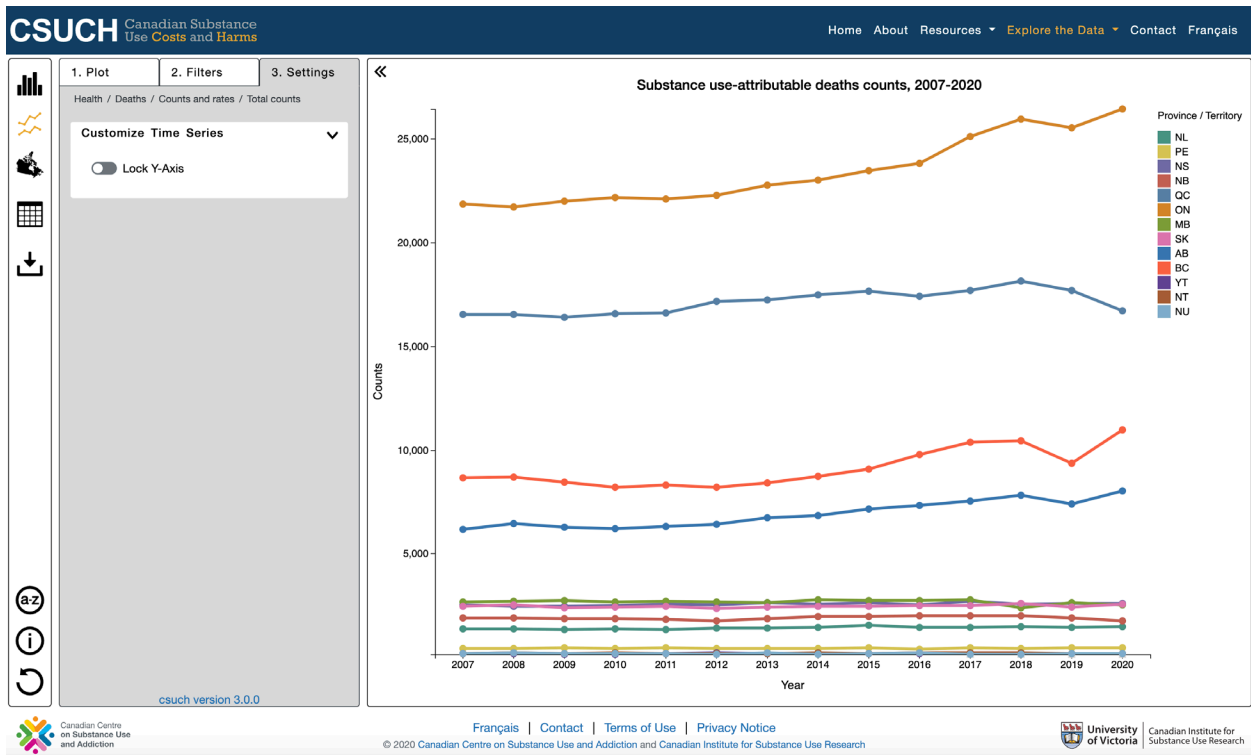
Compare By (Legend) ▼

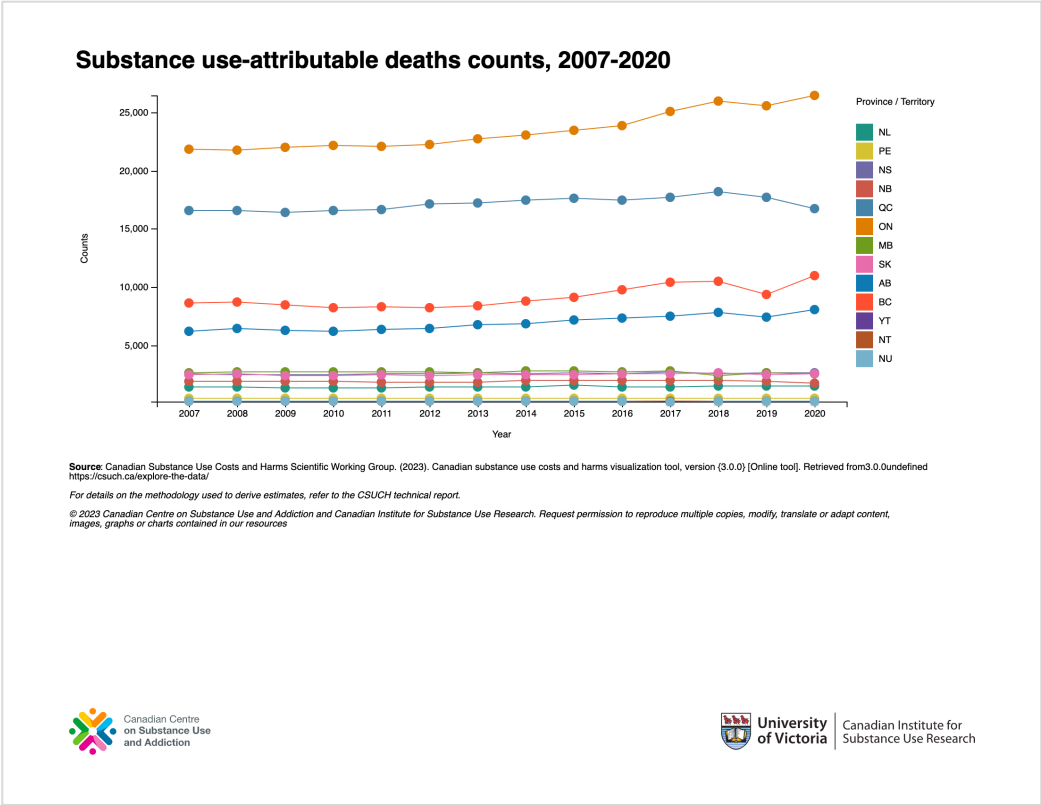
- Substance
- Province / Territory
 - All Canada
 - (Select All)
 - Newfoundland and Labrador
 - Prince Edward Island
 - Nova Scotia
 - New Brunswick
 - Québec
 - Ontario
 - Manitoba
 - Saskatchewan
 - Alberta
 - British Columbia
 - Yukon Territory
 - Northwest Territories
 - Nunavut

Step 4: There are no filters to select in this example.

Step 5: There is no further customization in the “Settings” tab in this example.

Step 6: Download the data as both a graph and a data table. The first step is to download the graph.





Next, to view the data table select table from the chart options:



Select the CSV file format to download for Excel:

Choose a file format ✕

CSV ▼

Comma-Separated Value (CSV) files store tabular data separated by commas. This file is a plain text export format, which is ideal for **past**ing or **importing into spreadsheets** such as Microsoft Excel to create your own visualizations or analysis.

Remember for this session

Close
Download

AutoSave OFF

deaths_line

Home Insert Draw Page Layout Formulas Data Review View Tell me

Calibri (Body) 12 A A

General

Conditional Formatting
Format as Table
Cell Styles

A1 Substance use-attributable deaths counts, 2007-2020

	A	B	C	D	E	F	G	H	I
1	Substance use-attributable deaths counts, 2007-2020								
2									
3	Year	Province / Territory	Deaths counts						
4	2007	Newfoundland and Labrador	1376.17						
5	2007	Prince Edward Island	428.65						
6	2007	Nova Scotia	2527.02						
7	2007	New Brunswick	1893.98						
8	2007	Quv@bec	16525.55						
9	2007	Ontario	21851.71						
10	2007	Manitoba	2655.18						
11	2007	Saskatchewan	2452.09						
12	2007	Alberta	6166.46						
13	2007	British Columbia	8651.21						
14	2007	Yukon Territory	169.69						
15	2007	Northwest Territories	173.35						
16	2007	Nunavut	187.32						
17	2008	Newfoundland and Labrador	1379.67						
18	2008	Prince Edward Island	414.97						
19	2008	Nova Scotia	2465.26						

Reload your browser or refresh the tool page to start a new chart.



Example 3: Creating a map to show standardized rate of inpatient hospitalizations for alcohol across the provinces and territories

Chart type: Map of Canada

Outcome of interest – vertical value(y-axis): Health>Inpatient hospitalizations>Counts and rates>standardized rates

Horizontal value: N/A

Compare by (Legend): N/A

Filters: Alcohol

First, select Map of Canada as your chart type.



Step 1: In “Plot” tab, select Health>Inpatient hospitalizations>Counts and rates>Standardized rates

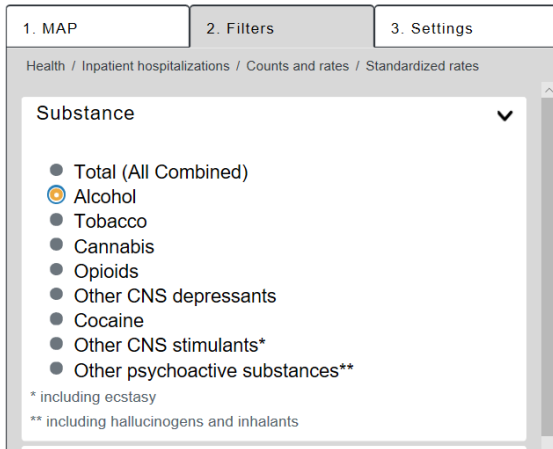
Select Vertical Value (Y-Axis) ▼

- ▶ Total Costs
- ▼ Health
 - ▶ All health
 - ▼ Inpatient hospitalizations
 - ▼ Counts and rates
 - Total counts
 - Unstandardized rates
 - **Standardized rates**
 - ▶ Costs
 - ▶ Day surgeries
 - ▶ Emergency department visits
 - ▶ Paramedic Services
 - ▶ Specialized treatment events
 - ▶ Deaths
 - ▶ Physician time
 - ▶ Prescription drugs
 - ▶ Lost Productivity
 - ▶ Criminal Justice
 - ▶ Other

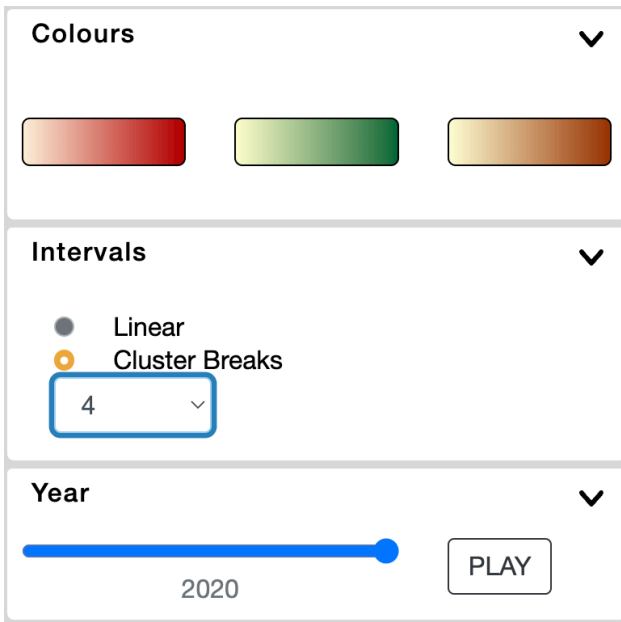
Step 2: N/A (No Compared By / Horizontal Value)

Step 3: N/A (No Filters)

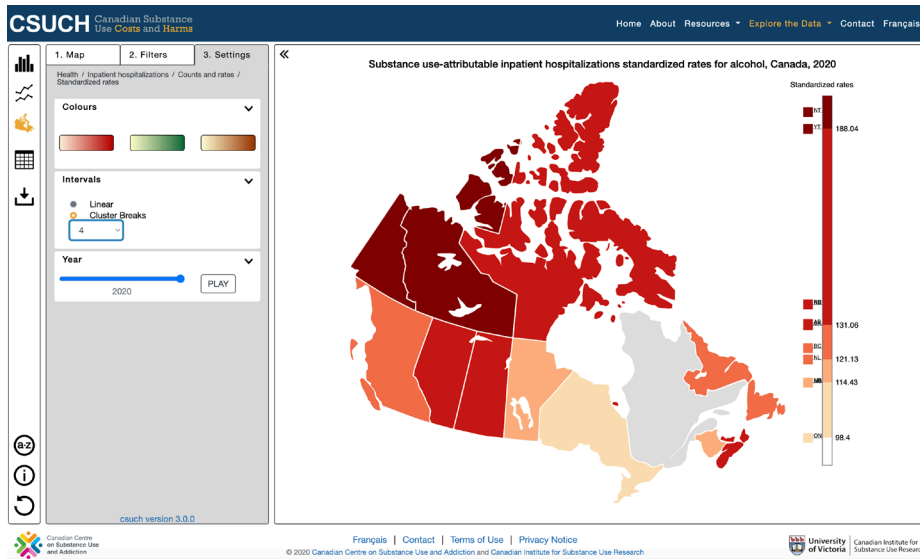
Step 4: In the “Filters” tab, select Alcohol from the substance drop down options. Please note you can only filter by one option for each of the variables (i.e., only one substance or only one health condition at a time).



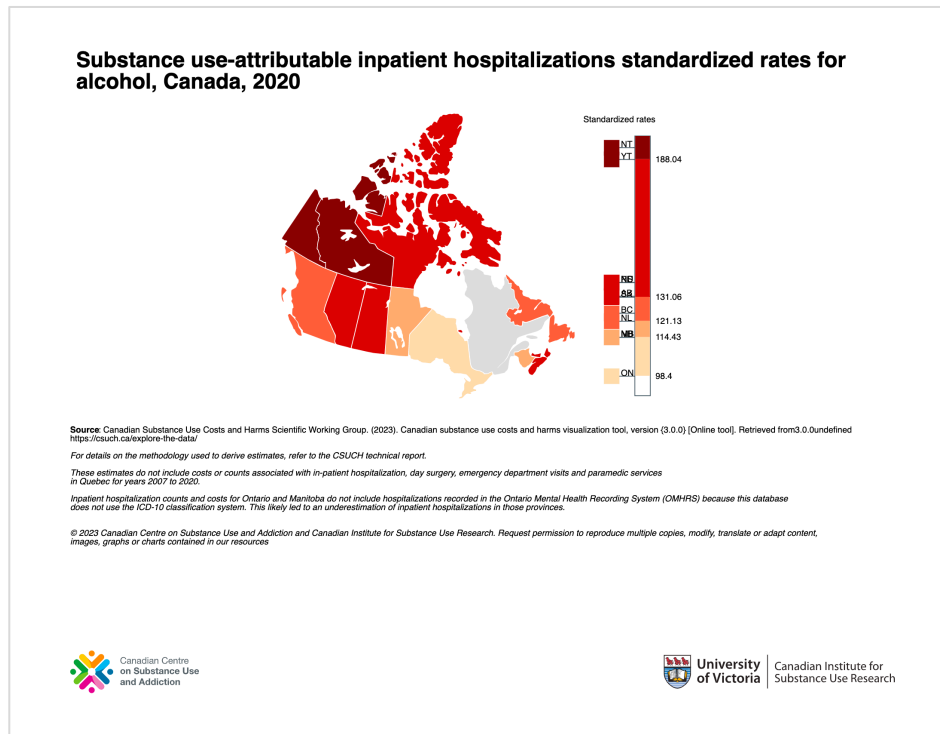
Step 5: In the “Settings” tab, select your desired colour and number of breaks in the data under intervals.



Step 6: Download the map for 2020 as a JPG



Save image for future use!



Reload your browser or refresh the tool page to start a new chart.



Example 4: Exploring per capita costs of inpatient hospitalizations by province/territory to see:

- a. Differences between male and female
- b. Differences by age categories
- c. Differences by health condition – cancer vs cardiovascular conditions

Chart type: bar

Outcome of interest – vertical value(y-axis): Health>Inpatient hospitalizations>Costs>Per capita
Horizontal value: Provinces/Territory

Compare by (Legend):

- a. Sex
- b. Age
- c. Health condition – Cancer vs Cardiovascular conditions

Filters

Year: 2020 (by default)

First, select “Bar Chart” as your chart type.



Step 1: In “Plot” tab, select Health>Inpatient hospitalizations>Costs>Per capita (\$)

Select Vertical Value (Y-Axis) ▼

- ▶ Total Costs
- ▼ Health
 - ▶ All health
 - ▼ Inpatient hospitalizations
 - ▶ Counts and rates
 - ▼ Costs
 - Total (\$)
 - **Per capita (\$)**
 - ▶ Day surgeries
 - ▶ Emergency department visits
 - ▶ Paramedic Services
 - ▶ Specialized treatment events
 - ▶ Deaths
 - ▶ Physician time
 - ▶ Prescription drugs
 - ▶ Lost Productivity
 - ▶ Criminal Justice
 - ▶ Other

Step 2: In the “Plot” tab, select Province/Territory as your Horizontal Value

1. Plot | 2. Filters | 3. Settings

Health / Inpatient hospitalizations / Counts and rates / Standardized rates

Select Horizontal Value (X-Axis) ▼

- Substance
- Province / Territory
 - All Canada
 - (Select All)
 - Newfoundland and Labrador
 - Prince Edward Island
 - Nova Scotia
 - New Brunswick
 - Québec
 - Ontario
 - Manitoba
 - Saskatchewan
 - Alberta
 - British Columbia
 - Yukon Territory
 - Northwest Territories
 - Nunavut

Step 3:

- To see the difference per capita costs of inpatient hospitalizations by sex, in the “Plot” tab, select Sex (Male and Female) as your Compare By (Legend) value.

1. Plot | 2. Filters | 3. Settings

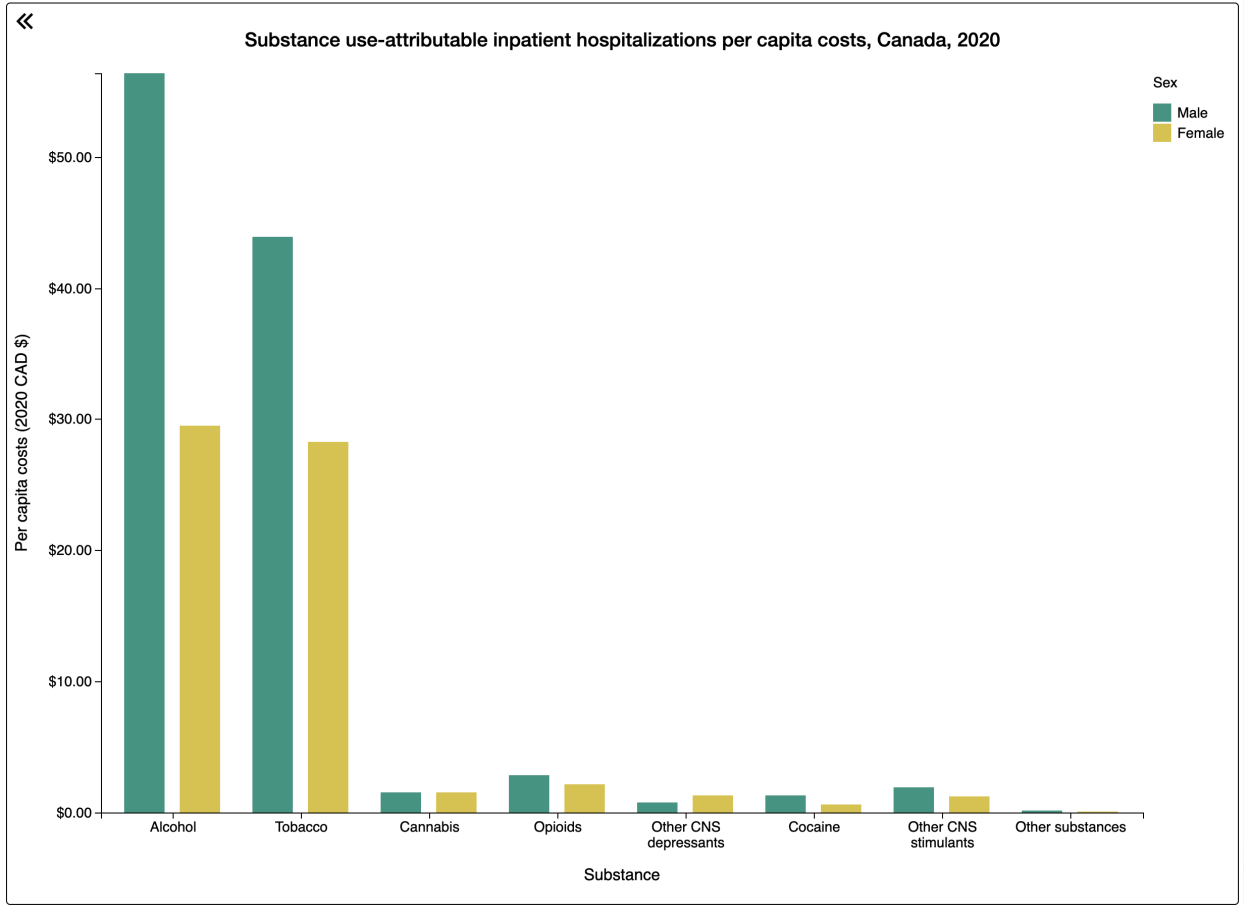
Health / Inpatient hospitalizations / Costs / Per capita (\$)

- Northwest Territories
- Nunavut
- Year
- Age
- Sex
- Health Conditions

Compare By (Legend) ▼

- Substance
- Province / Territory
- Year
- Age
- Sex
 - All Sexes
 - (Select All)
 - Male
 - Female
- Health Conditions
- No Comparison

The chart now displays the different inpatient hospitalizations per capita costs between male and female for 2020.



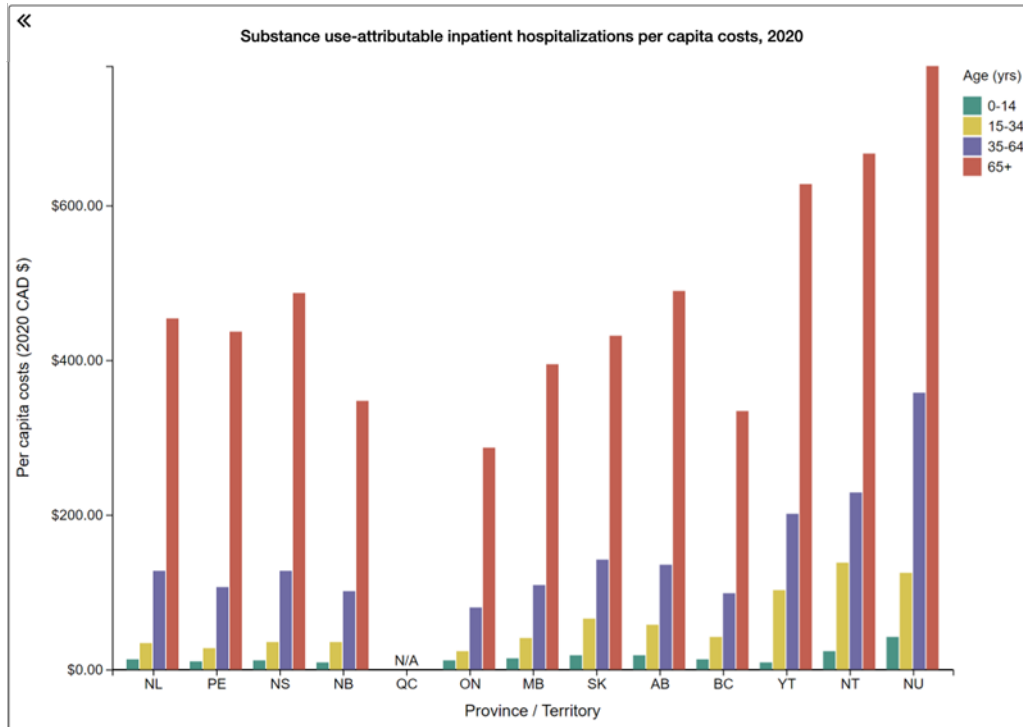
b. To see the difference per capita costs of inpatient hospitalizations by age, in the “Plot” tab, select Age as your Compare By (Legend) value.

Compare By (Legend) ▼

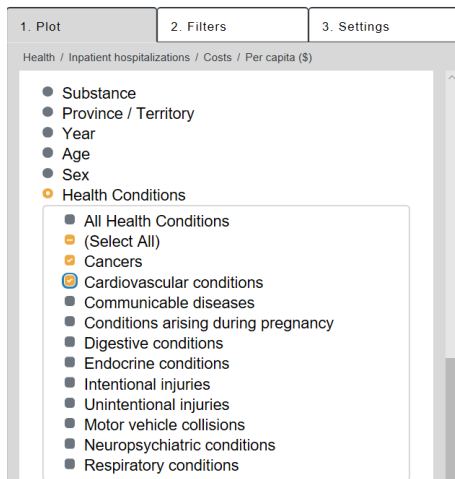
- Substance
- Province / Territory
- Year
- Age

- All Ages
 - (Select All)
 - 0-14 years
 - 15-34 years
 - 35-64 years
 - 65+ years
- Sex
- Health Conditions
- No Comparison

The chart now displays the different inpatient hospitalizations per capita costs between age categories for 2020.



c. Next, to see the difference per capita costs of inpatient hospitalizations for cancers vs. cardiovascular conditions, in the “Plot” tab, select Health Condition as your Compare By (Legend) value.



The chart now displays the different inpatient hospitalizations per capita costs between cancers and cardiovascular conditions by Province/Territory for 2020.

Refer to pages 8–9 for instructions on downloading charts.

Example 5: Comparing per total lost productivity per capita costs from in Ontario vs. Quebec for alcohol, tobacco and opioids from 2007–2020

Chart type: time series

*To compare between two sets of variables – here substance (alcohol and tobacco) as well as province and territory (Ontario and Quebec), you need to create two charts in a series by using the **Lock Y-Axis setting**. By locking the y-axis, the scale will stay the same between graphs and you will more easily see the differences between outcomes.*

Please note the range for different outcomes can vary greatly so it may not be possible to lock the y-axis for all selections.

Chart 1:

Outcome of interest – vertical value(y-axis): Lost Productivity>All lost productivity>costs>Per capita
Horizontal value: locked to year
Compare by (Legend): Substance>Alcohol, tobacco
Filter: Ontario

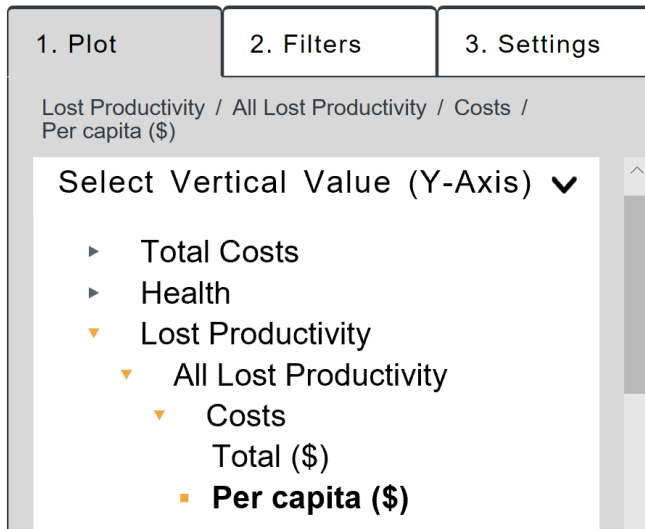
Chart 2:

Outcome of interest – vertical value(y-axis): Lost Productivity>All lost productivity>costs>Per capita
Horizontal value: locked to year
Compare by (Legend): Substance>Alcohol, tobacco
Filter: Quebec

First, select “Time Series” as your chart type.

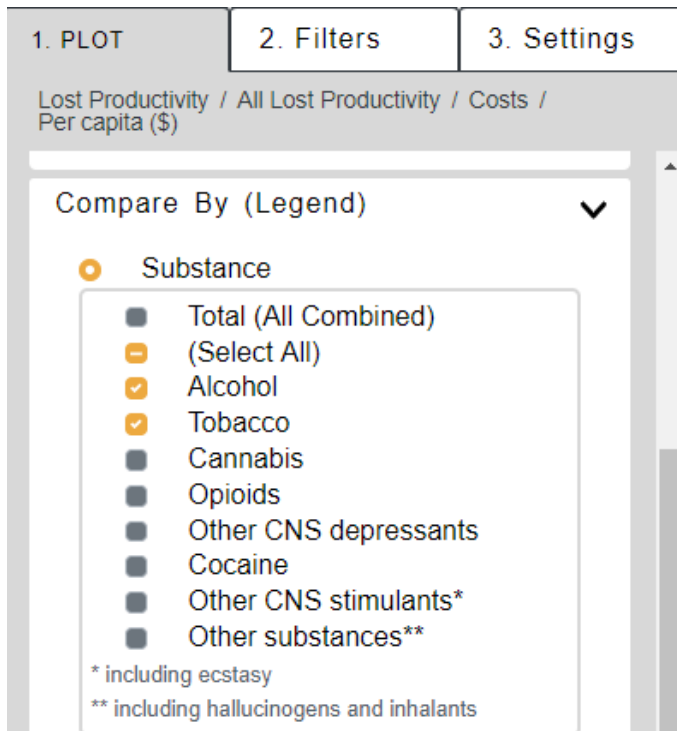


Step 1: In the “Plot” tab, select Lost Productivity>All lost productivity>Costs>Per capita (\$)

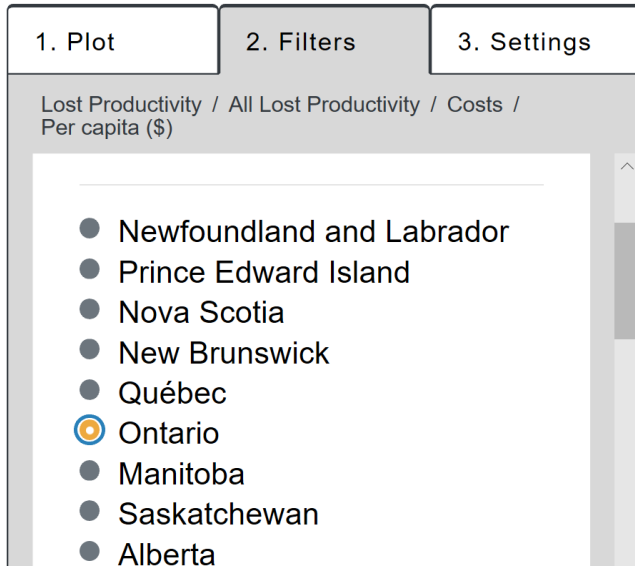


Step 2: In a time series, the x-axis is locked to years so there is no need to make a selection for the horizontal value.

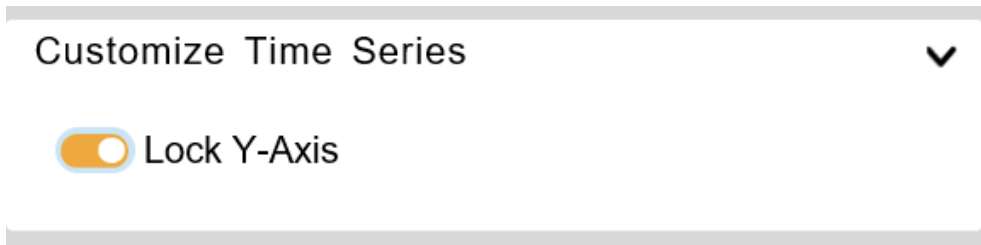
Step 3: In the “Plot” tab, select Substance and check Alcohol and Tobacco from the options.



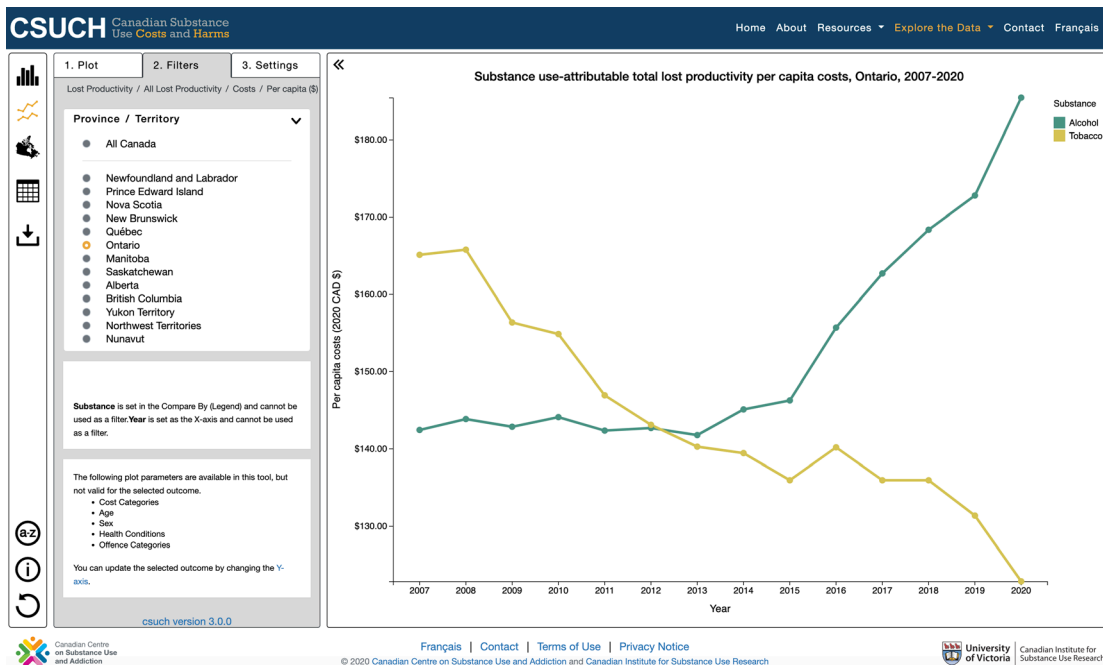
Step 4: In the “Filters” tab, select Ontario.

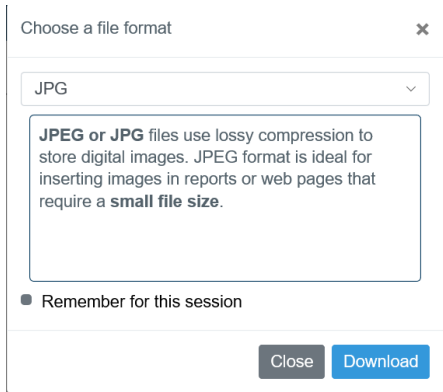


Step 5: In the “Settings” tab, select ‘Lock Y-Axis’.

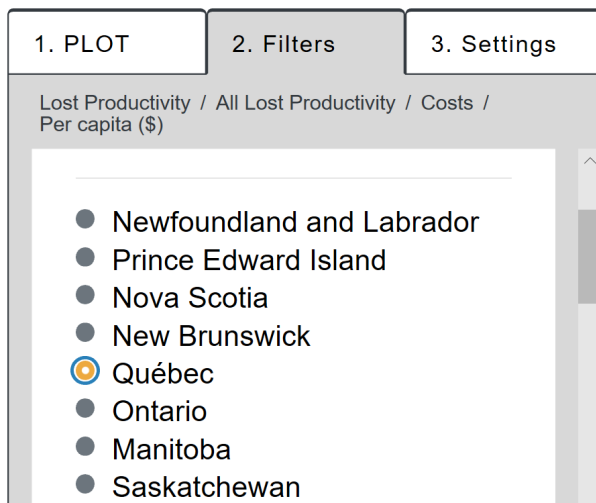


Step 6: Download as a JPG and insert into a Word document to create a side-by-side comparison.

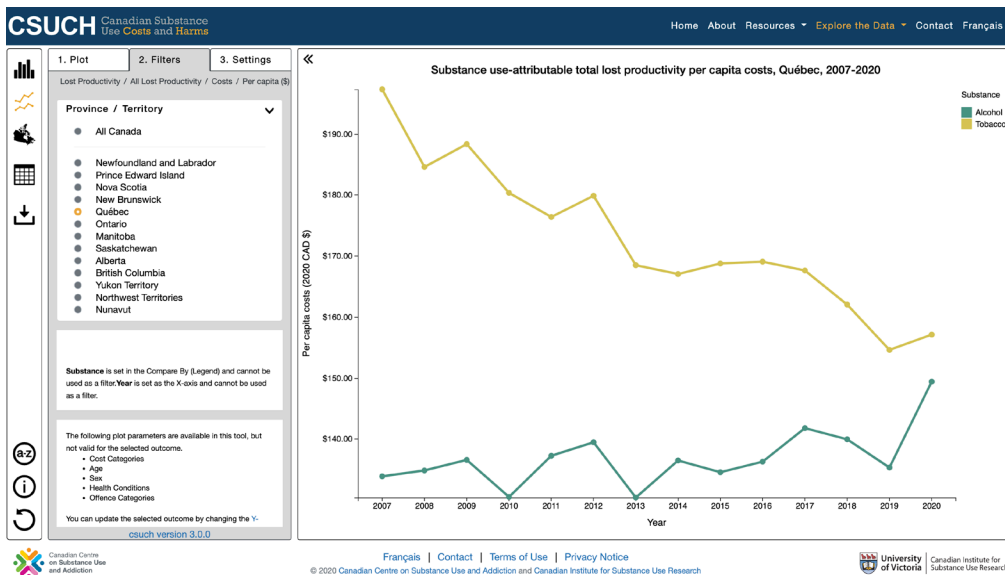




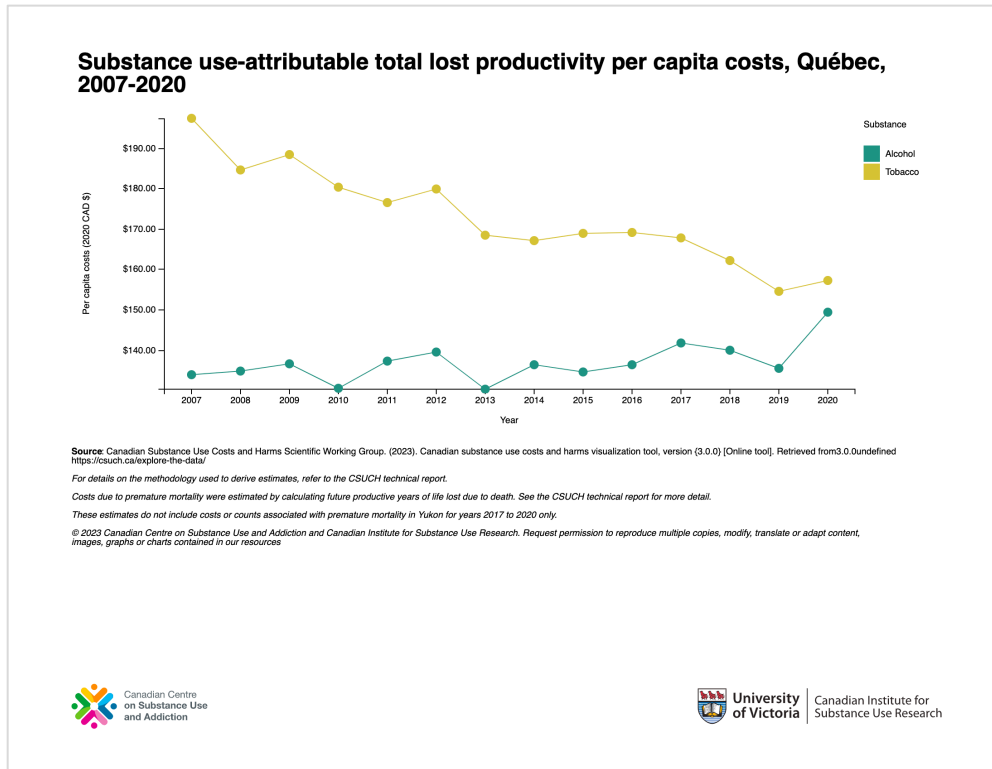
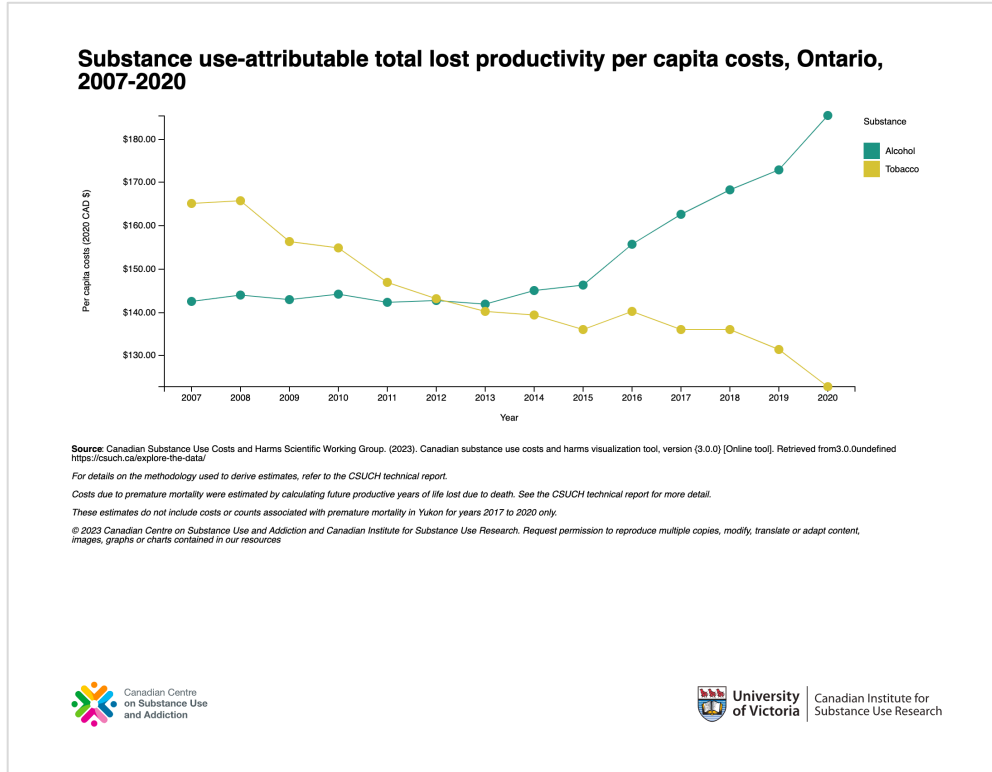
Now, create the second chart (ensuring the y-axis is locked) and only changing the filter option from Ontario to Quebec.



Step 7: Download as a JPG to compare to the first graph in the example.



Now you have two graphs to compare side-by-side. You can also open multiple tabs to compare across graphs.



Data available in the online tool: Total costs

Indicator	Counts and Rates			Costs		Descriptor Variables (X – Axis, Compare By, Filters)							
	Counts	Rate per 100,000	Std. rate per 100,000	Costs	Per capita costs	Cost categories	Years	Age Group	Sex	Province/Territory	Substance	Health Condition	Offence Category
Total costs	n/a	n/a	n/a	✓	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a

n/a = not applicable or not available

Data available in the online tool: Health

Indicator	Counts and Rates			Costs		Descriptor Variables (X – Axis, Compare By, Filters)						
	Counts	Rate per 100,000	Std. rate per 100,000	Costs	Per capita costs	Years	Age Group	Sex	Province/Territory	Substance	Health Condition	Offence Category
All Health	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Inpatient hospitalizations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
Day surgeries	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
Emergency department visits	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	n/a
Paramedic services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
Specialized treatment events	*	*	*	*	*	*	*	*	*	*	n/a	n/a
Physician time	n/a	n/a	n/a	✓	✓	✓	✓	✓	✓	✓	n/a	n/a
Prescription drugs	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a

Deaths	✓	✓	✓	<i>n/a</i>	<i>n/a</i>	✓	✓	✓	✓	✓	✓	<i>n/a</i>
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* = data currently not available; n/a = not applicable or not available

Data available in the online tool: Lost productivity

Indicator	Counts and Rates			Costs		Descriptor Variables (X – Axis, Compare By, Filters)						
	Counts	Rate per 100,000	Std. rate per 100,000	Costs	Per capita costs	Years	Age Group	Sex	Province/Territory	Substance	Health Condition	Offence Category
All lost productivity	n/a	n/a	n/a	✓	✓	✓	✓	✓	✓	✓	n/a	n/a
Potential Years of Productive Life Lost	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
Long-term disability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a	n/a
Short-term disability	n/a	n/a	n/a	✓	✓	✓	✓	✓	✓	✓	n/a	n/a

* = data currently not available; n/a = not applicable or not available

Data available in the online tool: Criminal justice

Indicator	Counts and Rates			Costs		Descriptor Variables (X – Axis, Compare By, Filters)						
	Counts	Rate per 100,000	Std. rate per 100,000	Costs	Per capita costs	Years	Age Group	Sex	Province/Territory	Substance	Health Condition	Offence Category
Criminal Justice	n/a	n/a	n/a	✓	✓	✓	*	✓	✓	✓	n/a	n/a
Policing	✓	✓	*	✓	✓	✓	*	✓	✓	✓	n/a	✓
Courts	✓	✓	*	✓	✓	✓	*	✓	✓	✓	n/a	✓
Corrections	✓	✓	*	✓	✓	✓	*	✓	✓	✓	n/a	✓

* = data currently not available; n/a = not applicable or not available

Data available in the online tool: Other Direct Costs

Indicator	Counts and Rates			Costs		Descriptor Variables (X – Axis, Compare By, Filters)						
	Counts	Rate per 100,000	Std. rate per 100,000	Costs	Per capita costs	Years	Age Group	Sex	Province/Territory	Substance	Health Condition	Offence Category
Other Costs	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Research and prevention	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Fire damage	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Motor vehicle damage	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	*	✓	n/a	n/a
Workplace drug testing	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Employee-assistance programs	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a
Workers' compensation administration	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a	n/a

Social assistance	n/a	n/a	n/a	✓	✓	✓	✓	✓	✓	✓	n/a	n/a
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* = data currently not available; n/a = not applicable or not available