Canadian Centre on Substance Use and Addiction

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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

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Data Available in the Tool

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

Table 1. Categories and outcomes

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

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 = 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.

Table 2. Definitions of costs, counts and rates

Costs	Counts and rates
Total ($): Estimates of the costs in 2020 Canadian dollars associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.).	**Total counts:** Refer to estimates of the number of cases associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.).
Per capita ($): 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.	**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. **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.

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

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

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.

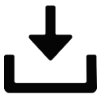
Refer to pages 27–31 for a full listing of data available in the tool.

Icon Reference Guide

Table 3: Chart or table options

Chart or table options	Function
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 show the values for each province or territory. In this tool, you can use the play button to animate the map and show any changes to the values over time.
Table 	Presents the data for your selected outcome as numerical values.

Table 4: User controls

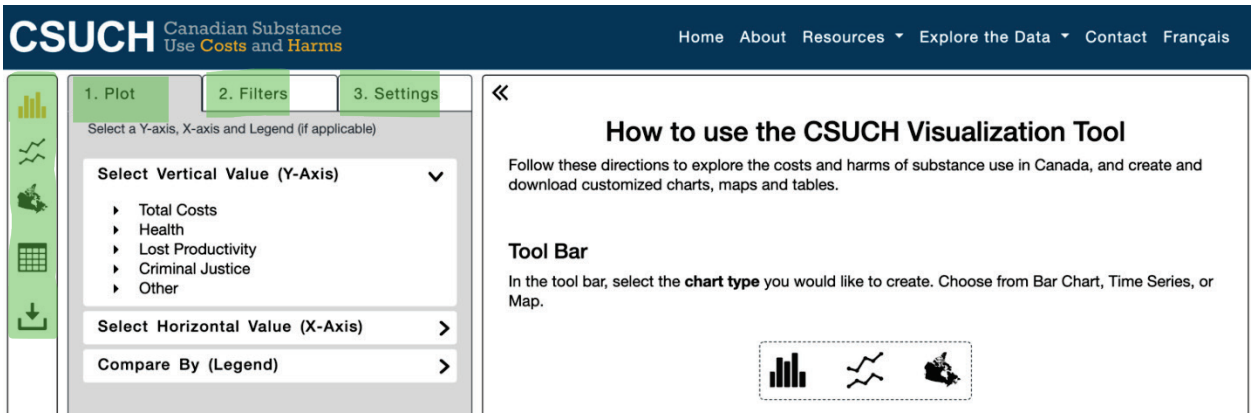
Using control	Function
Export 	Download the chart or table. The tool will provide a list of file formats available. Users have the option to select Remember for This Session to save your preferred file type and not be prompted again during the same visit.
Definitions 	Toggle this icon to access definitions.
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 Canadian Substance Use Costs and Harms data, and create and download customized charts, maps and tables.

Figure 1. Where you make your selections



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.

Steps

1. **Chart type:** First, select the type of report you would like to create, bar chart, time series, map of Canada or table. The default setting is a bar chart.
2. **Plot:** Choose an outcome of interest to map or plot: This is your **Vertical Value (Y-Axis).** You must select a cost (total or per capita) or harm (counts or rates) category.
3. **Plot:** For bar charts only, choose a **Horizontal Value (X-Axis)** to plot.
4. **Plot:** Choose a plot parameter to **Compare By (Legend)** (if applicable).
5. **Filters:** Use Filters tab to customize the data shown.
6. **Settings:** Use Settings tab to further customize your visual.
7. **Export.**
8. **Refresh and start again**.

Hint

Use Select All in the dropdown menu to both select and deselect the full list.

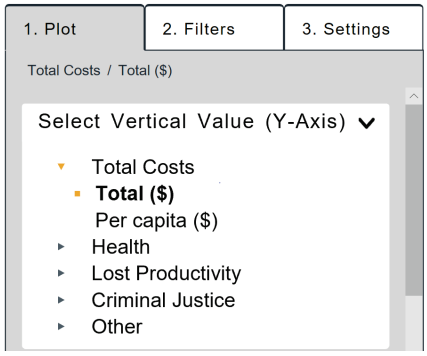
Examples to Illustrate Key Features of the Tool

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

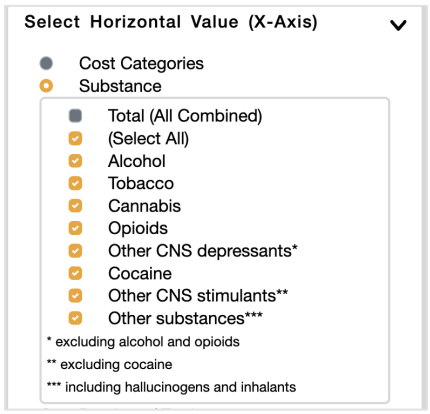
- **Chart type:** Bar
- **Outcome of interest — Vertical value (y-axis):** Total Costs > Total ($)
- **Horizontal value:** Substance
- **Compare by (Legend):** Cost categories
- **Filters:** Year: 2020 (by default)

Step 1: Select Bar as your chart type.

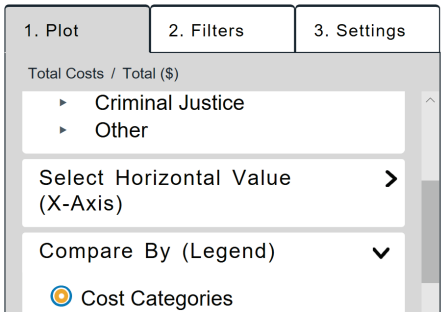
Step 2: In Plot tab, select Total Costs > Total ($) as your Vertical Value.



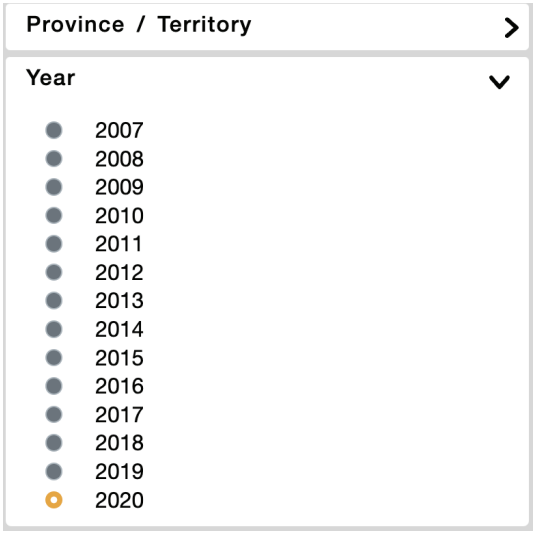
Step 3: In Plot tab, select Substance as your Horizontal Value.



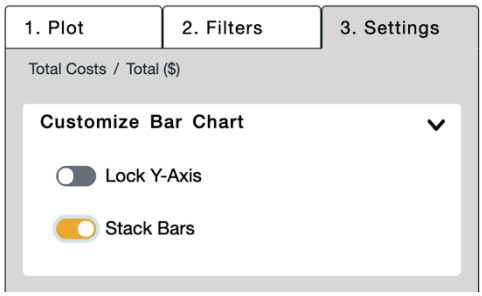
Step 4: In Plot tab, select Cost categories as your Compare By (Legend) value.



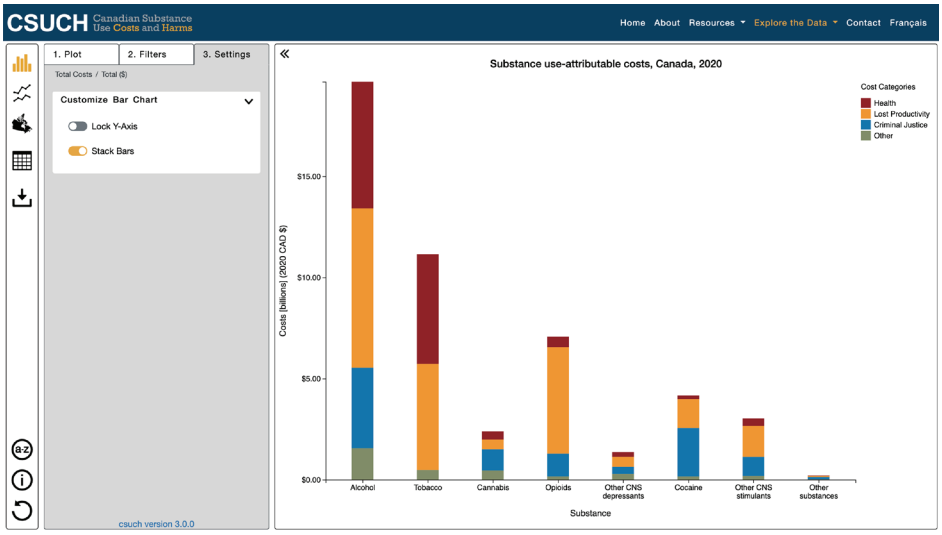
Step 5: In Filters tab, ensure 2020 is selected for Year.



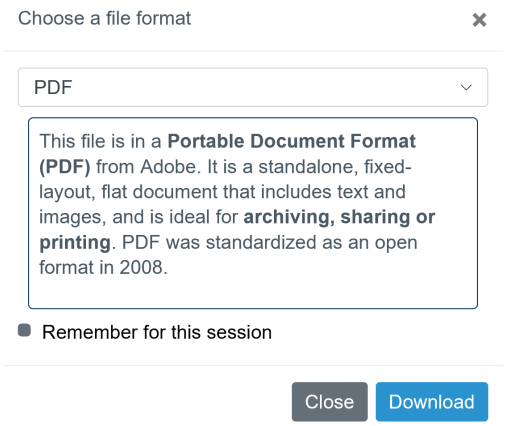
Step 6: In Settings tab, select Stack Bars.



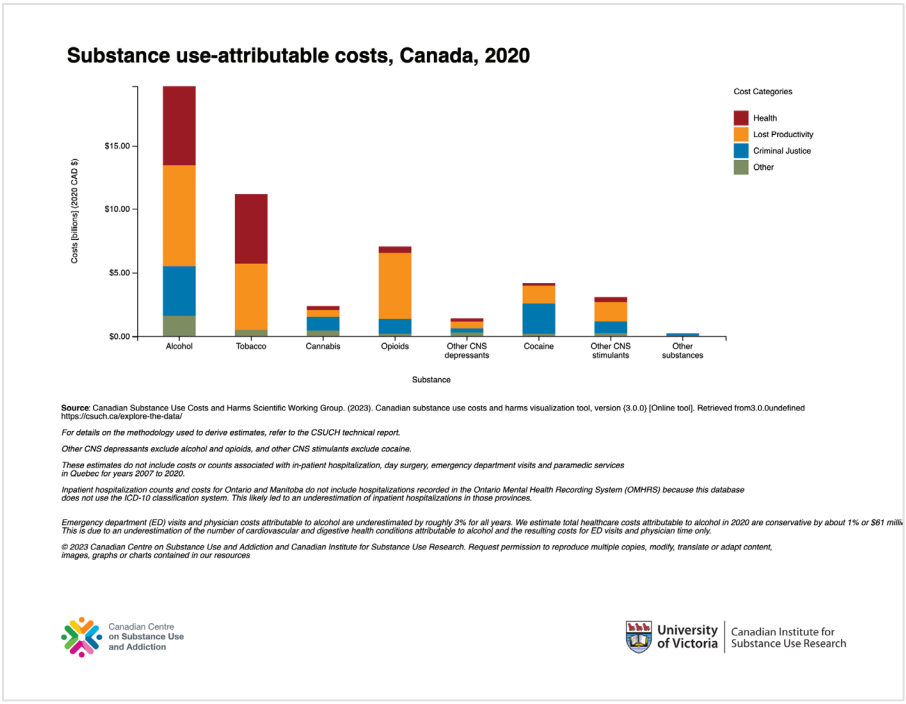
Step 7: Export.



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



Save your PDF for use!



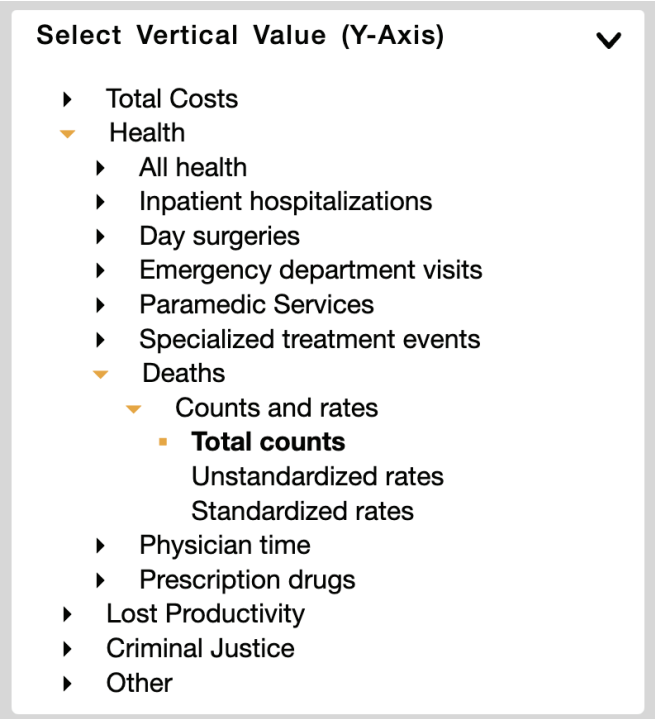
Step 8: Use the reset button to reload your browser and start a new chart.

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

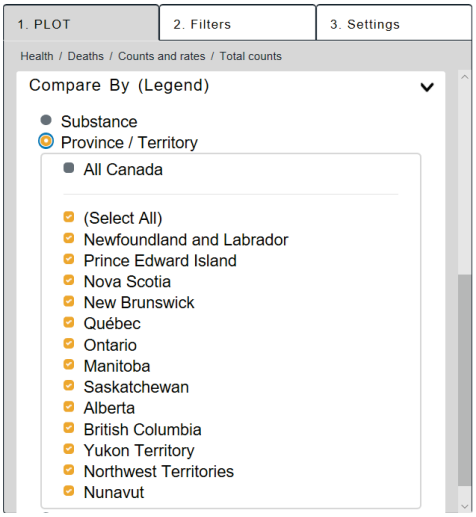
Step 1: Select Time Series as your chart type.

Step 2: In Plot tab, select Health > Deaths > Counts and Rates > Total Counts.



Step 3: In a time series, the x-axis is locked to years, so there's no need to select the horizontal value.

Step 4: In Plot tab, select Province/Territory as your Compare By (Legend) value.

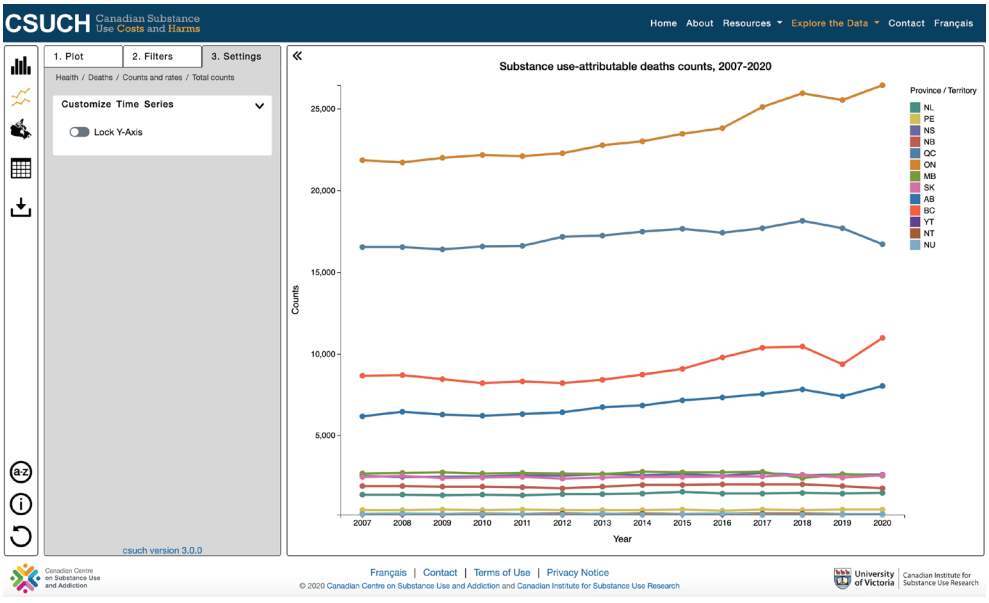


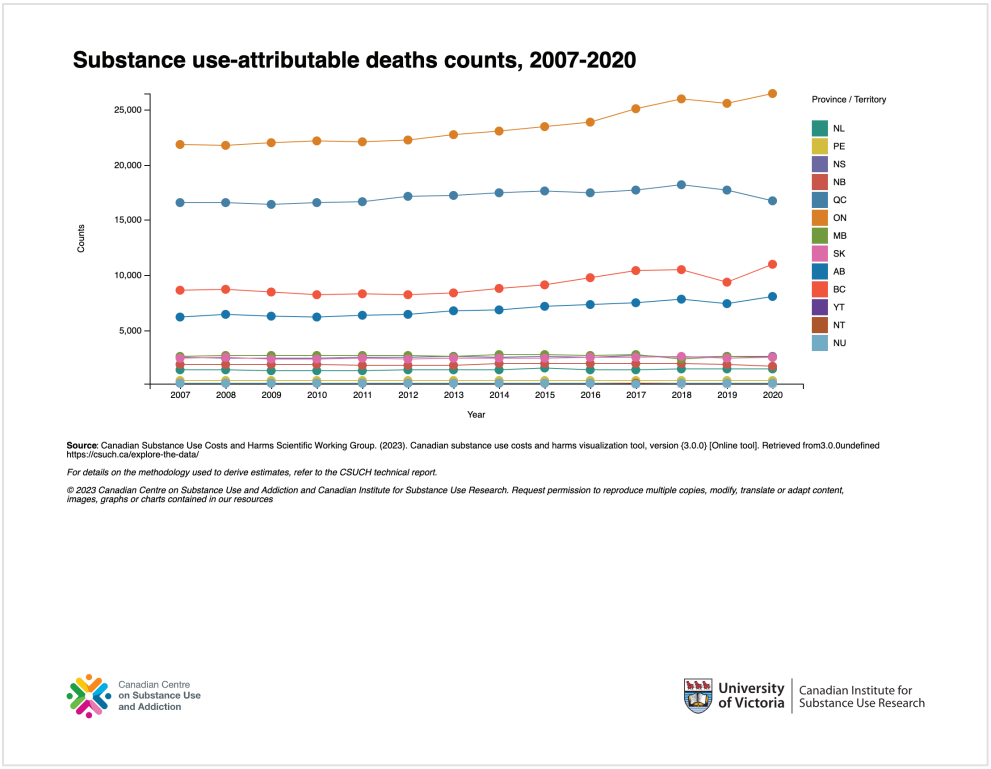
Step 5: There are no filters to select in this example.

Step 6: There is no further customization in the Settings tab in this example.

Step 7: Export the data as both a graph and a data table.

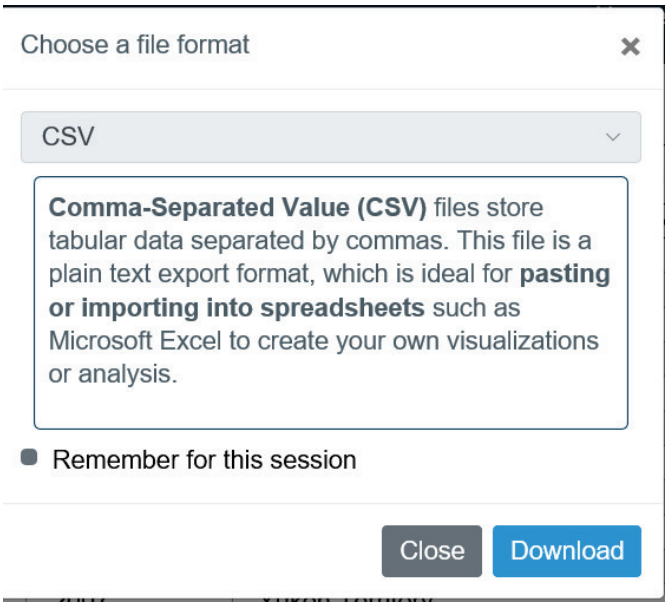
First, download the graph.

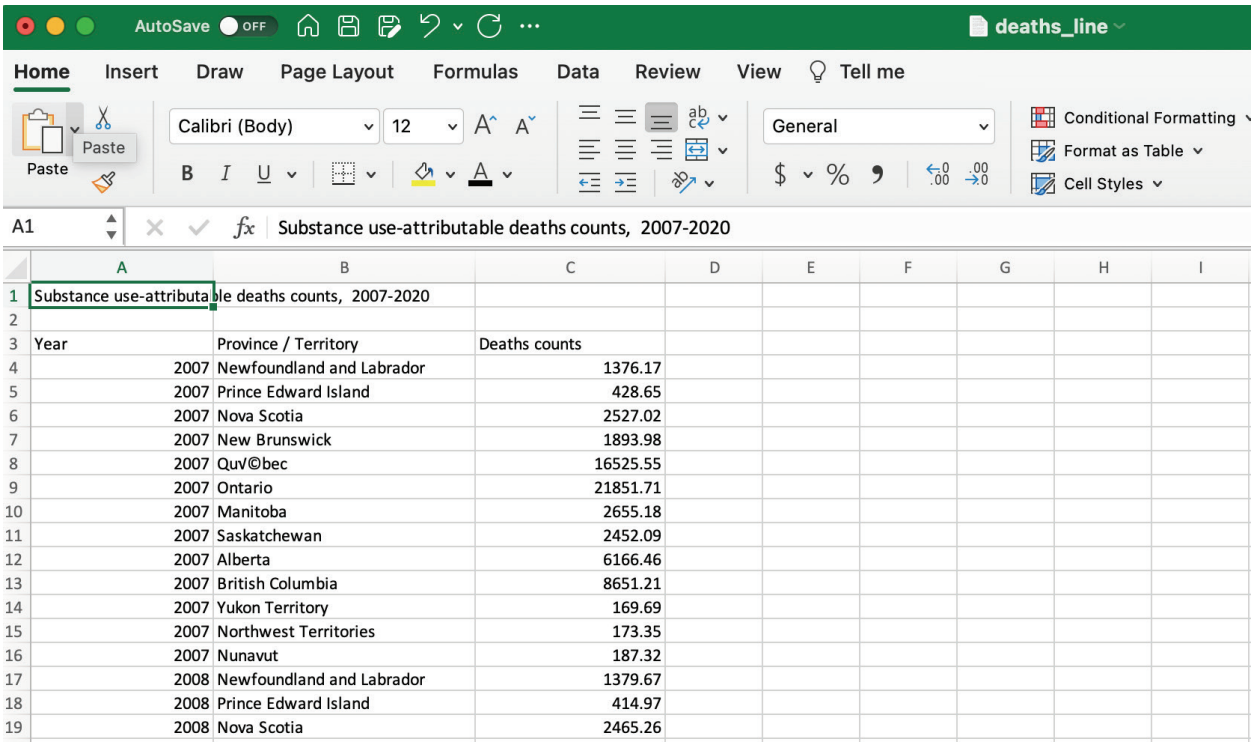




To view the data table, select table from the chart options.

Select the CSV file format to download for Excel.





	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						

Step 8: Reload your browser or refresh the tool page to start a new chart.

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

- **Chart type:** Map of Canada
- **Outcome of interest — Vertical value(y-axis):** Health > In-patient hospitalizations > Counts and rates > standardized rates
- **Horizontal value:** N/A
- **Compare by (Legend):** N/A
- **Filters:** Alcohol

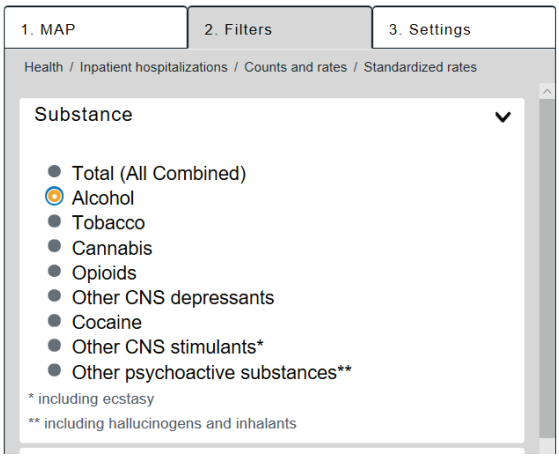
Step 1: Select Map of Canada as your chart type.

Step 2: In Plot tab, select Health > In-patient hospitalizations > Counts and rates > Standardized rates.

Step 3: There is no Horizontal Value.

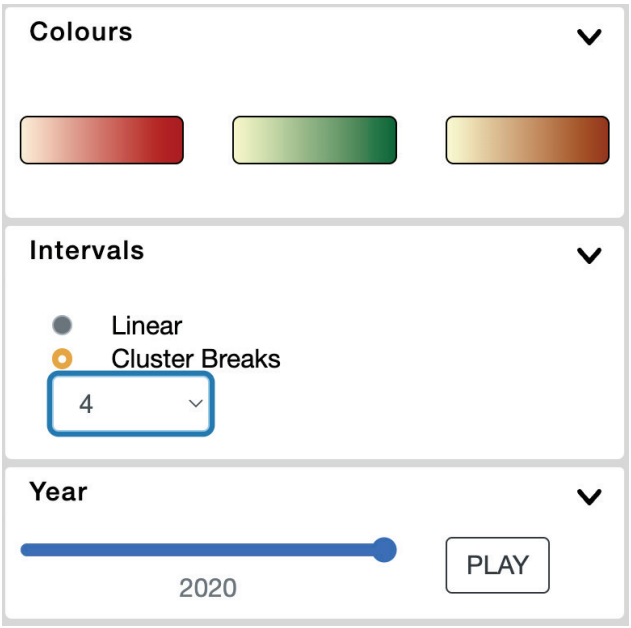
Step 4: There is nothing to Compared By.

Step 5: In the Filters tab, select Alcohol from the substance dropdown options.

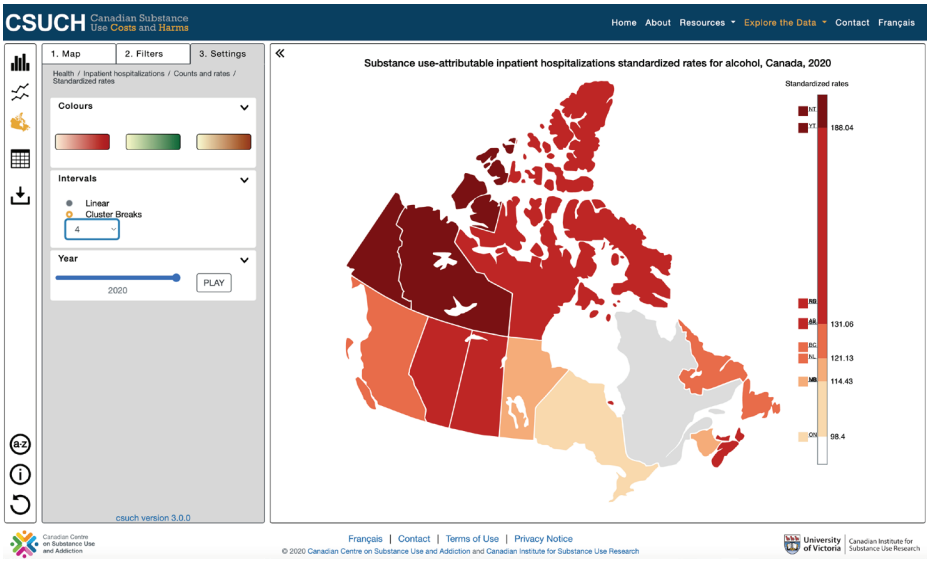


Please note you can only filter by one option for each of the variables (i.e., only one substance or only one health condition at a time).

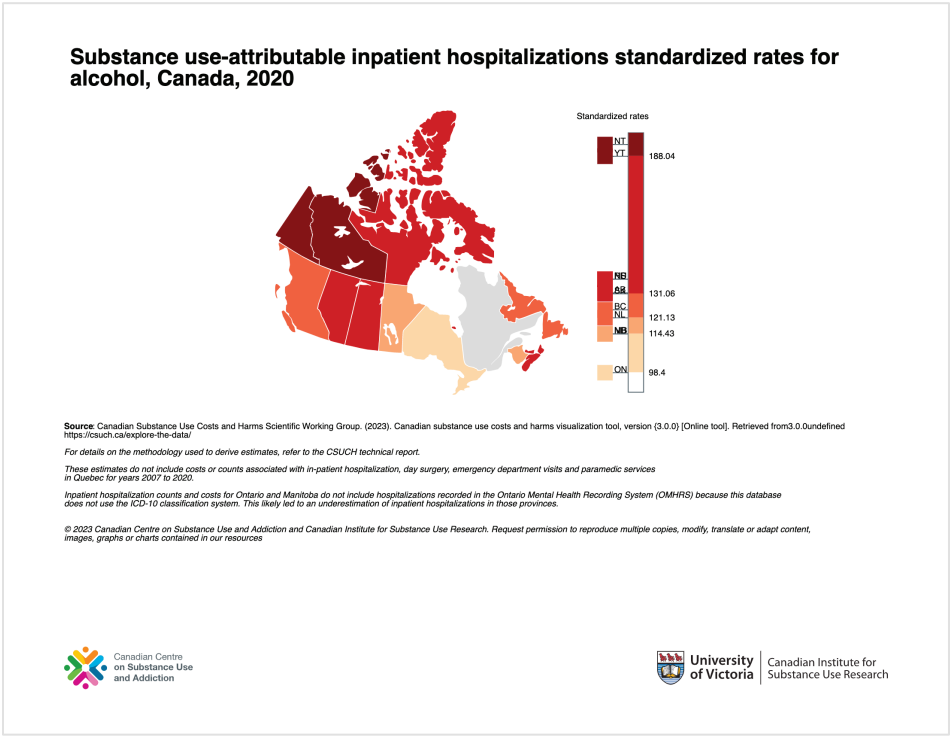
Step 6: In the Settings tab, select your desired colour and number of breaks in the data under intervals.



Step 7: Export the map for 2020 as a JPG.



Save image for future use!



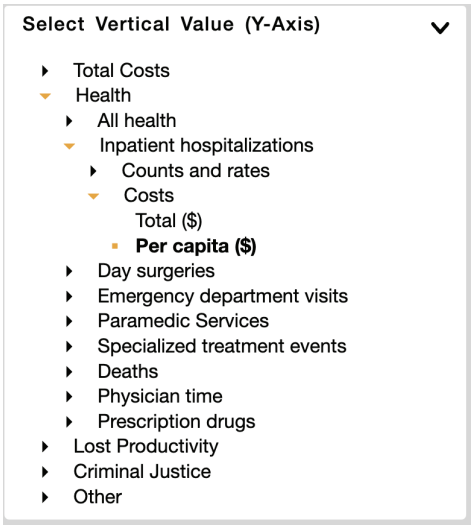
Step 8: Reload your browser or refresh the tool page to start a new chart.

Example 4: Exploring per capita costs of in-patient hospitalizations by province or territory to show differences between by sex, age and health condition (i.e., cancer vs cardiovascular conditions)

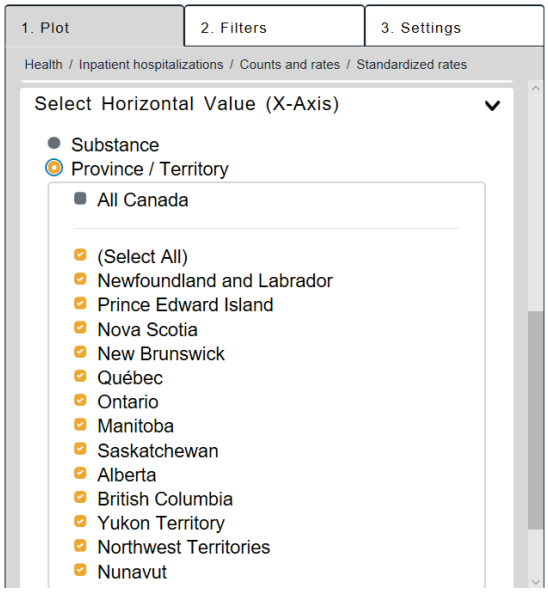
- **Chart type:** Bar
- **Outcome of interest — Vertical value (y-axis):** Health > In-patient hospitalizations > Costs > Per capita
- **Horizontal value:** Provinces/Territory
- **Compare by** (Legend):
  - Sex
  - Age
  - Health condition — Cancer vs Cardiovascular conditions
- **Filters:** Year: 2020 (by default)

Step 1: Select Bar Chart as your chart type.

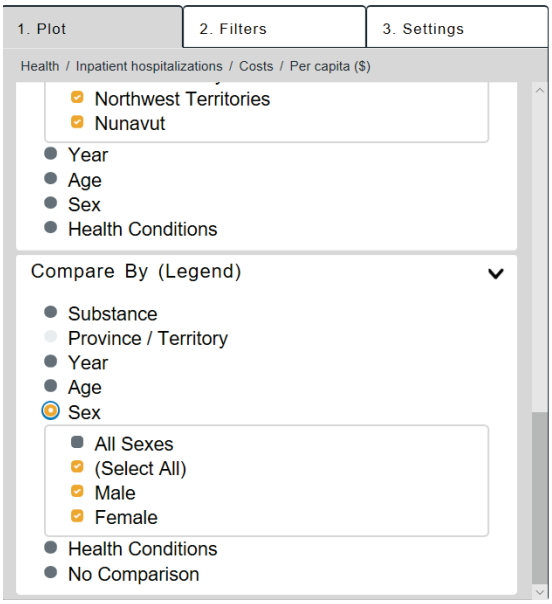
Step 2: In Plot tab, select Health > In-patient hospitalizations > Costs > Per capita ($).



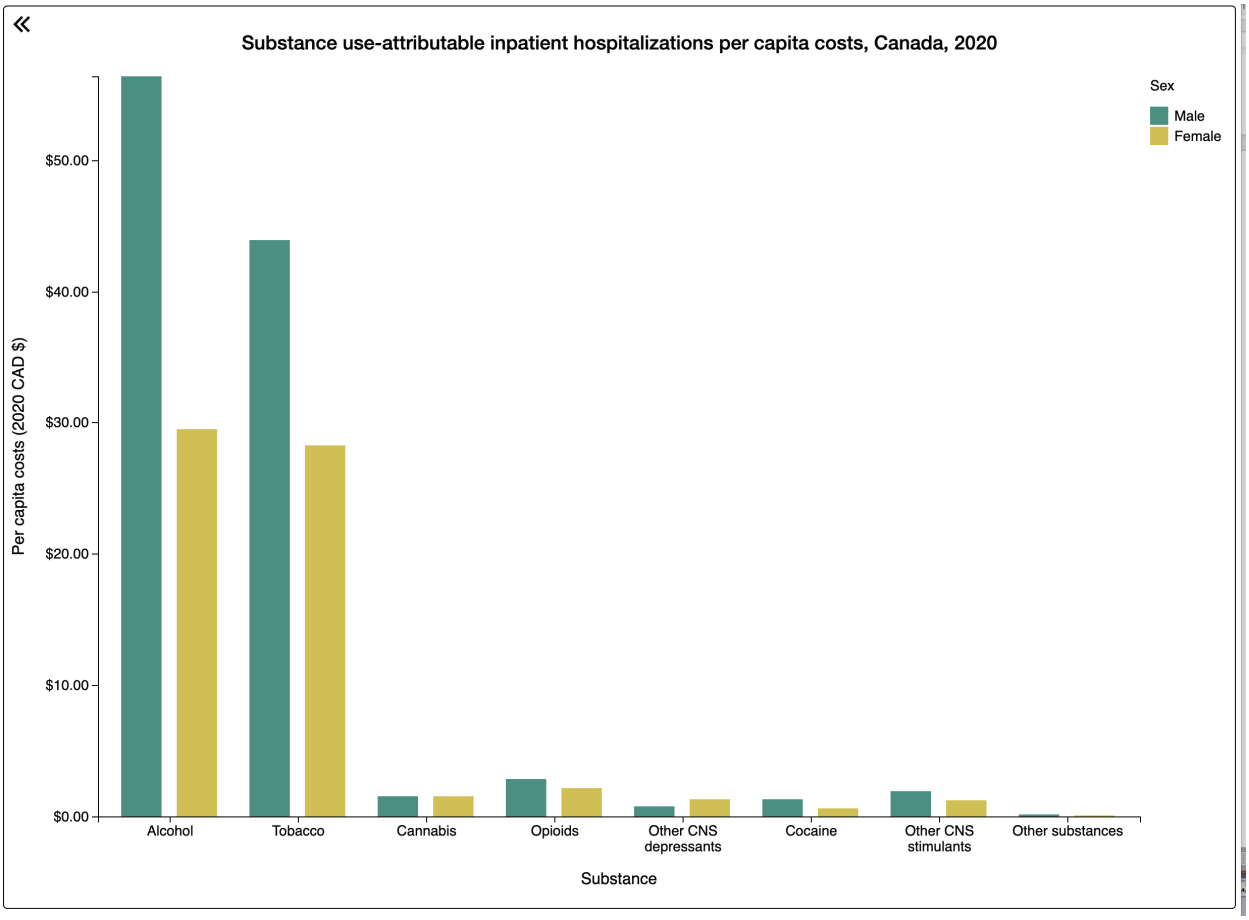
Step 3: In the Plot tab, select Province/Territory as your Horizontal Value.



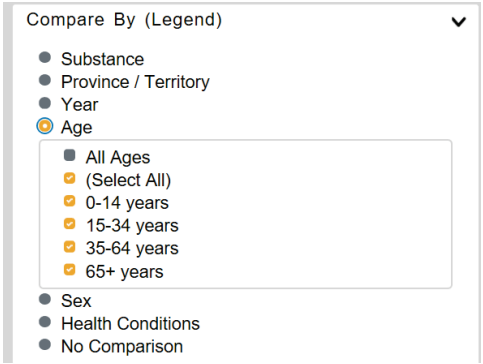
Step 4a: To show the difference per capita costs of in-patient hospitalizations by sex, in the Plot tab, select Sex (Male and Female) as your Compare By (Legend) value.



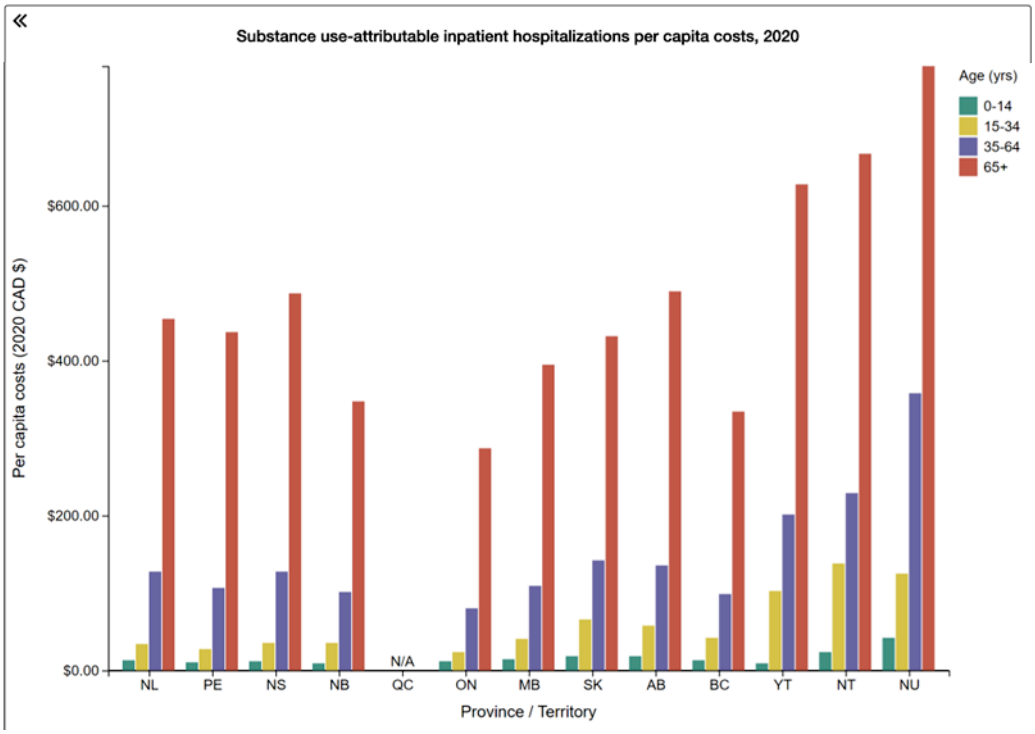
The chart now displays the different in-patient hospitalizations per capita costs between male and female for 2020.



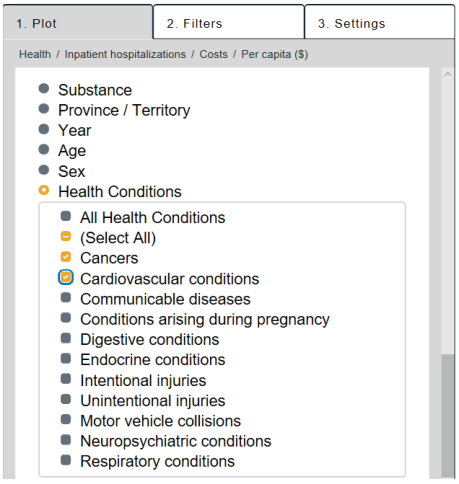
Step 4b: To show the difference per capita costs of in-patient hospitalizations by age, in the Plot tab, select Age as your Compare By (Legend) value.



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



Step 4c: Next, to show the difference per capita costs of in-patient 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 in-patient hospitalizations per capita costs between cancers and cardiovascular conditions by Province/Territory for 2020.

Step 5: There are no Filters.

Step 6: There is no further customization in the Settings tab in this example.

Step 7: Export.

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

Save your PDF for use!

Step 8: Use the reset button to reload your browser and start a new chart.

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 — substance (alcohol and tobacco) with province or 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 very greatly so it may not be possible to lock the y-axis for all selections.

  Chart 1:

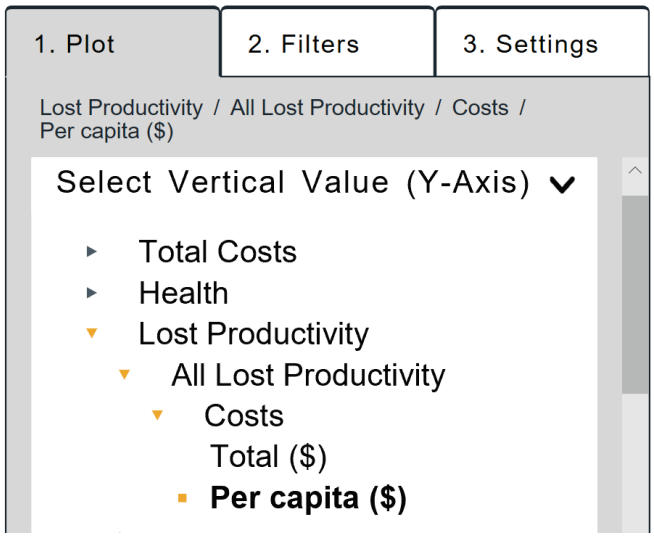
  - **Outcome of interest — Vertical value (y-axis):** Lost Productivity > All lost productivity > costs > Per capita
  - **Horizontal value:** Locked to year
  - **Compare by (Legend):** Substance > Alcohol, tobacco
  - **Filter:** Ontario

  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

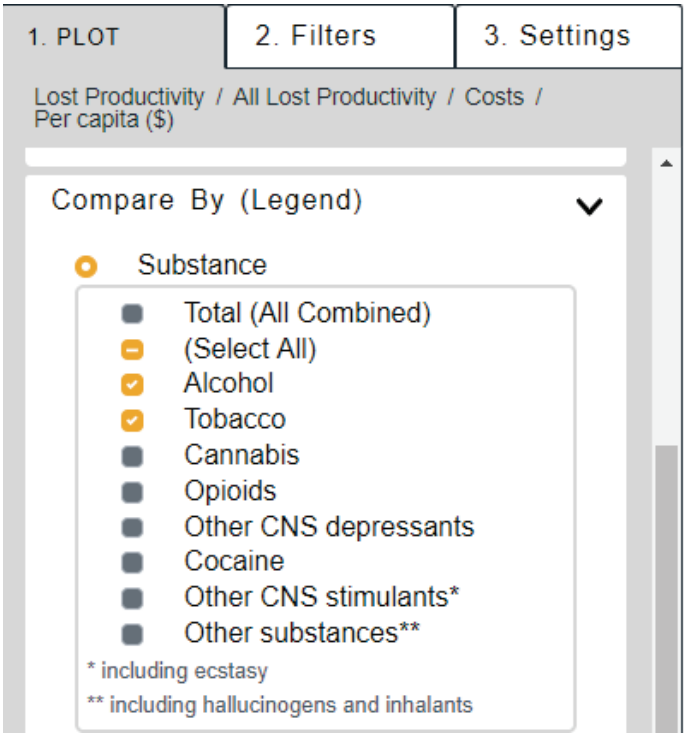
Step 1: Select Time Series as your chart type.

Step 2: In the Plot tab, select Lost Productivity > All lost productivity > Costs > Per capita ($)

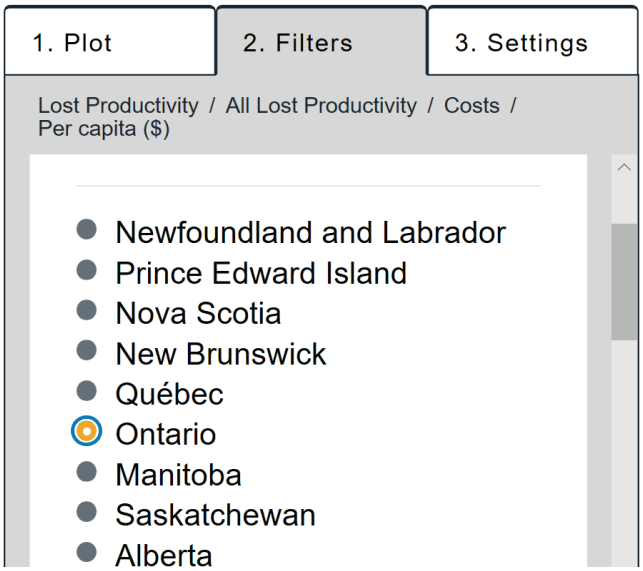


Step 3: In a time series, the x-axis is locked to years so there is no need to select the horizontal value.

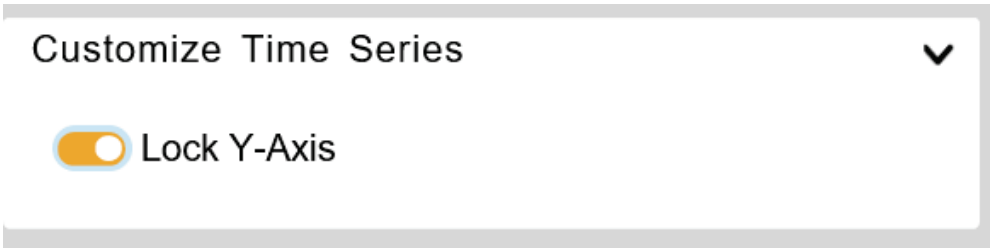
Step 4: In the Plot tab, select Substance and check Alcohol and Tobacco from the options.



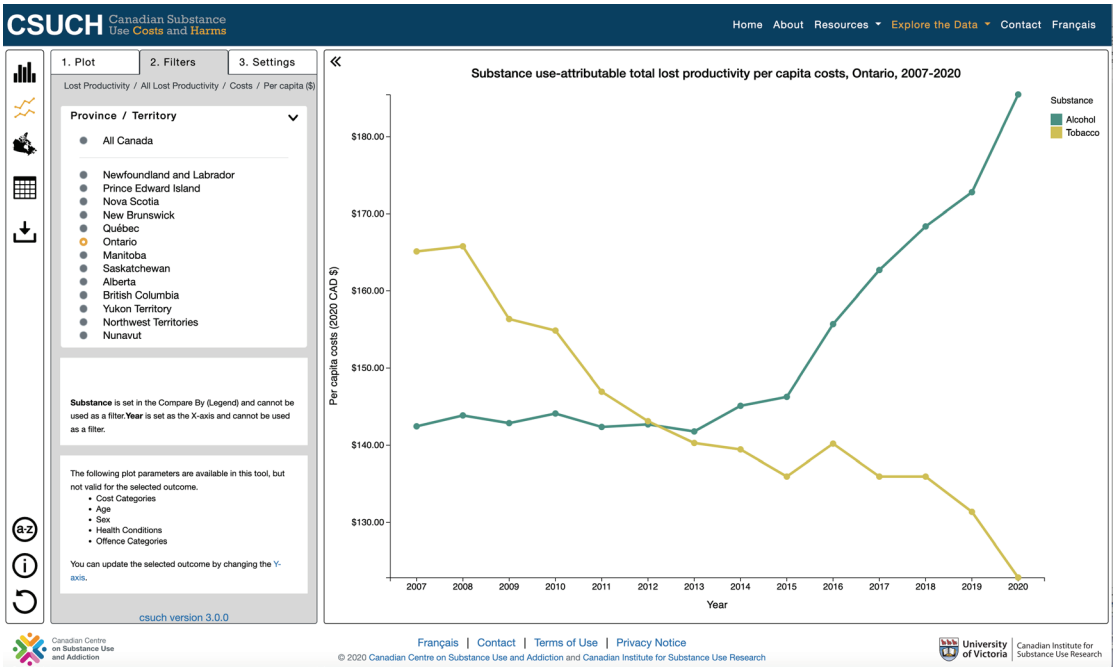
Step 5: In the Filters tab, select Ontario.

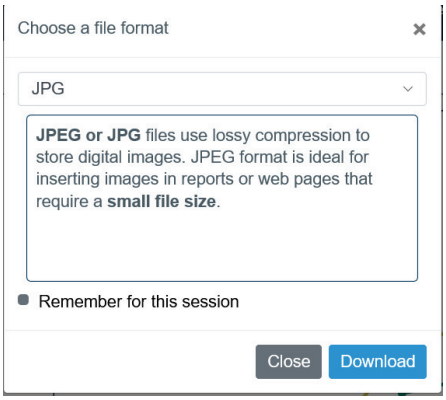


Step 6: In the Settings tab, select 'Lock Y-Axis'.

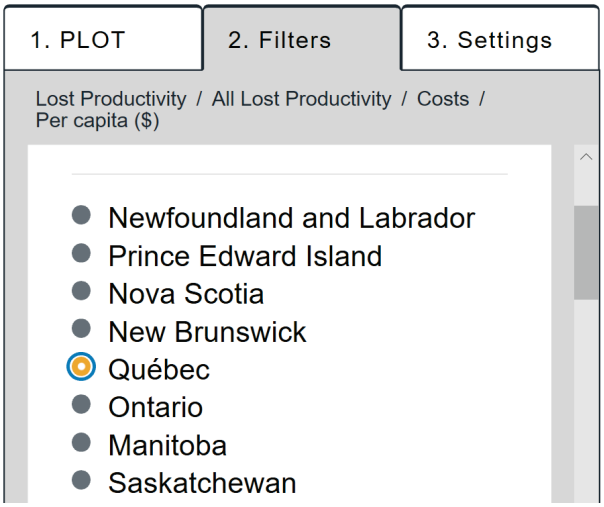


Step 7a: Export as a JPG and insert into a Word document to create a side-by-side comparison.

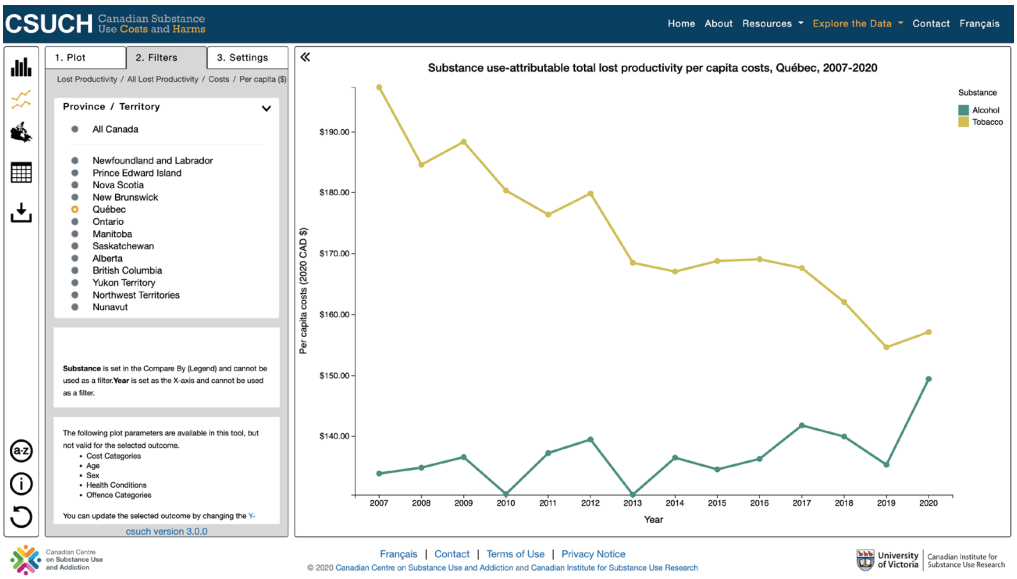




Now, create the second chart (ensuring the y-axis is locked) and only changing the filter option from Ontario to Quebec.

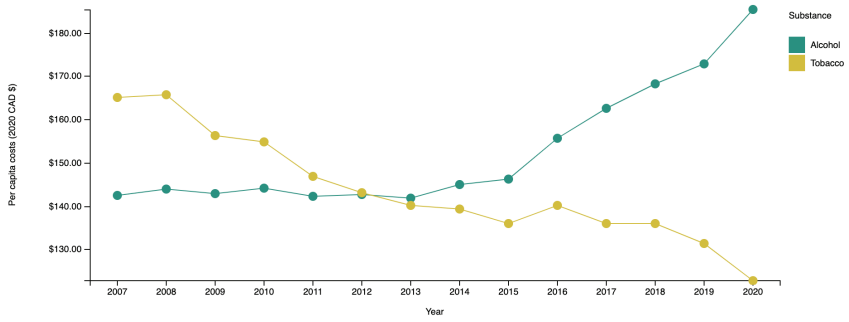


Step 7b: Export as a JPG to compare to the first graph in the example.



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

Substance use-attributable total lost productivity per capita costs, Ontario, 2007-2020



Source: Canadian Substance Use Costs and Harms Scientific Working Group. (2023). Canadian substance use costs and harms visualization tool, version {3.0.0} [Online tool]. Retrieved from3.0.0undefined https://csuch.ca/explore-the-data/

For details on the methodology used to derive estimates, refer to the CSUCH technical report.

Costs due to premature mortality were estimated by calculating future productive years of life lost due to death. See the CSUCH technical report for more detail.

These estimates do not include costs or counts associated with premature mortality in Yukon for years 2017 to 2020 only.

Canadian Centre on Substance Use and Addiction

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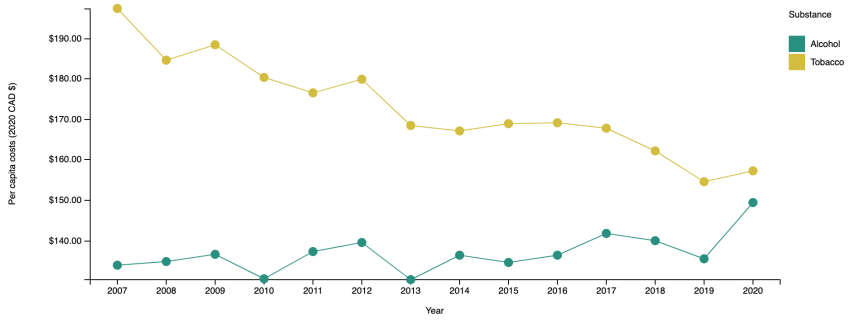
Substance use-attributable total lost productivity per capita costs, Québec, 2007-2020



Source: Canadian Substance Use Costs and Harms Scientific Working Group. (2023). Canadian substance use costs and harms visualization tool, version {3.0.0} [Online tool]. Retrieved from3.0.0undefined https://csuch.ca/explore-the-data/

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Data Available in the Online Tool: Total Costs

Table 5. Total costs data

Indica	Cou	F 10	S pe	Cos	(ca	Cos	Yea	Age	Sex	F ten	Sul	H col	(ate c to
Total cost	n/a	n/a	n/a	Y	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a

Notes. n/a = not applicable or not available; Y = yes.

Data Available in the Online Tool: Health Costs

Table 6. Health costs data

Indicator	Cou	F	10	S	pe	Cos	(	cap	Yea	Age	Sex	F	ten	Sub	H	cor	(	ate	c
All Health	n/a	n/a		n/a		Y	Y		Y	n/a	n/a	Y		Y	n/a		n/a		
In-patient hospitalizations	Y	Y		Y		Y	Y		Y	Y	Y	Y		Y	Y		n/a		
Day surgeries	Y	Y		Y		Y	Y		Y	Y	Y	Y		Y	Y		n/a		
Emergency department visits	Y	Y		Y		Y	Y		Y	Y	Y	Y		Y	*		n/a		
Paramedic services	Y	Y		Y		Y	Y		Y	Y	Y	Y		Y	Y		n/a		
Specialized treatment events	*	*		*		*	*		*	*	*	*		*	n/a		n/a		
Physician time	n/a	n/a		n/a		Y	Y		Y	Y	Y	Y		Y	n/a		n/a		
Prescription drugs	n/a	n/a		n/a		Y	Y		Y	n/a	n/a	Y		Y	n/a		n/a		
Deaths	Y	Y		Y		n/a	n/a		Y	Y	Y	Y		Y	Y		n/a		

Notes. * = data currently not available; n/a = not applicable or not available; Y = yes.

Data Available in the Online Tool: Lost Productivity Costs

Table 7. Lost productivity costs data

Indicator	Co	F 10	S pe	Co	(ca	Yea	Age	Sex	F ten	Sul	F cat	(ate c
All lost productivity	n/a	n/a	n/a	Y	Y	Y	Y	Y	Y	Y	n/a	n/a
Potential years of productive life lost	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n/a
Long-term disability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n/a	n/a
Short-term disability	n/a	n/a	n/a	Y	Y	Y	Y	Y	Y	Y	n/a	n/a

Notes. n/a = not applicable or not available; Y = yes.

Data Available in the Online Tool: Criminal Justice Costs

Table 8. Criminal justice costs data

Indicator	Co	F 10	S pe	Co	C ca	Yea	Age	Sex	F ten	Sul	F cat	C ate c fo
All criminal justice	n/a	n/a	n/a	Y	Y	Y	*	Y	Y	Y	n/a	n/a
Policing	Y	Y	*	Y	Y	Y	*	Y	Y	Y	n/a	Y
Courts	Y	Y	*	Y	Y	Y	*	Y	Y	Y	n/a	Y
Corrections	Y	Y	*	Y	Y	Y	*	Y	Y	Y	n/a	Y

Notes. * = data currently not available; n/a = not applicable or not available; Y = yes.

Data Available in the Online Tool: Other Direct Costs

Table 9. Other direct costs data

Indicator	Co	F 10	S pe	Co	C ca	Yea	Age	Sex	F ten	Sul	H cat	C ate c to
Other costs	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Research and prevention	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Fire damage	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Motor vehicle damage	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	*	Y	n/a	n/a
Workplace drug testing	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Employee assistance programs	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Workers' compensation administration	n/a	n/a	n/a	Y	Y	Y	n/a	n/a	Y	Y	n/a	n/a
Social assistance	n/a	n/a	n/a	Y	Y	Y	Y	Y	Y	Y	n/a	n/a

Notes. * = data currently not available; n/a = not applicable or not available; Y = yes.