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 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 Court Corrections	All other costs Research and prevention Fire damage Motor Vehicle damage Employee-assistance programs Workplace drug testing Workers' compensation administrative costs

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
Total ($): Estimates of the costs in 2017 Canadian dollars associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.). **Per capita ($):** The cost in 2017 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.	**Total counts:** Refer to estimates of the number of cases associated with a given outcome (e.g., hospitalizations, deaths, police incidents, correctional admissions, etc.). **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 2015 to 2017

For some[1] 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 31–35 for a full listing of data available in the tool.

[1] Age, sex and health condition data available for inpatient 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.

Due to methodological improvements, the 2015–2017 estimates should not be directly compared to estimates for 2007–2014 in the archived database. The two most notable improvements are as follows:

1. The inclusion of an additional auxiliary dataset to increase the precision of our modelling of exposure estimates. These new data, counts of hospitalizations for mental and behavioural disorders wholly attributable to substance use, add substantial power to our analytic estimates as they harness large, routinely collected data from each jurisdiction, for each specific substance category, for each year, and by age and sex.
2. Improved methods for both counting and distributing substance-related poisoning deaths. This resulted in greater accuracy in terms of both the number of poisoning deaths and the distribution of these deaths across the substance categories.

Data for years 2007–2014 will be updated with these improvements and made available in the online data visualization tool in the near future.

For a detailed description of methodological improvements, refer to the CSUCH technical report.

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 2015–2017.
		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.

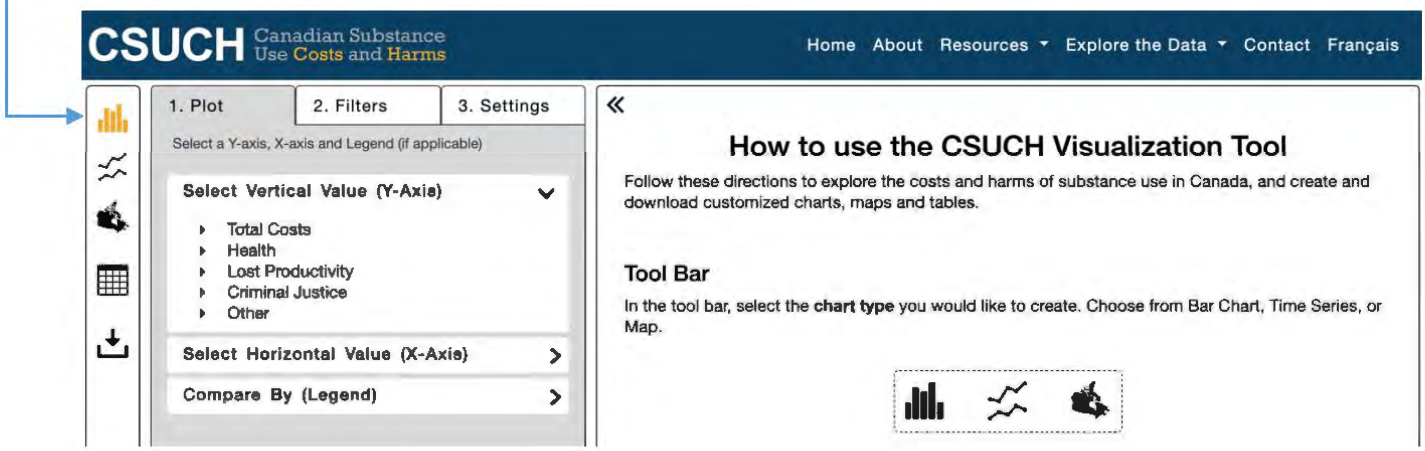
How to use the tool

Overview

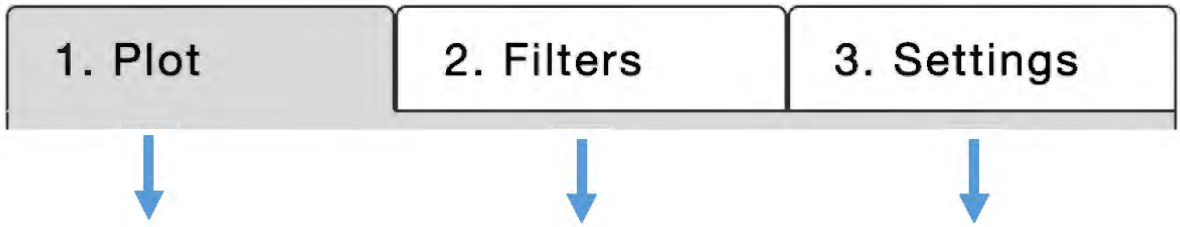
The tool allows users to explore the costs and harms of substance use in Canada, and create and download customized charts, maps and tables.

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



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:



Step 1: Choose an outcome of interest to map or plot – this is your vertical value (y-axis). In order to make a selection, you must select a costs (total or per capita) or harm (counts or rates) category. **Step 2:** For bar charts only, choose a horizontal value (x-axis) to plot.	**Step 4:** Use "Filters" tab to customize the data shown.	**Step 5:** Use "Settings" tab to further customize your visual.

Step 3: Choose a plot parameter to compare by in the legend (if applicable).		

Step 6: Export, refresh and start again.

Hints:

- Use "Select All" in the dropdown menu to both select and de-select the full list.

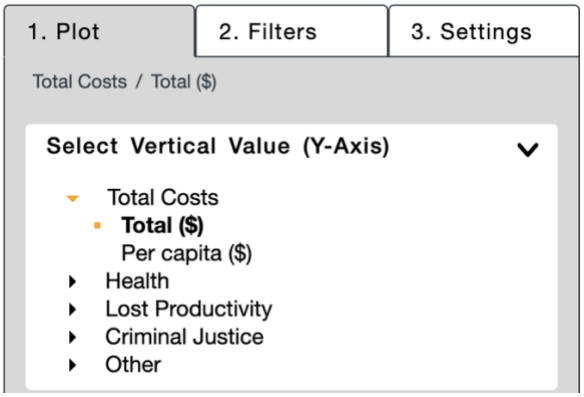
Examples to illustrate key features of the tool

A few illustrative examples are provided below:

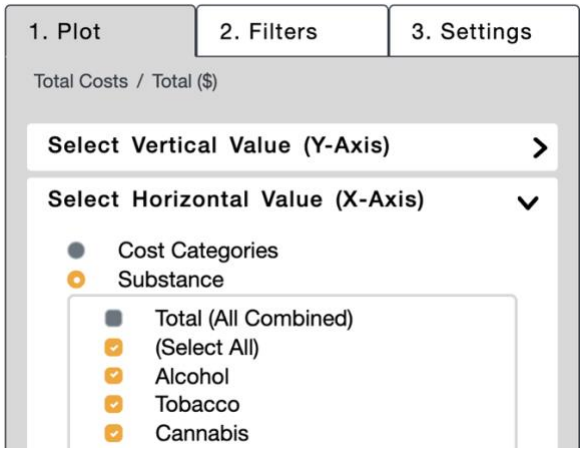
Example	Task	Page numbers
1	Creating a stacked bar chart to show the total cost of substance use by substance and cost category in 2017	8–10
2	Creating a time series to show the total criminal justice costs of substance use by province and downloading the data as both a graph and table	11–14
3	Creating a map to show standardized rate of inpatient hospitalizations for alcohol across the provinces and territories	15–17
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	18–22
5	Comparing per capita costs from long-term disability to total costs from short-term disability for alcohol and tobacco from 2015–2017	23–27

Example 1: Creating a stacked bar chart to show the total cost of substance use by substance and cost category in 2017
Chart type: bar Outcome of interest – vertical value (y-axis): Total Costs>Total ($) Horizontal value: Substance Compare by (Legend): Cost categories Filters Year: 2017 (by default)

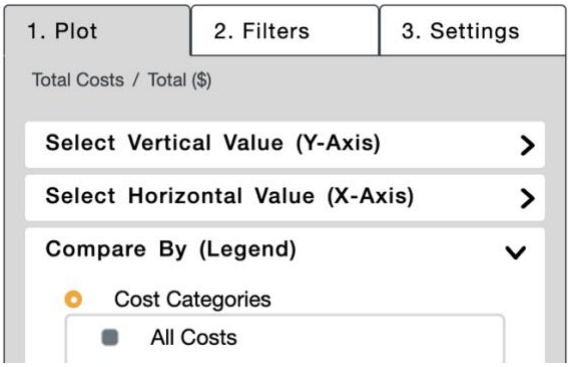
Step 1: In "Plot" tab, select Total Costs>Total ($) as your Vertical Value



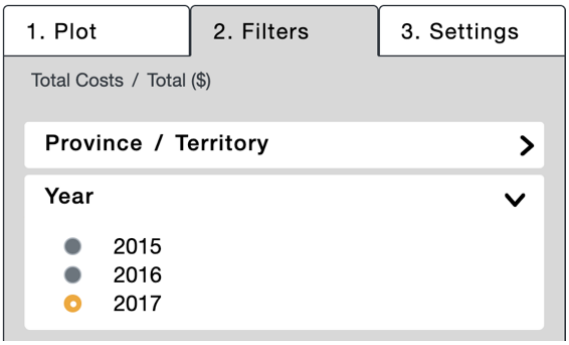
Step 2: In "Plot" tab, select Substance as your Horizontal Value



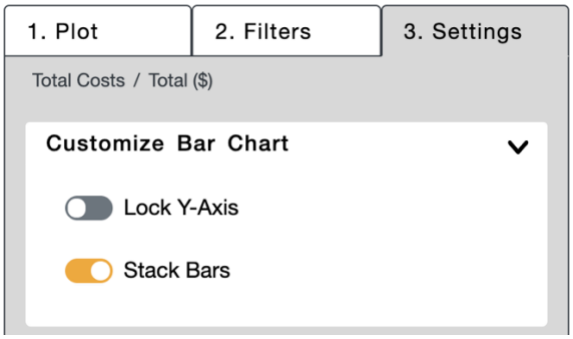
Step 3: In “Plot” tab, select Cost categories as your Compare By (Legend) value



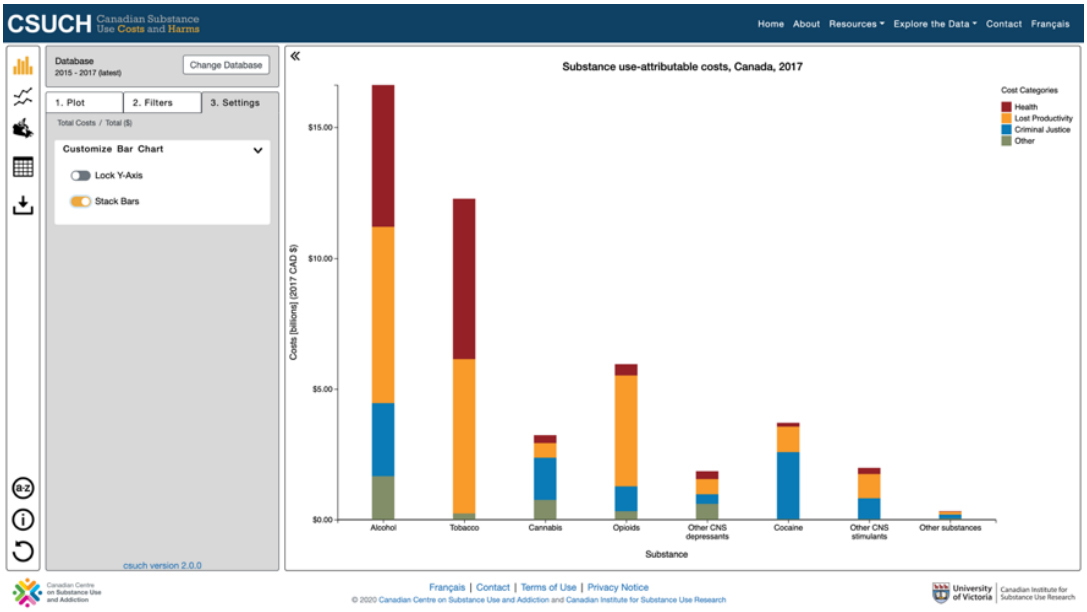
Step 4: In “Filters” tab, ensure 2017 is selected for Year.



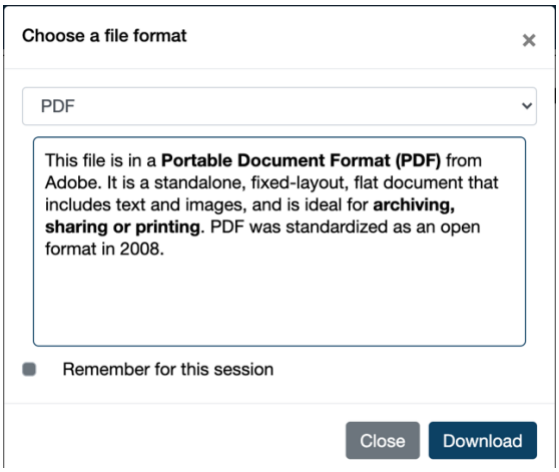
Step 5: In “Settings” tab, select “Stack Bars”



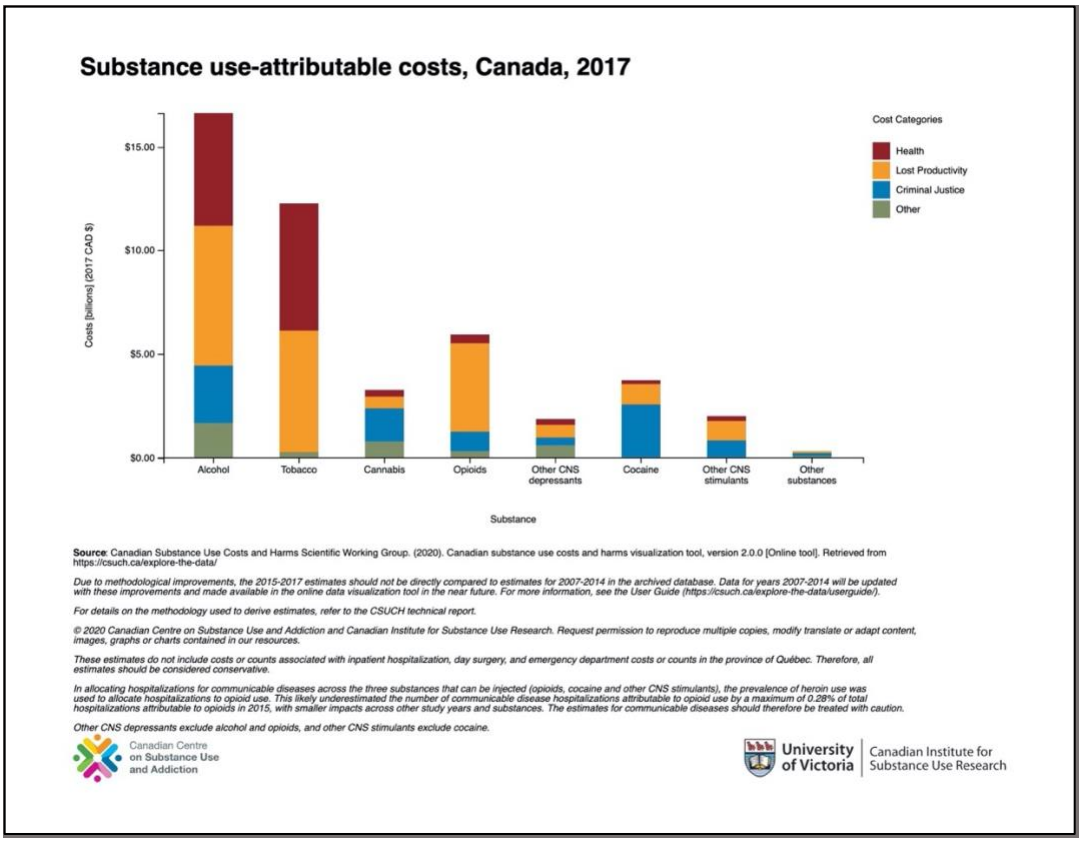
Step 6: Download as a PDF



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.



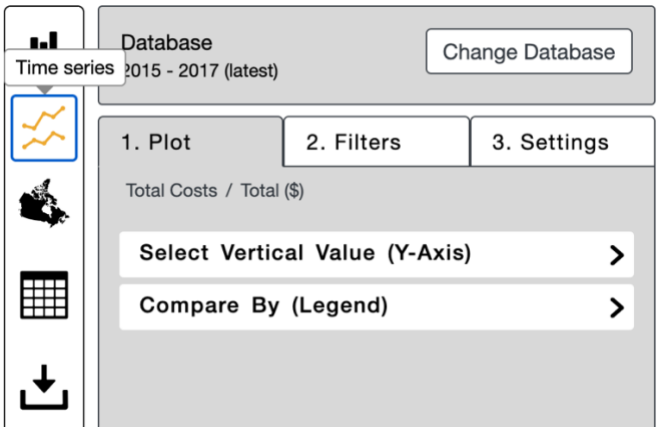
Save your PDF for use!



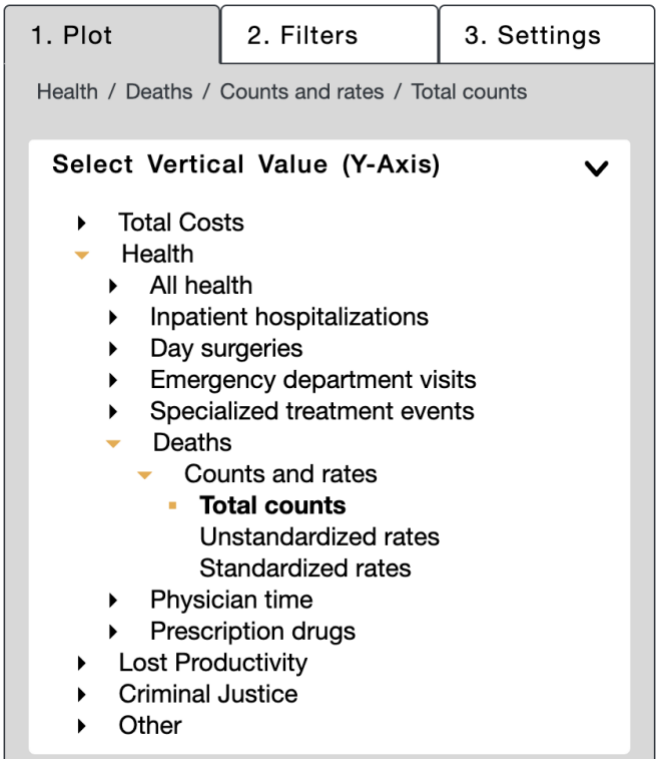
Use the reset button to reload your browser and start a new chart.

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.

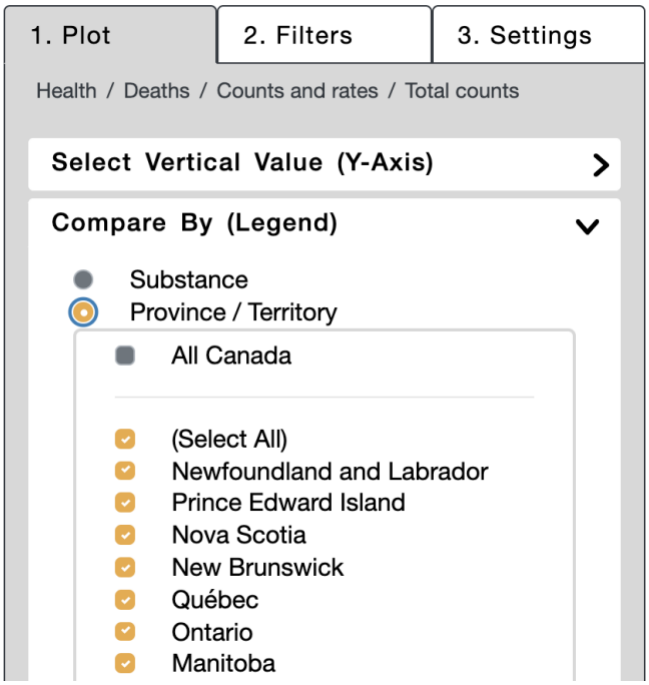


Step 1: In “Plot” tab, select Health>Deaths>Counts and Rates>Total Counts



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.

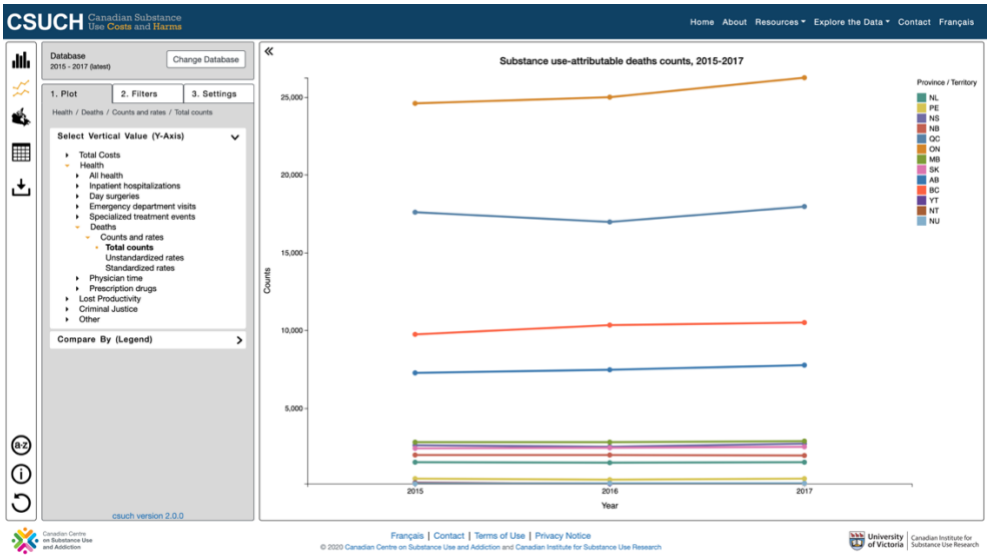
Step 3: In "Plot" tab, select Province/Territory as your Compare By (Legend) value.

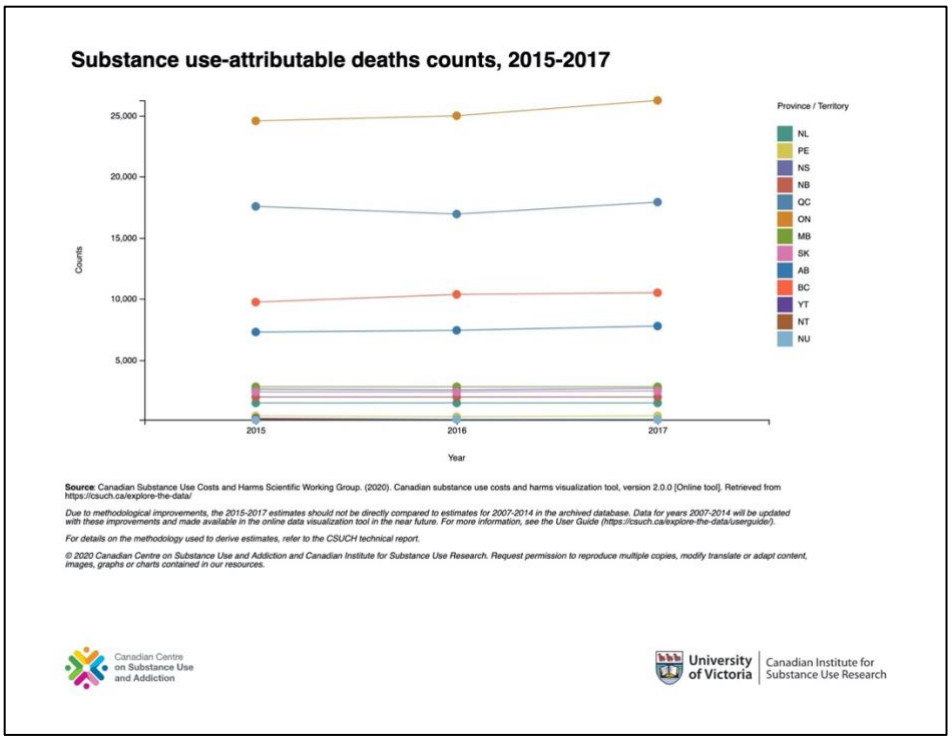


Step 4: There are no filters to select in this example.

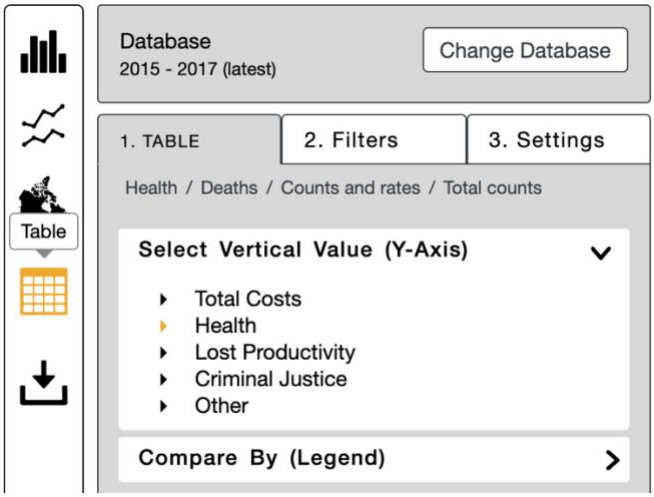
Step 5: There is no further customization in the "Settings" tab in this example.

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

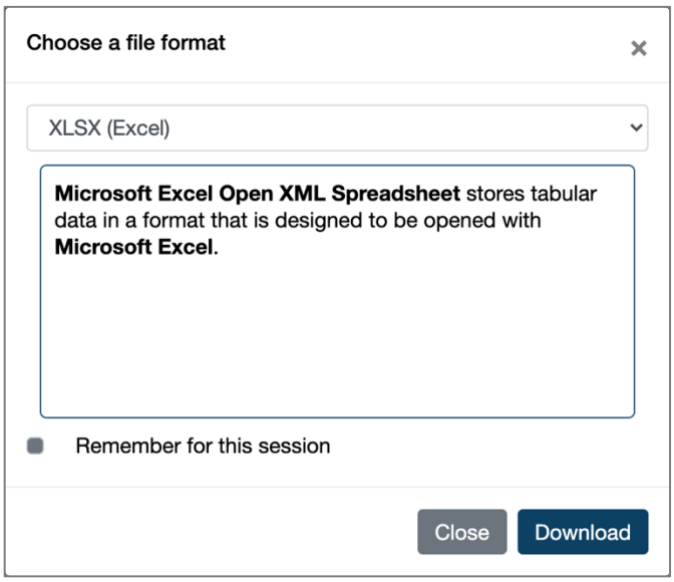


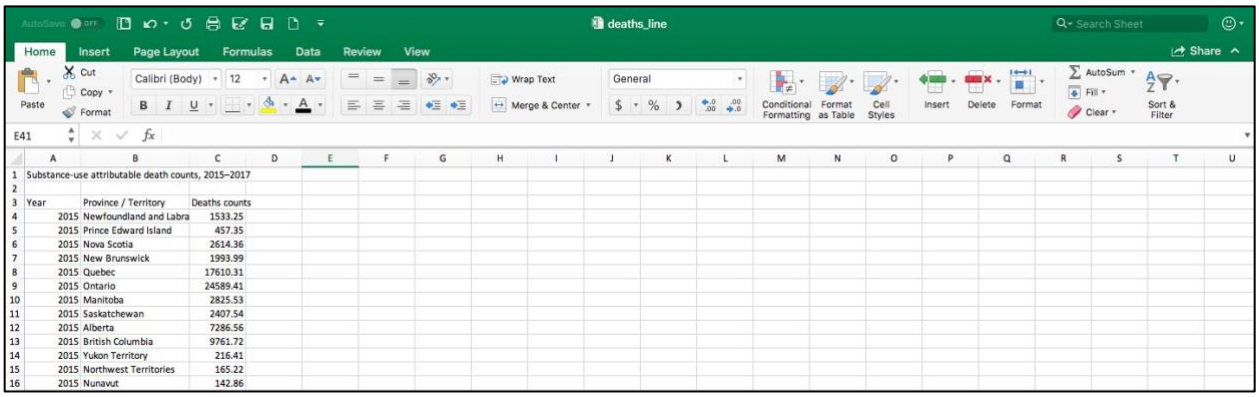


Next, to view the data table select table from the chart options:



Select the XLSX file format to download for Excel:

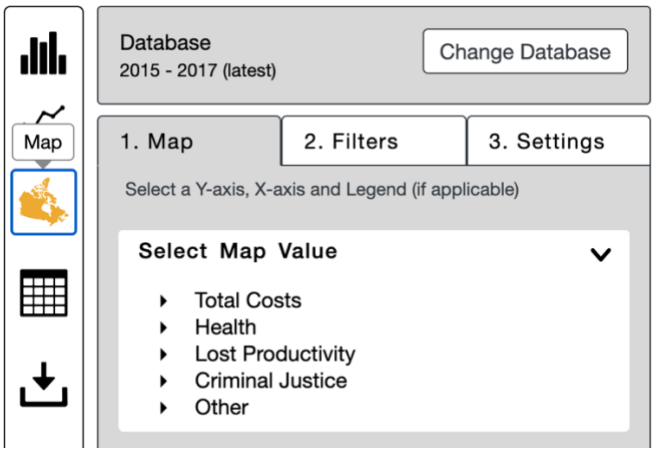




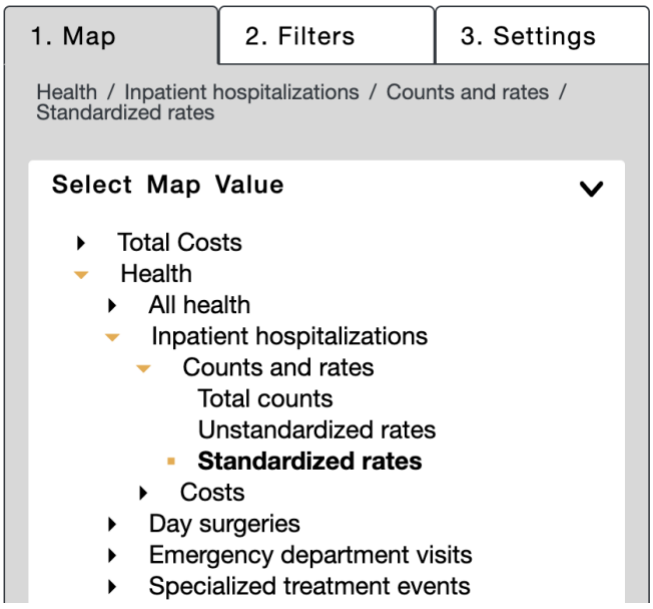
Reload your browser or refresh the tool page to start a new chart.

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.



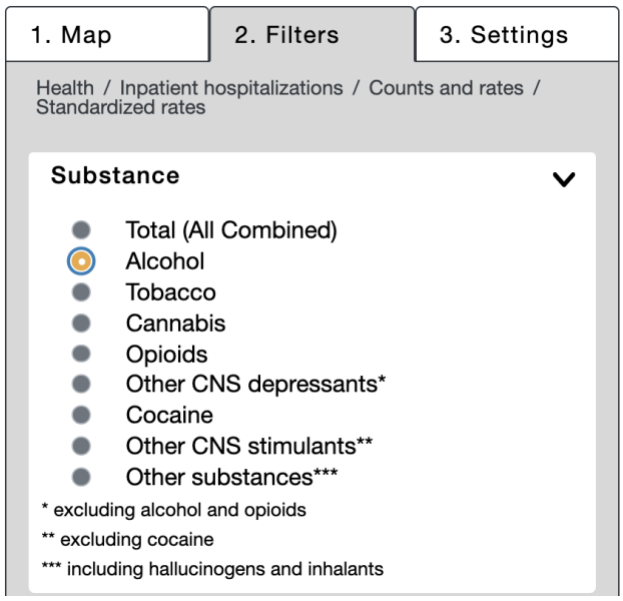
Step 1: In "Plot" tab, select Health>Inpatient hospitalizations>Counts and rates>Standardized rates



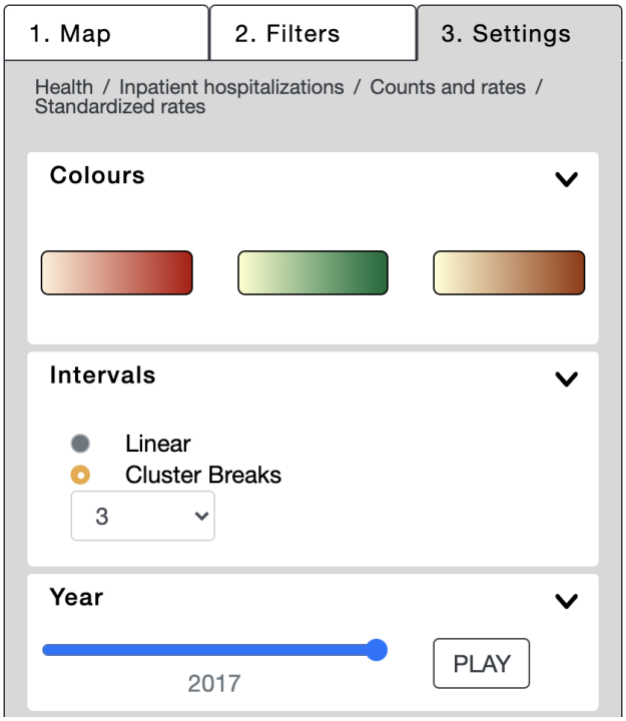
Step 2: N/A (No Compared By / Horizontal Value)

Step 3: N/A (No Filters)

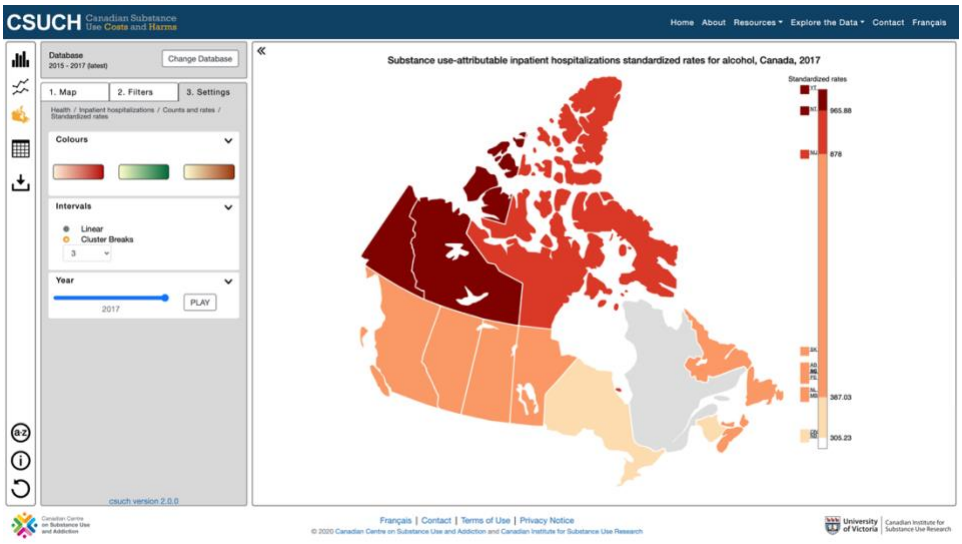
Step 4: In the “Filters” tab, select Alcohol from the substance drop down options. Please note you can only filter by one option for each of the variables (i.e., only one substance or only one health condition at a time).



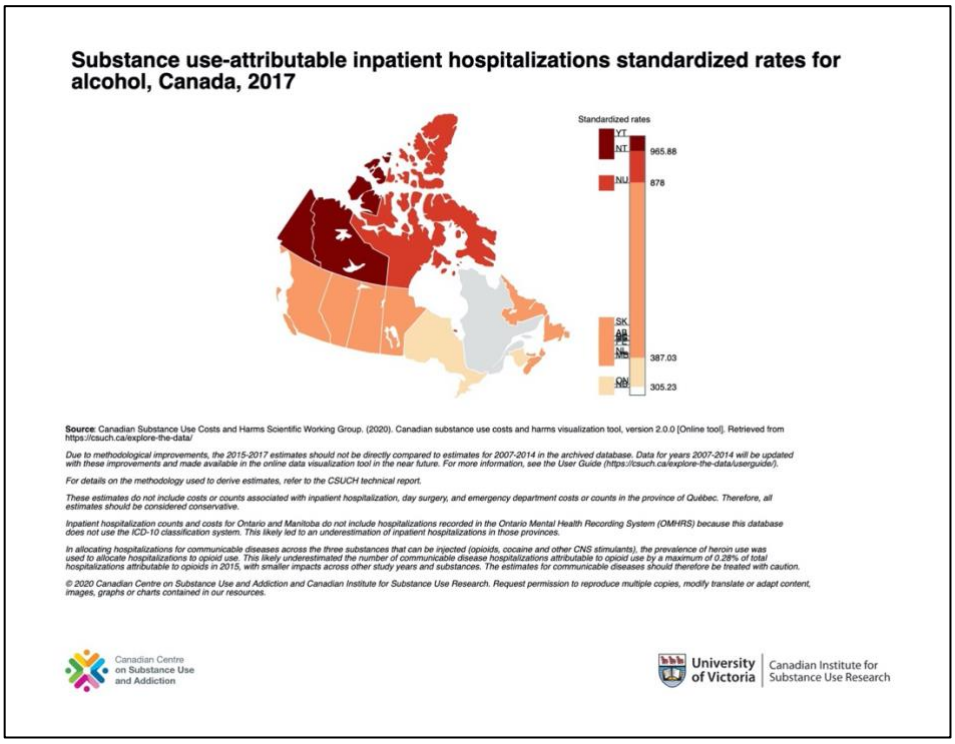
Step 5: In the “Settings” tab, select your desired colour and number of breaks in the data under intervals.



Step 6: Download the map for 2017 as a JPG



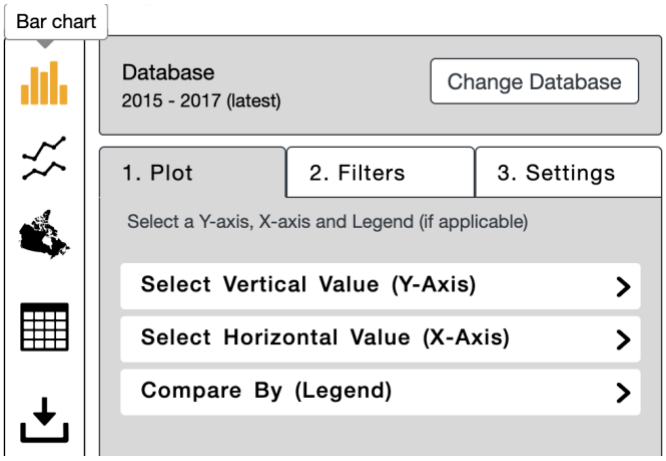
Save image for future use!



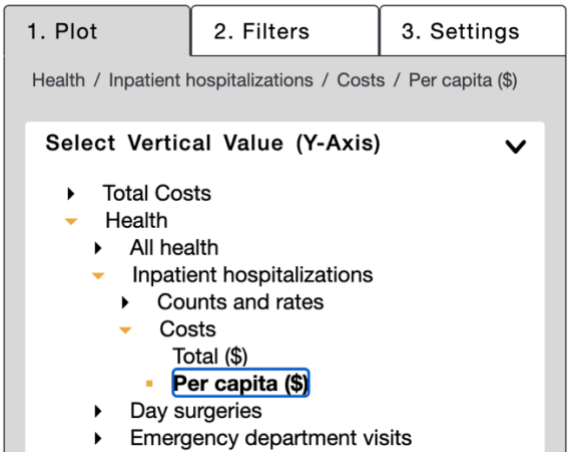
Reload your browser or refresh the tool page to start a new chart.

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: 2017 (by default)

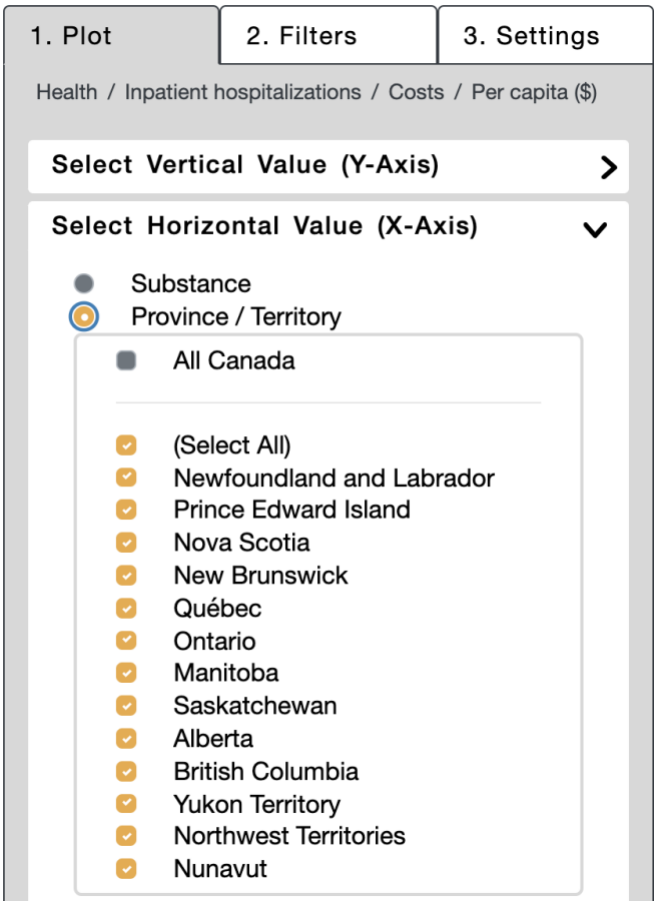
First, select "Bar Chart" as your chart type.



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

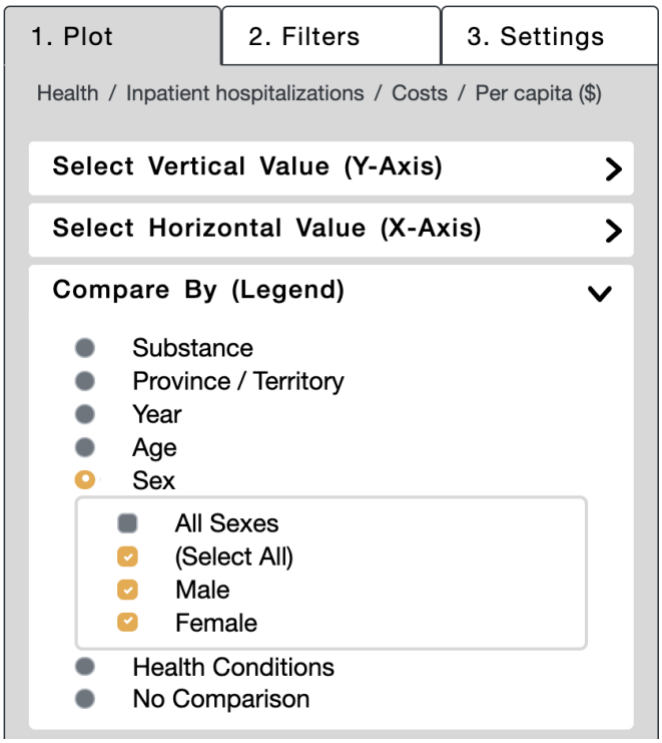


Step 2: In the "Plot" tab, select Province/Territory as your Horizontal Value

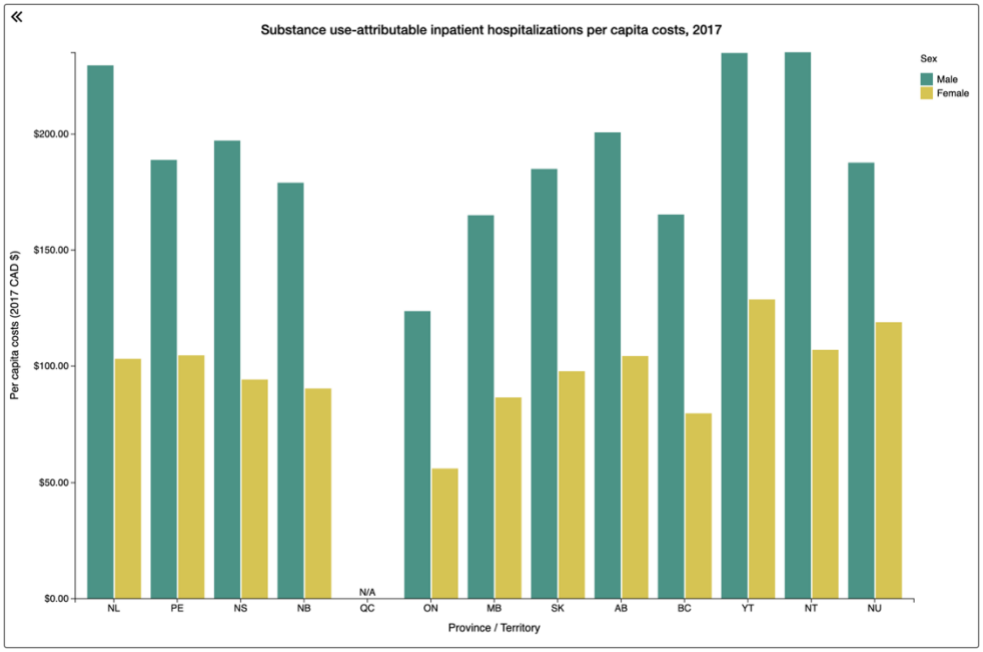


Step 3:

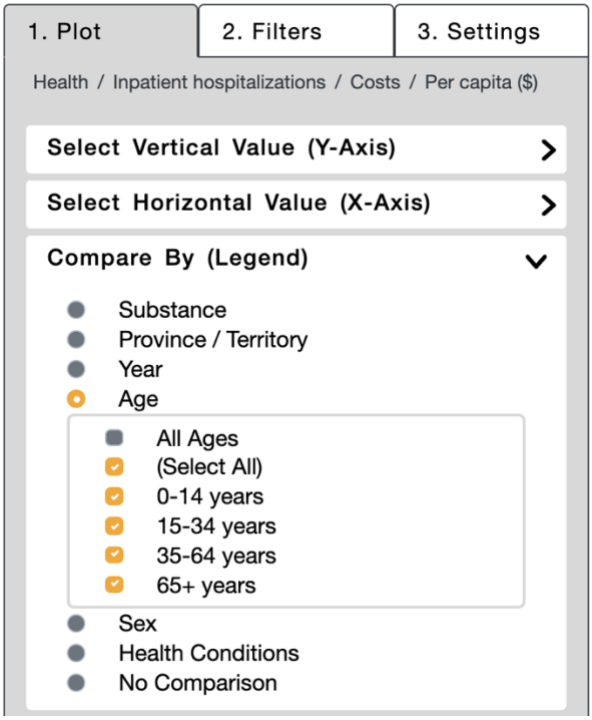
a. To see the difference per capita costs of inpatient hospitalizations by sex, in the "Plot" tab, select Sex (Male and Female) as your Compare By (Legend) value.



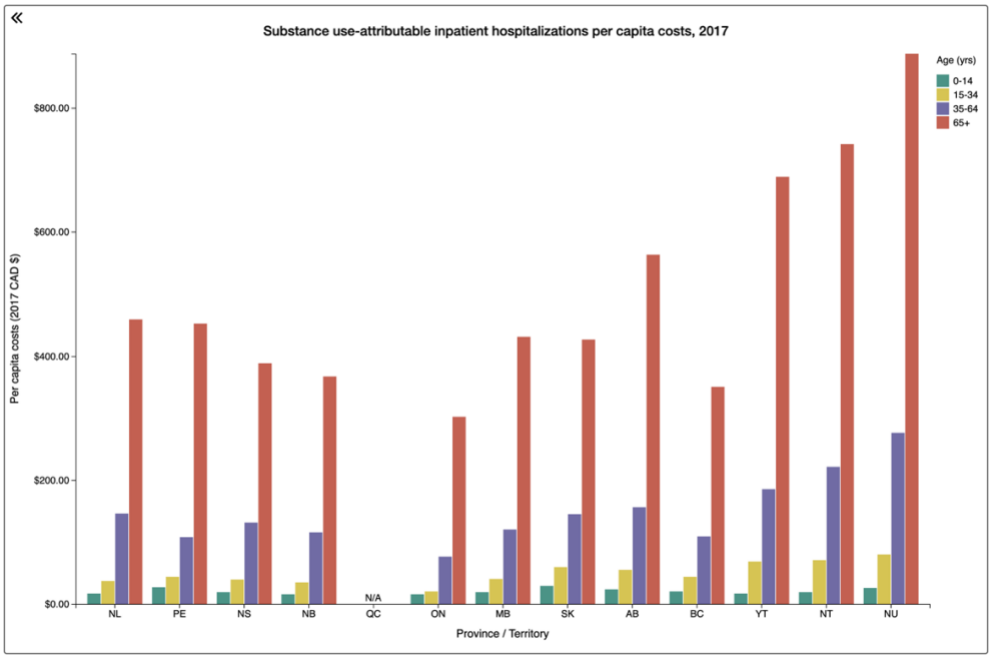
The chart now displays the different inpatient hospitalizations per capita costs between male and female for 2017.



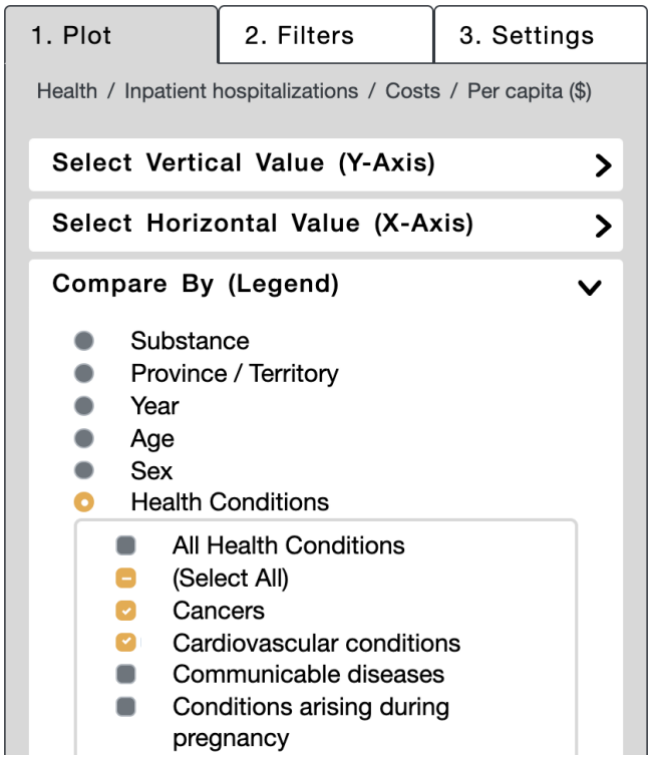
b. To see the difference per capita costs of inpatient hospitalizations by age, in the "Plot" tab, select Age as your Compare By (Legend) value.



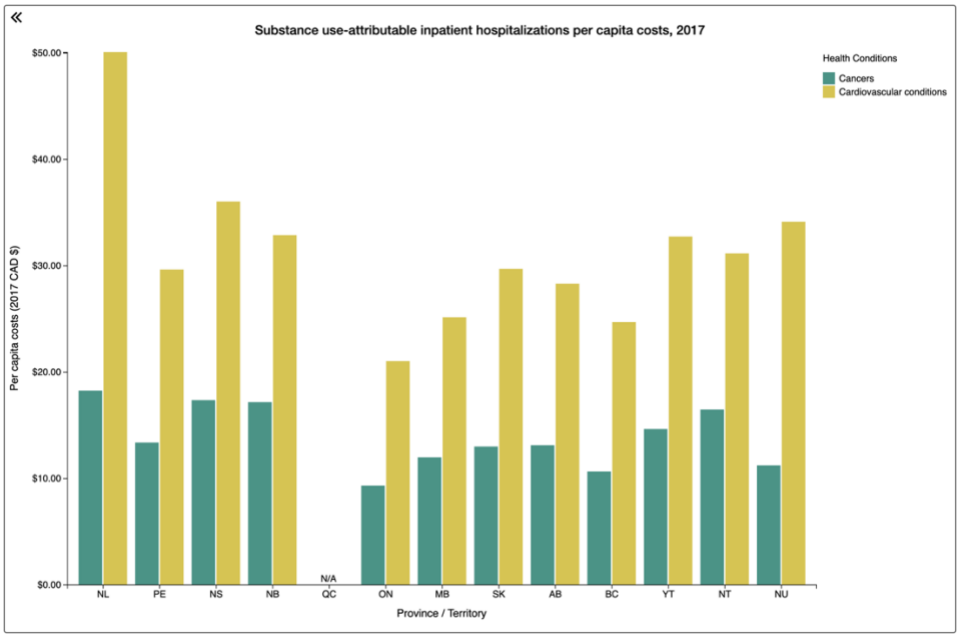
The chart now displays the different inpatient hospitalizations per capita costs between age categories for 2017.



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.



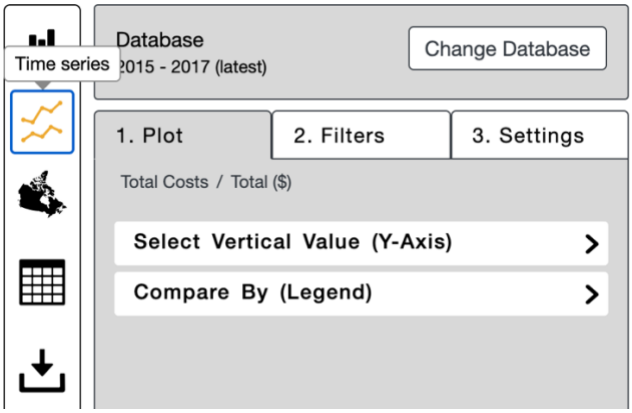
The chart now displays the different inpatient hospitalizations per capita costs between cancers and cardiovascular conditions by Province/Territory for 2017.



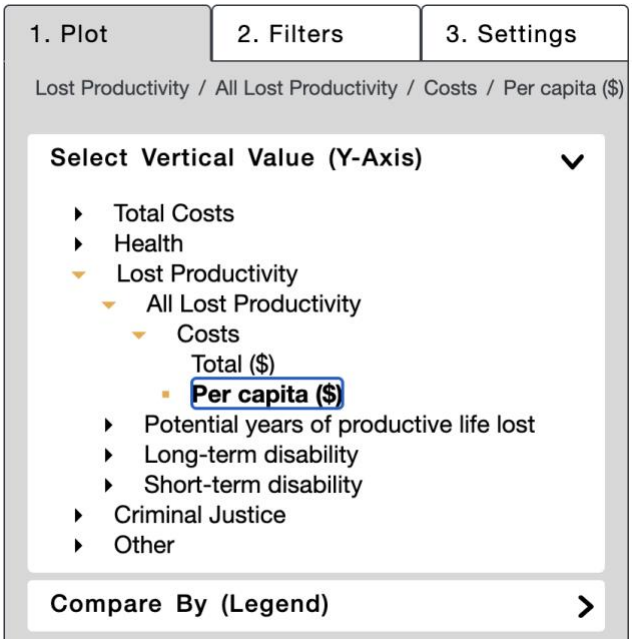
Refer to page 10 for instructions on downloading charts.

Example 5: Comparing per total lost productivity per capita costs from in Ontario vs. Quebec for alcohol, tobacco and opioids from 2015–2017
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 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

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

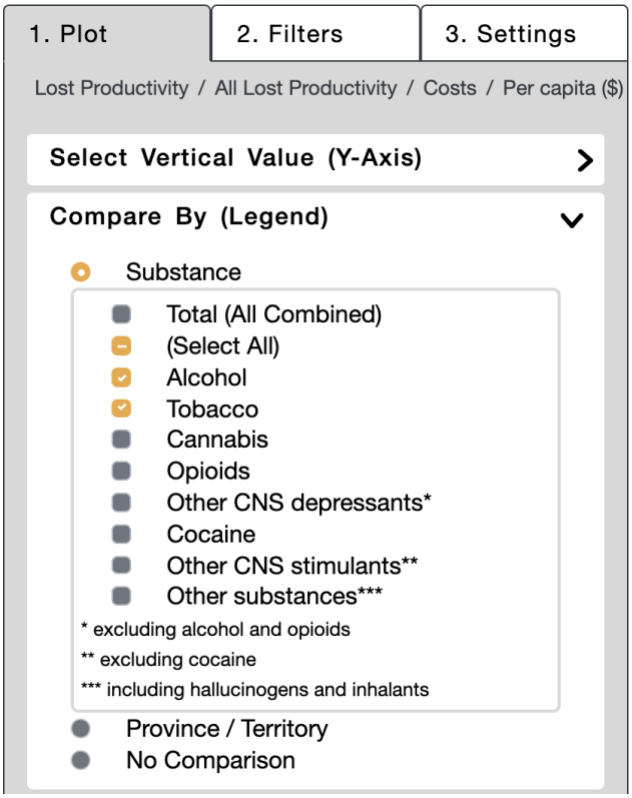


Step 1: In the “Plot” tab, select Lost Productivity>All lost productivity>Costs>Per capita ($)

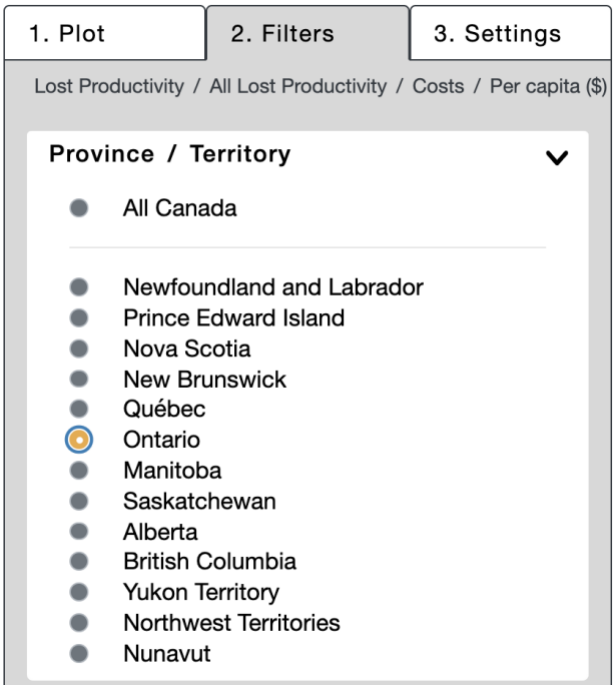


Step 2: In a time series, the x-axis is locked to years so there is no need to make a selection for the horizontal value.

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

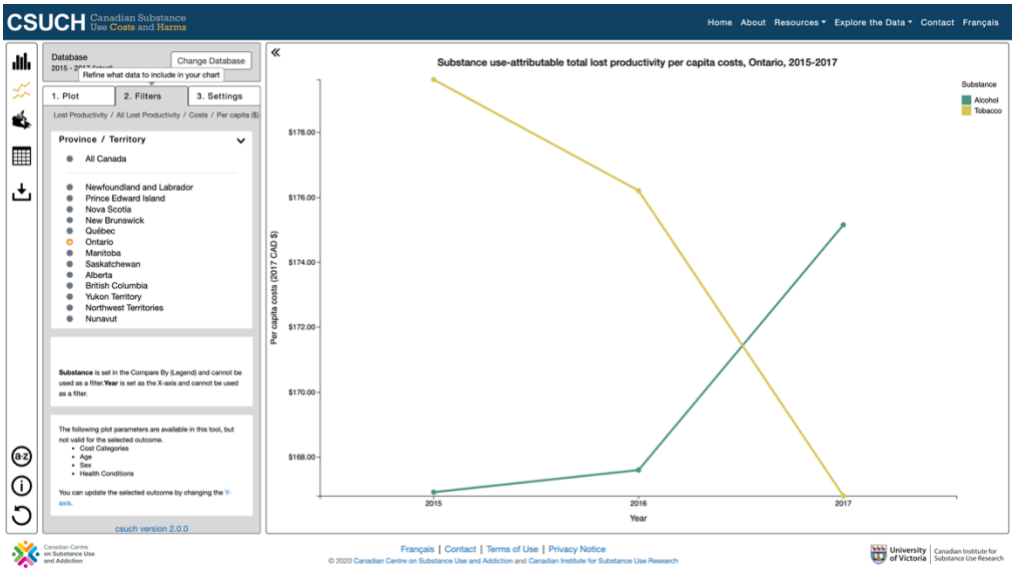


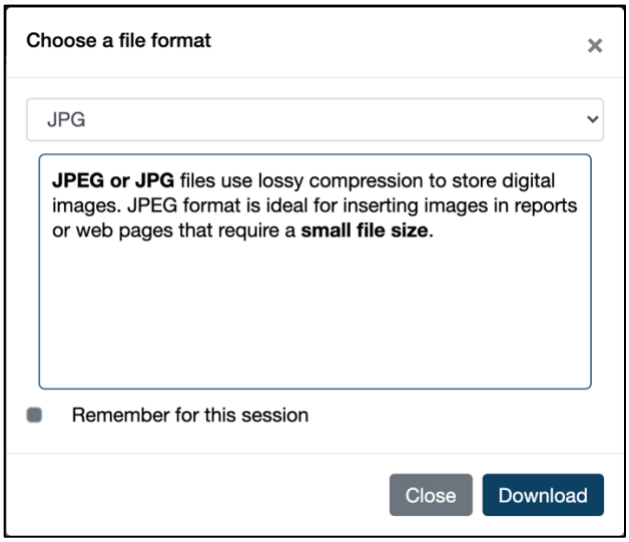
Step 4: In the “Filters” tab, select Ontario.



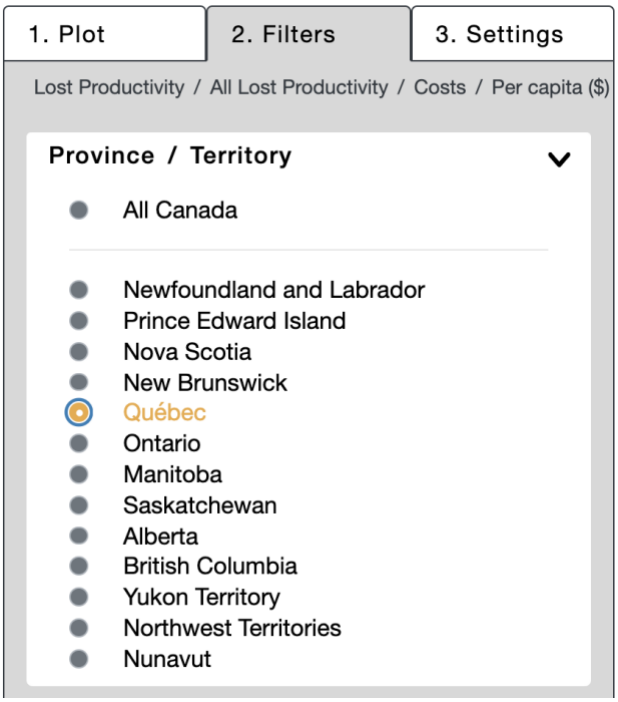
Step 5: In the “Settings” tab, select ‘Lock Y-Axis’.

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

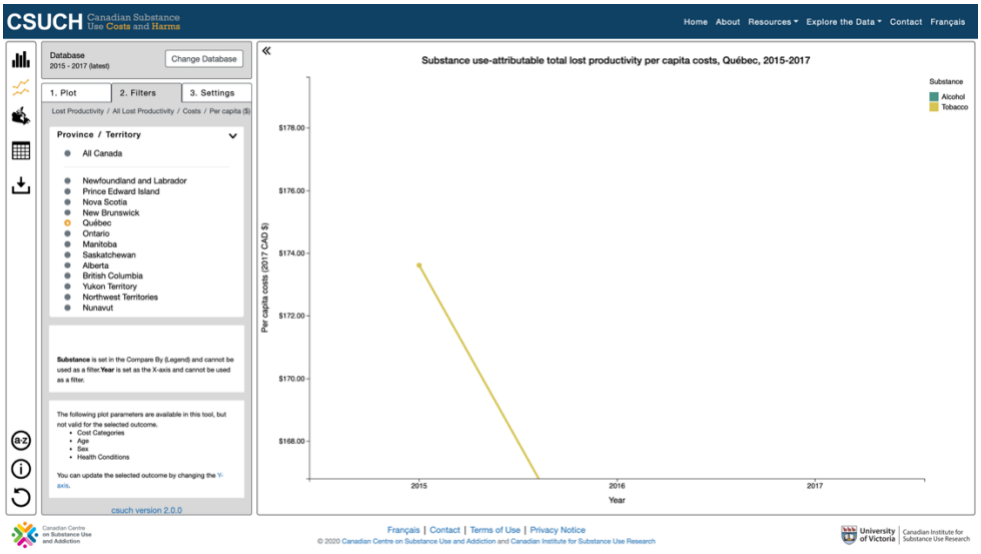




Now, create the second chart (ensuring the y-axis is locked) and only changing the filter option from Ontario to Quebec.

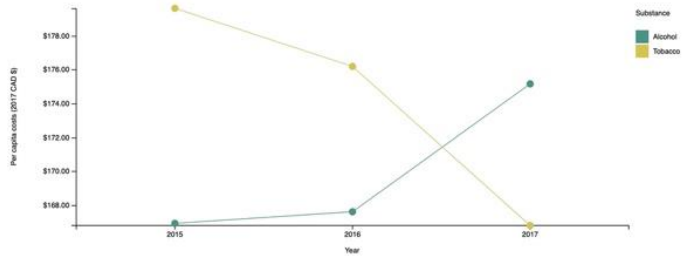


Step 7: Download as a JPG to compare to the first graph in the example.



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

Substance use-attributable total lost productivity per capita costs, Ontario, 2015-2017



Source: Canadian Substance Use Costs and Harms Scientific Working Group. (2020). Canadian substance use costs and harms visualization tool, version 2.0.0 [Online tool]. Retrieved from https://csuch.ca/explore-the-data/

Due to methodological improvements, the 2015-2017 estimates should not be directly compared to estimates for 2007-2014 in the archived database. Data for years 2007-2014 will be updated with these improvements and made available in the online data visualization tool in the near future. For more information, see the User Guide (https://csuch.ca/explore-the-data/userguide).

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 the Yukon in 2017. Therefore, all estimates should be considered conservative.

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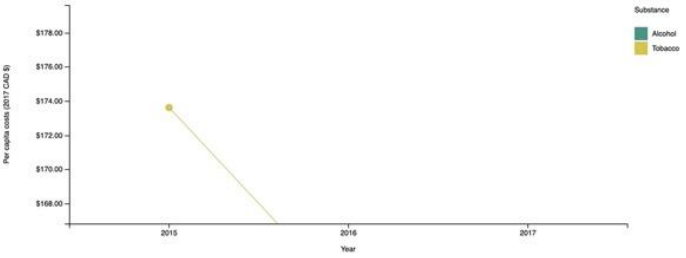
Substance use-attributable total lost productivity per capita costs, Québec, 2015-2017



Source: Canadian Substance Use Costs and Harms Scientific Working Group. (2020). Canadian substance use costs and harms visualization tool, version 2.0.0 [Online tool]. Retrieved from https://csuch.ca/explore-the-data/

Due to methodological improvements, the 2015-2017 estimates should not be directly compared to estimates for 2007-2014 in the archived database. Data for years 2007-2014 will be updated with these improvements and made available in the online data visualization tool in the near future. For more information, see the User Guide (https://csuch.ca/explore-the-data/userguide).

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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
Total costs	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
All Health	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a
Inpatient hospitalizations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Day surgeries	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Emergency department visits	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*
Specialized treatment events	*	*	*	*	*	*	*	*	*	*	n/a
Physician time	n/a	n/a	n/a	✓	✓	✓	✓	✓	✓	✓	n/a
Prescription drugs	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a
Deaths	✓	✓	✓	*n/a*	*n/a*	✓	✓	✓	✓	✓	✓

* = 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
All lost productivity	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a
Potential Years of Productive Life Lost	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Long-term disability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
Short-term disability	n/a	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

UI Outcome	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
Criminal Justice	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

UI Outcome	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
Other Costs	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
Fire damage	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
Workplace drug testing	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
Workers' compensation administration	n/a	n/a	n/a	✓	✓	✓	n/a	n/a	✓	✓	n/a

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