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# Canadian Substance Use Costs and Harms

Jill Fairbank, Matthew Young, and Bridget Hall

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# Disclosure Statement

- We have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.

# Agenda

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1. Overview of the Canadian Substance Use Costs and Harms (CUSCH) study
2. Demonstration of the CSUCH tool
3. Activity – brainstorming questions
4. Activity – using the tool
5. Tool feedback and discussion

# Before we begin...

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- What type of organization are you from?
  - Healthcare delivery
  - Research
  - Policy
  - Government
  - Other?
- What region of Canada do you represent?

# Acknowledgement

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This work is made possible through a financial contribution from Health Canada.

The views expressed herein do not necessarily represent the views of Health Canada.

# About CCSA

- **Vision:** A healthier Canadian society where evidence transforms approaches to substance use.
- **Mission:** To address issues of substance use in Canada by providing national leadership and harnessing the power of evidence to generate coordinated action.
- **Value Proposition:** Provide national leadership to address substance use in Canada. A trusted counsel, we provide guidance to decision makers by harnessing the power of research, curating knowledge and bringing together diverse perspectives.
- National non-profit organization with a pan-Canadian and international role.



# CCSA's National Priorities

**Cannabis**

**Children &  
Youth**

**Substance  
Use & Mental  
Health**

**Indigenous  
People**

**Workforce  
Development**

**National  
Treatment  
Strategy**

**Impaired  
Driving**

**National  
Alcohol  
Strategy**

**Opioids &  
Prescription  
Drugs**

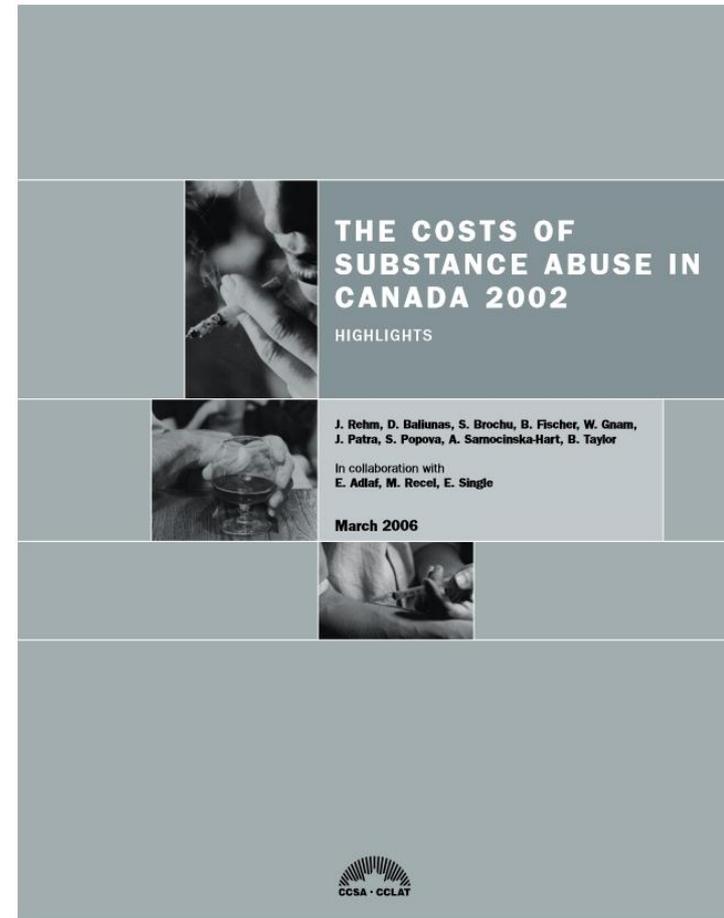
**Stigma**



Background

# Background

- Most recent comprehensive assessment on the harms and economic burden of substance use (SU) in Canada was the CCSA-led study by Rehm and colleagues, conducted in 2006 using 2002 data
- This study continues to be cited but data is no longer current
- The ability to report costs and trends in harms uniquely caused by the use of different substances will be a valuable support for federal, provincial and territorial (FPT) efforts to reduce these harms





## Canadian Substance Use Costs and Harms Working Group

### Canadian Institute for Substance Use Research (CISUR)

Tim Stockwell, PhD, Principal Investigator  
*Director, CISUR*  
*Professor, University of Victoria*

John Dorocicz

Scott MacDonald, PhD

Adam Sherk, PhD(c)

Justin Sorge, MPH

Jinhui Zhao, PhD

### Canadian Centre on Substance Use and Addiction (CCSA)

Matthew Young, PhD, Principal Investigator  
*Senior Research and Policy Analyst, CCSA*  
*Adjunct Professor, Carleton University*

Chealsea DeMoor, MA

Jill Fairbank, MS

Bridget Hall, MPH

Pamela Kent, PhD

Sarah Wallingford, PhD

# Overview

- Estimates were 2007 to 2014
- Estimates up to and including FY2017/2018 – Autumn 2019
- Several substance categories included:



ALCOHOL



TOBACCO



CANNABIS



COCAINE



OPIOIDS



OTHER CNS  
DEPRESSANTS



OTHER CNS  
STIMULANTS



ALL OTHER  
PSYCHOACTIVE  
DRUGS

# Overview

- Assessed costs across the following categories

Healthcare Related Costs



Lost Productivity Costs



Criminal Justice



Other Direct Costs



- Employed the attributable fraction methodology

# Attributable Fraction Methodology

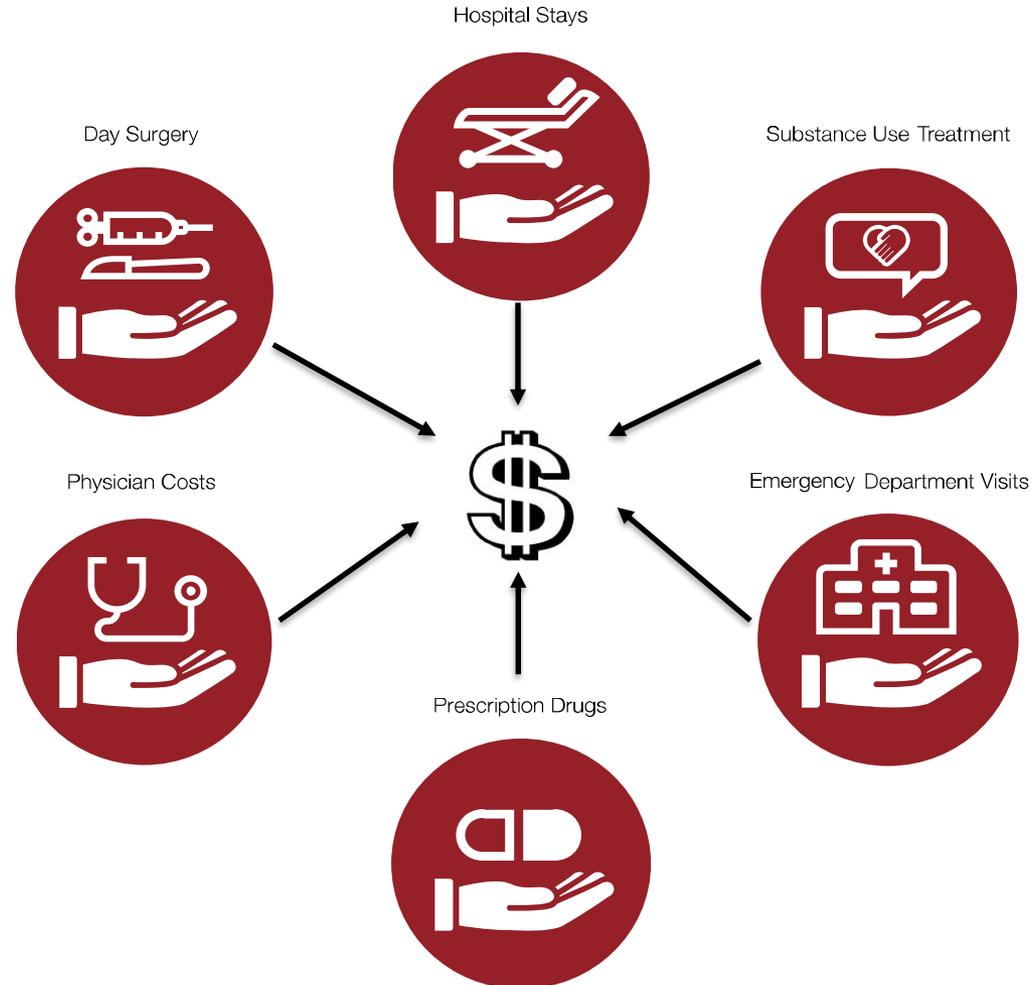
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- Some health conditions and events are 100% attributable to SU (i.e., poisonings, impaired driving charges) while others are only partially attributable (i.e., stomach cancer, homicide)
- Attributable fraction (AF) approach:
  - Identify the condition (or event or indicator) attributable to SU
  - Determine the relationship between the extent of exposure and the indicator
  - Identify prevalence of exposure in the general population
  - Combine information to obtain SU-related AFs

# Data sources used to model prevalence estimates

Substance	Data Sources
Alcohol	CADUMS 2008–2012 (Statistics Canada, 2013); CTADS 2013 and 2015 (Statistics Canada, 2015, 2017a); CCHS 2005 and 2007–2014 (Statistics Canada, 2017e); official sales from Statistics Canada 2006–2016 (Statistics Canada, 2016)
Tobacco	CADUMS 2008–2012 (Statistics Canada, 2013); CTADS 2013 and 2015 (Statistics Canada, 2015, 2017a); CCHS 2005 and 2007–2014 (Statistics Canada, 2017e); official sales from Health Canada 2006–2016 (Health Canada)
Cannabis, opioids, other CNS depressants, cocaine, other CNS stimulants and other substances	CADUMS 2008–2012 (Statistics Canada, 2013); CTADS 2013 and 2015 (Statistics Canada, 2015, 2017a); NWTAS 2012 (Northwest Territories Health and Social Services, 2015)

# Healthcare-related cost categories



# Data sources used to calculate healthcare-related costs



Costs/Harm	Data Source
Substance-use-attributable fractions	Alcohol: Calculated using the International Model of Alcohol Harms and Policies (Sherk et al., 2017b) Tobacco: Relative risks taken for 2014 U.S. <i>Surgeon General's Report</i> (Health & Services, 2014) Other substances: Relative risks (various) taken from the literature on a condition-specific basis (see technical report)
Inpatient hospitalizations	Canadian Institute for Health Information (CIHI): Discharge Abstract Database (DAD) 2006–2007 to 2014–2015 (Canadian Institute for Health Information) CIHI: Cost of a Standard Hospital Stay (indicator) (Canadian Institute for Health Information)
Day surgeries	CIHI: DAD 2006–2007 to 2014–2015 (Canadian Institute for Health Information) and National Ambulatory Care Reporting System (NACRS) 2006–2007 to 2014–2015 (Canadian Institute for Health Information) CIHI: Cost of a Standard Hospital Stay (indicator) (Canadian Institute for Health Information)
Emergency department visits	CIHI: NACRS 2006–2007 to 2014–2015 (counts) (Canadian Institute for Health Information) CIHI: Cost of a Standard Hospital Stay (indicator) (Canadian Institute for Health Information)
Specialized substance use treatment	National Treatment Indicator (NTI) Working Group data 2009–2010 to 2014–2015 (counts) (Beasley, Jesseman, Patton, & National Treatment Indicators Working Group, 2012; McQuaid, Di Gioacchino, & National Treatment Indicators Working Group, 2017; Pirie, Jesseman, Di Gioacchino, & National Treatment Indicators Working Group, 2014; Pirie, Jesseman, & National Treatment Indicators Working Group, 2013; Pirie & National Treatment Indicators Working Group, 2015; Pirie, Wallingford, Di Gioacchino, McQuaid, & National Treatment Indicators Working Group, 2016) CIHI: DAD 2006–2007 to 2014–2015 (Canadian Institute for Health Information) and Cost of a Standard Hospital Stay 2007–2014 (costs) (Canadian Institute for Health Information) Literature: <i>Comorbid mental disorders among clients in addiction treatment: the costs of care</i> (costs) (Urbanoski, Rehm, Lange, & Popova, 2014)
Family physician time	CIHI: National Physician's Database 2006–2007 to 2014–2015 (Canadian Institute for Health Information) and Quick Stats Inpatient Hospitalizations 2007–2014 (Canadian Institute for Health Information)
Prescription drugs	CIHI: National Health Expenditure Trends 2007–2014 (Canadian Institute for Health Information)

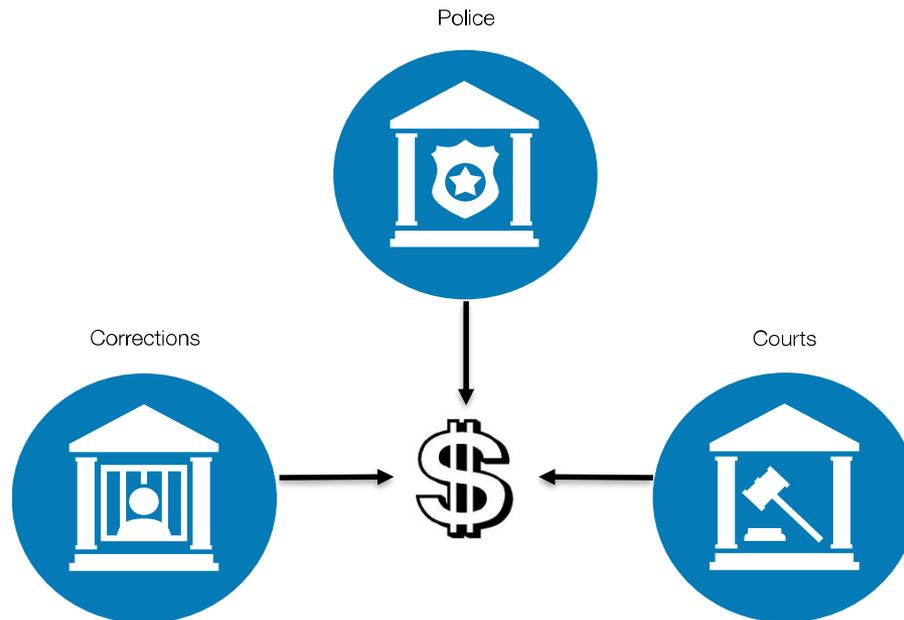
# Lost productivity cost categories



# Data sources used to calculate lost productivity costs

Costs/Harm	Data Source
Premature mortality	Vital Statistics – Death Database (Statistics Canada); General Social Survey (Statistics Canada, 2017b) (counts); Labour Force Survey (Statistics Canada, 2017d); Job Vacancy and Wages Survey (Statistics Canada, 2017c) (costs)
Long-term disability	Canadian Community Health Survey (Statistics Canada, 2017e) (counts and costs)
Short-term disability (absenteeism and presenteeism)	Canadian Community Health Survey (Statistics Canada, 2017e) (counts and costs)

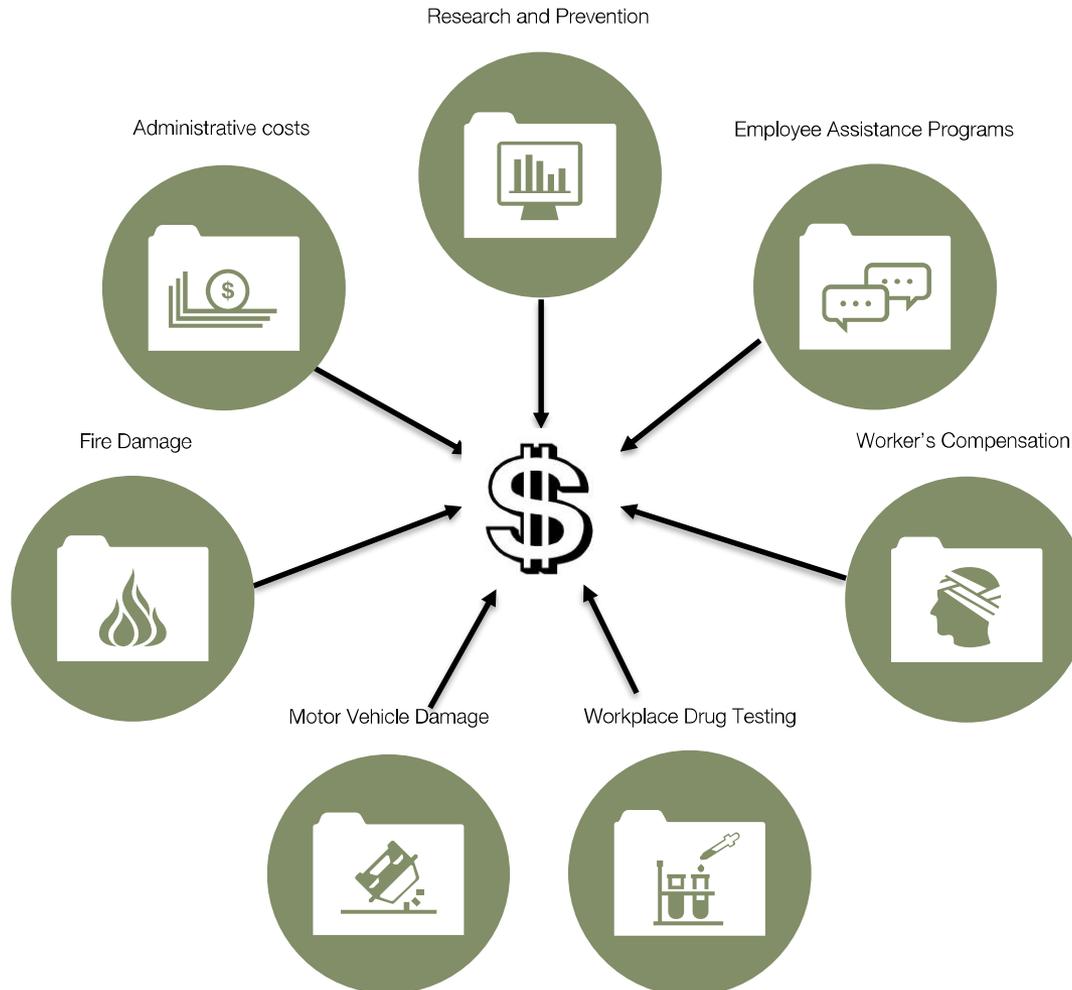
# Criminal justice cost categories



# Data sources used to calculate criminal justice costs

Costs/Harm	Data Source
Crime-related attributable fractions	Correctional Service of Canada: Computerized Assessment of Substance Abuse (CASA) (Kunic, 2006); Women's CASA (Correctional Service of Canada, 2012)
Police (crime incidents)	Uniform Crime Reporting Survey 2009–2014 (Statistics Canada)
Courts (charges)	Integrated Criminal Court Survey 2009–2014 (Statistics Canada)
Corrections (admissions to sentenced custody)	Adult Correctional Services 2009–2014 (Statistics Canada); Youth Custody and Community Service Survey 2009–2012 (Statistics Canada)
Criminal justice costs	Office of the Parliamentary Bureau Officer: Expenditure Analysis of Criminal Justice in Canada, 2013 (Story & Yalkin, 2013).

# Other direct cost categories



# Data sources used to calculate other direct costs

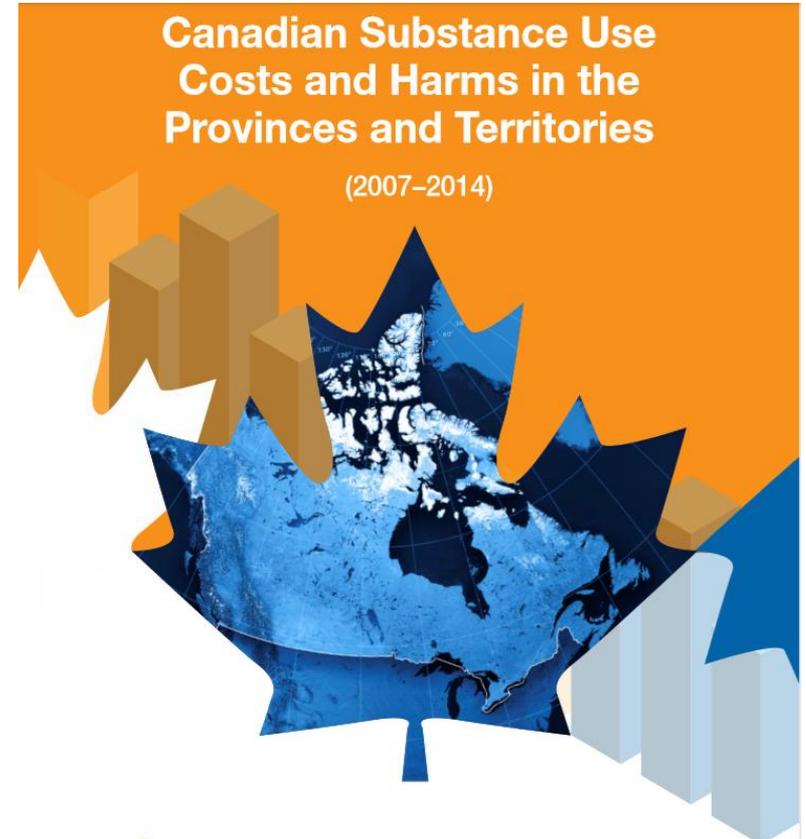
Costs/Harm	Data Source
Research and prevention	Health Canada; Canadian Institute for Health Research; Heart and Stroke Foundation; Canadian Cancer Society; Canadian Partnership Against Cancer; Canadian Council for Tobacco Control; Traffic Injury Research Foundation; Treasury Board of Canada Secretariat: Tobacco Control Strategy 2006/07 -2014/15 (Treasury Board of Canada Secretariat).
Fire damage	Provincial/territorial fire marshal and fire commissioners reports 2007–2014; personal communications with provincial/territorial fire marshals and fire commissioners
Motor vehicle collisions (property damage only)	National Collision Database (Transport Canada) (counts); General Insurance Statistical Agency (costs)
Workplace drug-testing programs	Butler (2012) (counts and costs)
Employee-assistance programs	Labour Force Survey 2007–2014 (Statistics Canada, 2017d); Macdonald & Wells (1995) (counts); personal communications with Morneau Shepell (costs)
Workers' compensation administrative costs	Provincial/territorial workers' compensation boards annual reports 2007–2014

# Major releases thus far

June 2018



October 2018



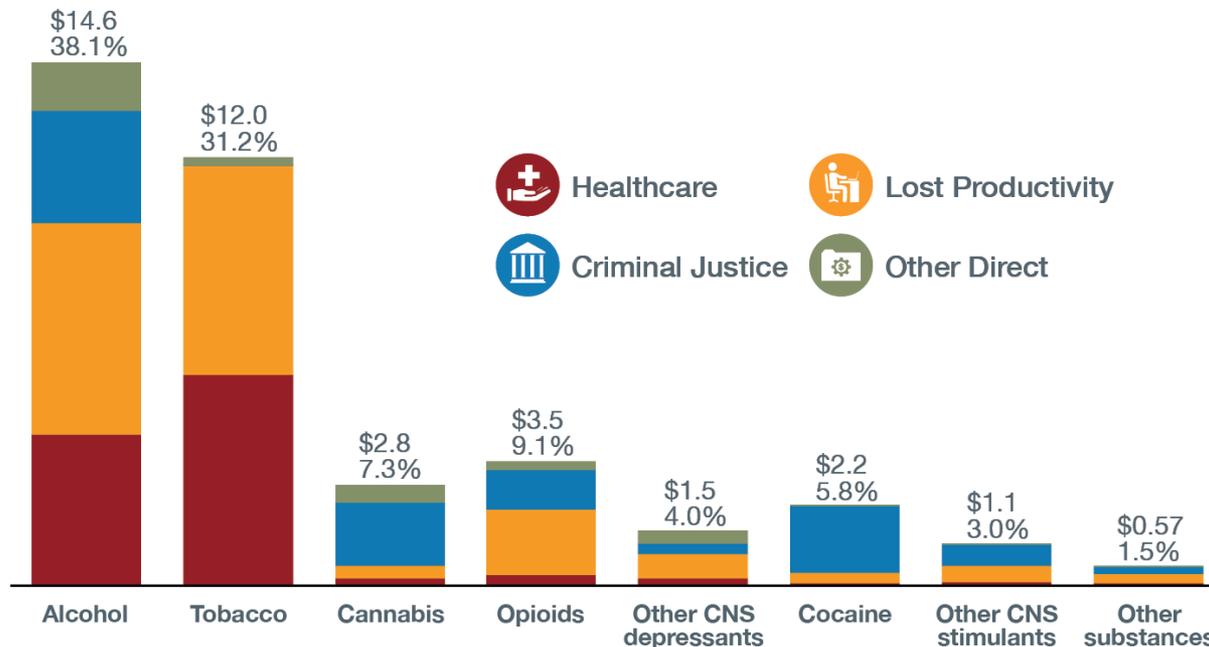


# Findings

# Most costs from alcohol and tobacco

- The overall economic cost of substance use in Canada in 2014 was estimated to be \$38.4 billion.
- This overall estimate represents a cost of almost \$1,100 for every man, woman and child in Canada.
- In 2014, the legally available and most widely used psychoactive substances, alcohol and tobacco, contributed almost 70% of these costs.

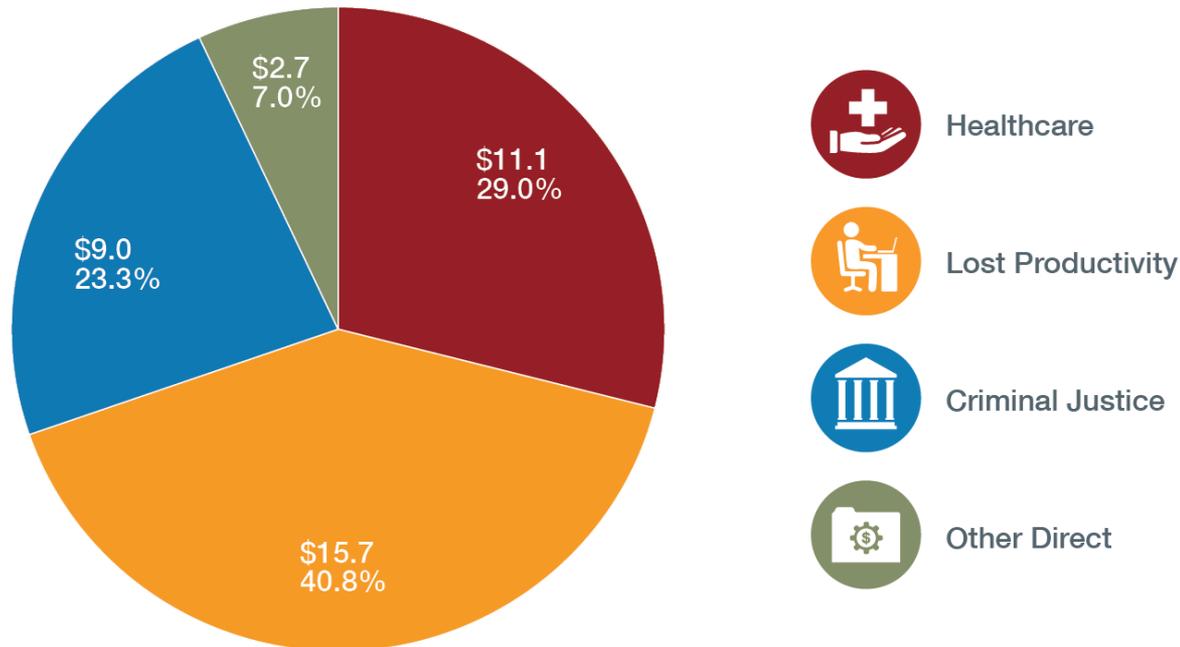
**Figure 1.** Overall costs (in billions) and percentage of total overall costs attributable to substance use by substance and cost type, 2014



# Most costs from lost productivity and healthcare

- Lost productivity and healthcare costs accounted for almost 70% of overall costs

Figure 2. Overall costs (in billions) and percentage of total overall costs attributable to substance use in Canada by cost type, 2014

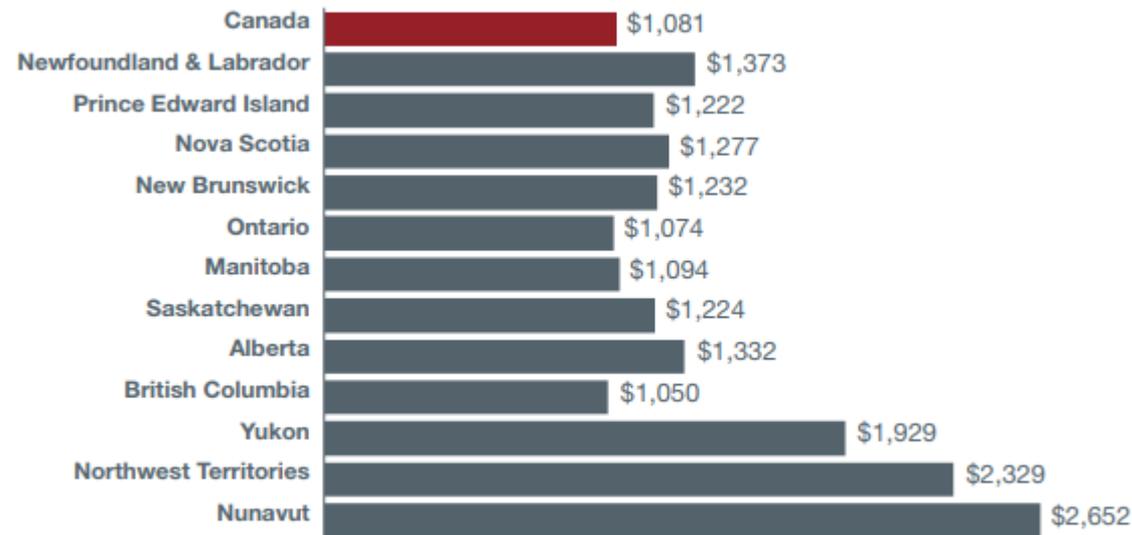


Total cost: \$38.4 billion

# Per person costs highest in territories

- Per person costs in 2014 ranged from \$1,050 to \$2,652.
- In 2014, the per-person economic costs were estimated to be higher in the territories than the provinces, reflecting in particular their higher rates of tobacco smoking and alcohol use.

**Figure 3.** Overall per person costs attributable to substance use by province and territory, 2014



**Note:** Meaningful per-person costs for Quebec could not be calculated.

# Tobacco still deadliest substance

Hospital Stays



Premature Mortality



- In 2014, there were over 255,000 hospitalizations attributable to substance use. That is a rate of approximately 7.19 per 100,000
- There were also over 67,000 SU-attributable deaths 1.90 deaths per 100,000
- Over 751,000 potential years of life lost due to premature mortality.

**Table 6. Number of hospital stays, number of deaths, and potential years of life lost due to substance use-attributable premature mortality, 2014**

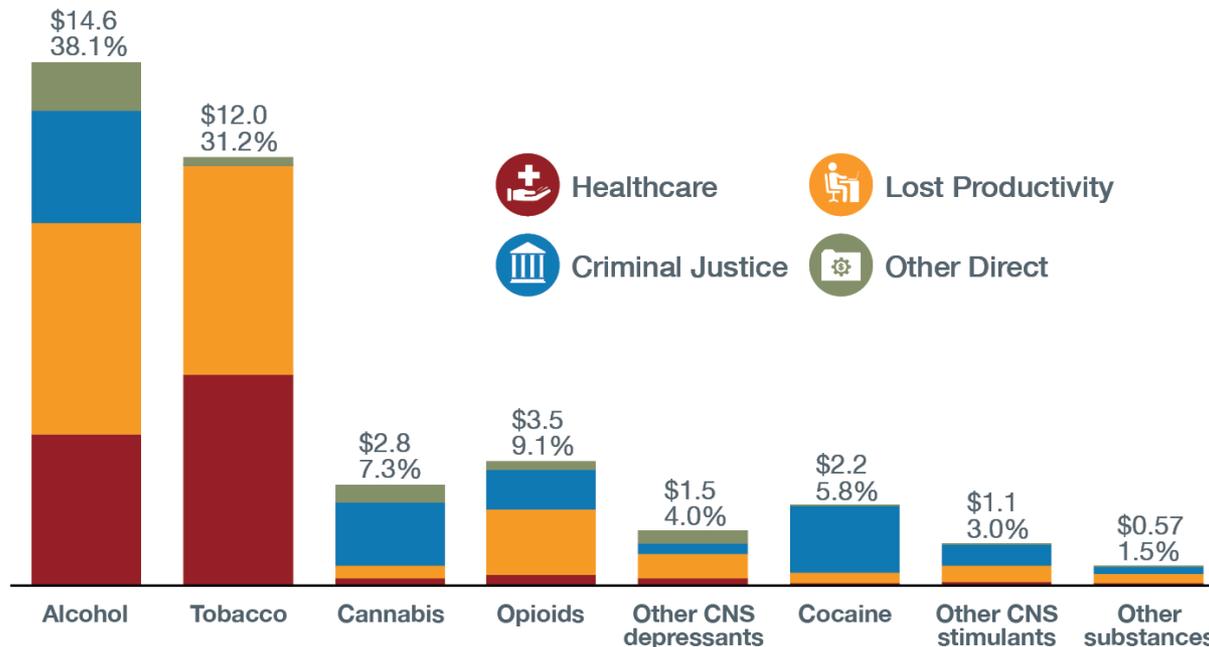
Substance	Hospital Stays	Deaths	Potential Years of Life Lost due to Premature Mortality
Alcohol	87,911	14,827	244,144
Tobacco	145,801	47,562	326,870
Cannabis	3,836	851	18,301
Opioids	6,982	2,396	87,782
Other CNS depressants	5,534	796	28,792
Cocaine	1,572	297	13,015
Other CNS stimulants	2,275	487	21,038
Other drugs	1,660	299	11,427
<b>Totals</b>	<b>255,571</b>	<b>67,515</b>	<b>751,369</b>

# Alcohol costs most



ALCOHOL

- In 2014, alcohol use is the leading cause of economic costs associated with substance use in Canada
- Alcohol accounts for 38% of all SU related healthcare-related costs
- Almost 20% of violent crimes are alcohol attributable



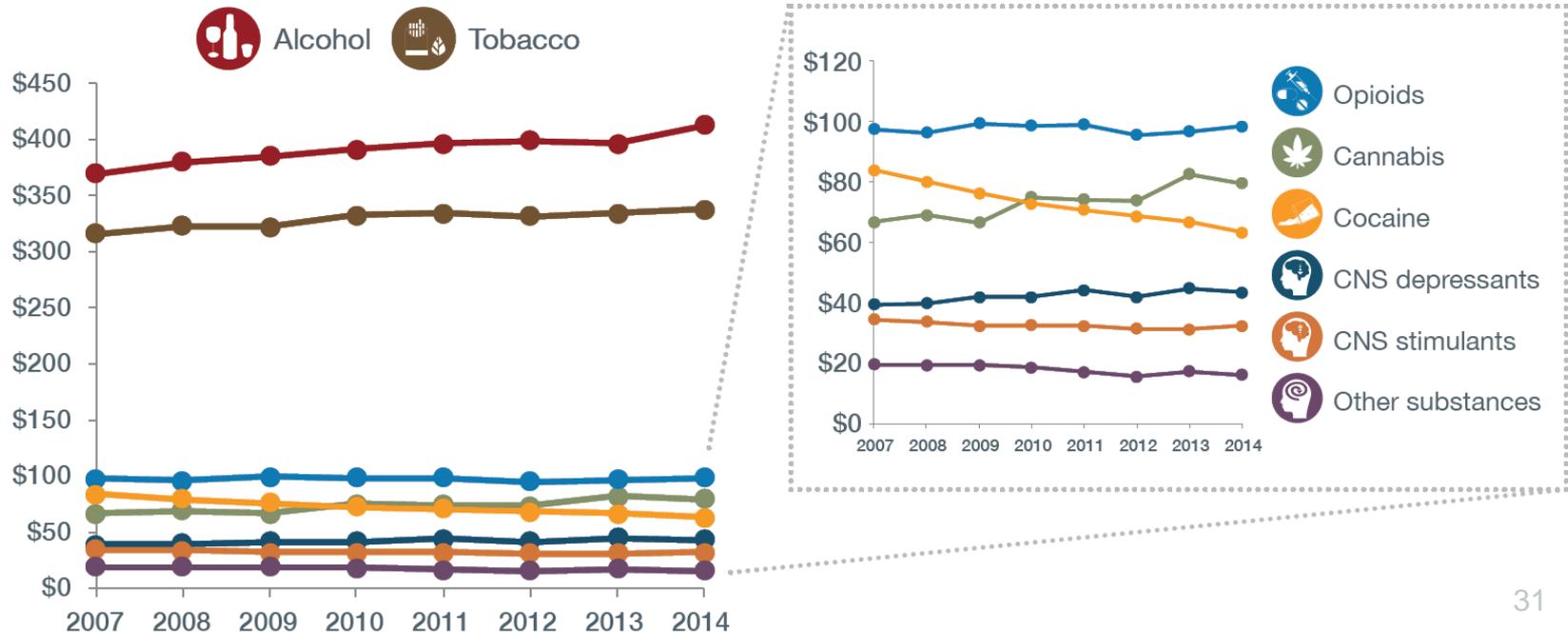
# Alcohol costs are increasing



ALCOHOL

- Per capita costs associated with alcohol use increased 11.6% from \$369 per person in 2007 to \$412 per person in 2014.

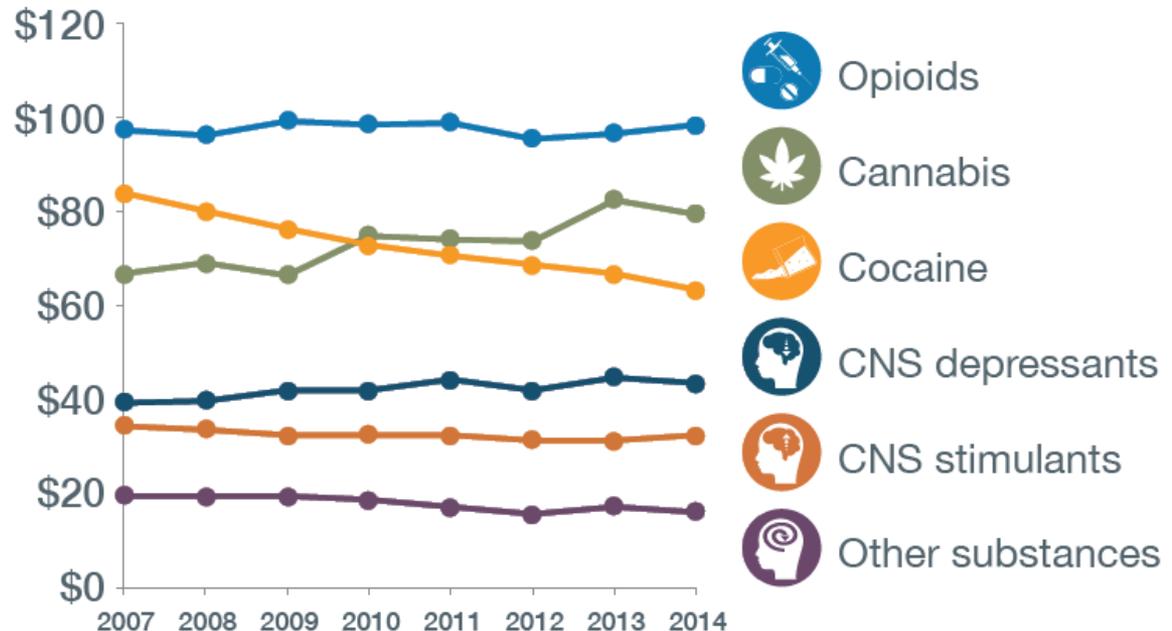
Figure 4. Overall per person costs (2014 CDN) attributable to substance use in Canada by substance, 2007-2014



# Cannabis costs increased most



- Per capita costs associated with opioids increased 1% from \$97 per person in 2007 to \$98 per person in 2014.
- The largest per capita increase was associated with cannabis 19.1% from \$66 per person in 2007 to \$79 per person in 2014.
  - **NOTE:** per person cannabis costs < 1/4 per person alcohol costs



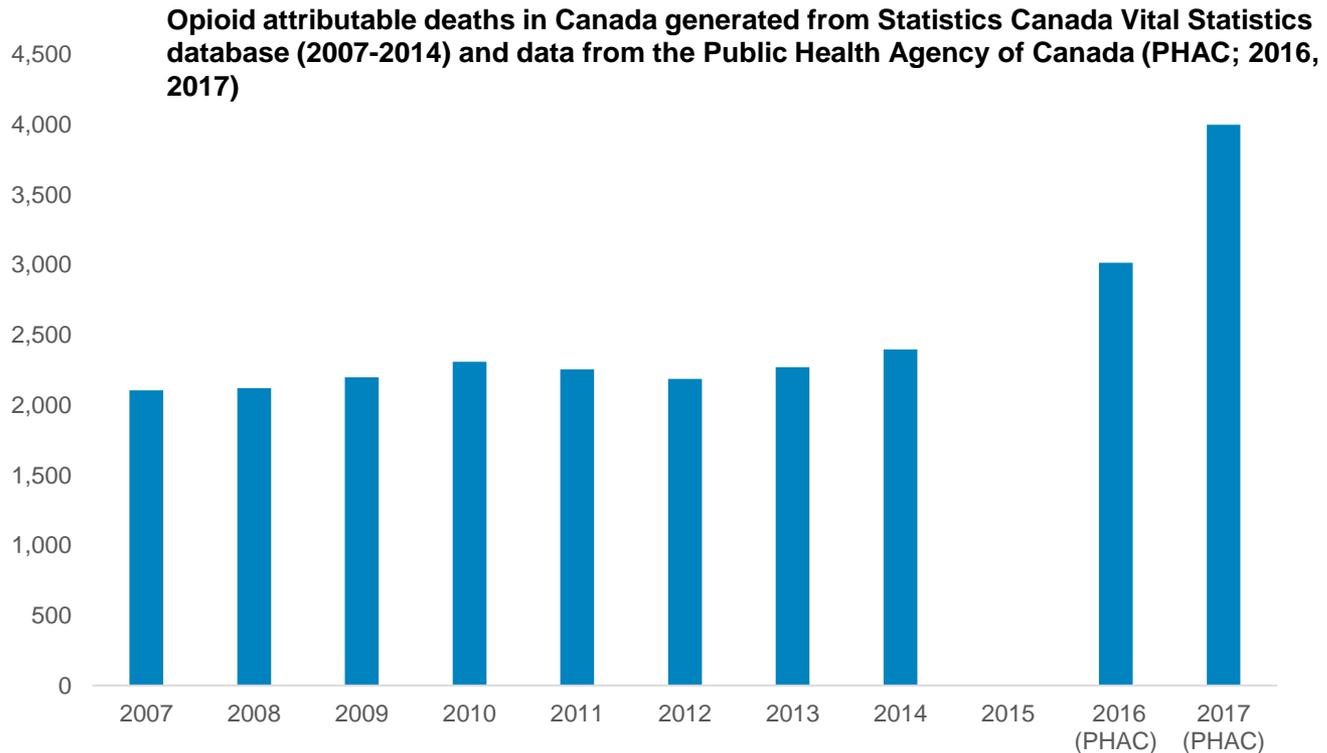
Note: Costs do not include costs associated with inpatient hospitalization, day surgery and emergency department costs in the province of Quebec. Therefore, costs are likely 1% to 2% higher than what is reported here.

# Opioid costs mainly due to early death

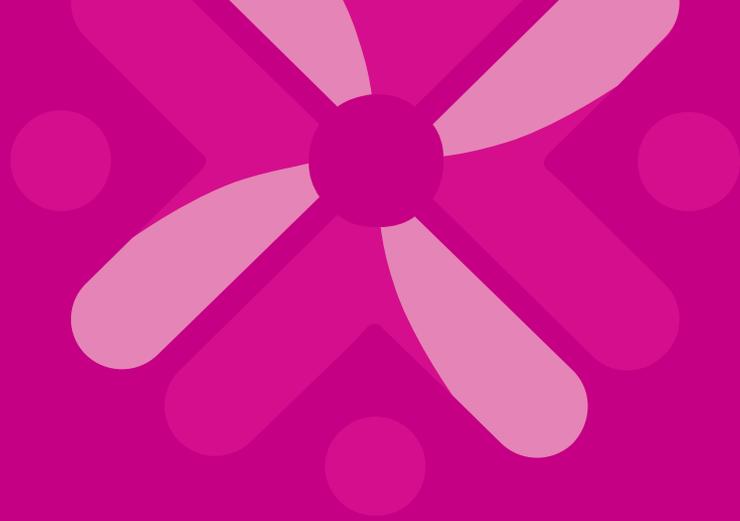


OPIOIDS

- In 2014 opioids,
  - Contributed \$3.5 billion or 9.1% of all costs
  - 52.5% was due to lost productivity



Note. Includes 100% attributable conditions such as accidental poisoning by opioids and intentional self-poisoning by opioids and partially attributable conditions such as some infectious disease due to IV drug use



# Online Data Visualization Tool



# Online tool demo



# Brainstorming questions

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- In a group, take 5-10 minutes to brainstorm some potential questions that might be answered using the tool.

# Individual time to explore the tool

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- Potential guiding questions
  - What do we know about alcohol costs by sex?
  - How do costs by substance vary in your province or territory?
  - What is the most common health condition behind substance use-attributable hospitalizations? How does this vary by age group and sex?

# Discussion and feedback

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- Can this tool be used in your work?
- What can we do to make the tool more user friendly and valuable?
- Other feedback

# Be a champion!

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- Submit your examples of using the tool to [csuch.ca](http://csuch.ca) and be part of a growing community of recognized data experts

# CCSA's Issues of Substance 2019



*Evidence and Perspectives, Compassion and Action.*

- CCSA's Issues of Substance is Canada's premier conference for the substance use and addiction field
- Registration opens March 2019
- #CCSAConference

# Questions and Comments

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# Contact Information

## Canadian Centre on Substance Use and Addiction

75 Albert Street, Suite 500  
Ottawa, ON K1P 5E7  
Canada

**Matthew Young, PhD**



Canadian Centre  
on **Substance Use**  
and **Addiction**

Senior Research and Policy Analyst

[myoung@ccsa.ca](mailto:myoung@ccsa.ca)

613-235-4048 ext.222

**Jill Fairbank, MSc**



Canadian Centre  
on **Substance Use**  
and **Addiction**

Knowledge Broker

[jfairbank@ccsa.ca](mailto:jfairbank@ccsa.ca)

613-235-4048 ext.264

**Bridget Hall, MPH**



Canadian Centre  
on **Substance Use**  
and **Addiction**

Research & Policy Analyst

[bhall@ccsa.ca](mailto:bhall@ccsa.ca)

613-235-4048 243