Collisions Attributable to Cannabis: Estimating the Harms and Costs in the Canadian Provinces

After alcohol, cannabis is the most widely used psychoactive substance in Canada and cannabinoids are among the most common psychoactive substances found in dead and injured drivers in Canada (Beasley & Beirness, 2011; Brubacher et al., 2016). In 2012, approximately 10% of Canadians aged 15 and older used cannabis and just under half of those reported driving within two hours of using it (Health Canada, 2012). However, there remains a lot that we don't know about the extent and costs associated with driving under the influence of cannabis (DUIC). As Canada is poised to introduce legislation to regulate cannabis, conversations on the harms related to cannabis and driving are becoming increasingly relevant.

Psychoactive Substances

Psychoactive substances are substances that change brain function and result in changes in how people who take them think and feel.

Purpose

This study, "Estimating the Harms and Costs of Cannabis-Attributable Collisions in the Canadian Provinces," is one of the first in Canada to address knowledge gaps about the costs associated with DUIC. Led by CCSA, the study was produced by Ashley Wettlaufer, Roxana O. Florica, Mark Asbridge, Douglas Beirness, Jeffrey Brubacher, Russell Callaghan, Benedikt Fischer, Gerrit Gmel, Sameer Imtiaz, Robert E. Mann, Anna McKiernan and Jürgen Rehm. It estimates:

- The number of people in each province who were killed or injured in a motor vehicle collision (MVC) in which a driver was DUIC, or involved in a property-damage-only (PDO) crash in which one of the drivers was DUIC; and
- The total economic and social costs associated with collisions in which cannabis use was involved.

The study results will help to inform policies and practices aimed at reducing harms related to DUIC.

Description of the Study

To achieve these goals, data were collected from national self-report surveys and roadside surveys. The data were used to estimate the prevalence of DUIC by age and province.

The number of people involved in fatal, injury-only or PDO collisions due to cannabis use was estimated using this prevalence data in combination with information on the risk of a MVC as the result of DUIC. Overall costs were determined by applying cost values developed using Ontario data to the number of collisions estimated to have been the result of DUIC.

Roadside Surveys

To determine the prevalence of driving under the influence of drugs, researchers collect voluntary breath and oral fluid samples from a random sample of drivers. They test the samples for the presence of cannabis and other drugs. .

Key Findings

Collisions resulting in fatalities, injuries and property damage were especially high among those aged 16–34:

- 16–34 year olds represented only 32% of the Canadian population, but 61% of the cannabis-attributable fatalities;
- 16–34 year olds also disproportionately represented 59% of the cannabis-attributable injuries and 68% of the people involved in cannabis-attributable PDO collisions;
- Those 34 years old and younger accounted for approximately $658 million (60%) of the total costs attributable to MVCs related to DUIC.

The highest costs were associated with fatalities, accounting for more than 58% of the costs. While less than the costs related to fatalities, injury costs and costs related to PDO collisions were also significant.

Table 1: Estimates of the number of victims and associated costs of cannabis related collisions for 2012

	Deaths, injuries and PDO victims (n=)	Cost per incident ($)
Death	75	8,532,200
Injury	4,407	84,600
PDO	7,794	10,700
Estimated cumulative cost: $1.09 billion*		

*Due to rounding this number will not reflect the same number as adding up all the incidents and associated costs.

Limitations

Costs and harms are likely higher than estimated for the following reasons:

- Minor cannabis-related collisions (those resulting in injury not requiring medical attention or in property damage under $1,000) were not included in the analysis.
- Only collisions reported to police or requiring admission to hospital were included.
- Findings did not account for the dose-dependent effects of cannabis and therefore did not account for the possibly increased risk of MVC when higher concentrations of cannabis are present in the body.

Data Limitations

- The data used were from a single year (2012), so they do not reflect trends in cannabis use, DUIC or relevant policy and enforcement practices over time.
- There is limited data on the provincial prevalence of cannabis use and DUIC, and costs and estimates of DUIC were based on the data that was available.

Implications

Cannabis impairs the skills needed to safely operate a motor vehicle (Beirness & Porath-Waller, 2015) and has clear impacts on collision risk. However, many people who use cannabis believe it is safe to drive under its influence. As the Canadian government moves to regulating cannabis, it should consider the harms and cost of cannabis-related collisions

Policy

- This study can serve as a benchmark estimate of the harms and costs associated with DUIC across the provinces prior to the legalization of cannabis in Canada.
- *Per se* laws specify that it is an offence to operate a vehicle with a concentration of drugs in the body in excess of a specified threshold value. Canada could consider a *per se* law for cannabis use as legislation is developed to legalize it for non-medical purposes.

Research

- This study fills the gap for baseline data on the social and economic cost of DUIC; however, jurisdictional roadside data would help refine these estimates.
- To conduct future research, cost-estimate data at the jurisdictional level should be more widely available.

Prevention

- Findings from this study show the highest rates of MVC due to DUIC are among those aged 16–34, which underlines the need for prevention campaigns targeting this age group.
- Prevention efforts should highlight the effects that cannabis has on the body and the brain, and the risk of driving after using.

To Learn More

Access the full report, published in the peer-reviewed journal, *Drug and Alcohol Dependence*. Find related reports on the Drug-Impaired Driving page of the Canadian Centre on Substance Use and Addiction website, including the following reports:

- Oral Fluid Drug Screening (Policy Brief)
- Drug Per Se Laws (Policy Brief)
- Drug-Impaired Driving Toolkit

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Canadian Centre on Substance Use and Addiction

CCSA was created by Parliament to provide national leadership to address substance use in Canada. A trusted counsel, we provide national guidance to decision makers by harnessing the power of research, curating knowledge and bringing together diverse perspectives.

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