# Cannabis and Road Safety in Canada: Evidence on the Prevalence of Cannabis Use and Driving

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### Background

The Road Safety Monitor, a national telephone survey conducted each year involving Canadian drivers indicates that drug impaired driving is seen as second only to alcohol impaired driving as a serious issue and that illicit drugs are seen as a more serious problem than prescription or over the counter drugs<sup>1</sup>. Overall, 17.7%, or 3.7 million Canadian drivers report driving within two hours of using illicit, prescription or over the counter drugs.

Collisions remain a major cause of death and injury in Canada, and concerns about the role of cannabis in road safety in this country date back many years. Much less is known about the impact of cannabis on road safety than the impact of alcohol, in part because of the much greater difficulty involved in measuring the presence and amount of cannabinoids compared to alcohol. However, there is renewed interest in this issue stimulated in part by proposed legislative changes on the part of the Government of Canada to reduce substantially the penalties for possession of small amounts of cannabis.

#### **Objectives**

The purpose of this paper is to provide an overview of available research and evidence on the potential impact of cannabis on road safety in Canada focusing on two areas: 1) research on the prevalence of cannabis use in Canada; and 2) research on the prevalence of driving after cannabis use in Canada.

#### Prevalence of Cannabis Use in Canada

Little information is available on the prevalence of cannabis use in Canada prior to the 1960s<sup>2</sup>. However, in that decade, cannabis use increased substantially. While a variety of possible sources of information on cannabis in the Canadian population have been used over the years, including such measures as amounts of the drug seized by police and the number of individuals prosecuted by the courts for cannabis offences, the most direct and the most accurate measures of the prevalence of cannabis use are those derived from surveys. Although cannabis is an illegal drug and there are concerns that survey responses may be influenced by its legal status, research demonstrates that respondents to anonymous surveys, where there are no adverse consequences involved, generally provide valid responses<sup>3</sup>.

Smart and Fejer<sup>2</sup> presented one of the very first estimates of the prevalence of cannabis use in a Canadian population, based on a survey of a representative sample of residents of Toronto conducted in 1971. They found that 12.2% of males and 5.5% of females had used cannabis at least once in the preceding year. The prevalence of use differed

substantially by age group and gender. Among males, 41.5% of those aged 18-25, 20.8% of those aged 26-30, and 1.8% of those aged 31 and over had used cannabis in the preceding year. Among females, 20.0% of those aged 18-25, 6.3% of those aged 26-30, and 1.8% of those aged 31 and over had used cannabis in the previous year. These data clearly demonstrate that, by the end of the 1960's, cannabis use had become very common among young people.

Ogborne and Smart<sup>4</sup> reported on cannabis use in the general population of Canada aged 15 and over based on the National Alcohol and Other Drugs Survey conducted in 1994. This survey was the largest representative survey with information on cannabis use ever made in Canada, with a sample size of 12,155. Use of cannabis at that time was relatively uncommon, but not rare. Only 7.3% of respondents reported using cannabis in the preceding year, and 2.0% reported using it as often as once per week. However, nearly a third (29%) reported that they had used cannabis at least once in their lives. Substantial regional differences were observed, as noted in Table 1, with the proportion reporting use at least once in the past year ranging from a low of 4.9% in Ontario to a high of 11.4% in British Columbia.

	Maritimes	Quebec	Ontario	Prairies	British Columbia
Percent reporting use in the past year	5.9%	8.5%	4.9%	8.1%	11.4%

Table 1: Use of cannabis in the past year, regions of Canada, 1994

Data derived from Ogborne and Smart<sup>4</sup>.

While these data provide a valuable perspective on the use of cannabis across Canada, unfortunately there is little information on other important issues, such as change in rates of use over time. However, in Ontario a series of surveys has been conducted over the past 20 years that allow a picture of current use and changes in use over time in that part of the country.

# The Use of Cannabis in Ontario

Repeated cross-sectional surveys conducted in Ontario by the Centre for Addiction and Mental Health provide the most comprehensive picture of the use of cannabis and other drugs use in Canada. These surveys have been conducted among the student population and adult population since the late 1970s<sup>5,6</sup>.

Table 2 presents a summary of recent data on the use of cannabis and other drugs (any use in the past year) among students in grades 7 and  $12^6$ , and among adults aged 18-29 (young adults), 40-49 (the middle-aged) and 65 and over (seniors)<sup>5</sup>. Cannabis is the most widely used illicit substance, with nearly half of grade 12 students reporting cannabis use at least once in the past year. It is worth noting that by grade 12 most students will have reached the age when they will be eligible to drive. Use of cannabis drops with increasing age, however, and is used by less than 2% of seniors. Use of other illicit drugs is much less common than the use of cannabis, with highest levels occurring for Hallucinogens and Ecstasy among grade 12 students. Not surprisingly, alcohol is the most commonly used substance.

Table 2: Percent of respondents reporting substance use within the past 12 months among students and adults in Ontario by selected grade or age group, 2000/2001

	Alcohol	Cannabis	Cocaine	Hallucinogen	Ecstasy	Heroin	Any illicit drug
Students							
Gr. 7	36.1	5.1	2.4	0.9	0.9	0.9	10.6
Gr. 12	80.0	43.5	3.5	20.5	9.2	S	43.5
Adults							
18-29	85.7	28.2	4.4	Na	7.3	Na	Na
40-49	79.2	6.4	S	Na	Na	Na	Na
65+	61.9	1.5 <sup>a</sup>	S	Na	Na	Na	Na

S - Estimate under 1% or unreliable Na - Not available

Sources - Students: Adlaf and Paglia<sup>6</sup>; Adults: Adlaf and Ialomiteanu<sup>5</sup> <sup>a</sup> age group is 50+ for cannabis data

Trends in Cannabis Use Over Time

Table 3 presents information on the proportion of students in Grades 7, 9, 11 and 13 who report using cannabis and alcohol between 1977 and 2001<sup>6</sup>. While cannabis is used by a smaller proportion of students than alcohol; it is still used by a substantial minority of students. There have been important changes in the use of cannabis over time. The general trend appears to have been one of reduced use of cannabis and alcohol from the late 1970's to the early 1990's. The proportion reporting use of cannabis declined from a peak of 31.7% in 1979 to 11.7% in 1991. However, since the mid-1990's self-reported use of both substances has increased, with 28.6% reporting cannabis use in 2001.

Table 3: Trends over time in cannabis and alcohol use among Ontario students in Grades 7, 9, 11, 13

	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Alcohol	76.3	76.9	75.3	71.7	69.8	68.1	66.2	58.7	56.5	58.5	59.6	65.7	62.6
Cannabis	25.0	31.7	29.9	23.7	21.2	15.9	14.1	11.7	12.7	22.7	24.9	29.2	28.6

Source – Adlaf and Paglia<sup>6</sup>

Table 4 presents data since 1977 on the proportion of the adult population (age 18 and above) who report using cannabis, drinking alcohol, or using cocaine at least once in the preceding 12 months<sup>5</sup>. Cannabis use has continued among a much smaller proportion of the adult population than among students. Alcohol is used by the large majority of the adult population, while the use of cocaine is reported by only a very small percentage. The trends among adults are not as clear as those among the student population. For example, the proportion reporting use of alcohol has been relatively consistent, with perhaps a slight increase to the early 1990s followed by a slight decrease. Among users of cannabis and cocaine, enduring trends over time cannot be ascertained.

Table 4: Trends over time in alcohol, cannabis and cocaine use among Ontario adults

	1977	1982	1984	1987	1989	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cannabis	8.1	8.2	11.2	9.5	10.5	8.7	6.2	Na	9.0	Na	8.7	9.1	8.6	10.4	10.8
Alcohol	79.9	77.7	84.5	83.1	82.6	80.3	86.6	83.3	82.1	84.4	79.3	79.9	77.1	79.1	77.2
Cocaine	Na	Na	1.7	1.8	2.1	1.6	Na	Na	S	Na	S	Na	S	Na	1.2

S - Estimate under 1% or unreliable Na - Not available Source – Adlaf and Ialomiteanu<sup>5</sup>

## Prevalence of Cannabis Use and Driving in Canada: Estimates from Survey Data

Survey data on the prevalence of driving under the influence of cannabis are available. In the first reported data from the general population in Canada, Jonah<sup>7</sup> reported on the prevalence of driving after use of cannabis at least once in the preceding 12 months. The survey included 9943 persons aged 16-69, obtained through random digit dialing. Jonah found that the prevalence of DUIC varied with age, as summarized in Table 5. While the prevalence of DUIC was relatively low, it was higher in younger age groups. Jonah<sup>7</sup> also observed that DUIC was significantly associated with a variety of other risk behaviours, such as driving after drinking, use of illicit drugs other than cannabis, and collision involvement.

 Table 5: Prevalence of DUIC by Age in Canada, 1988

	Age Groups							
	16-19	20-24	25-34	35-44	45-64	65+		
% reporting DUIC in the previous 12 months	4.3	5.8	3.0	0.6	0.0	0.3		

Data derived from Jonah<sup>7</sup>.

Walsh and Mann<sup>8</sup> reported information on the incidence of DUIC in a representative sample of the Ontario adult population surveyed in 1996/97. Among all drivers, 1.9% reported DUIC in the previous 12 months. Several factors influenced the likelihood of reported DUIC, including gender, age, marital status and education level. DUIC was most frequently seen in younger age groups, with 9.3% of the youngest age group (18-19) reporting the behaviour. DUIC was more common among men (3.0%) than women (0.8%), more common among those never married (4.7%) than among those married (0.9%) or previously married (2.1%). It was also least common among those with a university degree. Among cannabis users, DUIC appeared to be a relatively common behaviour; 22.8% reported DUIC, and the probability of the behaviour was significantly influenced by gender and education level. Table 6 presents the proportion of users who report DUIC by age group. As well, DUIC and drinking-driving were strongly related in this sample.

Table 6: Prevalence of DUIC by Age among Cannabis Users in Ontario, 1996-97

Age Groups								
	18-19	20-24	25-34	35-44	45-64			
% reporting DUIC in the previous 12 months	40.8	21.5	17.2	21.7	31.8			

Data derived from Walsh and Mann<sup>8</sup>.

The observation that DUIC was more common among younger respondents was recently extended by Adlaf, Mann and Paglia<sup>9</sup>. These investigators assessed DUIC among respondents to the 2001 administration of the Ontario Drug Use Survey (OSDUS). Among students with a drivers licence in grades 10-13, 19.3% reported driving within one hour of using cannabis at least once in the preceding year; this proportion was higher than the proportion that reported driving within an hour of two or more drinks (15.0%). Males were significantly more likely than females to report DUIC (23.8% versus 13.5%). DUIC was more frequently reported than driving after drinking (see Table 7).

Table 7: Prevalence of riding with a drinking driver, drinking driving, and DUIC by Gender among Ontario students, 2001

% of students reporting in the past 12 months	Drove with a drinking driver	Drove after 2 or more drinks	Drove after using cannabis
Males	32.6	20.0	24.5
Females	31.2	8.9	13.7
	0		

Data from Adlaf, Mann and Paglia<sup>9</sup>.

Beirness, Simpson and Desmond<sup>10</sup> reported on DUIC in a survey of Canadian drivers. Among respondents, 5.1% reported using marijuana, and 1.5% reported DUIC at least once in the preceding 12 months. These authors also noted that males and respondents under 30 were most likely to report DUIC, and also that there was a strong relationship between DUIC and driving after drinking.

Recently, the first report on trends over time in cannabis use and driving in Canada appeared<sup>10</sup>. Adlaf, Paglia and Mann<sup>10</sup> compared the proportions of Ontario adults reporting DUIC in a representative sample of the Ontario population surveyed in 2002 with those reported by Walsh and Mann<sup>8</sup>. A trend for an increase over time was observed, with the proportion of adult drivers reporting DUIC increasing from 1.9% in 1996/97 to 2.7% in 2002. The authors note, however, that this increase is not statistically significant and recommend further monitoring of this trend.

## Conclusions

The data presented here indicate that cannabis use is relatively common in Canada, particularly among young people. The prevalence of use appears to have increased substantially in the 1960s and '70s, while since then some fluctuations have occurred. Driving after cannabis use is less common, but among cannabis users it does appear to occur with some frequency. In particular, young cannabis users appear more likely to report DUIC. Among high school students, DUIC appears to occur as frequently, or more frequently, than driving after drinking. These data provide grounds for concern about this behaviour, particularly among younger drivers. Further research on the prevalence of DUIC in Canada, including differences between provinces, is needed.

# References

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