

Prevalence of cannabis-impaired driving and crash risk

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Overview

1. What is the prevalence of driving under the influence of cannabis?
2. Does cannabis use increase crash risk?



What is the prevalence of driving under the influence of Drugs?



► Do you believe that marijuana use prior to driving impacts your ability to drive safely?

The online survey, conducted in March, 2016, polled 3,000 respondents across Canada.



Of those Canadians who have driven under the influence of marijuana, **44% don't think it impacts their ability to drive safely** and 14% don't know.

44%

No

42%

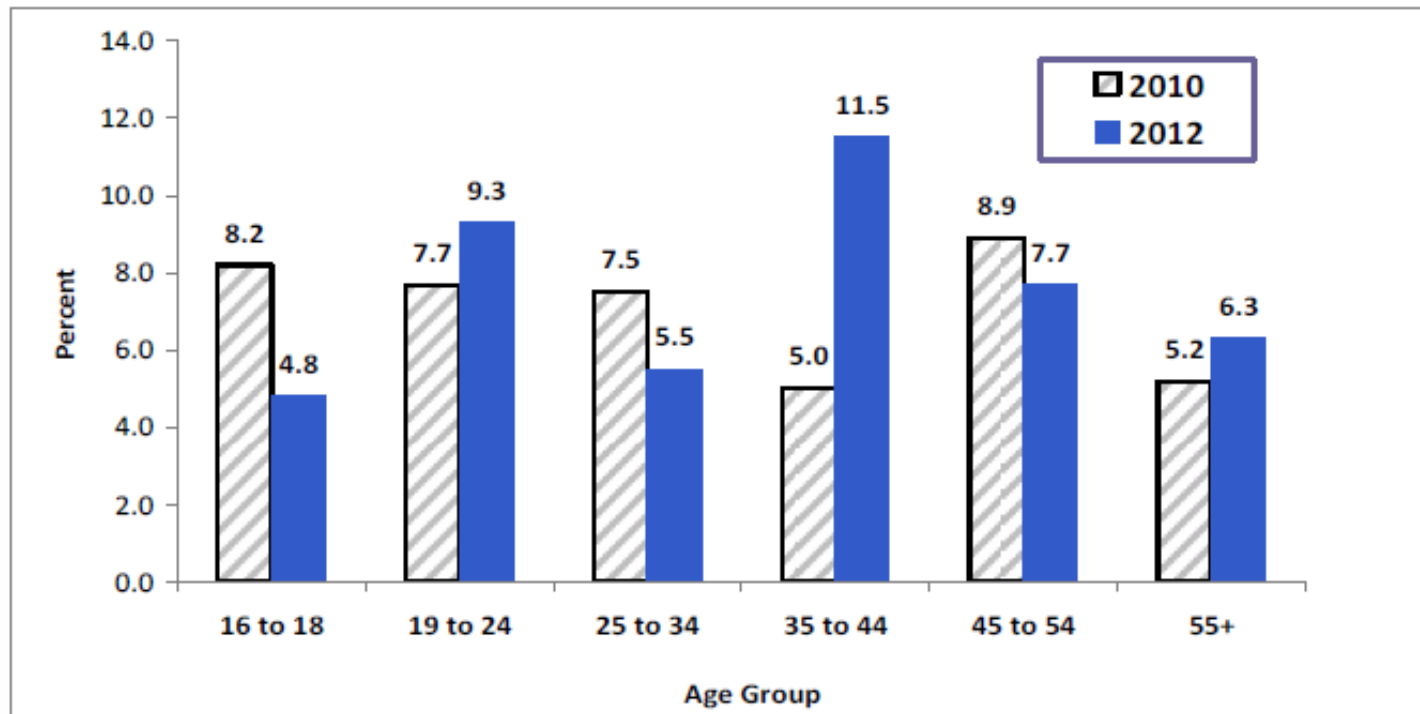
Yes

14%

Don't Know

British Columbia: Roadside Surveys

Figure 28: Percentage of Drug Positive Drivers According to Age in 2010 and 2012

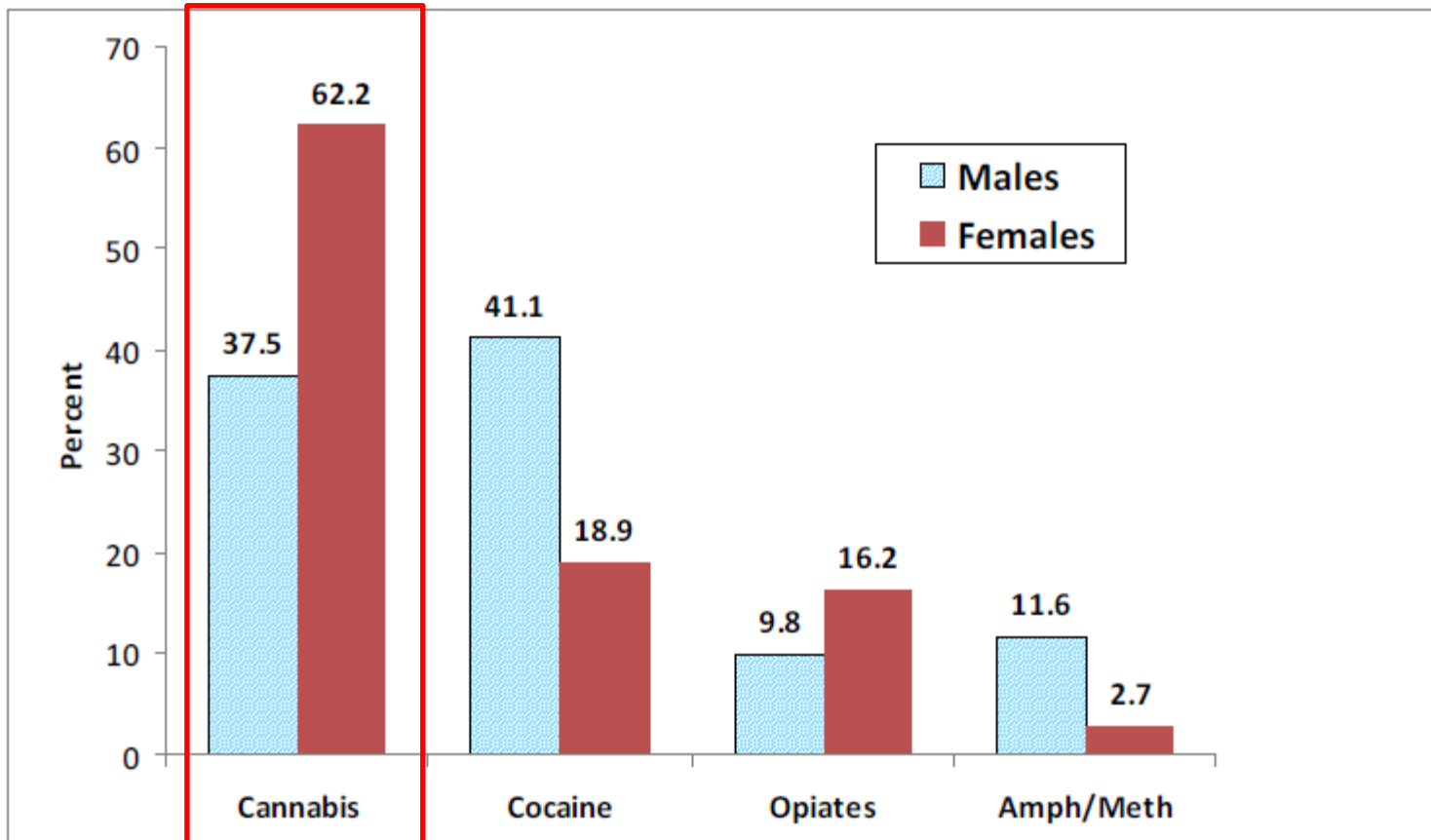


Source: Beasley & Beirness, 2012



British Columbia: 2012 Roadside Survey

Figure 25: Distribution of Drug Types Detected Among Drivers According to Sex

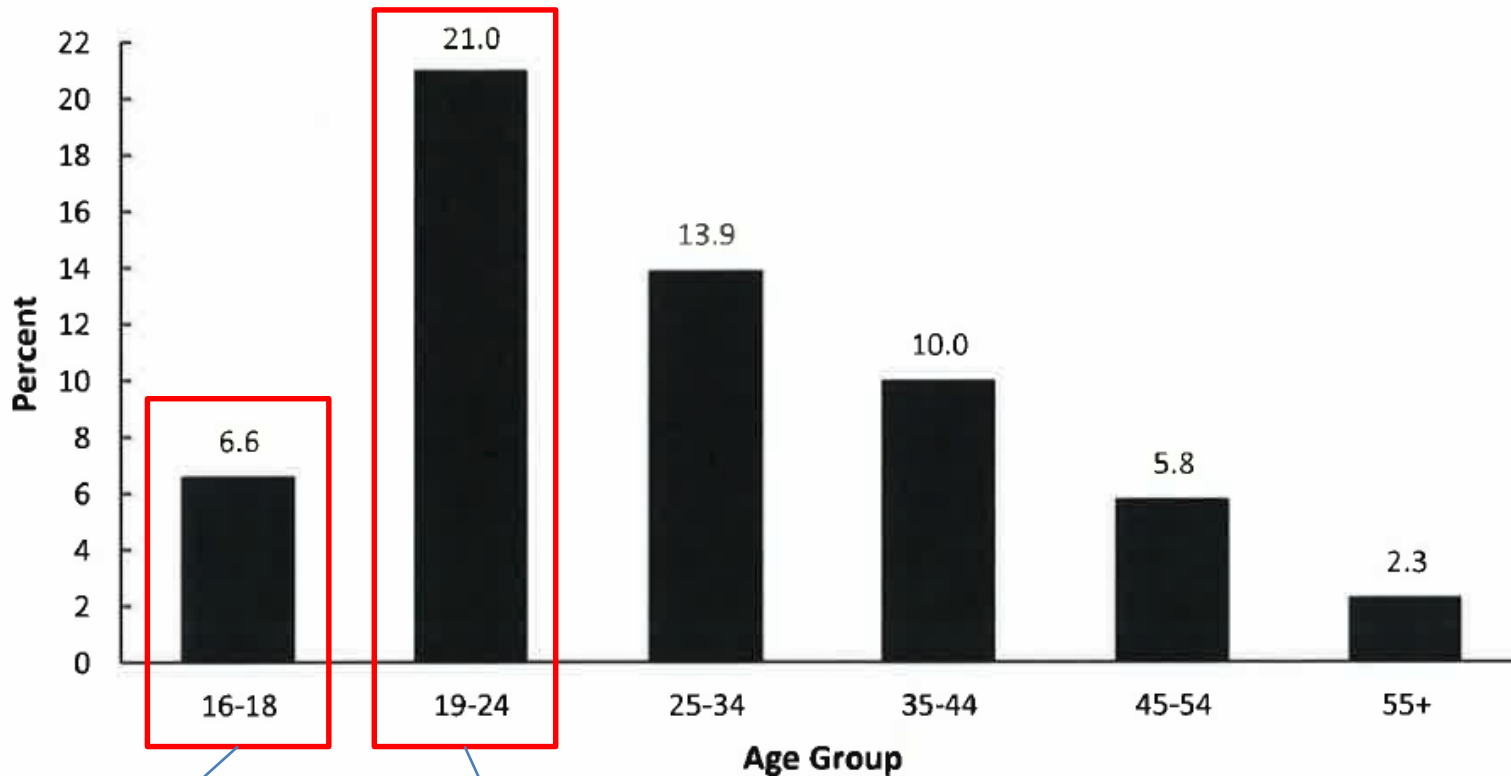


Source: Beasley & Beirness, 2012



Ontario: 2014 Roadside Survey

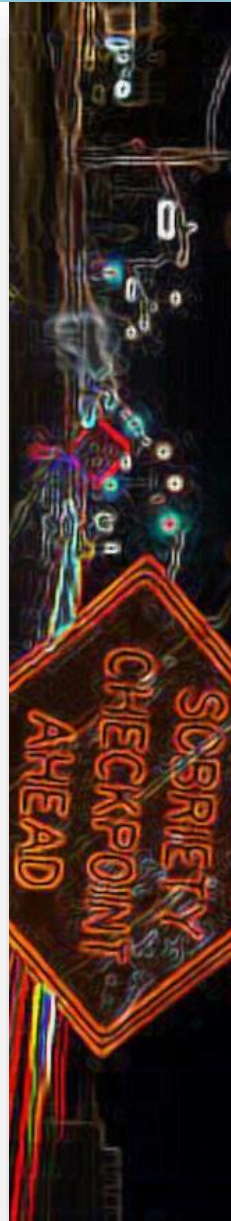
Figure 11: Percentage of Drug-Positive Drivers According to Age



100% for cannabis

93% for cannabis

Source: Beirness, Beasley & McClafferty 2015



Canadian Roadside Survey Results

Ages 16-18		British Columbia		Ontario
	2010	2012	2014	
Drug +	8.2%	4.8%	6.6%	
Alcohol +	3.4%	0%	0%	
Ages 19-24		British Columbia		Ontario
	2010	2012	2014	
Drug +	7.7%	9.3%	21%	
Alcohol +	9.2%	4.9%	3.4%	

Driving and Cannabis Use

- **Self-Report** – 2.4% of all drivers have DUIC in past year (Jonah, 2013)
- Young drivers and DUIC
 - 8.3% of 18-19 year olds
 - 6.4% of 15-17 year olds (Health Canada, 2012)
- 15.8% of those 15-24 years have been a passenger with someone DUIC
 - 33.2%-48.8% of grade 12 students



Youth Surveys

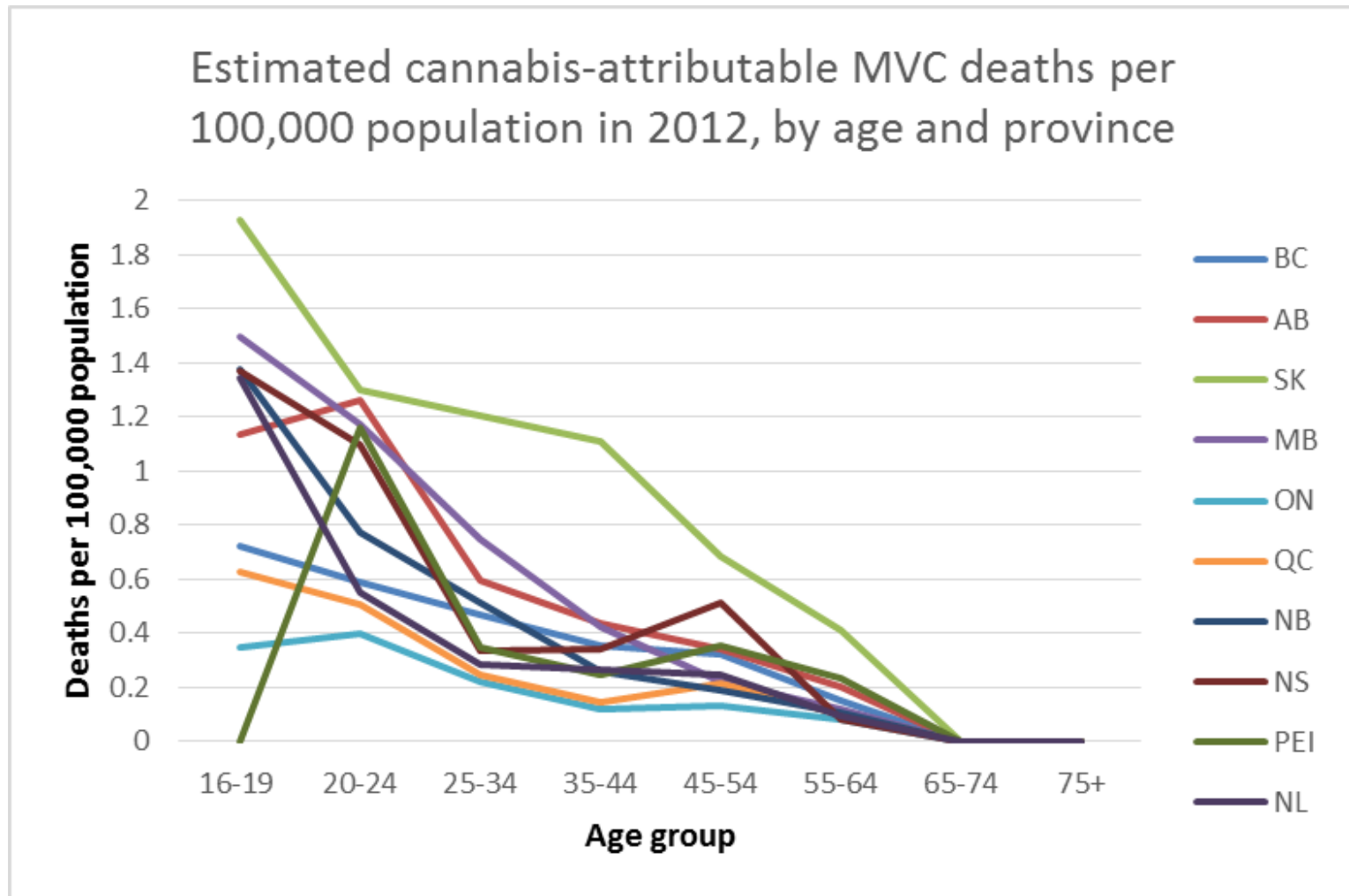
- Rates of driving under the influence of cannabis have surpassed rates of driving under the influence of alcohol among young drivers:
 - In Ontario students (2015):
 - DUIA 5.1%; DUIC 10%
 - In Atlantic Canada (2012):
 - DUIA 4.5%; DUIC 8%
 - In the United States (2013)
 - DUIA 8.7%; DUIC 12.4%



Estimated prevalence of driving under the influence of cannabis use by age and province (Health Canada, 2012)

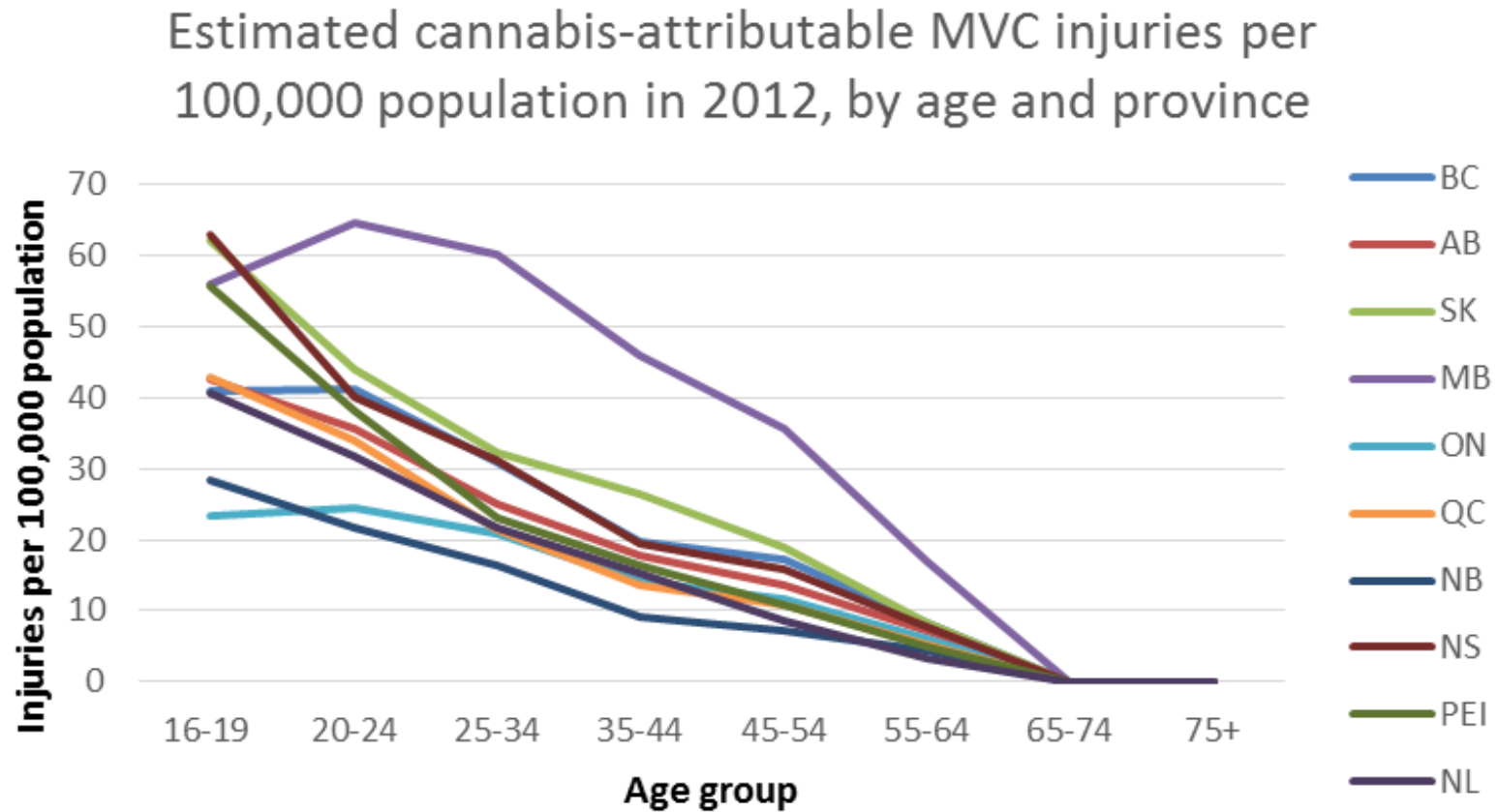
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Estimated cannabis-attributable MVC deaths per 100,000 population in 2012, by age and province



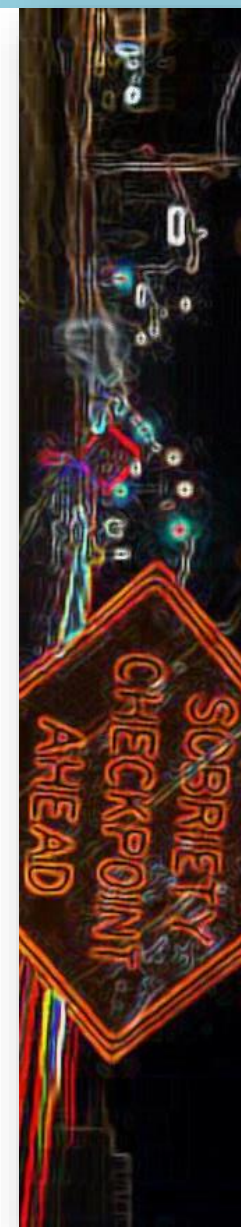
Estimated cannabis-attributable MVC injuries per 100,000 population in 2012, by age and province

Province	16-19	20-24	25-34	35-44	45-54	55-64	65-74	75+
BC	42	41	22	18	18	10	0	0
AB	43	35	25	18	15	10	0	0
SK	56	44	32	27	19	10	0	0
MB	56	65	60	46	36	18	0	0
ON	24	25	21	18	12	8	0	0
QC	43	34	22	14	12	8	0	0
NB	28	22	17	9	7	4	0	0
NS	63	40	30	20	15	10	0	0
PEI	56	40	22	18	12	8	0	0
NL	41	30	22	15	10	4	0	0



MVC's in Nova Scotia

- From 2010 to 2014:
 - *300 MVC related fatalities (drivers and passengers)*
 - *284 were tested*
 - *Alcohol was present in 85 (28%)*
 - *Cannabis was present in 70 fatalities (23%)*
 - *Other drugs 33 (11%)*
 - Alone or in conjunction with one another.

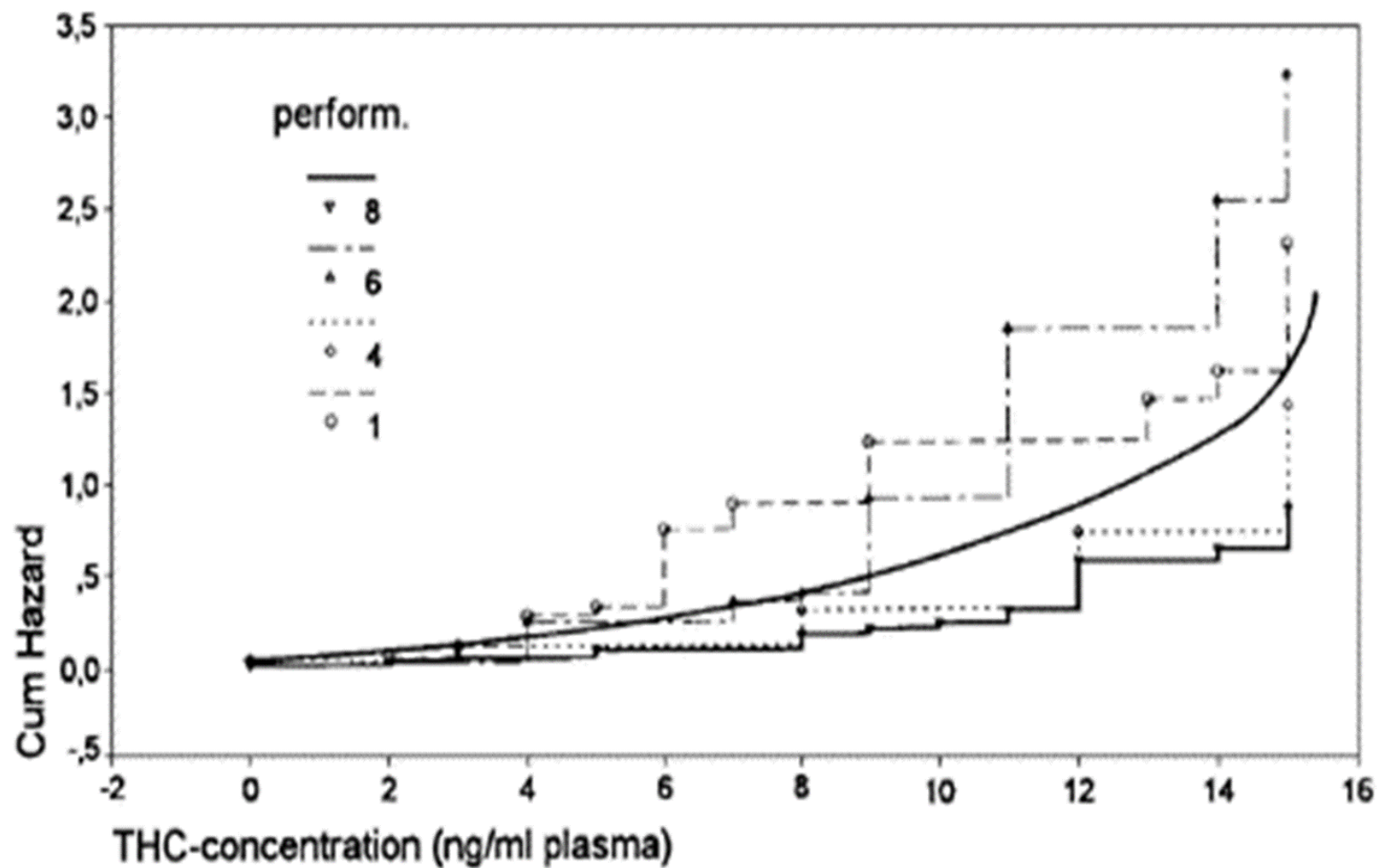


2. Does Cannabis Consumption Impact Crash Risk?



Experimental or Laboratory Studies





1=tracking 4=visual f. 6=attention 8=en-,decoding

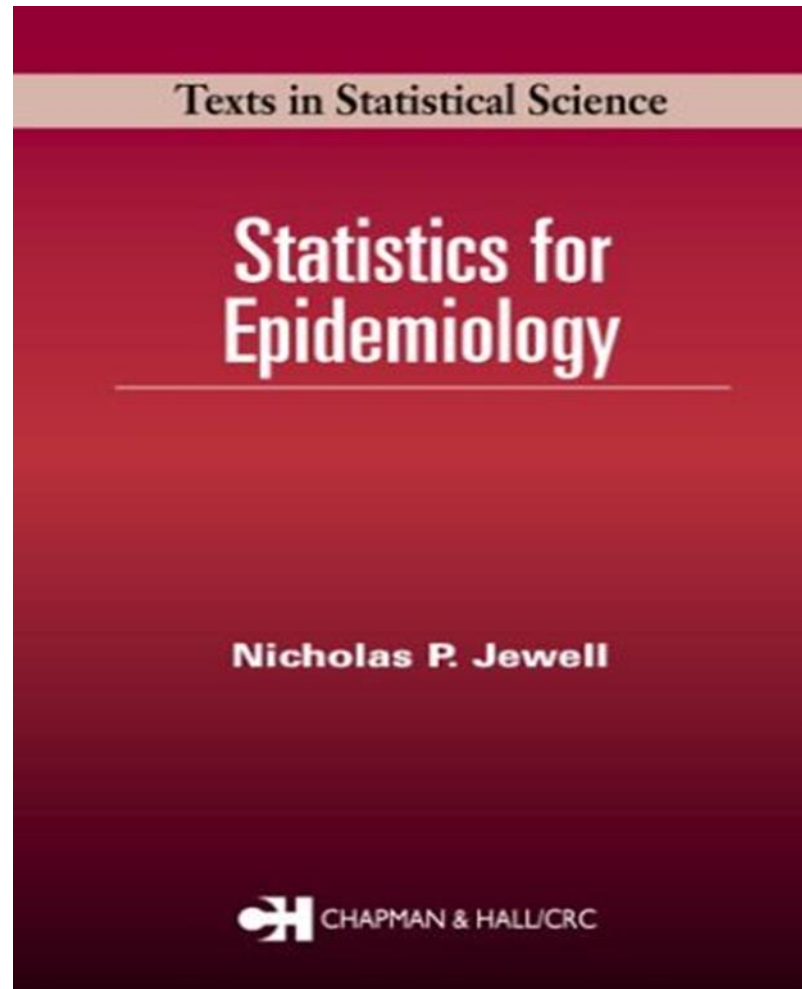


Limitations of Laboratory Studies

1. Low external validity and poor translation to real-world driving
2. Do not allow us to calculate burden of disease or allow evaluation of policy



Epidemiologic Studies



Epidemiologic Reviews

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Vol. 34, 2012

DOI: 10.1093/epirev/mxr017

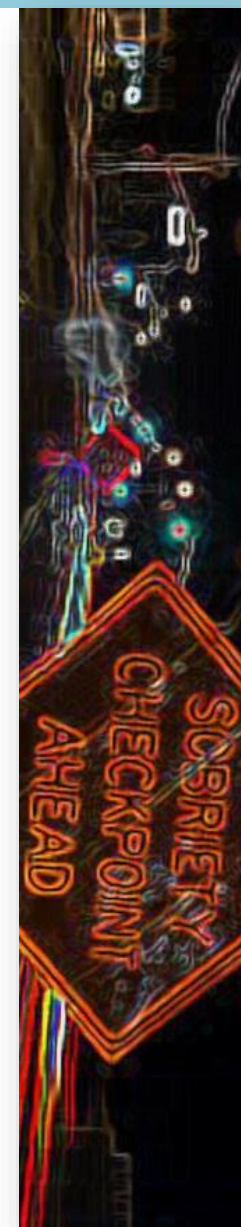
Advance Access publication:

October 4, 2011

Marijuana Use and Motor Vehicle Crashes


Mu-Chen Li, Joanne E. Brady, Charles J. DiMaggio, Arielle R. Lusardi, Keane Y. Tzong, and
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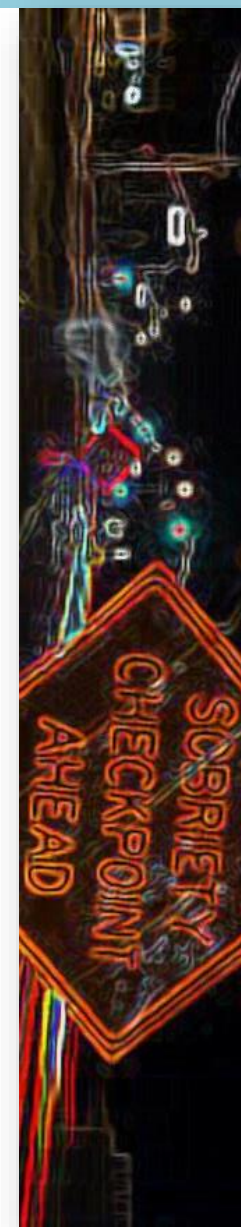
RESEARCH

Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis

 OPEN ACCESS

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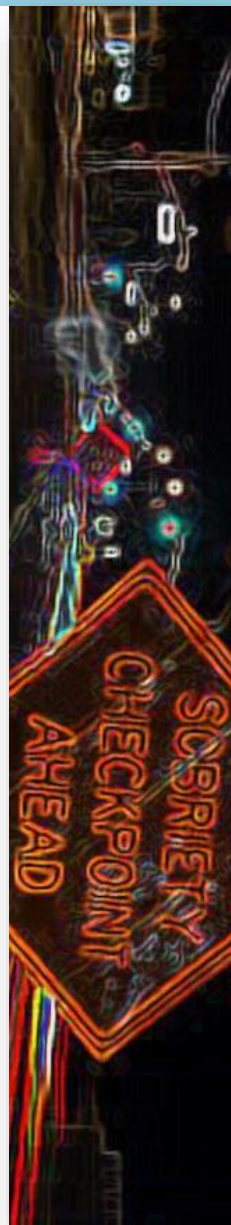


Risk of road accident associated with the use of drugs: A systematic review and meta-analysis of evidence from epidemiological studies

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Road Traffic Injury Risk: Illicit Drugs

Cannabis

- 72 estimates based on 46 studies
- **most widely studied illicit drug** among those included in the report

	Unadjusted	Adjusted for pub bias
Fatal injury:	1.37 (1.24; 1.52)	1.37 (1.24; 1.51)
Serious injury:	1.96 (1.27; 3.02)	1.84 (1.19; 2.85)
Other injury:*	1.41 (0.97; 2.05)	1.12 (0.78; 1.62)
Property-damage-only:	1.43 (1.26; 1.63)	1.11 (0.93; 1.32)

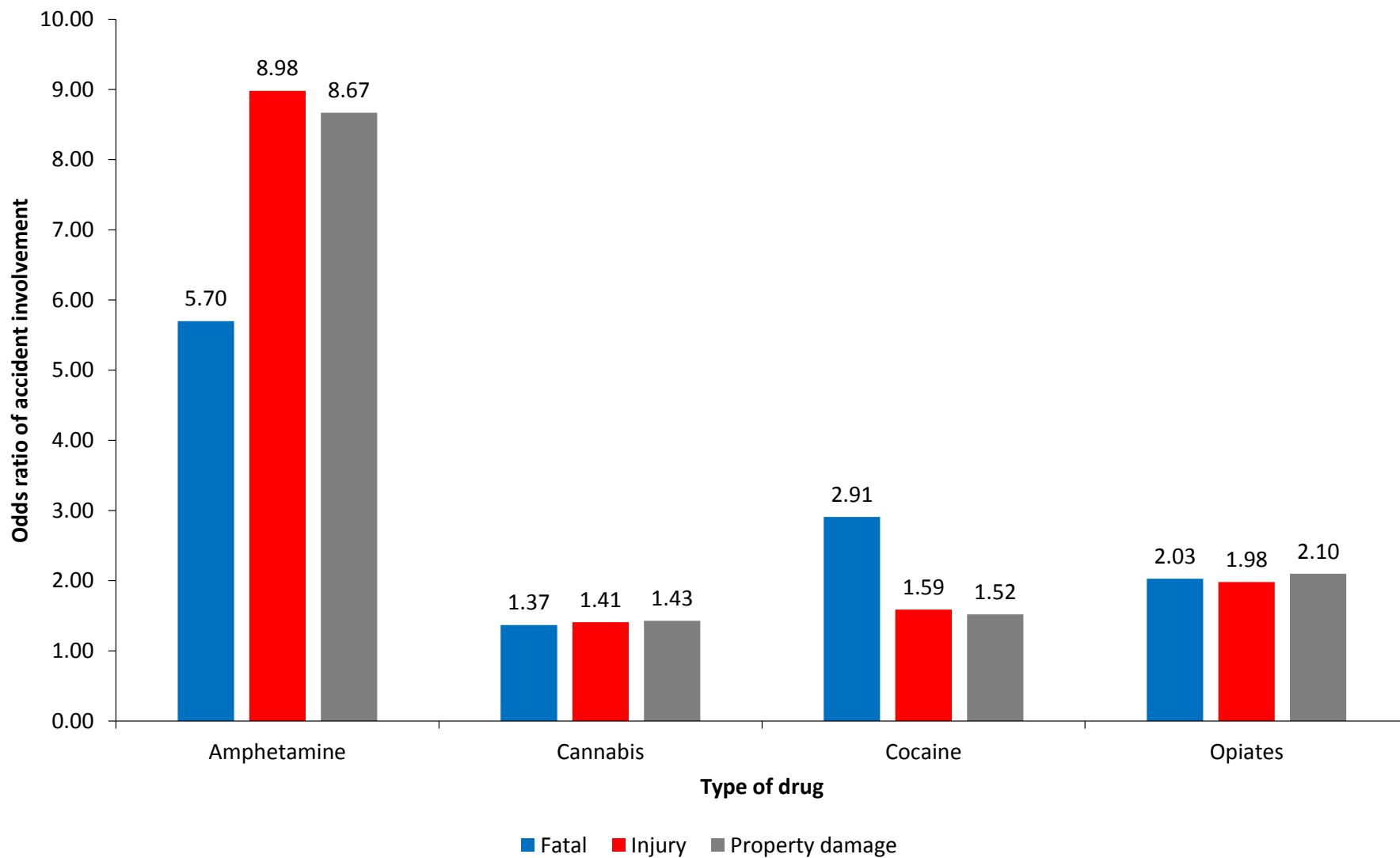
*severity not specified

(95% CI)

- Large variation in population attributable risk of non-fatal injury associated with the use of cannabis (negative to 0.260, mean=0.0372).
- Studies reporting highest risk for cannabis use typically had the fewest number of drivers recruited to the study

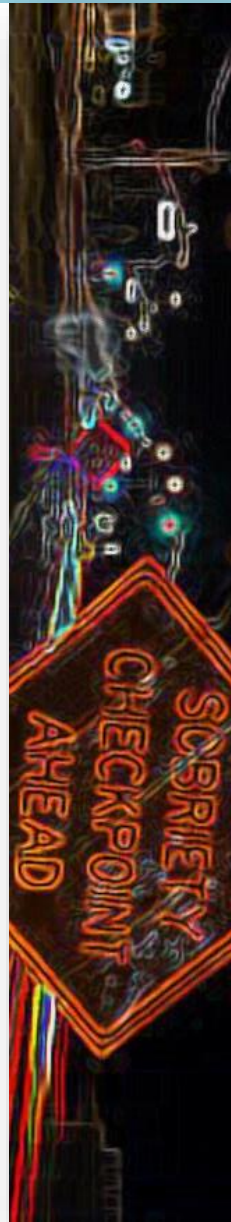


Risks associated with illicit drugs according to accident severity



Road Traffic Injury Risk: Conclusions

Drug	Increase in Risk of Injury While Driving
Amphetamines	6-9 times
Cocaine	2-3 times
Opiates	2-3 times
Cannabis	1.5-2 times
$0.5 \text{ g/L} \leq \text{alcohol in blood} < 0.8 \text{ g/L}$	2-10 times
$0.8 \text{ g/L} \leq \text{alcohol in blood} < 1.2 \text{ g/L}$	5-30 times



Conclusions

- Prevalence of driving under the influence of cannabis has increased in recent decades
 - Particularly amongst younger drivers
- Cannabis produces a modest increase in the risk of traffic crash of about 30-50%



Economic Cost: Canada 2012

- Impact:
 - 75 MVC death
 - 4,407 injuries
 - Between 7,794-24,879 PDO collisions
- Cannabis-Attributable Cost of Motor Vehicle Crashes for one year:

~between \$1.09-\$1.28 billion~
 - $\frac{3}{4}$ of which accounts for those aged 34 and under



The Future of Cannabis in Canada

Legalization of cannabis: Harm reduction

- Changing social norms
 - Combination of strong laws, public awareness, social acceptance, and time for change
- Multi-pronged initiative, modeled after successes with drinking and driving



The Improbable Charge

In 2012:

- ~15.6 million incidents of driving after cannabis use
- 1126 drug impaired driving charges laid



Thank You

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