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Data Monitoring & Surveillance

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BC Coroners Service

BC Coroners Service Mandate

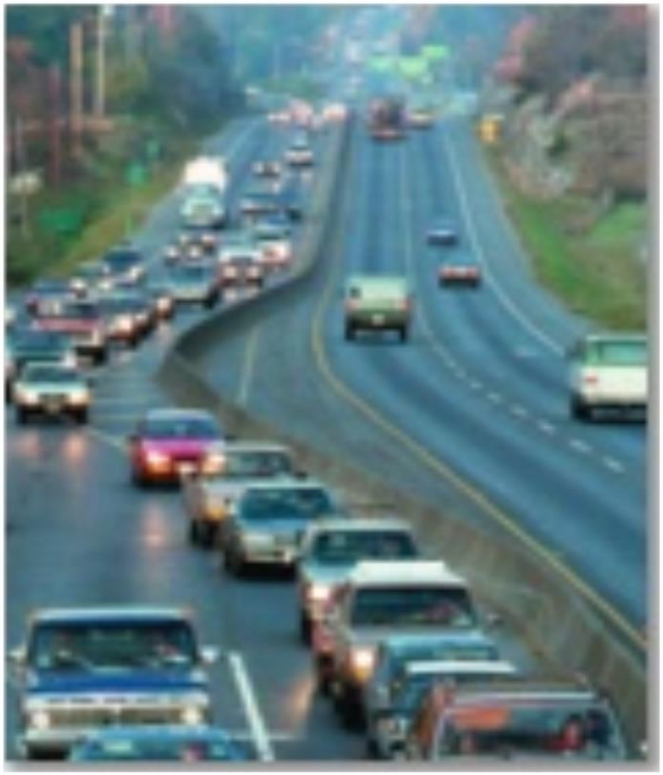
- The British Columbia Coroners Service is committed to conducting a thorough, independent examination of the factors contributing to death in order to improve community safety and quality of life in the Province of British Columbia.

Role of the Coroner

- The Coroner Service is a civil regulatory regime. We are not fault finders, instead we focus only on finding fact.
- The Coroner is an independent investigator who clarifies the circumstances of all sudden, unexpected and unnatural deaths for the public record.
- The Coroner makes recommendations to prevent future loss of life.
- The Coroner's role is independent – by eliciting the facts we serve the deceased, his/her family, community and broader societal interests.

BC Coroners Service Investigations

- Coroners investigate all deaths resulting from violence, misadventure, and accidents.
- In 2016, the Coroners Service investigated approximately 10,300 deaths.
- **315** of those deaths were related to a motor vehicle incident.



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Does Marijuana Use affect driving – Various Research/Studies

- It is almost universally accepted that Marijuana impacts judgment, spatial perception, motor coordination, and reaction time - therefore increasing accident propensity.

- In most developing countries, drug impaired driving is anecdotally thought to be on the rise, particularly among young drivers, who interestingly (according to some studies) are twice as likely to drive after smoking pot as they are after drinking.

- Two large European studies found that drivers with THC in their blood were roughly twice as likely to be culpable for a fatal crash than drivers who had not used drugs/alcohol.[11,12]

Does Marijuana Use affect driving – Various Research/Studies

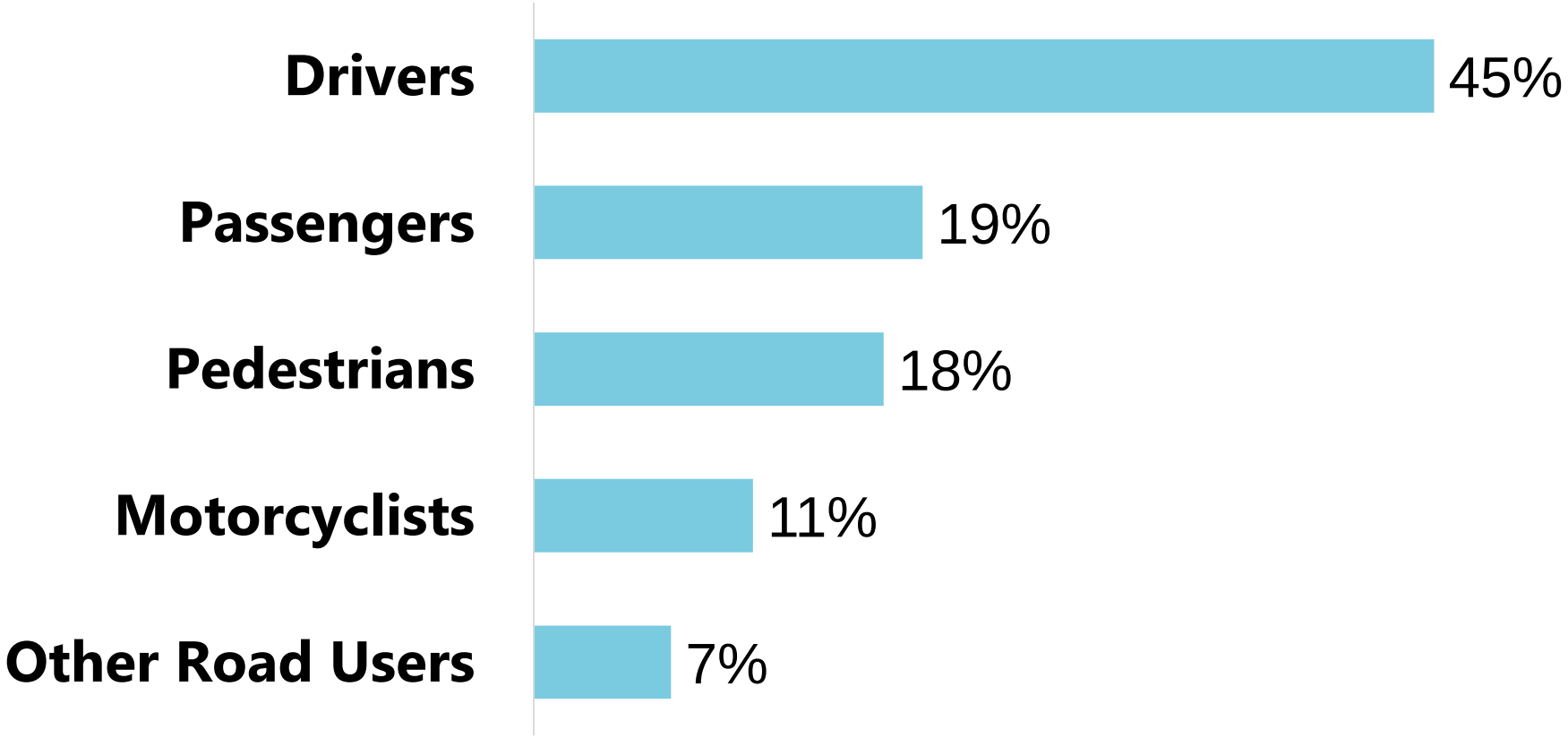
- Meta-analyses of multiple studies has found that the risk of being involved in a crash significantly increased after marijuana use[13]—in a few cases, the risk doubled or more than doubled.[14–16]

- In contrast, a large case-control study conducted by the National Highway Traffic Safety Administration found no significant increased crash risk attributable to cannabis after controlling for drivers' age, gender, race, and presence of alcohol.[17]

Data Surveillance

- Data surveillance pre- and post-cannabis legislation are critical for understanding impact on road safety

MVI Deaths by Type of Road User, 2007-2016



Top Three Contributing Factors in MVI Deaths

From a review of MVI deaths in 2013:

1. Driver Impairment
2. Weather/Road Conditions
3. Speed

Note: A single fatality may be represented in more than one category if multiple contributing factors are identified.

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How Do Coroners Try to Determine Drug Involvement?

- Toxicology testing
  - Specimens from deceased road user (blood, urine, etc.) are sent to the Provincial Toxicology Centre (PTC) for analysis

- Other sources of information:
  - Scene investigation
  - Police reports
  - Review of pre-incident events

Attribution: Tannim1010, 2014

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Challenges Around Identifying Cannabis as Contributory

- There is currently no legal limit in British Columbia.
- Since individuals may have different degrees of impairment at the same THC level, coroners must decide whether cannabis was contributory on a case-by-case basis.
- Circumstances may suggest multiple possible contributing factors.

Challenges Around Identifying Cannabis as Contributory

What level of THC impairs driving ability?

- The level at which THC begins to impair driving ability is unclear and may vary with the individual.

- Most studies of cannabis-impaired driving compare 'THC-positive drivers' with 'THC-negative drivers'. **Few assess crash risk as a function of THC concentration.**

- Estimates of the THC level that can be assumed to produce elevated crash risk generally place it at ~5 ng/mL (nanograms per millilitre) in blood.

However, opinions vary . . .

Cannabis Toxicology Tests

How do you know that a driver has used cannabis?

The PTC tests for two metabolites of cannabis:

- 11-nor 9-carboxytetrahydrocannabinol (11-COOH-THC)
  - Inactive metabolite.
  - Does not indicate impairment
  - May be detectable in blood or urine days after cannabis use

- Delta-9-tetrahydrocannabinol (THC)
  - Active metabolite
  - Detection **may or may not indicate impairment,** depending on levels detected
  - Generally indicates fairly recent use, but habitual cannabis users may have detectable THC in blood >24 hours after use

Current Reporting on Cannabis Impairment and MVI Deaths

Option 1: # of deaths with cannabis detected

Accidental, Traffic-Related Driver Deaths With Cannabis Detected: 2011-2013				
	2011	2012	2013	Total
Total Driver Deaths	132	115	120	367
THC and/or 11-COOH-THC Detected (#)	15	19	20	54
THC and/or 11-COOH-THC Detected (%)	11.4%	16.5%	16.7%	14.7%

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Current Reporting on Cannabis Impairment and MVI Deaths

Option 2: # of deaths where cannabis was contributory

Accidental, Traffic-Related Deaths With Cannabis Contributory: 2012-2014				
	2012	2013	2014	Total
Total Deaths	292	288	306	886
Cannabis Contributory	19	22	14	55
Cannabis May Have Been Contributory	3	5	10	18
Cannabis Total (#)	19 - 22	22 - 27	14 - 24	55 - 73
Cannabis Total (%)	7 - 8%	8 - 9%	5 - 8%	6 - 8%

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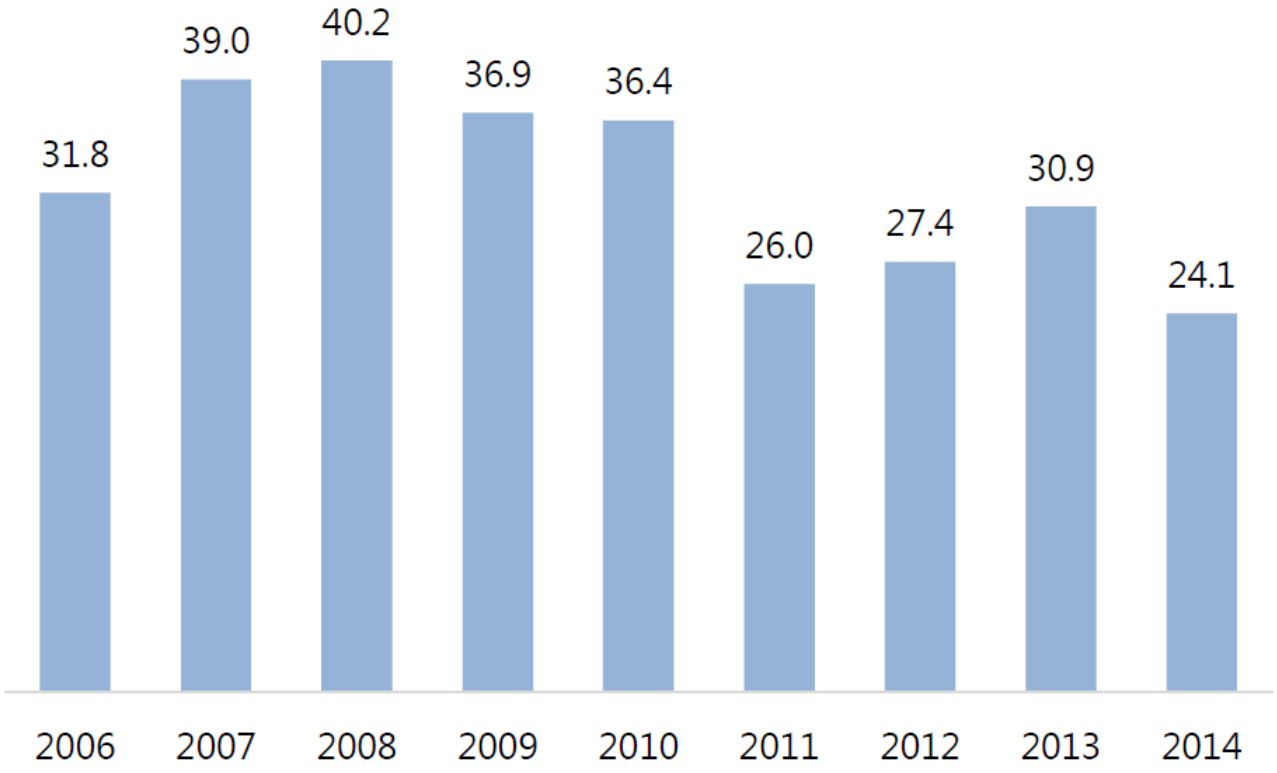
Percentage of MVI Deaths With Drugs and/or Alcohol Involved



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Limitations With Current Data

- No legal limit standard
- Coroners may attribute ‘contribution’ inconsistently
- The role played by marijuana in crashes is often unclear because it can be detected in body fluids for days or even weeks after intoxication and because people frequently combine it with alcohol.

How Do Other Jurisdictions Report on Cannabis and MVI Deaths?

WASHINGTON

- Recreational cannabis use legalized in 2012. *Per se* limit of 5 ng/mL for drivers.

- A recent report on marijuana involvement in fatal crashes in Washington from 2010-2014 reported on the following:
  - **#** and % of drivers with 'detectable' THC in blood (>1 ng/mL)
  - # and % of drivers with THC levels of 5 ng/mL or greater
  - # and % of drivers with **only** THC detected

- The authors note that the presence of THC does not indicate impairment or being at fault: *'The data available cannot be used to assess whether a given driver was actually impaired.'*

How Do Other Jurisdictions Report on Cannabis and MVI Deaths?

COLORADO

- Recreational cannabis use legalized in 2012. 'Reasonable inference' limit of 5 ng/mL for drivers.

- A recent report on marijuana involvement in MVIs in Colorado from 2010 to 2015 reported the following fatality data:
  - # and % of 'traffic deaths related to marijuana'.
  - Breakdown of marijuana-related deaths by road user type
  - Other drugs detected in drivers positive for marijuana

- 'Marijuana-related': 'Any time marijuana shows up in the toxicology report' [of the driver]. 'Marijuana' appears to refer to detectable levels of THC (>1-2 ng/mL). The authors note that 'marijuana-related' does not necessarily mean that incident was caused by marijuana use.

Key Points/Take Aways

- For motor vehicle driver deaths, toxicology results are the most-used source of information about impairment (roadside sobriety tests generally not feasible).

- There are mixed views on whether impairment can be assumed at a given THC level, and, if so, what this level should be.

- Jurisdictions reporting on traffic-related fatalities tend to limit their analysis to the number and/or percentage of drivers testing positive for THC, while acknowledging that test results may or may not indicate impairment.

Considerations Moving Forward…

- Coroner decision making in BC regarding the influence of THC in vehicle related fatalities will continue to be inconsistent without a legal limit standard.

- Universally established methods of testing for intoxication (be it by roadside/laboratory testing etc…) across jurisdictions is critically important to gain a clear understanding of the impact of driver intoxication by THC as contributory.

- Coroner & Medical Examiner's in Canada need to begin exploring methods for data surveillance so that we are prepared to assess the impact of impending legislation.