

# Low THC levels not linked to increased risk of car crashes: study

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Canadian drug-impaired driving laws penalize drivers found to have blood THC levels of between two to five nanograms per millilitre. However, new research led by the University of British Columbia

suggests that THC levels less than five nanograms/ml of blood do not lead to an increased risk of causing car crashes in most drivers.

The findings, published in the journal *Addiction*, adds to a growing body of research into the road safety impacts of not only THC, but a variety of legal and illegal substances, suggesting more research is needed to inform drug-impaired driving laws.

"At [blood levels](#) of less than five nanograms/ml, THC does not appear to be associated with an increased risk of crashing," said Dr. Jeffrey Brubacher, associate professor in the department of emergency medicine at UBC and principal investigator on a five-year study investigating the role of cannabis in causing motor vehicle crashes. "That's significant because the new impaired driving laws do include penalties for [drivers](#) with THC levels between two and five nanograms/ml, suggesting that the laws may be too strict."

For the study, researchers analyzed blood samples from 3,005 drivers who were treated at seven trauma centres in B.C. between January 2010 and July 2016. Accident reports were available for 2,318 of those drivers and 1,178 were deemed responsible for the crashes and included in the final analysis. Blood is the best medium for measuring THC in the impairing range—better than saliva or urine—so researchers tested whole [blood samples](#) from moderately injured drivers who had blood drawn following a crash.

Within 15 minutes of smoking cannabis, whole blood THC levels typically peak at upwards of 100 nanograms/ml. THC levels then drop rapidly to two nanograms/ml or less within four hours after smoking. Levels drop to a similarly low concentration eight hours after ingesting THC.

At blood levels of less than five nanograms/ml, the researchers found no

increased risk of crashing. While there may be an increased risk of causing crashes with THC levels greater than five nanograms/ml, only 20 of the 1,825 samples they tested had THC levels greater than that amount.

In addition to THC levels, researchers measured levels of recreational drugs, sedating medications and alcohol. They found the use of recreational drugs such as cocaine, amphetamines and heroin increased crash risk by 82 percent. Sedating medications, such as antihistamines, benzodiazepines, other hypnotics and antidepressants, increased crash risk by 45 percent.

Meanwhile, they found that alcohol had the highest association with crash risk. For drivers with a [blood alcohol content](#) above .08, the researchers found a six-fold increase of crash risk compared to drivers who had not been drinking.

"The biggest problem remains alcohol," said Brubacher, also a researcher with the Vancouver Coastal Health Research Institute, an emergency physician with Vancouver General Hospital and director of VGH's emergency medicine research division. "Drug-impaired driving is probably a problem, but let's not lose sight of alcohol."

The researchers are continuing to collect blood from drivers involved in [car crashes](#). They hope to conduct another analysis when they have accumulated 6,000 samples to determine better estimates of the risk of causing car crashes among drivers with higher levels of THC in their [blood](#).

**More information:** Jeffrey R. Brubacher et al. Cannabis use as a risk factor for causing motor vehicle crashes: a prospective study, *Addiction* (2019). [DOI: 10.1111/add.14663](https://doi.org/10.1111/add.14663)

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