

The injustice of targeting cannabis in Victoria's roadside drug-testing programs

Submission to the Victorian Parliament's *Inquiry into the Increase in Victoria's Road Toll*

My submission relates to the second of the Terms of Reference: *The adequacy and scope of the current driver drug and alcohol testing regime*

Summary

For many users of cannabis, moderate use before driving does not impair their performance at all. The overall risk of crashing after using cannabis is considerably lower than for driving at a BAC of 0.05. But the most relevant point in relation to drug-driving policy is that positive toxicology for THC (for example, as detected during roadside drug testing - RDT) does not provide a valid indication of impairment. The only valid way to demonstrate impairment is through behavioural observation, or 'sobriety' testing. Most of the drivers who test positive for THC during RDT operations are not impaired by their use of cannabis, and do not have an increased risk of crashing. The use of stand-alone *per se* toxicological testing for cannabis is invalid and unjust. It is recommended either that cannabis be removed as a proscribed drug from Victoria's RDT protocols, or, if it remains, then that the toxicological results are used only to support behavioural evidence of impairment.

Epidemiological studies

A recent meta-analysis of cannabis-crash studies by Rogeberg and Elvik (2016) shows that the risk of crashing after using cannabis (as indicated by the presence of THC in blood or oral fluid) is increased by less than 50%.

It is widely accepted by Australian road safety authorities that driving at a BAC of 0.05 approximately doubles (i.e., increases by 100%) the risk of crashing; as does driving on a metropolitan road at a speed that is 5 km/h above the average traveling speed at that location (McLean & Kloeden, 2002). The 50% increase in risk from the use of cannabis is therefore less than half of the increase from driving at a BAC of 0.05 or travelling at 5 km/h above the average metropolitan speed.

A further point may be of interest. The increased risks from using unprotected modes of transport are vastly greater than the upper estimate of the increased risk from being THC+ve. For example, if you chose to ride a motorcycle rather than drive a car, you have a forty-fold increase in your risk of being seriously injured (per vehicle distance travelled; Johnston, Brooks & Savage, 2008). That increase is *eighty* times as great as the 50% increase from choosing to use cannabis before driving.

Impairment studies

The use of sensitive laboratory apparatus makes it relatively easy to demonstrate the impairing effects of a range of environmental and personal variables on a variety of human skills.

It might be assumed that the statistical significance of an impairment implies some real-world significance. A contrary example is provided: Choice reaction time (CRT) is a frequently studied index of human performance. Der and Deary (2006) have shown that CRTs are statistically-significantly

longer for every 5 years of aging during adulthood. In other words, the CRT performance of 40-year olds is significantly impaired when compared with that of 35-year olds, and the CRT performance of 45-year olds is significantly impaired when compared with that of 40-year olds, etc... Obviously, these differences are of no real-world significance to road safety: We do not contemplate removing 40-year olds from the road because of their age-related impairments. Humans are over-engineered when it comes to most driving-related skills: the laboratory demonstration of statistically-significant impairments may be of no real-world significance.

Given the ease of detecting impairments, it seems surprising that it is extraordinarily difficult to demonstrate *any* impairing effects of cannabis on the performance of *regular* users of cannabis. A recent systematic review has concluded that regular users develop a tolerance to its impairing effects such that they are not impaired by moderate use (Colizzi & Bhattacharyya, 2018).

It is also difficult to demonstrate impairments in *occasional* users of cannabis. Most studies of occasional users involve a battery of performance tests that are repeatedly administered over a few hours after the subjects consume a dose of cannabis. Some research groups (e.g., Ogourtsova *et al.*, 2018) resort to questionable cherry-picking exercises in order to locate, and report on, the one or two islands of statistically-significant findings in an ocean of non-significant results.

Given that most of the THC+ve drivers on the road will be regular users, it is clear that most of the drivers who test positive to THC at RDT sites will not be measurably (let alone meaningfully) impaired by their recent use of cannabis. And many of those who are occasional users will also not be meaningfully impaired.

Toxicological studies

There is a popular assumption that must be rejected: it is that the effects of cannabis and alcohol are comparable insofar as there is a dose-response relationship between the concentration of the drug and the level of impairment (and therefore of crash risk). While the assumption is a good first approximation for alcohol, it is wildly inaccurate for cannabis. For example, immediately after a regular user has smoked marijuana she may be completely unimpaired, but with a very high level (hundreds of ng/ml) of THC in her oral fluid. Conversely, an infrequent user may be impaired at two hours after smoking marijuana, with THC levels of only 1 or 2 ng/ml.

A recent report to the U.S. Congress from the Congressional Research Service (CRS; Peterman, 2019) strongly rejects the 'alcohol model' of cannabis impairment. Observing that there is no cut-off level of THC (not even a very high level) above which it can reasonably be assumed that a person is impaired, the CRS argues in favour of the need always to have good observational evidence of behavioural impairment before charging a driver with a cannabis-driving offence. In other words, the CRS is strongly opposed to Australian-type stand-alone *per se* cannabis offences - whether they involve zero tolerance for the presence of THC or above-zero cut-off levels of THC.

A number of studies have measured the length of time after using cannabis when THC can still be detected in oral fluid. A recent review of those studies (Arnold, *et al.*, 2019) reports that median 'detection windows' range from 6 to over 30 hours. Given that any impairment from the use of cannabis is likely to last for only 2 to 3 hours (Tank *et al.*, 2019), it is evident that any driver who was

actually impaired from smoking marijuana would probably not be impaired some hours, or a day, later when testing positive for THC at an RDT site.

In summary, there are two reasons why testing positive to THC at an RDT site says very little about impairment. The first is that many users of cannabis are not measurably (or meaningfully) impaired by its use. The second is that, because the 'impairment window' for cannabis is considerably shorter than its potential detection window, many users of cannabis who were initially impaired would not be impaired at the time of testing.

Recommendation

It is recommended either that cannabis be removed as a proscribed drug from Victoria's RDT protocols, or, if it remains, then that the toxicological results are used only to support behavioural evidence of impairment.

Endorsements

I have not sought any public endorsement of this advice from Australian road-safety researchers. I am aware that many of them agree with my views. Some researchers are justifiably concerned that being involved in a public conversation could jeopardise their chances of winning research grants from national or state governments. As a senior road-safety researcher recently told me:

Expert discussion is a surprisingly difficult thing to promote, even in a field such as ours that is not dominated by commercial secrecy. Experts who work in government agencies, such as the road/traffic/licensing/policing agencies, can't contribute anything that contradicts current government policy. Experts who work in research and consulting also feel constrained not to contribute anything that might upset their current or future customers. Which only leaves people like you to carry the discussion on behalf of the rest of us. Thank you for all your good work!

References

Arnold, L. S., Benson, A. J., Chen, K. T., Kelley-Baker, T., & Horrey, W. J. (2019). *Detection Windows for Drugs in Oral Fluid: Cannabinoids, Stimulants, and Opioids (Research Brief)*. Washington, D.C.: AAA Foundation for Traffic Safety.

Colizzi, M., & Bhattacharyya, S. (2018). Cannabis use and the development of tolerance: A systematic review of human evidence. *Neuroscience and Behavioral Reviews*, 93, 1-25.

Der, G., & Deary, I. J. (2006). Age and sex differences in reaction time in adulthood: Results from the United Kingdom Health and Lifestyle Survey. *Psychology and Aging*, 21 (1), 62-73.

Johnston, P., Brooks, C., & Savage, H. (2008). *Fatal and serious road crashes involving motorcyclists*. Canberra: Department of Infrastructure, Transport, Regional Development and Local Government.

McLean, J., & Kloeden, C. (2002). Alcohol, travelling speed and the risk of crash involvement. In: D. R. Mayhew & C. Dussault (Eds.). *Proceedings of the 16th International Council on Alcohol, Drugs and Traffic Safety (ICADTS) Conference (T02)*. Montreal, Canada: ICADTS.

Ogourtsova, T., Kalaba, M., Gelinis, I., Korner-Bitensky, N., & Ware, M. A. (2018). Cannabis use and driving-related performance in young recreational users: A within-subject randomized clinical trial. *CMAJ OPEN*, 6 (4), E435-E462.

Peterman, D. R. (May 14, 2019). *Marijuana Use and Highway Safety* (CRS Report Number R45719). Washington, DC: Congressional Research Service.

Rogeberg, O., & Elvik, R. (2016). The effects of cannabis intoxication on motor vehicle collision revisited and revised. *Addiction*, 111 (8), 1348-1359.

Tank, A., Tietz, T., Daldrup, T., Schwender, H., Hellen, F., Ritz-Timme, S., & Hartung, B. (2019). On the impact of cannabis consumption on traffic safety: A driving simulator study with habitual cannabis consumers. *International Journal of Legal Medicine*, 133, 1411-1420.

Author note

I worked for many years in the Safety Strategy section of the TransportSA. For some of that time, I was a member of the national Drug-Driving Working Group. I am a co-author of three peer-reviewed journal articles on drug-driving. I have approached this issue from a harm-minimisation perspective. I do not use cannabis. I am not an active advocate of legalising the medicinal or recreational use of cannabis. I have undertaken my recent drug-driving research as an unpaid retirement activity. I believe that civil liberties, such as the right to not be arbitrarily detained, should not be infringed without a good cause. It seems to me that government cannabis-driving policies reflect an imperious, punitive, populist War-on-Drugs mentality. I am concerned that police involvement in the enforcement of cannabis-driving could be perceived by drivers as disingenuous and bullying.

19 April 2020

Dr Michael White,

[REDACTED]