Australian Road Safety Foundation

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Medicinal cannabis road safety

September 2025

Executive summary

In addressing road safety issues, driver impairment has long been viewed as one of the leading contributing factors in fatal and serious road crashes. That position remains to this day.

Whilst alcohol was traditionally the primary focus for impairment and enforcement, drugs (illegal and legal) were more difficult to measure and therefore harder to enforce. Recent improvements in roadside testing have provided police with the capability to test for a range of substances.

Roadside drug tests (saliva test) detect the presence of methamphetamine (speed/ice), MDMA (the active ingredient in ecstasy), THC (the active ingredient in cannabis) and cocaine. https://www.police.qld.gov.au/sites/default/files/2024-10/Drug%20Driving%20-%20What%20you%20need%20to%20know.pdf

Currently there is no test for over the counter or prescribed medications that may impact of a person's driving performance.

Recently, the use of medicinal cannabis has been emerging as a growing issue, both from a health and a road safety standpoint and it will be an area where the Australian Road Safety Foundation (ARSF) will need to consider and have a position on.

Medicinal cannabis (products containing THC, and/or cannabidiol, CBD) is increasingly prescribed to assist with the management of a range of medical conditions including chronic pain, cancer symptoms and epilepsy.

THC produces psychoactive effects that can impair psychomotor performance, reaction time and divided attention — all critical for safe driving.

Most epidemiological and meta-analytic evidence indicates a modest but statistically significant increase in crash risk following recent cannabis use, though effect sizes vary and are influenced by study design, measurement of exposure (self-report, biological fluids, roadside tests), co-use of alcohol, and user tolerance.

Experimental driving studies show variable impairment across study cohorts. Some individuals, especially inexperienced or occasional users, show measurable deficits after acute THC exposure, whereas regular users may show smaller acute effects. Importantly, there is poor correlation between measured THC concentration (blood, oral fluid) and driving impairment because THC pharmacokinetics differ from alcohol and can be influenced by dose, individual tolerance and time since use.

A substantial body of research has established that THC, the primary psychoactive component of cannabis, is associated with an increased risk of motor vehicle crashes.

While the effects of recreational cannabis on driving are well-documented, research specifically examining crash risk among medicinal cannabis patients is relatively limited. Existing studies in this population present less consistent findings, partly due to variations in prescribed doses and other factors.

https://files.justice.vic.gov.au/2021-07/Final%20Report%20of%20the%20Medicinal%20Cannabis%20and%20Safe%20Driving

%20Working%20Group.pdf https://pmc.ncbi.nlm.nih.gov/articles/PMC8195290/

https://pmc.ncbi.nlm.nih.gov/articles/PMC3836260/#:~:text=CONTENT,enhances%20impair ment%2C%20especially%20lane%20weaving.

https://www.sciencedirect.com/science/article/pii/S0022437525001367

This complexity creates legal and clinical challenges for jurisdictions that use zero-tolerance or per-se THC limits for driving offences.

In Australia, most states retain zero-tolerance for detectable THC while driving, though recent reforms and parliamentary recommendations indicate growing pressure to create tailored legal responses that recognise medicinal prescriptions while protecting road safety.

In Western Australia, drivers who have taken prescribed medications such as opioids, benzodiazepines, or antidepressants face no penalties provided they are not impaired. Proving non-impairment would be a separate are of concern and with definitive test procedure, would be speculative.

While medicinal cannabis is legally available in Australia, it remains an offence in most states to drive with any detectable level of THC in the system, regardless of actual impairment.

Tasmania currently stands as the only Australian jurisdiction where a person prescribed medicinal cannabis may legally drive with THC present in their body, provided they are not impaired.

Victoria has introduced a reform that allows a magistrate to use discretion and choose not to suspend a driver's licence if the individual holds a valid prescription and there is no evidence of impairment.

The state is also conducting on-road studies with medicinal cannabis patients using real vehicles on closed test tracks. These trials are expected to provide valuable data to inform potential future reforms to driving laws.

file:///D:/Downloads/gleeson-medicinalcannabisand-2021.pdf

This white paper reviews the current evidence, summarises legal/policy approaches, discusses implications, and gives recommendations for the ARSF to use as a guide for commentary on the issue.

Overview

Drug driving remains a significant contributor to road trauma in Australia, posing a growing challenge to enforcement, health, and education systems.

While alcohol-related fatalities have steadily declined over the past three decades, the proportion of crashes involving drivers with illicit or prescription drugs in their system has increased. The presence of drugs—particularly cannabis, methamphetamine, and prescription sedatives—continues to be detected in a notable proportion of serious and fatal crashes across all jurisdictions.

In 2023, drug driving at 16.8% was the most common factor in fatal crashes where risky road behaviours were involved. https://datahub.roadsafety.gov.au/safe-systems/safe-road-use/police-enforcement

In recent years, police have significantly enhanced their drug testing capabilities. Roadside saliva tests can now detect the presence of substances such as methamphetamine (commonly known as speed or ice), MDMA (the active ingredient in ecstasy), THC (the psychoactive compound in cannabis), and cocaine. https://www.police.qld.gov.au/sites/default/files/2024-10/Drug%20Driving%20-%20What%20you%20need%20to%20know.pdf

However, these tests only measure the presence of these substances, not the level of impairment of the individual.

Determining driving impairment caused by substances other than alcohol remains complex. Research shows no consistent relationship between substance concentration in the body and observable medical signs.

Driving under the influence of drugs – The failed quest of finding medical signs indicative to driving impairment –

https://www.sciencedirect.com/science/article/pii/S134462232500001X

Similarly, physiological indicators such as pupil size, pulse rate, and blood pressure show no reliable correlation with impairment levels. Moreover, physical examinations conducted after a delay often fail to identify impairment accurately, highlighting the limitations of current assessment methods.

Roadside tests still require further analysis to confirm initial test results. Whilst the exact figures are hard to find, it is understood that a drug test is significantly more expensive to conduct compared to roadside alcohol breath test.

These logistical issues, and the cost for each test means that the number of roadside drug tests are well below the number of breath tests conducted for alcohol.

In 2024, nationally 10.3 million random breath tests were conducted in Australia, with 57,801 positive results (0.6% positive rate) compared to 500,683 roadside drug tests, with 52,411 positive results (10.5% positive rate).

https://datahub.roadsafety.gov.au/safe-systems/safe-road-use/police-enforcement

The effect of a given amount of THC (the active ingredient in cannabis) varies significantly both between and within individuals. This is impacted by many factors including how the cannabis is consumed, some diseases, combination with other medications and individual body characteristics.

This makes it especially challenging from a road safety perspective, as it is not possible to be certain of the effects of a given dose on any one individual. As identified by the Victorian Department of Justice and Community Safety (2021), it is not feasible to account for individual differences in the context of a mass screening drug driving program.

People who are impaired by THC are not necessarily able to assess their own impairment. This is a challenge because it indicates that a person may not be able to determine if they are safe to drive.

There is a significant challenge in attempting to truly access the level of impairment between cannabis and alcohol because they behave very differently in the body.

Alcohol is much more predictable in the way it impairs and leaves the body, therefore making impairment testing consistent and measurable.

Conversely, cannabis has a wide range of variables that can alter its impacts from person to person. This makes it very challenging to set an impairment limit for cannabis like the 0.05 BAC limit for alcohol.

Cannabis is also hard to compare to other prescription drugs, mostly due to its widespread use and availability as a recreational drug. Cannabis is also detected at higher rates in fatal crashes than any other prescription drug. This may be due to its

widespread medicinal and recreational use, which cannot be separated in crash data or through laboratory analysis.

Cannabis and driving in Queensland – Community consultation paper
file:///D:/Downloads/cannabis%20and%20driving%20consultation%20paper%20(2).pdf

A substantial body of research has established that THC, the primary psychoactive component of cannabis, is associated with an increased risk of motor vehicle crashes. THC can impair multiple driving-related skills, including slowing reaction times, increasing lane deviations, reducing vehicle handling precision, and impairing time and distance estimation.

Drivers under the influence of THC may also struggle to maintain safe following distances, exhibit decreased sustained attention and vigilance, and have impaired divided attention, all of which elevate the likelihood of collisions.

https://files.justice.vic.gov.au/2021-07/Final%20Report%20of%20the%20Medicinal%20Cannabis%20and%20Safe%20Driving%20Working%20Group.pdf

Couper, F. J. & Logan, B. K. (2014, revised). Drugs and human performance fact sheets. https://www.nhtsa.gov/sites/nhtsa.gov/fles/809725-drugshumanperformfs.pdf

The degree and duration of impairment are influenced by several factors, including the dose of THC, frequency of use, route of administration, and individual tolerance. Inhaled forms, such as smoking or vaping, typically produce rapid onset of effects within minutes, with peak impairment occurring within 30–60 minutes and subsiding over a few hours.

Oral forms, such as oils, capsules, or edibles, have a slower onset (30–120 minutes), more variable absorption, and longer-lasting effects, sometimes persisting for several hours after ingestion. These pharmacokinetic differences complicate the ability to provide simple “safe driving” timelines and underscore the importance of individualised guidance.

While the effects of recreational cannabis on driving are well-documented, research specifically examining crash risk among medicinal cannabis patients is relatively limited. Existing studies in this population present less consistent findings, partly due to variations in prescribed doses, chronicity of use, and the development of tolerance among regular medicinal users.

The introduction of legal medicinal cannabis access in Australia was initiated in November 2016, via regulatory amendments implemented by the Commonwealth Government that enabled Australian patients to legally access medicinal cannabis when prescribed by their doctor.

Medicinal cannabis prescriptions have grown globally and in Australia for conditions including chronic pain, multiple sclerosis spasticity, chemotherapy-related nausea and some neurological conditions.

Products range widely in THC concentration, CBD content, and formulation (inhaled, oral oils, capsules, sublingual sprays, topical). Route and dose strongly affect onset and duration of impairment: inhaled THC is rapidly bioavailable with quicker onset and shorter peak impairment window, whereas oral products have delayed onset, variable absorption and longer duration.

The pharmacological diversity of medicinal products means clinician advice and patient education must be product-specific.

Medicinal (9) -tetrahydrocannabinol (dronabinol) impairs on-the-road driving performance of occasional and heavy cannabis users but is not detected in Standard Field Sobriety Tests. Addiction (Abingdon, England), 107(10), 1837–1844.

https://doi.org/10.1111/j.1360-0443.2012.03928.x

Unlike many other prescription medications with potential sedative or psychoactive effects - such as opioids, benzodiazepines, or certain antidepressants - THC is often treated under a zero-tolerance framework in most Australian jurisdictions, which does not differentiate between impairment and mere presence.

In simple terms, other prescribed medications may cause similar or worse levels of impairment to Medicinal cannabis but are not tested for. Whereas a positive test for THC is an offence in most states.

This legal approach contrasts with other medications where driving is permitted unless impairment is demonstrable.

Another research program by the Lambert Initiative for Cannabinoid Therapeutics at the University of Sydney, in collaboration with Maastricht University (Netherlands) in 2022, has provided important new insights into how cannabis affects driving performance. https://www.sydney.edu.au/news-opinion/news/2020/12/02/Cannabidiol-CBD-in-cannabis-does-not-impair-driving-landmark-study-shows.html#:~:text=Cannabis%20containing%20mainly%20CBD%20did,understand%20the%20duration%20of%20impairment.%E2%80%9D

The landmark study, published in the Journal of the American Medical Association (JAMA), found that cannabidiol (CBD) - a non-intoxicating component of cannabis widely used for medical treatment - does not impair driving ability. In contrast, moderate doses of tetrahydrocannabinol (THC) caused mild driving impairment for up to four hours after use.

The study involved participants inhaling vaporised cannabis containing varying ratios of THC and CBD before undertaking a monitored 100-kilometre highway drive. Cannabis with CBD alone produced no measurable impairment, while cannabis containing THC, or a THC/CBD mix, showed temporary impairment shortly after use, which subsided within hours.

These findings may have major implications for drug driving laws, particularly for medical cannabis patients, by distinguishing between substances that cause impairment and those that do not.

The research supports the case for evidence-based road safety policy that recognises the differing effects of THC and CBD and promotes a more balanced approach to testing and regulation.

Given these factors, there is an urgent need for targeted research that evaluates how different medicinal cannabis formulations, doses, and routes affect driving performance in real-world conditions.

Understanding these nuances is critical for developing evidence-based guidance for patients, clinicians, and policymakers, and for ensuring that road safety measures are both effective and equitable.

Conclusions and Recommendations

It is clear that the issue of medical cannabis is an issue that is growing in terms of media attention and public awareness.

While there may be health benefits and for people treating health issues with medicinal cannabis, the primary focus must still be given to ensuring that a person is not impaired when they are on the road or operating a vehicle.

There is no way currently for a person to measure the level of impartment to using drugs of this nature. There are also significant variations in how these drugs effect individuals.

The findings from the University of Sydney study indicate the differing effects of THC and CBD, there is still much more research to be done in this area.

Being able to separate the non-intoxicating component of cannabis could certainly alter the position, if a person could be guaranteed the medical benefit of the drug without the impairment.

Based on the current information, it is recommended The Australian Road Safety Foundation (ARSF) recognises the growing use of medicinal cannabis in Australia and the need for driving laws that both protect public safety and uphold the rights of patients prescribed these therapies.

However, it must be noted that the key philosophy of road safety must not be compromised as a result of any government policy or public opinion.

The ARSF's position on this issue should be as follows:

- Road Safety remains paramount.
  No person should drive while impaired by any substance, including medicinal cannabis.
- Current testing laws are outdated.
  The use of presence-based or "zero tolerance" THC testing does not accurately measure impairment and risks penalising lawful medicinal cannabis users who are not impaired. But it isn't possible for an individual to assess their own level of impairment, and no test is available for a person to accurately measure their capabilities.
- Medicinal cannabis should be treated consistently with other prescription drugs that have potential sedative or psychoactive effects, such as opioids or benzodiazepines - where impairment, not presence, is the key legal threshold. But once again, the technology is not capable of doing that. Therefore, authorities must rely on the presence test for now.
- Evidence-led reform.
  ARSF supports national research efforts, such as Victoria's on-road trials, that seek to better understand how medicinal cannabis affects driving performance in real-world conditions. Further research should be conducted on the differing effects of THC and CBD and how that might impact future policy and enforcement.
- Call for harmonisation.
  ARSF advocates for a nationally consistent, impairment-based legal framework for medicinal cannabis and driving, supported by clear clinical guidance for prescribers and educational resources for patients.
- Public education priority.
  Any reform must be accompanied by a targeted road safety campaign that helps drivers understand the difference between impairment and detection, reinforces shared responsibility, and promotes honest dialogue between patients, clinicians, and law enforcement.

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