INQUIRY INTO ROAD TRANSPORT AMENDMENT (MEDICINAL CANNABIS-EXEMPTIONS FROM OFFENCES) BILL 2021

Organisation: Drug Free Australia

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Hon Chris Rath MLC
Committee Chair
The Director
Standing Committee on Law and Justice
Parliament House, Macquarie Street
Sydney NSW 2000

Submission re: Road Transport Amendment (Medicinal cannabis Exemptions from Offences Bill) 2021

Thank you for the opportunity to submit evidence into the Standing Committee on Law and Justice's enquiry into exempting medicinal cannabis from driving offences.

This is a matter of great community concern and Drug Free Australia would like to bring to your urgent attention the following current research on Medical Marijuana and Driving as outlined in the following items. This evidence demonstrates that exempting users of medicinal cannabis products from driving offences would be a highly dangerous and irresponsible approach to road safety, not only for the drivers who use the substance, but also for their passengers and other road users.

1. ***The Problem of Driving Under the Influence of Medical Marijuana***
   Evidence from the Institute of Behavior and Health, United States:

'Unlike alcohol, there are no impairment thresholds for drugs. Alcohol impairment tracks closely with blood alcohol concentration: as alcohol is consumed, an individual's BAC increases and so does impairment. [15] See Figure 1. A clear standard now exists for alcohol use among drivers: it is illegal to drive with a BAC of 0.08 g/dL or more in every state.1 However, there will never be an equivalent impairment threshold for any other substance, including cannabis,[16-17] because drug levels do not consistently correlate with specific levels of impairment. For example, when an individual smokes cannabis, THC concentration in blood peaks quickly and begins to drop very soon after; however, impairment is longer lasting.[15]'

Feb_24_Drug-Impaired_Driving_Summary_Handout.pdf (thf_media.s3.amazonaws.com)

To further support this, please access the link below: *"The Views of Four Former "Drug Czars"* (in the United States) who shared their collective experience in five administrations. They emphasized that '**driving under the influence of drugs isn't a bipartisan issue; it's a nonpartisan issue that requires our attention'.**

Source: https://www.heritage.org/public-health/event/virtual-event-the-problem-driving-under-the-influence-drugs-the-views-four?mkt_tok=ODI0LU1IVC0zMDQAAAF7ky378g4OIbS5JNRWQlhSVw7c3p7pr22q7q1aL2. D-xoxcwIsUB6nH2ATkIkDJwc_7kjubigR5eY3BV7eutOoKUGQ-WMHLFBDnzTqEWc-coPmFAR8rB

DRUG-IMPAIRED DRIVING A NATIONAL THREAT TO PUBLIC HEALTH AND PUBLIC SAFETY
https://static1.squarespace.com/static/5a0db010dc2b4a275d40be78/t/60380855100ed85f3bb11225/1614284886549/Feb_24_Drug-Impaired_Driving_Summary_Handout.pdf

2. **Cannabis in Medicine: Ken Finn** –

https://www.drugfree.org.au/images/pdf-files/library/Cannabis/Cannabis%20in%20Medicine%20-%20Ken%20Finn.pdf

Chapter 19 Cannabis-Impaired Driving: Evidence and the Role of Toxicology Testing
Edward C. Wood and Robert L. Dupont Page 493 to 513.

'Conclusions: Laboratory experiments prove that cannabis adversely affects psychomotor skills and cognitive functions required for safe driving in both occasional and chronic cannabis users. Whereas laboratory evidence is strong and consistent, epidemiological evidence is far less so. Epidemiological studies have demonstrated that alcohol increases driving crash risk far more than THC does. The large database created by the National Highway Traffic Safety Administration (NHTSA) through its Fatality Analysis Reporting System (FARS) has enabled determination of the odds ratio (OR) of being involved in a fatal crash across a variety of demographic characteristics [43]. There is a high correlation between alcohol blood levels and crash risk. Whereas the OR of a fatal crash for a driver using alcohol can range from 2 to 20 or higher depending upon the blood alcohol level, the OR of a fatal crash is typically around 2 for a driver using cannabis, regardless of the forensically-determined blood THC level [63]. Epidemiological results vary widely with some showing very little or no effect of cannabis use on driving fatalities [13]. These findings support the claim that driving 19 Cannabis-Impaired Driving: Evidence and the Role of Toxicology Testing 510 under the influence of cannabis is safer than driving under the influence of alcohol, but more dangerous than sober driving. The combination of alcohol and cannabis is more impairing than the effects of either substance separately. Impairing effects of the two substances (polydrug use) are either additive or synergistic, depending on the impairing domain being measured [15, 29, 32]. Polydrug impairment is not only more dangerous than impairment by THC alone, it is also more common. Most (64.1%) of THC-impaired drivers arrested for driving under the influence (DUI) in Colorado in 2016 tested positive for both alcohol and THC [44]. Although chronic users can develop a tolerance to some of cannabis's impairing effects, they can also maintain a chronic low level of impairment between dosing sessions. After dosing they become acutely impaired similar to occasional users. Distracted driving further complicates understanding the impact of impaired driving. Some distractions such as traffic and road signs are beyond a driver's control, but others such as mobile phone use, monitoring a GPS, or talking with passengers are choices made by a driver. Regardless of the source of distractions, their impact on driving safety becomes magnified if the driver is suffering from a divided attention deficit, such as that induced by a driver's choice to use cannabis prior to driving. In the real world, we must frequently deal with cases where alcohol, drugs, and distractions are all contributing causes of a traffic crash, each one compounding the effects of the other. There is no direct correlation between the degree of driving impairment and THC levels in blood. Forensic laboratory tests of drivers suspected of drugged driving are of secondary importance, playing a supportive role to that of collecting symptomatic evidence of impaired driving.'

3. **Effects of chronic marijuana use on driving performance**
https://pubmed.ncbi.nlm.nih.gov/30411981/Chronic marijuana users had slower reaction times, deviated less in speed, and had difficulty matching a lead vehicle's speed compared to nonusers. The effects on SDS and modulus were present at cutoffs of 2 and 5 ng/mL.

4. **Medicinal cannabis and driving: the intersection of health and road safety policy**
https://www.sciencedirect.com/science/article/pii/S0955395921002127

We conclude that in medical-only access models there is little evidence to justify the differential treatment of medicinal cannabis patients, compared with those taking other prescription medications with potentially impairing effects.

5. **Medical cannabis and driving https://pubmed.ncbi.nlm.nih.gov/34059836/**

Delta-9-tetrahydrocannabinol (THC) impairs driving performance and can increase crash risk. These effects are more pronounced in people who use THC occasionally and can last for up to eight hours with oral THC products. There is no evidence that cannabidiol (CBD) impairs driving. Patients using THC-containing products should avoid driving and other safety-sensitive tasks (eg operating machinery), particularly during initiation of treatment and in the hours immediately following each dose. Patients may test positive for THC even if they do not feel impaired, and medical cannabis use does not currently exempt patients from mobile (roadside) drug testing and associated legal sanctions.

6. The Legalization of Marijuana in Colorado: The Impact: Volume 8, September 2021 https://www.dfaf.org/wp-content/uploads/2021/09/RMHIDTA-Marijuana-Report-2021.pdf

Traffic Fatalities & Impaired Driving • Since recreational marijuana was legalized in 2013, traffic deaths where drivers tested positive for marijuana, increased 138%, while all Colorado traffic deaths increased 29%.

 Since recreational marijuana was legalized, traffic deaths involving drivers who tested positive for marijuana more than doubled from 55 in 2013 to 131 people killed in 2020.

 Since recreational marijuana was legalized, the percentage of all Colorado traffic deaths involving drivers who tested positive for marijuana increased from 11% in 2013 to 20% in 2020

It is precisely this empirical evidence which has driven the following fact-sheets from government entities.

7. **Motor vehicle crash fatalities and undercompensated care associated with legalization of marijuana https://pubmed.ncbi.nlm.nih.gov/29787529/**
THC positivity among driver fatalities increased since legalization, with a threefold increase from 1993-2000 to 2001-2015. Methamphetamine, which has remained illegal, and alcohol positivity were not significantly different before versus after 2000. THC-positive fatalities were younger, and more likely, single-vehicle accidents, nighttime crashes, and speeding. They were less likely to have used a seatbelt or helmet. THC positivity among all injured patients tested at our highest-level trauma center increased from 11% before to 20% after legalization. From 2011 to 2015, THC-positive patients were significantly less likely to wear a seatbelt or helmet (33% vs 56%). They were twice as likely to have Medicaid insurance (28% vs 14%).

8. **Dose related risk of motor vehicle crashes after cannabis use https://pubmed.ncbi.nlm.nih.gov/14725950/**
The role of Delta(9)-tetrahydrocannabinol (THC) in driver impairment and motor vehicle crashes has traditionally been established in experimental and epidemiological studies. Experimental studies have repeatedly shown that THC impairs cognition, psychomotor function and actual driving performance in a dose related manner. The degree of performance impairment observed in experimental studies after doses up to 300 microg/kg THC were equivalent to the impairing effect of an alcohol dose producing a blood alcohol concentration (BAC) >/=0.05 g/dl, the legal limit for driving under the influence in most European countries. Higher doses of THC, i.e. >300 microg/kg THC have not been systematically studied but can be predicted to produce even larger impairment. Detrimental effects of THC were more prominent in certain driving tasks than others. Highly automated behaviors, such as road tracking control, were more affected by THC as compared to more complex driving tasks requiring conscious control.

9. Cannabis affects driving skills https://pubmed.ncbi.nlm.nih.gov/17332811/

Delta (9)-tetrahydrocannabinol (THC), the most important psychoactive substance in cannabis, is frequently detected in blood from apprehended drivers suspected for drugged driving. Both experimental and epidemiological studies have demonstrated the negative effects of THC upon cognitive functions and psychomotor skills. These effects could last longer than a measurable concentration of THC in blood. Culpability studies have recently demonstrated an increased risk of becoming responsible in fatal or injurious traffic accidents, even with low blood concentrations of THC. It has also been demonstrated that there is a correlation between the degree of impairment, the drug dose and the THC blood concentration. It is very important to focus on the negative effect of cannabis on fitness to drive to prevent injuries and loss of human life and to avoid large economic consequences to the society.

10. Relationship between THC concentration in blood and impairment in apprehended drivers https://pubmed.ncbi.nlm.nih.gov/16854704/

The relationship between the concentration of THC in blood and risk of being assessed impaired found in this cross-sectional study of suspected drugged drivers, supports findings from previous experimental studies of concentration related effects of THC on psychomotor performance and driving skills.

11. Driving under the influence of cannabis: a 10-year study of age and gender differences in the concentrations of tetrahydrocannabinol in blood
https://pubmed.ncbi.nlm.nih.gov/18190663/
The concentration of THC in blood at the time of driving is probably a great deal higher than at the time of sampling (30-90 minutes later). The notion of enacting science-based concentration limits of THC in blood (e.g. 3-5 ng/ml), as discussed in some quarters, would result in many individuals evading prosecution**. Zero-tolerance or limit of quantitation laws are a much more pragmatic way to enforce DUID legislation.** ZERO tolerance or using the US DOT standard of urine marijuana metabolites (attached) is a MUCH safer alternative for the public SAFETY (rather than allow ONE marijuana impaired driver to KILL another human, or even themselves). The authors need to answer how many innocents can be injured or harmed to allow ONE marijuana-impaired driver to operate a vehicle. The US DOT uses urine levels for ALL drug EXCEPT alcohol - since they recognized a long time ago that blood level limits for these hydrophobic substances are NOT accurately measured in the blood. The same method (urine levels) should be used by all governments when looking at these impairing substances. The Authors of the paper didn't address the issue of multi-substance impaired driving - which is on the rise. There is NO way to determine the numerous amounts of combinations to determine accurate impairing blood (or oral levels) of each substance when combining. The ONLY safe measure is ZERO tolerance.

12. Effects of chronic marijuana use on driving performance
https://www.tandfonline.com/doi/full/10.1080/15389588.2018.1501800
https://pubmed.ncbi.nlm.nih.gov/30411981/

"No significant relationship between blood THC concentration and driving performance was observed for 'regular' (weekly or more often) cannabis users." - the reason why blood levels are inappropriate for chronic users - is that they may be chronically impaired and they DO have residual THC remaining in the fatty brain tissue which is coming out and being turned into THC metabolites (including the HIGHER intoxicating THC-OH molecule than the parent THC molecule). - they have conveniently NOT included the Doroudgar study which showed chronic impairment in chronic users.

13. Cannabis Effects on Driving Lateral Control With and Without Alcohol
https://pubmed.ncbi.nlm.nih.gov/26144593 showed that 13.1 ng/ml THC created the same amount of weaving as 0.08 BAC. The hydrophobic THC molecule rapidly leaves hydrophilic blood since THC distributes readily into the brain - fatty tissue. The study shows the very low (2- 4 ng/ml THC levels within 1 - 2 hrs). Here was their ADMISSION that THIS study DID perform appropriate

assessments for impairment AND the timely monitoring of THC levels/biomarkers : *"Very few studies have measured the effects of THC on SDLP in combination with a relevant (and appropriately timed) biomarker (Arkell et al., 2019a; Brands et al., 2019; Micallef et al., 2018; Hartman et al., 2015; Ronen et al., 2010; Fares et al., 2021). Further research using simulated and on-road driving methods (or other measures that have a known relationship with driving performance) would permit better characterisation of the relationships between THC-related biomarkers and driving impairment."*

14. Medicinal" Cannabis and Driving – is it an Issue?
https://www.dalgarnoinstitute.org.au/images/resources/pdf/cannabis-medical-use/Marijuana_Use__Driving_Paper_14-12-21.pdf

15. Recreational cannabis use impairs driving performance in the absence of acute intoxication **https://www.sciencedirect.com/science/article/pii/S0376871619305484**

Chronic, heavy, recreational cannabis use was associated with worse driving performance in non-intoxicated drivers, and earlier onset of use was associated with greater impairment. These results may be related to other factors associated with early exposure such as increased impulsivity.

16. Motor vehicle crash fatalaties and undercompensated care associated with legalization of marijuana **https://pubmed.ncbi.nlm.nih.gov/29787529/**
THC positivity among driver fatalities increased since legalization, with a threefold increase from 1993-2000 to 2001-2015. Methamphetamine, which has remained illegal, and alcohol positivity were not significantly different before versus after 2000. THC-positive fatalities were younger, and more likely, single-vehicle accidents, nighttime crashes, and speeding. They were less likely to have used a seatbelt or helmet. THC positivity among all injured patients tested at our highest level trauma center increased from 11% before to 20% after legalization. From 2011 to 2015, THC-positive patients were significantly less likely to wear a seatbelt or helmet (33% vs 56%). They were twice as likely to have Medicaid insurance (28% vs 14%). Since the legalization of cannabis, THC positivity among MVC fatalities has tripled statewide, and THC positivity among patients presenting to the highest level trauma center has doubled. THC-positive patients are less likely to use protective devices and more likely to rely on publically funded medical insurance. These findings have implications nationally and underscore the need for further research and policy development to address the public health effects and the costs of cannabis-related trauma.

17. Dose related risk of motor vehicle crashes after cannabis use
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becoming responsible in fatal or injurious traffic accidents, even with low blood concentrations of THC. It has also been demonstrated that there is a correlation between the degree of impairment, the drug dose and the THC blood concentration. It is very important to focus on the negative effect of cannabis on fitness to drive in order to prevent injuries and loss of human life and to avoid large economic consequences to the society.

19. Relationship between THC concentration in blood and impairment in apprehended drivers https://pubmed.ncbi.nlm.nih.gov/16854704/ The relationship between the concentration of THC in blood and risk of being assessed impaired found in this cross-sectional study of suspected drugged drivers, supports findings from previous experimental studies of concentration related effects of THC on psychomotor performance and driving skills**.**

20 Marijuana's Impact on Driving Presented by Phillip Drum, PharmD This session will discuss the impact marijuana use has on driving. Dr. Drum will review the pharmacokinetics of major cannabis components and data from impaired driving fatalities and methods used to monitor impaired drivers. **https://vimeo.com/683514977/80fb56953b**

21. **Motor vehicle crash fatalaties and undercompensated care associated with legalization of marijuana https://pubmed.ncbi.nlm.nih.gov/29787529/**

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22. Adverse Health Effects of Marijuana Use
https://www.researchgate.net/publication/262846407_Adverse_Health_Effects_of_Marijuana_Use

23. . **Driving under the influence: a multi-center evaluation of vehicular crashes in the era of cannabis legalization**
https://www.researchgate.net/publication/356150737_Driving_under_the_influence_a_multi-center_evaluation_of_vehicular_crashes_in_the_era_of_cannabis_legalization

Since the legalization of cannabis, THC positivity among MVC fatalities has tripled statewide, and THC positivity among patients presenting to the highest-level trauma center has doubled. **THC-positive patients are less likely to use protective devices and more likely to rely on publicly funded medical insurance.** These findings have implications nationally and underscore the need for further research and policy development to address the public health effects and the costs of cannabis-related trauma.

24.**Cannabis Legalization and Detection of Tetrahydrocannabinol in Injured Drivers**
https://www.nejm.org/doi/full/10.1056/nejmsa2109371

Key points: During the study period, 4339 drivers (3550 before legalization and 789 after legalization) met the inclusion criteria.
Before legalization, a THC level greater than 0 was detected in 9.2% of drivers, a THC level of at least 2 ng per milliliter in 3.8%, and a THC level
of at least 5 ng per milliliter in 1.1%. After legalization, the values were 17.9%, 8.6%, and 3.5%, respectively. After legalization, there was an increased prevalence of drivers with a THC level greater than 0 (adjusted prevalence ratio, 1.33; 95% confidence interval [CI], 1.05 to 1.68), a THC level of at least 2 ng per milliliter (adjusted prevalence ratio, 2.29; 95% CI, 1.52 to 3.45), and a THC level of at least 5 ng per
milliliter (adjusted prevalence ratio, 2.05; 95% CI, 1.00 to 4.18). The largest increases in a THC

level of at least 2 ng per milliliter were among drivers 50 years of age or older (adjusted prevalence ratio, 5.18; 95% CI, 2.49 to 10.78)
and among male drivers (adjusted prevalence ratio, 2.44; 95% CI, 1.60 to 3.74). There were no significant changes in the prevalence of drivers testing positive
for alcohol. CONCLUSIONS
After cannabis legalization, the prevalence of moderately injured drivers with a THC level of at least 2 ng per milliliter in participating British Columbia
trauma centers more than doubled. The increase was largest among older drivers and male drivers. Funded by the Canadian Institutes of Health Research.

25. Position Statement: The Royal Australian College of General Practitioners (RACGP)
highlights the need for further high-quality research into the safety and effectiveness of medicinal cannabis products, as the current evidence is limited and
inconclusive.https://www.racgp.org.au/advocacy/position-statements/view-all-position-statements/clinical-and-practice-management/medical-cannabis#:~:text=Types%20of%20medicinal%20cannabis%20products&text=The%20main%20active%20ingredients%20used,nausea%2C%20pain%20and%20muscle%20spasticity.

Types of medicinal cannabis products

Cannabis is a complex plant comprising more than 500 constituents, including approximately 100 cannabinoids.[3] The main active ingredients used for medical purposes are tetrahydrocannabinol (THC) and cannabidiol (CBD). THC is the psychoactive part of cannabis that produces a 'high' and has been used to treat symptoms such as nausea, pain and muscle spasticity. CBD has no psychoactive properties and has been used to treat several inflammatory disorders and epilepsy. Only pharmaceutical, non-smokeable, medicinal-grade products (listed in point one below) can now be supplied lawfully in Australia but medicinal cannabis products can **come in three main forms:** Pharmaceutical: Natural and synthetic medical-grade products with standardised content. The three main products are: Dronabinol: Synthetic form of THC, Nabilone: Synthetic form of THC, Nabiximols: Chemically pure 50:50 mixture of THC and CBD. Medicinal-grade herbal cannabis: Produced and processed in controlled standard conditions to a medical grade, free of adulterants, higher levels of CBD and other cannabinoids, and contains lower levels of THC. This is provided in herbal form, or processed as an oil, balm, capsule, or pill. Herbal cannabis on the illegal market: Potentially unstable THC and CBD and may contain adulterants.

26. Cannabis and Driving **https://www.frontiersin.org/articles/10.3389/fpsyt.2021.689444/full**

Cannabis-impaired driving is an under-appreciated risk, and one with growing public health consequences. The situation is complicated by the somewhat skewed, agenda-driven reporting of this area of inquiry. For example, both proponents and opponents of cannabis legalization each interpret statistical reports of motor vehicle crashes in relationship to cannabis legalization differently, hoping that the data can help further their own agenda. Relying on established science can help the debate, particularly in instances where science finds itself bumping up against public policy, with legislators and others needing to be more current/topical about the existing research, so that they can make the best, most informed, policy decisions. Looking first at the public health issue because cannabis-intoxicated individuals are relatively aware of their impairment, particularly in comparison to alcohol-intoxicated drivers, many cannabis users erroneously assume that they are therefore safe to drive. Public service announcements emphasizing risks of "stoned driving," such as those used in Australia, would be a useful investment in the US. And although the evidence for synergy of impairment between alcohol and cannabis is still preliminary, this point could be easily incorporated into such PSA's, at least as a means of raising awareness of a potential

problem. In the interim though, more research needs to be conducted in this area, given its potential public health importance. Until there is more evidence-based consensus on meaningful thresholds for *per se* laws, we would recommend against reliance on such legislation. This is particularly the case given the significant inconsistencies in threshold values currently determined by different states in the US, and the rather weak scientific basis for such decisions. Any such laws cannot claim to be strongly based on current scientific evidence, which suggest collectively that standard based on detectable blood THC levels are not useful. These relatively recently ascertained facts tend to contradict established legislative efforts to demarcate cut offs. A related issue is the still current disconnect between demonstrating the presence of THC in a physiological sample taken from a putatively intoxicated driver and the assumption of driving impairment. There is widespread agreement on the dearth of available valid roadside tests that assess cannabis-related behavioral patterns specifically, and an obvious need to develop such screening paradigms that index actual cannabis-related driving impairment, rather than mere intoxication that may be unrelated to such impairment. It is important therefore to first validate experimentally any such putative field sobriety impairment measures in the context of concomitant on-road or similated driving. Finally, because cannabis concentrates and edible forms of the drug are becoming more popular (148, 149), and are both potent sources of THC and little-studied in terms of their types and time courses of driving impairment, it would be prudent for the National Institute on Drug Abuse to devote more resources on studying the effects of these forms of cannabis, and developing procedures for making them available to investigators for this purpose.

27. Effects of therapeutic cannabis on simulated driving: A pilot study
https://www.researchgate.net/publication/340770069_Effects_of_therapeutic_cannabis_on_simulated_driving_A_pilot_study

 Drivers may not be aware of the effects of alcohol and cannabis on their driving abilities. One study of therapeutic cannabis users observed that they felt there was little risk associated with driving after the use of cannabis (Di Ciano et al. 2020). Another study showed that individuals believed their driving ability may be more negatively impacted by alcohol than cannabis (Watson et al. 2019).

27. Preliminary Eye-Tracking Data as a Nonintrusive Marker for Blood Δ-9-Tetrahydrocannabinol Concentration and Drugged Driving
https://pubmed.ncbi.nlm.nih.gov/34432541/

Specific eye characteristics could potentially be used as nonintrusive markers of THC presence and driving-related effects of cannabis. clinicaltrials.gov (NCT03813602).

28. Adverse Health Effects of Marijuana Use
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827335/

This document states that: RISK OF MOTOR-VEHICLE ACCIDENTS
Both immediate exposure and long-term exposure to marijuana impair driving ability; marijuana is the illicit drug most frequently reported in connection with impaired driving and accidents, including fatal accidents.[35] There is a relationship between the blood THC concentration and performance in controlled driving-simulation studies,[36] which are a good predictor of real-world driving ability. Recent marijuana smoking and blood THC levels of 2 to 5 ng per milliliter are associated with substantial driving impairment.[37] According to a meta-analysis, the overall risk of involvement in an accident increases by a factor of about 2 when a person drives soon after using marijuana.37 In an accident culpability analysis, persons testing positive for THC (typical minimum level of detection, 1 ng per milliliter), and particularly those with higher blood levels, were 3 to 7 times as likely to be responsible for a motor-vehicle accident as persons who had not used drugs or alcohol before driving.[38] In comparison, the overall risk of a vehicular accident increases by a factor of almost 5 for

drivers with a blood alcohol level above 0.08%, the legal limit in most countries, and increases by a factor of 27 for persons younger than 21 years of age.39 Not surprisingly, the risk associated with the use of alcohol in combination with greater than that associated with the use of either drug alone. However, the effects of a drug (legal or illegal) on individual health are determined not only by its pharmacologic properties but also by its availability and social acceptability. In this respect, legal drugs (alcohol and tobacco) offer a sobering perspective, accounting for the greatest burden of disease associated with drugs77 not because they are more dangerous than illegal drugs but because their legal status allows for more widespread exposure. As policy shifts toward legalization of marijuana, it is reasonable and probably prudent to hypothesize that its use will increase and that, by extension, so will the number of persons for whom there will be negative health consequences.

References

*35. Brady JE, Li G. **Trends in alcohol and other drugs detected in fatally injured drivers in the United States**, 1999–2010. Am J Epidemiol. 2014; 179:692–9. [PubMed: 24477748]*

*36. Lenné MG, Dietze PM, Triggs TJ, Walmsley S, Murphy B, Redman JR. **The effects of cannabis and alcohol on simulated arterial driving: influences of driving experience and task demand.** Accid Anal Prev. 2010;   42:859–66. [PubMed: 20380913] 37. Hartman RL, Huestis MA. Cannabis effects on driving skills. Clin Chem. 2013; 59:478–92. [PubMed: 23220273]*

*38. Ramaekers JG, Berghaus G, van Laar M, Drummer OH. **Dose related risk of motor vehicle crashes after cannabis use. Drug Alcohol Depend**. 2004; 73:109–19. [PubMed: 14725950]*

29. Duration of neurocognitive impairment with medical cannabis use: a scoping review - L Eadie, LA Lo, A Christiansen, JR Brubacher… https://pubmed.ncbi.nlm.nih.gov/33790818/
This review suggests that the duration of neurocognitive impairment following inhalation or sublingual absorption of THC-containing products is 4 hours or less in medical cannabis patients. The results of this review are consistent with the College of Family Physicians of Canada's 2014 statement that medical cannabis patients should err on the side of caution, and delay safety sensitive activities for 3–4 hours if cannabis (THC) is inhaled, 6–8 hours if ingested orally, and 8 hours if any euphoria is experienced (79). There are important differences between medical and recreational cannabis users that may not allow for the same conclusions to be drawn about the duration or degree of impairment within the recreational cannabis population. These differences pertain to factors including the dose of THC, method of intake, patient tolerance and intent, additional chemovars added (such as CBD) and concurrent sedative or hypnotic medication intake (Figure 2). This review suggests that neurocognitive impairment in medical cannabis patients can involve multiple neurocognitive and psychomotor domains. A summary of the main conclusions and recommendations from this review can be found in Table 5

30. Dose related risk of motor vehicle crashes after cannabis use
https://iasic1.org/library/?msclkid=4c6534a6b5b511ecb37a1db62987bf12#catagory-6

Recent smoking of marijuana and blood THC of 2-5 ng per milliliter are associated with substantial driving impairment. According to meta-analysis, the overall risk of involvement in an accident increases by a factor of about 2 when a person drives soon after using marijuana. In an accident culpability analysis, persons testing at 1 ng/ml ofTHC or higher were 3-7 times as likely to be responsible for a motor vehicle collision. In comparison, the risk of a vehicular collision increased by almost 5 for a driver with a blood alcohol over 0.08%. The risk of alcohol with marijuana is associated with an increase risk than either drug alone.

30. Driving Performance and Cannabis Users' Perception of SafetyA Randomized Clinical Trial https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2788264

Smoking cannabis ad libitum by regular users resulted in simulated driving decrements. However, when experienced users control their own intake, driving impairment cannot be inferred based on THC content of the cigarette, behavioral tolerance, or THC blood concentrations. Participants' increasing willingness to drive at 1 hour 30 minutes may indicate a false sense of driving safety. Worse driving performance is evident for several hours   postsmoking in many users but

appears to resolve by 4 hours 30 minutes in most individuals. Further research is needed on the impact of individual biologic differences, cannabis use history, and administration methods on driving performance.

32. **Drug and Alcohol Crash Risk** https://www.nhtsa.gov/sites/nhtsa.gov/files/812117-drug_and_alcohol_crash_risk.pdf

In the 2015 "Traffic Safety Facts: Drug and Alcohol Crash Risk" report, the National Highway Traffic Safety Administration (NHTSA) notes that THC increased crash risk

by 1 to 3 times more than sober drivers. Some studies also note that high-risk groups for car accidents are those most likely to use marijuana.[4] Most notably, this is young

men in their late teens and 20s.

33. A Baseline Review and Assessment of Cannabis Use and Public Safety

https://mass-cannabis-control.com/wp-content/uploads/2019/01/FINAL-RR1-PS1-Cannabis-Impaired-Driving_2019-1-18.pdf

Two of the research agenda priority items enumerated include the assessment of:

1 Incidents of impaired driving.

2 State of science around identifying a quantifiable level of marijuana-induced impairment of motor vehicle operation

34. The effects of cannabis intoxication on motor vehicle collision revisited and revised

https://onlinelibrary.wiley.com/doi/10.1111/add.13347

More than one research study has found a direct link between THC (the psychoactive chemical in marijuana) concentration in the blood and impaired driving skills.

An analysis of several studies has found that the risk of being involved in a motor vehicle crash significantly increases after using marijuana.

35. Driving Performance and Cannabis Users' Perception of Safety A Randomized Clinical Trial https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2788264

Smoking cannabis ad libitum by regular users resulted in simulated driving decrements. However, when experienced users control their own intake, driving impairment cannot be inferred based on THC content of the cigarette, behavioral tolerance, or THC blood concentrations. Participants' increasing willingness to drive at 1 hour 30 minutes may indicate a false sense of driving safety. Worse driving performance is evident for several hours postsmoking in many users but appears to resolve by 4 hours 30 minutes in most individuals. Further research is needed on the impact of individual biologic differences, cannabis use history, and administration methods on driving performance.

36. **Driving While Stoned** By Laura Stack https://johnnysambassadors.org/driving-stoned/

Effects of Medical Marijuana use on driving performance Our Nation has worked long and hard to arrest and 'wind in' drink driving and the incredible toll it has taken on our communities. To add any mechanism to legislation that allows or even permits any other version of intoxicated use over a vehicle is at best incredibly unwise – at worst culpable. The campaign in play at the moment to have Cannabis is 'medicinal' form excised from the legislation to enable the users of such

formulations to consume this psychotropic substance and drive with impunity is illadvised at best. It is our conclusion that enabling people who use cannabis to drive – even as 'medicine' – is not on the best interest of public safety. And last, by not least, the chronic users of alcohol could argue for their 'adaptive' capacity over time, and thus be exempt from probation standards. The salient point being that drink drivers could also claim that every metabolism is different and that some of them can drive perfectly well with 0.10 readings instead of 0.05. However, the law simply cannot work this way, cannabis being more complex than alcohol regarding its various modes of delivery (i.e. smoked or ingested) and difficult to resolve whether waiting 6 or 10 hours is applicable.

Since safe driving will require abstinence from cannabis consumption for hours, any "on site" cannabis consumption (lounges, restaurants, bars, etc.) will __require__ the user to use alternative methods of transportation following use to protect society from impaired driving. Like tobacco second hand marijuana exposure for non-users may also impair their ability to drive safely.

The only way to keep the Australian community safe on the roads and highways here in Australia now is to have **ZERO** tolerance for cannabis while driving.

We would be pleased to participate in an opportunity to further present the above evidence in person, during this Inquiry.

Kind regards

**International Liaison Director,
Drug Free Australia**

Prevent. Don't Promote Drug Use.
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