

## Perspective

# Skydiving without a Parachute

Ed Wood\*

DUID Victim Voices, USA

## \*Corresponding author

Ed Wood, DUID Victim Voices, PO Box 986, Morrison, CO 80465, USA, Tel: 303-478-7636; Email: ed.wood2@comcast.net

Submitted: 10 June 2016

Accepted: 14 July 2016

Published: 18 July 2016

ISSN: 2333-665X

## Copyright

© 2016 Wood

OPEN ACCESS

**Abstract**

Colorado has reported no increases in citations for Driving under the Influence of Drugs (DUID) since commercialization of marijuana in the state. That is no surprise, since Colorado does not issue any citations for DUID. The state has a single citation for Driving under the Influence (DUI), irrespective of cause, and does not separate alcohol, drugs, or a combination of alcohol and drugs in any of their data systems. There is therefore no means to determine the highway safety impact of the state's current widespread and increasing use of marijuana. Some view Colorado as an experiment in marijuana legalization, but any scientific experiment requires both a control of input variables and a measurement of outcomes. Colorado does neither, and reports tax revenue from its marijuana "experiment," but little else.

Colorado attempted to deal with DUID due to marijuana long after marijuana's commercialization began. Policy discussions that were conducted to deal with DUID were therefore dominated by marijuana users, growers, dealers, and their organized supporters. Consequently, Colorado now has the weakest DUID laws in the nation, as shown by the comparison of laws shown in this report.

Legalizing and commercializing marijuana prior to having effective laws in place to identify and deal with its consequences is akin to skydiving without a parachute.

Because of the great differences between alcohol and marijuana, DUI laws developed to deal with alcohol-impaired driving are ill-suited to dealing with marijuana-impaired driving. The following recommendations to deal with marijuana-impaired driving as well as other forms of drugged driving should be considered before legalizing or commercializing marijuana.

## HOW COLORADO PASSED THE NATION'S WEAKEST DUID LAW

Colorado's HB1325 (2013) is a case study in how a state can move from having a weak DUID law to having the absolute weakest DUID law in the nation.

A Marijuana DUID Working Group met seven times in the summer of 2011 to review existing research and to hear testimony from eight experts. The Working Group learned the following:

- The use of cannabis leads to behavioral impairment.
- There is no consistent correlation between impairment and blood levels of THC.
- Alcohol is water soluble; THC is not, and is not metabolized like alcohol, so one should not expect blood THC levels to correlate well with impairment. There is not now, and may never be, any scientific support for an impairing level of THC in blood for all drivers.
- Prosecutors want the simplicity of a per se limit.
- Chronic marijuana use can lead to some tolerance, but such users can still be impaired.
- A limit of no higher than 1-2 ng/ml is needed to cover most

THC-impaired drivers and to ensure highway safety.

- Toxicologists consistently advised that a limit of 5 ng/ml was too high.
- A limit of at least 15 ng/ml is needed to permit non-impaired chronic users to drive legally.

Note that "science" did not establish impairment limits for alcohol. Alcohol per se limits vary from .00 to .10 gm/dl of whole blood in various countries all based upon the same scientific data. Alcohol per se limits were established by politicians based on scientific data and their country's views on freedom and acceptance of risk.

Alcohol per se levels have been established in most countries irrespective of some drivers' ability to drive safely above those levels because the public has no sympathy for drunk driving. THC per se levels faces a different public mood, since the public views many of those having high THC levels with sympathy. Some are, after all, "sick patients," not drugged drivers. The marijuana lobby's strategy of starting with "medical" marijuana before progressing to recreational marijuana has paid off.

Colorado's Commission for Criminal and Juvenile Justice (CCJJ) considered the above findings as well as other inputs to settle upon a 5 ng/ml THC per se limit that was subsequently changed to a 5 ng/ml permissible inference level. As opposed to

the expert testimony relied upon by the Marijuana DUID Working Group, the additional inputs provided to CCJJ were dominated by the marijuana lobby. This increasing powerful marijuana lobby has been effective in seeding the following myths into the minds of the media, the public, and the state's policy makers:

### **Marijuana is medicine**

But marijuana is marijuana, whether it be used recreationally, recreationally in the guise of medicine, or as an herbal remedy to relieve medical symptoms. The only difference between medical marijuana and recreational marijuana in Colorado is the tax rate.

### **Marijuana doesn't impair driving.**

Some drivers allege they are safer when they drive stoned. One such "stoner" reported to the Colorado District Attorney's Council that, "We have a right to drive stoned. And it's not dangerous." Some of this myth comes from the observation that some stoned drivers recognize their impairment and drive more slowly than normal. But the data are incontrovertible that marijuana impairs driving safety. And when mixed with alcohol, the risks are much greater.

Research numbers vary, but using marijuana before driving increases the chance of being involved in a crash (Odds Ratio, or OR, a measure of risk) by a factor of about 2. Most researchers find that alcohol's average OR are in the 7-9 range and increases as Blood Alcohol Content (BAC) increases. But the combination of alcohol and marijuana is much riskier than for either drug separately. OR numbers vary considerably from one research study to another, and for alcohol they vary based on the level of alcohol found in the driver. But virtually all studies confirm that alcohol combined with marijuana is more dangerous than alcohol alone, and that alcohol is more dangerous than marijuana alone. It is true that current data support the claim that driving stoned is safer than driving drunk. But it's not safer than driving sober.

EvenNORML (National Organization to Reform Marijuana Laws) recognizes that marijuana impairs driving safety, "Although cannabis is said by most experts to be safer than alcohol and many prescription drugs with motorists, responsible cannabis consumers never operate motor vehicles in an impaired condition".

### **THC remains in a user's blood long after the user is no longer impaired**

There is a high level of confusion about this claim, beginning with the confusion between active THC and its inactive metabolite, carboxy-THC, or THC-COOH. The inactive metabolite can remain in a user's body for an extensive period of time (over 4 weeks), long after acute impairment has subsided. That is not true of active impairing THC for most users. For occasional marijuana users, THC is cleared from blood within a few hours at the most, to well below the levels of quantification of forensic laboratories.

Marijuana addicts and other chronic users present a different problem. THC can remain in their blood after acute impairment has passed. But these users also have demonstrated a durable impairment that lasts even after three weeks of sustained abstinence and after THC can no longer be detected in the blood.

The problem here is that the paradigm is wrong. Blood is

never impaired by THC. Only the brain is impaired. We test blood as a surrogate for what is in the brain. For alcohol, blood is an excellent surrogate, since alcohol is a small, water-soluble molecule that rapidly establishes concentration equilibrium between blood and highly perfused tissues like the brain. For THC, blood is a terrible surrogate. THC is a much larger, fat-soluble molecule that is rapidly cleared from the blood when it is absorbed by fatty tissues like the brain. THC can be found in brain tissue even when none can be detected in blood, using today's analytical techniques.

### **Marijuana should be regulated like alcohol**

The nice thing about this myth is that it sounds catchy and sounds like it makes sense. But upon examination, its sensibility breaks down, leaving only its catchiness.

Marijuana is unlike alcohol chemically, biologically, and metabolically.

What possible rationale exists to regulate these two substances alike?

	<b>Alcohol</b>	<b>Marijuana</b>
Chemistry	Watersoluble, small molecule	Fat soluble, large molecule
Biology	Impacts physical abilities	Impacts mental abilities
Metabolism	Linear	Non-linear (First order kinetic)

### **A THC blood limit of 5 ng/ml is equivalent to .08 BAC**

As noted above, a THC blood test provides no information about the level of THC in the brain that may be impaired by THC.

But it gets worse. Over 90% of THC is cleared from blood within the first hour after smoking. The average time from a crash to collecting a blood sample in Colorado is two hours, or over three hours if a warrant is required. Conversely, the blood level of THC rises for several hours after consuming marijuana edible. Thus blood levels as tested have no relationship to blood levels at the time of a crash. Unlike a blood test for alcohol, a THC blood test provides no information whatsoever about the level of THC at the time of the incident that led to taking the blood test.

These two issues lead to the inevitable conclusion that a blood THC test is useless to determine impairment by marijuana. It can be used to prove marijuana was present and thus the likely cause of observed impairment symptoms, but it cannot be used to prove impairment.

Furthermore, the majority of cannabinoid-positive drivers arrested on suspicion of DUI test below 5 ng/ml. Depending upon the jurisdiction, laboratory, and law enforcement practices, the percentage that tests below 5 ng/ml varies from 45% to 90%, with most laboratory results showing that 70% of drivers arrested for DUID are below 5 ng/ml.

### **There is No Need for Stronger DUID Laws, since Over 90% of Such Drivers are already Convicted**

Colorado, like most other states doesn't collect any data on DUID, so it doesn't know what its DUID conviction rate is.

England's Ministry of Transport reported a DUID conviction rate of 52% before it imposed drug per se limits (2 ng/ml for marijuana).

### Since legalization of marijuana, highway death rates have dropped, so we have no DUID problem

These data are from the Fatality Analysis Reporting System (FARS) managed by the National Highway Traffic Safety Administration. But FARS was never designed to adequately capture DUID data. It's true that reported highway death rates dropped through 2014, but that drop has been attributed to safer roads, safer cars, better enforcement, and less driving due to the Great Recession. Now that the economy is beginning to recover, fuel prices have dropped, and driving has increased, deaths are on the rise once again.

Colorado began commercializing marijuana after the Department of Justice's Ogden memo of 2009. Consequently, the state legislature was under pressure to implement objective marijuana DUI standards. HB 1325 was passed and signed into law May 28, 2013. It established 5 ng/ml THC in whole blood as a permissible inference. The law's effect is to prevent prosecution of most drivers who test below 5 ng/ml. Those drivers above 5 ng/ml may be prosecuted, but convicted only if the prosecutor can convince the court that other evidence proves that the driver is impaired. This led to the recent acquittal for DUI of a chronic user who was impaired as indicated by Standardized Field Sobriety Test results and subsequently tested positive for 19 ng/ml of THC in whole blood.

### DUID Initiatives

It can be extraordinarily difficult for a prosecutor to prove that drug impairment caused a crash, just as it once was difficult to prove that alcohol impairment caused a crash before adoption of alcohol per se laws. A common defense argument was, "It was an accident. It could have happened to anyone." Fortunately, multiple researchers have shown a strong correlation between BAC and the relative risk of being in a crash. This has led to the near universal adoption of alcohol per se limits in states and countries around the world, beginning with Indiana's presumptive DUI law in 1939.

Objective limits for alcohol impairment have replaced reliance upon subjective measures of DUI-alcohol. Prosecutors, courts and juries desire and expect similar objective measures for drug impairment.

Unfortunately, and for multiple reasons the correlation between impairment and THC blood concentration is very weak. Data on correlation between impairment and other drugs or drug combinations is generally lacking.

Nevertheless, many states have adopted drug per se laws, using a variety of strategies:

1. 15 states have various forms of zero-tolerance laws for a wide range of impairing drugs
2. 3 states have specific non-zero per se limits for a limited range of drugs
3. 3 states have set a 5 ng/ml THC limit in whole blood as

either a per se limit (Washington and Montana) or a permissible inference limit (Colorado).

4. At least 6 states have considered or are considering adoption of the ill-advised 5 ng/ml THC limit adopted by Washington, Colorado and Montana. These include:
  - a) Illinois HB 218 (2015): This was a bill to decriminalize marijuana that also would have established a 15 ng/ml THC per se limit. The bill passed both houses, but the Governor exercised a line item veto on the 15 ng limit, promising to sign the bill if the legislature lowered the limit to 5 ng. The legislature did not respond, and the bill died.
  - b) Florida H 161 (2015): This bill proposes a 5 ng/ml THC limit in whole blood.
  - c) Michigan HB 5024 (2015): This bill directs a state agency to define a THC per se limit.
  - d) Missouri HB 1974 (2016): This bill would establish a 5 ng/ml THC permissible inference level, like Colorado's.
  - e) New Mexico HB 44 (2016): This bill proposes per se limits on many Schedule I drugs and select metabolites, including a 5 ng/ml limit for THC
  - f) California AB 2740 (2016): This bill proposes a 5 ng/ml THC per se limit, but it also requires corroborating evidence of impairment for a DUI conviction.

### Alternative objective measures for DUID

Lacking evidence of correlation between drug concentrations and impairment, the following alternatives for objective measures of DUID may be considered:

1. Zero tolerance based per se limits. Zero tolerance limits are rational for illegal drugs. Why establish an acceptable limit for illegal drugs? But zero tolerance will not likely be generally accepted for drugs that are legal. For legal drugs, limits may be based on detectable levels. For THC, this could result in a limit of 1 or 2 ng/ml THC, based on common testing thresholds.
2. Risk-based blood per se limits. For THC, this would result in a range between 1 and 20 ng/ml in whole blood. If the level is set too low, it would not be accepted by the public. If the level is set too high, it would harm highway safety by allowing many impaired drivers to escape justice.
3. Compromise per se limits. The common compromise for THC is 5 ng/ml. This serves the interests neither of highway safety nor of many marijuana users. The only constituencies well-served by a 5 ng limit are prosecutors, politicians, and most stoned drivers .
4. Dual per se approach. An example of this is the English/Welch approach that sets zero tolerance limits for illegal drugs and risk-based limits for legal drugs. This works for them because they classify marijuana as an illegal drug. They classify methamphetamine (Adderall) as an illegal drug, whereas 25 million prescriptions are written for it

in the US. They don't establish any limits for opioids.

5. Tandem per se. Two sequential events must occur to prove DUID. First, admissible evidence of impairment, followed by proof of presence of any impairing drug in the driver. Evidence of impairment may include both driving behavior and/or behavioral assessments.
6. Await future science advancements to determine if oral fluid is better than blood testing. Preliminary evidence suggests that oral fluid samples can be taken more quickly than blood samples, but there is no evidence to suggest that oral fluid results are better than blood tests.
7. Await future science advancements to determine if breath testing can identify recency of use. This may be of some merit for THC impairment, but data are limited.
8. Seek alternative measures of biological impairment. Portable electroencephalograms, assays of retinal impairment or other measures could possibly measure drug impairment symptoms, not merely drug presence.

### Model DUID laws

Policy makers faced with legalization and commercialization of impairing drugs should deal with all facets of DUID, not simply DUI-marijuana. It is essential to recognize poly drug impairment (including drugs plus alcohol), and the fact that risk-based drug impairment levels that may seem reasonable for a single drug may not be reasonable when several drugs are combined. Decisions should be based upon sound science, but it is unrealistic to expect "science" to make political decisions.

Policy makers should consider the following measures, especially when facing drug legalization:

1. Establish an objective DUID standard such as zero-tolerance per se limits or tandem per se limits, described above.
2. Ensure the state has a mechanism to understand DUID; the causes, consequences, and effect of steps taken to influence outcomes. It is essential that data systems separate arrests based on alcohol alone, drugs alone, and drug/alcohol combinations. Few states do this today. Half of the states have a single citation for DUI that does not differentiate between impairment caused by alcohol from impairment caused by drugs. This makes DUID data analysis difficult and sometimes impossible.
3. Define DUI to be drivers less able than the driver would ordinarily be to exercise clear judgment, sufficient physical control, or due care in the safe operation of a vehicle. Current statutory definitions range from "impairment to the slightest degree" (3 states) to "incapable of driving safely" (12 states). Proving the latter may be nearly impossible, especially if there are no defined objective measures of DUID.
4. For legal drugs, prescribed or otherwise, it should be a per se violation to drive with any detectable level of drugs in the body if and only if there is also admissible evidence of driving impairment or behavioral impairment.
5. Require blood or oral fluid testing of all drivers involved

in crashes that result in death or serious bodily injury. Six states provide for this. Others require that additional probable cause be established prior to taking a biological sample. Defense attorneys can then sometimes convince courts that the probable cause was inadequate, thereby making laboratory tests inadmissible.

6. Enable use of qualitative oral fluid drug testing devices (present/not present) at the roadside to inform officers, support probable cause for further testing and evaluation, or to call for Drug Recognition Experts or other experts.
7. Enable use of quantitative oral fluid evidentiary testing for presence of drugs. Oral fluid samples can be taken more quickly than blood samples. This is essential in THC cases, since THC is so rapidly cleared from the blood.
8. Enable electronic warrants to reduce time delays before collecting a blood or oral fluid sample. The Arizona model for electronic warrants enables officers to routinely obtain permission to withdraw blood in less than 30 minutes. Implied consent laws to encourage voluntary testing and thereby reduce delays are only marginally effective. Officers in Colorado report arresting drivers for marijuana impairment, only to find a bag of marijuana sitting on top of an ignition interlock device, placed there as an administrative sanction for refusing a blood test in a prior arrest.
9. Establish enhanced penalties for driving under the influence of multiple drugs, including alcohol plus drugs.
10. Eliminate statutory presumption of innocence for drivers testing below BAC .05 when impairing drugs are also present. Some states provide a statutory presumption of DUI innocence if a driver tests below .05 BAC. This may be appropriate when alcohol is the only impairing substance in the driver, but it is not appropriate when small doses of alcohol are combined with one or more other drugs, due to the additive and/or synergistic biological response to combinations of impairing drugs.

### CONCLUSION

Drugged driving is rampant, is increasing faster than DUI alcohol, and the consequences include death and serious injuries. Marijuana, whether legalized or not, is only part of a larger drugged driving problem. States must deal with this problem aggressively, based on sound science, courage, and a focus on both safety and justice.

The American Automobile Association Foundation for Traffic Safety (AAA) released four reports in 2016 to address marijuana-impaired driving. Although their focus was on only the marijuana part of a larger DUID problem, the reports stand out for their thoughtful combination of sound science and rational suggestions. If AAA's analysis and recommendations can be picked up by an effective advocacy group like the National Conference of State Legislators, we may one day find legislatures will provide legal tools to deal effectively with DUID, as they have already done for DUI-alcohol.

### REFERENCES



1. Recap of Marijuana DUID Working Group, Commission on Criminal and Juvenile Justice, 2011.
2. Blood alcohol content.
3. Li M, Joanne E. Brady, Charles J. DiMaggio, Arielle R. Lusardi, Keane Y. Tzong, Guohua Li, et al. Marijuana Use and Motor Vehicle Crashes. *Epidemiol Rev.* 2012.
4. Krüger H-P, Kazenwadel J, Vollrath M. Grand Rapids Effects Revisited. *Accidents, Alcohol and Risk.*
5. Ramaekers JG, Robbe HW, O'Hanlon JF. Marijuana, Alcohol, and Actual Driving Performance. *Hum Psychopharmacol.* 2000; 15: 551-558.
6. Huestis MA, Milavetz G, Spurgin A, Pierce RS, Gorelick DA, Gaffney G. Cannabis effects on driving lateral control with and without alcohol. 2015; 154: 25-37.
7. Principles of Responsible Use.
8. How Long Does THC Stay in Your System? 2014.
9. Johansson E, Halldin MM, Agurell S, Hollister LE, Gillespie HK. Terminal elimination plasma half-life of delta 1-tetrahydrocannabinol (delta 1-THC) in heavy users of marijuana. *Eur J Clin Pharmacol.* 1989; 37: 273-277.
10. Bosker WM, Karschner EL, Lee D, Goodwin RS, Hirvonen J, Robert B. Innis, et al. Psychomotor Function in Chronic Daily Cannabis Smokers during Sustained Abstinence. *PLoS ONE.* 2013; 8: 53127.
11. Mura P, Kintz P, Dumestre V, Raul S, Hauet TJ. THC can be detected in brain while absent in blood. *J Anal Toxicol.* 2005; 29: 842-843.
12. Huestis MA, Henningfield JE, Cone EJ. Blood Cannabinoids Absorption of THC and Formation of aa-OH-THC and THCCOOH during and after Smoking Marijuana. *J Anal Toxicol.* 1992; 16: 276-282.
13. Wood E, Brooks-Russell A, Drum P. Delays in DUI blood testing: Impact on cannabis DUI assessments. *Traffic Inj Prev.* 2016; 17: 105-108.
14. *Op. cit.* Huestis Dec 15, 2015
15. Testimony before Colorado's Senate Judiciary Committee.
16. Martin Ellis, Policy Lead on Drug Driving, Department for Transport.
17. Berning A, Smither D. Understanding the Limitations of Drug Test Information, Reporting and Testing Practices in Fatal Crashes. NHTSA Research Note. 2014; DOT HS 812 072.
18. Hernandez E. Colorado sees deadliest year of traffic fatalities. *Denver Post.* 2016.
19. Ogden DW. Memorandum for selected united states attorneys. 2009.
20. Salomonsen-Sautel S, Min SJ, Sakai JT, Thurstone C, Hopfer C. Trends in fatal motor vehicle crashes before and after marijuana commercialization in Colorado. *Drug Alcohol Depend.* 2014; 140: 137-144.
21. Kosnett MJ. Case Review: The Toxicologist in the Marijuana Court. ACMT Seminars in Forensic Toxicol. 2015. *Op. cit.* Krüger
22. Wood, E. Why a 5 ng/ml THC limit is bad public policy. *J Global Drug Policy in press*
23. Ramaekers JG, Moeller MR, Van Ruitenbeek P, Theunissen EL, Schneider E, Kauert G. Cognition and motor control as a function of  $\Delta^9$ -THC concentration in serum and oral fluid. *Drug Alcohol Depend.* 2006; 85: 114-122.
24. Logan, B et al. An Evaluation of Data from Drivers Arrested for Driving Under the Influence in Relation to Per Se Limits for Cannabis. AAA Foundation for Traffic Safety. May 2016. *Op. cit.* Wood. In Press
25. PIRE California Roadside Survey. 2012.
26. Eric Rasmussen. FOX25 Investigates: Drugged driving outpacing drunk driving in Massachusetts. 2016.
27. Derrell Lyles. Traffic fatalities fall in 2014, but early estimates show 2015 trending higher. NHTSA. 2015; 47-15.
28. Wood E, Salomonsen-Sautel S. DUID prevalence in Colorado's DUI citations. *J Safety Res.* 2016; 57: 33-38.
29. AAA Foundation for Traffic Safety competed reports in 2016.

## Cite this article

Wood E (2016) Skydiving without a Parachute. *J Addict Med Ther* 4(1): 1020.