Colorado's Drugged Driving Problem

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1. **Percent of drivers who admit to driving after marijuana use**:
   Over half of our marijuana-using youth drive after using marijuana.
   o 18.6% of past 30-day adult marijuana users in 2019[1] drove after using marijuana.
   o 54.4% of past 30-day high school student marijuana users in 2019[2] drove after using marijuana.

   Analysis: Recent THC[*] use impairs driving skills, but acute THC impairment subsides within a few hours after inhaled use of the drug. The data above are fairly soft since they are based on surveys. Nevertheless, the high percentage of current high school marijuana users who admit to driving after use of the drug is quite alarming. If that cohort continues their practice into adulthood, we can expect a continual increase in drugged driving and attendant traffic fatalities.

2. **Toxicology tests of those arrested for DUI:[3]**
   CBI reported more positive tests for DUI-marijuana than for DUI-alcohol.

Drug category		Number
Cannabinoids	Positive screens	4,205
	THC positive	4,069
Alcohol		3,956
Benzodiazepines		1,774
Methamphetamine and similar		1,090
Cocaine		838
Opioids/opiates		699
Sleeping Zs		115

   Note: Colorado Bureau of Investigation (CBI) data from July 2019 to June 2020.

   Analysis: Validity of past similar reports has suffered from the fact that after finding that a driver exceeded the alcohol *per se* limit of BAC .08 gm/dL, it is uncommon for police to proceed with gathering drug use. Therefore, the prevalence of drugged driving was dramatically under-reported. In contrast, CBI tested all blood samples for both alcohol and drug testing beginning in July, 2019. CBI reported 12,771 positive drug results from the 9,763 samples submitted, suggesting a maximum of 23.6% polydrug use. The above data do not include Colorado's forensic toxicology tests performed by Chematox Labs for the month of June 2019 or DUI evidentiary breath tests.

   These data show that 96.8% of positive cannabinoid screens resulted in positive THC test results. Benzodiazepines have long been a common impairing drug found in Colorado's DUI forensic toxicology assays. Although benzodiazepines are prescribed as Valium® and Xanax® for example, they are commonly used "recreationally". 12.8% of the benzodiazepines were "designer benzos," cooked up for illicit use, not for conventional medications.

   * THC refers only to Δ^9-tetrahydrocannabinol, the psychoactive agent in marijuana, <u>not</u> to its inactive metabolite.

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[1] https://marijuanahealthinfo.colorado.gov/health-data/behavioral-risk-factor-surveillance-system-brfss-data
[2] https://marijuanahealthinfo.colorado.gov/health-data/healthy-kids-colorado-survey-hkcs-data 11.2% of students divided by 20.6% of past 30-day users
[3] https://us17.campaign-archive.com/?u=8c19b56d089ffb41f61475b71&id=7e46389639

3. **DUI charges– percent caused by alcohol, THC and polydrug use – 3-year trend:**[4]
   DUI-alcohol charges are decreasing while DUI-drug charges are increasing.

	2016	2018	% change
Alcohol	75.8%	75.3%	- 4.4%
THC	5.4%	6.4%	+18.5%
Polydrug	12.7%	14.5%	+14.2%

Analysis: DUI is not only about alcohol and DUID is not only about THC, the prevalence of which is increasing rapidly while the prevalence of alcohol impairment is declining. These data include both blood testing as well as evidentiary breath testing.

4. **Traffic deaths per Billion Vehicle Miles Traveled (BVMT)**:
   Traffic deaths increased over 1.5/BVMT since marijuana commercialization.
   o   Increased from 9.91 deaths/BVMT in the five years before marijuana commercialization to 11.26/BVMT in the five years after marijuana commercialization[5].
   o   Increase of 1.46 deaths/BVMT per year adjusted after marijuana commercialization, compared with a synthetic control[6].
   o   Increase of 1.9 deaths/BVMT per year adjusted after marijuana commercialization, compared with states with stable legalization policies[7].
   o   Increase of 1.7 deaths/BVMT per year non-adjusted after marijuana commercialization compared with states without legal recreational or medical marijuana[8].
   Note: the above reports measured the effect of marijuana commercialization in 2014, not marijuana legalization in 2012.

Analysis: These four separate analyses have similar results showing the association between marijuana commercialization and increasing traffic fatalities. They all show association but cannot prove causation.

The first analysis shows Colorado fatalities before and after commercialization. The last three compare Colorado's death rate with control states during the same time period.

5. **Traffic fatalities implicating THC:**
   Deaths implicating THC are increasing.

	Traffic fatalities	THC-positive	THC$\geq$5 ng/ml
2018[9]	632	83	36
2019[10]	596	113	73

[4] Rosenthal A, Reed J. Driving Under the Influence of Drugs and Alcohol. Colorado Department of Public Safety, Division of Criminal Justice, Office of Research and Statistics, Nov 2020
[5] Federal Highway Administration, https://www.fhwa.dot.gov/resources/pubstats/
[6] Santaella-Tenorio J, Wheeler-Martin K, DiMaggio CJ et al. Association of Recreational Cannabis Laws in Colorado and Washington State With Changes in Traffic Fatalities, 2005-2017. JAMA Intern Med. Published Online June 22 (2020)
[7] Aydelotte JD, Mardock AL, Mancheski CA et al. Fatal crashes in the 5 years after recreational marijuana legalization in Colorado and Washington. Accident Analysis and Prevention 132 (2019) 105284
[8] Kamer RS, Warshafsky S, Kamaer GC. Change in Traffic Fatality Rates in the First 4 States to Legalize Recreational Marijuana. JAMA Intern Med. Published Online June 22 (2020)
[9] Gorman T. The Legalization of Marijuana in Colorado: The Impact. Vol 6 Sept 2019. Rocky Mountain High Intensity Drug Trafficking Area
[10] Clarke C. The Legalization of Marijuana in Colorado: The Impact. Vol 7 Sept 2020. Rocky Mountain High Intensity Drug Trafficking Area

Analysis: The above data come from NHTSA's FARS reports. FARS reports are commonly used for drugged driving epidemiology studies in spite of their acknowledged limitations. Part of the increase in THC-positive cases from 2018 to 2019 was the increased testing done by CBI beginning June 2019. The distinction between THC above and below 5 ng/mL is not very meaningful since a driver can be highly impaired below 5 ng/mL and be only modestly impaired above that level.

6.   **Crash involvement by drug group convictions:**[11]
        Impaired drivers' crash risk is at least double that of sober drivers.

Impaired category	Crash prevalence	Crash prevalence ratio
Non-impaired controls	2.87%	1.0
THC *only*	7.1%	2.5
Alcohol *only*	24.8%	8.6
Single other drug *only*	28.7%	10.0
Alcohol + THC	28.5%	9.9
Other polydrug	30.7%	10.7

Analysis: This kind of analysis has never been done before. Past epidemiological studies of drugged driving crash risk compared crash rates for drivers testing positive for drugs with drivers testing negative for drugs. A limitation of those studies is that one must infer impairment from drug testing results. The above data do not require that inferring that a drug-positive driver was or was not impaired. All of the Colorado drivers above except the controls were convicted of DUI/DWAI in 2018, categorized by drug assay. Controls were all non-impaired Colorado drivers in 2018, reported to CDOT and CDOR.

7.   **Vehicular homicide convictions by drug group in 2016:**[12]
        Drugged driving causes vehicular homicide.

Drugs detected	Number
Alcohol *only*	10
THC *only*	2
Single other drug *only*	1
Alcohol + THC	2
Alcohol + other drug	1
Alcohol + THC + other drug	2

Analysis: All the above cases were charged with vehicular homicide caused by DUI, categorized by the drugs identified. Colorado's Division of Criminal Justice discontinued providing this analysis after only one year, so we have no current data. Nevertheless, we can see that drugged driving can be deadly, whether from THC, other drugs, or polydrugs.

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[11] Drugged driver data:Rosenthal A, Reed J. Driving Under the Influence of Drugs and Alcohol. Colorado Department of Public Safety, Division of Criminal Justice, Office of Research and Statistics, Nov 2020. Control data: Colorado Department of Transportation https://www.codot.gov/safety/safetydata/colorado-problem-identification-id-reports/2020_statewideperspective_final.pdf. And Colorado Department of Revenue data, personal communication, Christine Demont, Epidemiologist for Colorado Department of Public Health and Environment, Dec 31, 2020
[12] Bui B, Reed J. Driving Under the Influence of Alcohol and Drugs. A Report Pursuant to HB 17-1315. July 2018. Colorado Division of Criminal Justice

What is Colorado doing about its drugged driving problem?

Deny the problem exists

In 2020 the Department of Motor Vehicles revised the Driver Handbook to say, "…it is unclear whether cannabis use increases the risk of car crashes."

Encourage marijuana use

During the COVID pandemic shutdown, marijuana dealers were classified as an "essential business" by the Governor, permitting them to sell their product while non-essential businesses were required to close.

Home delivery of marijuana was authorized, ostensibly to reduce drugged driving.

At the December 14, 2020 meeting of the Retail Marijuana Public Health Advisory Committee, the Colorado Department of Public Health an Environment announced that henceforth, "marijuana users" were to be referred to as "cannabis consumers" since the former label is pejorative.

Subsidize the marijuana industry

Governor Polis announced a $584,399 tax credit to Canadian marijuana company SLANG Worldwide to expand operations in Colorado.

On a side note, that may not be completely unrelated, Governor Polis is rated A+ by NORML, the National Organization to Reform Marijuana Laws.