JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Senator Ayer

Chair, Vermont Senate Health and Welfare Committee

115 State Street

Montpelier, VT 05633

Chairwoman Ayer and members of the Senate Health and Welfare Committee,

My name is Dr. Malik Burnett, and I thank you for the opportunity to testify on the public health impacts of marijuana legalization in the state of Vermont. As a preventive medicine physician at Johns Hopkins School of Public Health, I examine how the US can empirically shift its drug policy from a criminal justice to a public health framework. Reforming marijuana policy falls within the scope of this work, and I have collaborated with policy makers and legislators in the District of Columbia, Georgia, Maryland, Massachusetts, New York, Pennsylvania, Tennessee, and Jamaica to help develop regulatory systems to better control marijuana within their jurisdictions. I congratulate you on your efforts to have Vermont be the first state to tackle marijuana legalization through the state legislature, and wish you luck in creating the best possible policies for Vermont.

Regarding the Department of Health's Health Impact Assessment, I thought the report was a thorough, overview of the available research on the impact of marijuana legalization, addressing a wide range of topics. Given the findings presented in this report there are three issues which stand out most from a public health standpoint: (1) marijuana use is very prevalent in Vermont and there is not a system in place to control access to the supply, (2) there are opportunities to improve traffic policies and procedures surrounding marijuana use in Vermont, and (3) developing a framework to deal with marijuana infused products is important to ensuring public health and safety.

Prevalence

Per the report, Vermont has a higher percentage of past year and past 30-day marijuana use compared to the US for all age groups and ranks in the top fifth of all states in the US. This fact indicates that Vermont's current policy of blanket prohibition to curtail marijuana use has been a failure. Moreover, the most important concern from a public health standpoint is limiting and controlling youth access to marijuana as research on marijuana has only demonstrated instances of harm when use begins before the age of 21. Establishing a regulatory system, will allow the state to better focus its public dollars on minimizing youth use. By effectively controlling the supply of marijuana within the state, regulators can ensure that suppliers are checking IDs, which will over time significantly raise the level of difficulty for youth to access marijuana.

Additionally, you may hear arguments outlining the fact that regulating marijuana will "send the wrong message to kids," this is a misconception, as the removal of a blanket prohibition on marijuana will allow for more nuanced messaging to youth that is in line with reality. There is a significant body of research

which reports that fact based education and public health campaigns allow children to make better informed decisions, when compared to public campaigns based on scare tactics and "just say no" efforts. The states of Colorado and Washington have good examples of this type of messaging within the marijuana space.

Traffic Safety

With regards to traffic safety, the Department of Health's report discusses an increased odds of crashing with increasing blood THC levels by 2.7-6.6 times. These statistics are from studies conducted in 2012 and 2013. A more recent study conducted by the National Highway Traffic Safety Administration (NHTSA) published in February 2015, refutes this assertion. After surveying over 10,000 drivers and controlling for alcohol use, results show that marijuana users had no greater risk of getting into a motor vehicle accident than an individual not under the influence of drugs or alcohol.[1]

Moreover, the NHTSA study directly calls into question the methodology used in the Asbridge et al. (2012) meta- analysis, which is referenced in the Department of Health report, saying that the comparison of studies with different designs (case control and culpability) and the use of a study with "data of questionable value," calls into question the resulting measurements of risk. To avoid the problem of comparing data across different study designs, NHTSA conducted the first ever large scale case-control study in the United States to assess the crash risk associated with both drug and alcohol use by drivers, making the results presented the most reliable to date.

In spite of these results, there is still a need for law enforcement officials to be able to effectively assess whether a person is under the influence of a controlled substance. The report recommends creating a blood based standard of analysis. While this has been the policy in other jurisdictions which have created a legal framework for marijuana, such a policy proves to be unwieldy in practice for two reasons: (1) law enforcement officials are now required to take an individual suspected of driving under the influence to a health professional in order to obtain a blood specimen, making roadside assessment almost impossible and the inappropriate detention of drivers inevitable. (2) It has been well research that the acute effects of smoked cannabis last only 3-4 hours,[2,3] while the active ingredients in the plant are stored in the body's fat cells for much longer, causing experienced marijuana users to test positive even when they are not impaired.

The primary public safety objective is to be able to identify, and ultimately discourage, individuals who have *recently* used marijuana from getting behind the wheel. The use of oral fluid testing as a preliminary screening measure has proven useful in achieving this end. Roadside oral fluid testing is currently in use in Australia, and the European Union as the preliminary measure of assessment of impairment in conjunction with standard field sobriety examinations.[4] Additionally, road side oral fluid testing has been piloted in California, Florida, Texas and Virginia, and was part of the methodology used

---

[1] Compton RP, Berning A. Drug and alcohol crash risk. *National Highway Traffic Safety Administration Traffic Safety Facts: Research Note*. 2015

[2] Substances C, Directorate T. Information for health care professionals: Cannabis (marihuana, marijuana) and the cannabinoids. *Ottawa (ON): Health Canada*. 2013

[3] Grotenhermen F, Leson G, Berghaus G, et al. Developing limits for driving under cannabis. *Addiction*. 2007;102(12):1910-1917

[4] Wille SM, Baumgartner MR, Fazio VD, Samyn N, Kraemer T. Trends in drug testing in oral fluid and hair as alternative matrices. *Bioanalysis*. 2014;6(17):2193-2209

in the previously mentioned NHTSA study. There are numerous devices on the market which allow for rapid on scene testing in a manner similar to how an individual takes a rapid HIV test. Moreover, the Substance Abuse and Mental Health Services Administration is currently developing guidelines to implement oral fluid testing as a workplace standard for federal employees[5].

Determining cut off standards for impairment in both oral fluid and blood testing still need significant research. While many studies have researched cut off standards there is limited scientific evidence for a *per se* level of THC which would create a reliable standard for impairment[6,7], this lack of agreement in the scientific community has led to cut-off standards that range from between 5 ng/mL to 25 ng/mL worldwide.[8] Given this, a prudent approach to addressing the issue of driving under the influence of cannabis (DUIC) in Vermont may be to have a range of criteria including positive oral fluid screening, failure of field sobriety examination, and elevated blood THC concentration that cause an individual to be charged. By establishing a multifactorial measure of assessment, Vermont can avoid wrongfully conviction of unimpaired, but experience marijuana users.

Marijuana Infused Products

Finally, while I understand that the political reality getting marijuana infused products, or edibles, language into this legislation will prove difficult. I would be remiss if I did not address the public health issues which would occur from a lack of regulation. As I previously mentioned, a policy of blanket prohibition does not eliminate the issues associated with marijuana infused products, in fact one could argue such a policy makes the issue worse. Given, that a number of other states in New England allow for marijuana infused products, failing to address them in regulations will ensure that a black market for these products exist.

An example of proactive, policy approaches to the marijuana infused products issue can be found in Washington D.C. where, regulations are being crafted around standardizing serving size for these products, which may have the effect of limiting overconsumption. A framework for this approach is provided below:

---

[5] Federal Register. Substance Abuse and Mental Health Administration. Standards for a Drug Free Workplace. https://www.gpo.gov/fdsys/pkg/FR-2015-05-15/pdf/2015-11523.pdf

[6] Lee D, Schwope DM, Milman G, Barnes AJ, Gorelick DA, Huestis MA. Cannabinoid disposition in oral fluid after controlled smoked cannabis. *Clin Chem*. 2012;58(4):748-756

[7] Hall W, Homel R. [Commentary] REDUCING CANNABIS-IMPAIRED DRIVING: IS THERE SUFFICIENT EVIDENCE FOR DRUG TESTING OF DRIVERS? *Addiction*. 2007;102(12):1918-1919

[8]Drummer, Olaf. Drugs in Oral Fluid. Monash University Department of Forensic Medicine. http://www.standards.org.au/OurOrganisation/Events/Documents/Presentation%202%20-%20Prof.%20Olaf%20Drummer%20AS%204760%20Workshop%20-%209%20December%202013.pdf

The following shall represent the maximum allowable limit for marijuana ingredients used in the production of various edible types:

Edible Type	Unit of Measure	Examples	Maximum Concentrate Content	Maximum Flower Content	Maximum Flower Trimming Content
Baked Goods	Per slice or per single serving unit	Breads, pies, cakes, cookies	1 gram	3.5 grams	7 grams
Beverages	Per 12 fluid oz	Bottled drinks and poured drinks	1 gram	3.5 grams	7 grams
Cooking Oils, toppings and Sauces	Per 250 ml	Olive oils, Canola oils, Grape seed oil	4 grams	14 grams	28 grams
Dairy and Dairy like Product	Bottled 20 oz	ice cream, creamers, butter, yogurts, bottled milks	2 grams	7 grams	14 grams
Finished bagged or packaged Goods	1 cup or serving.	Trail mix, tea bag, popcorn, crackers, chocolates	1 gram	3.5 grams	7 grams
Canned or container Goods	1 cup	Soups, chili, dips, hummus	1 gram	3.5 grams	7 grams
Sublingual products	1 oz bottles	Tinctures	1 gram	3.5 grams	7 grams
Concentrates for vaporization	0.5 grams	Vaporizer tablets, Oil containers, Flower packs for vaporizers	0.5 grams	1 gram	2 grams

Additionally, the District of Columbia is considering the following standards for establishing a visible potency rating to educate consumers on the strength of various products in the marketplace:

All edible products shall be labeled with a visual potency rating and stated potency rating to be determined as follows:

Percent of maximum marijuana content allowed	Stated Potency Rating	Visual Rating designation
Up to 25%	Mild	●○○○
26% to 50%	Moderate	●●○○
51% to 75%	Strong	●●●○
Above 75%	Very Strong	●●●●

In addition to the above, the edible or topical product label should state the approximate percent of maximum cannabis content allowed per serving in the actual edible or topical product.

If Vermont is not going to include regulations for regulating edibles and infused products in this legislation, I would suggest that you at least create a study committee to examine this issue and make recommendations in the not-distant future. Colorado and Washington have gotten a good handle on the regulation of edibles, and I'm confident that Vermont will be able to learn from their examples.

Overall, the state of Vermont has an opportunity to develop a responsible regulatory framework for marijuana, taking lessons from both alcohol and tobacco regulation and from states that have preceded Vermont in this effort. I hope this commentary is helpful and look forward to continuing to work with you in the effort.

Regards,

Malik Burnett MD, MBA

General Preventive Medicine

Johns Hopkins School of Public Health