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## An Assessment of Traffic Safety Culture Related to Driving After Cannabis Use

<http://www.mdt.mt.gov/research/projects/trafficsafety.shtml>

### Introduction

Several states have legalized recreational cannabis use, and more are considering legalization. Increased use of cannabis among drivers may pose a barrier to achieving the National Toward Zero Deaths (TZD) initiative. The transformation of traffic safety culture is a primary element of the TZD strategy. A positive safety culture can significantly reduce crash fatalities and serious injuries. This research focuses on specific aspects of traffic safety culture that relate to the decision to drive after consuming cannabis.

Research shows that cannabis is the most commonly used illicit drug in the United States and due to recent legalization trends, use is increasing. Increased use of cannabis may lead to more incidents of driving after using cannabis. This research project was a formative study to better understand which specific aspects of traffic safety culture (the values and beliefs shared among groups of road users and stakeholders that influence

their decisions to behave or act in ways that affect traffic safety) predict the decision to drive after using cannabis. The research sought to answer four critical research questions:

1. How does traffic safety culture compare between users and non-users of cannabis?
2. How does traffic safety culture correlate with the decision to drive under the influence of cannabis?
3. How does traffic safety culture compare between states with and without legalized recreational use laws?
4. How does traffic safety culture compare between states with and without legalized medical use laws?

### What We Did

The Center for Health and Safety Culture at Montana State University developed a survey to investigate the traffic safety culture related to driving after cannabis use based on an augmented form of the integrated behavioral model based on the theory of reasoned action and the

prototype willingness model (Fishbein & Ajzen, 2010; Gerrard *et al*, 2008). The questions were developed to measure each component of the model. The survey development process included interviews with regular users of cannabis to better understand behavioral, normative, and control beliefs associated with driving after using cannabis. An initial draft of the survey was created based on these interviews and was pilot tested with 75 participants who had used cannabis in the past 30 days (recruited online). Based on these results, the questions were narrowed and refined. Additional input was gathered from the Traffic Safety Culture Pooled Fund Board. A complete version of the survey was pilot tested with 35 participants who had used cannabis in the past 30 days (recruited online) as well as a small convenience sample of young adults. These results were analyzed, and minor modifications were made.

The national survey was administered by two methods: a mailed paper version and an online version. The same survey

instrument was used for each method. The online version was included to obtain responses from younger adults as mailed surveys often lack responses from this group. One research objective was to explore the differences in beliefs and behaviors between states with and without legalized recreational use of cannabis, thus Colorado and Washington were oversampled. In addition, Alaska, Oregon, and the District of Columbia were excluded from the study because they had recently passed laws legalizing recreational use of cannabis but were in various stages of implementation. The overall response rate of the mailed paper survey was 31.9%.

Overall, more females responded to the survey than males, and the respondents tended to be older, more educated, and more likely to drink alcohol than the general population. Age and gender differences were controlled for by weighting. The proportion of respondents living in rural areas was similar to the general population. Effects of geography, education attainment, and consumption of alcohol were examined with each analysis.

The researchers started analyzing data through relative frequency distributions for each question on the survey to provide a general overview about which values, beliefs, and attitudes regarding driving under the influence of cannabis (DUIC) were “shared” within the sample. Next, partial correlation coefficients (Spearman) were examined relating various components of the behavioral model. These coefficients identified which components were most associated with DUIC behavior. Means of various groups were compared to better understand how values, beliefs and attitudes varied.

## What We Found

The survey results provided understanding into the traffic safety culture around DUIC. The relative

frequency analysis provided an initial understanding into the range of values, beliefs, and attitudes about DUIC. In particular, about half of the individuals reporting use of cannabis in the past year indicated they had driven one or more times within four hours of using cannabis. In addition, about one in six respondents did not know if their state had a law about driving under the influence of cannabis.

Partial correlation coefficients showed that components of the model were strongly associated with DUIC behavior. A comparison of the means of these components among different groups (non-users of cannabis, users of cannabis who do not drive under the influence of cannabis, and people who do drive under the influence of cannabis) revealed important differences in shared values, beliefs, and attitudes (Figure 1).

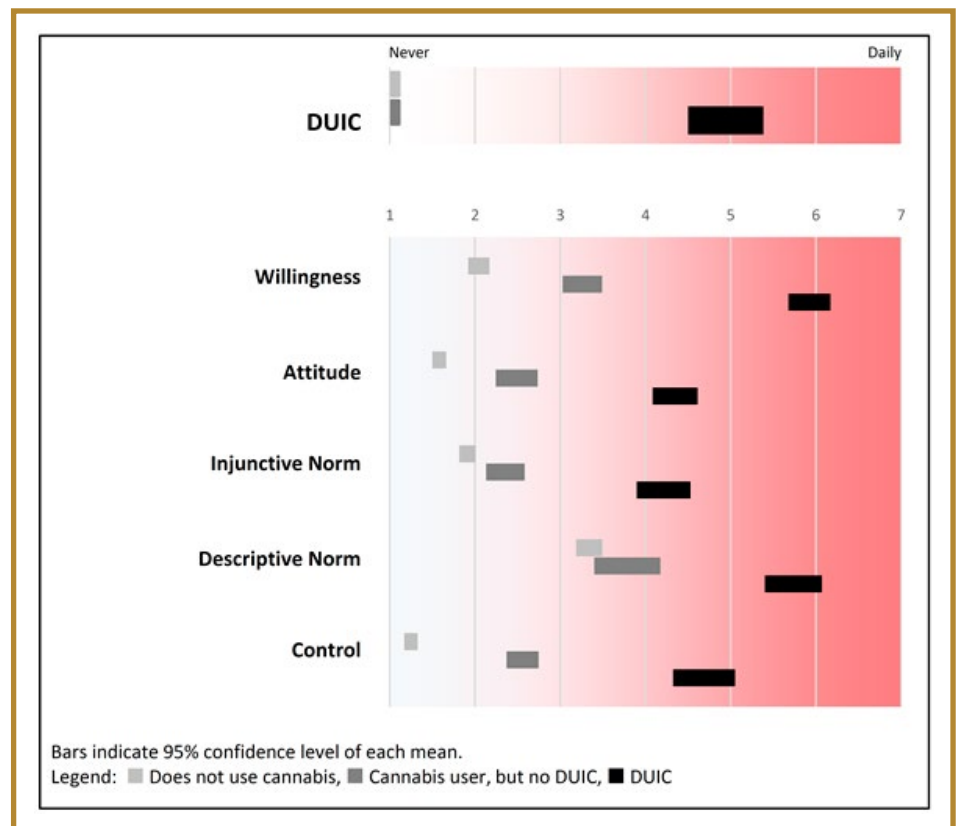
Additional analyses answered four questions about the culture of DUIC:

*How does traffic safety culture compare between users and non-users of cannabis?*

All implementations of the survey showed significant differences in beliefs and attitudes about DUIC between users and non-users of cannabis. In particular: Users of cannabis have a greater intention to DUIC, greater willingness to DUIC in a variety of circumstances, a more positive attitude about DUIC, hold normative beliefs (both injunctive and descriptive) that are more supportive of DUIC, and experience more situations where they are likely to DUIC.

*How does traffic safety culture correlate with the decision to drive under the influence of cannabis?*

All three implementations of the survey showed significant differences in beliefs and attitudes among users of cannabis about DUIC between those who engage in DUIC and those who do not. In particular: Those who DUIC have a positive attitude about DUIC, hold normative beliefs (both injunctive



**Figure 1: Summary of Means Based on Behavior (mailed survey, all states, age ≥21).**

and descriptive) that are supportive of DUI, and experience more situations where they are likely to DUI. Six different behavioral beliefs about DUI were strongly correlated with attitude and provide more insights. Specifically, those who DUI were more likely to feel calmer, more alert, and more cautious if they drive after using cannabis compared to those who do not DUI. They were less likely to feel that they would be arrested, that their reaction time would be slower, or that they would be in an accident compared to those who do not DUI.

#### *How does traffic safety culture compare between states with and without legalized recreational use laws?*

Results from this survey did not reveal significant differences in values, beliefs, or attitudes between states with and without legalized recreational use of cannabis. This finding does not preclude such differences existing; however, among the items measured on this survey, no differences were found. More time may be required to see an impact in beliefs and attitudes.

#### *How does traffic safety culture compare between states with and without legalized medical use laws?*

Results from this survey did not reveal significant differences in values, beliefs, or attitudes between states with and without legalized medical use of cannabis. This finding does not preclude such differences existing; however, among the items measured on this survey, no differences were found.

## **What the Researchers Recommend**

### Recommendation #1: Interventions should be developed to address the beliefs of those who use cannabis.

An intervention is an intentional experience specifically designed to change beliefs. Interventions can

include a wide variety of activities including classroom instruction (in a driver's education program, for example), experiential activities like driving simulators, education campaigns, one-on-one counseling, etc. Furthermore, as laws and policies about DUI are developed and enforced, these efforts can include education to change the beliefs revealed in this study. The specific beliefs to be addressed include:

- Knowledge of existing DUI laws: About one in six individuals did not know whether DUI was illegal in their state or not. Educating the general public about current laws is an important opportunity to also address the beliefs noted below.
- Attitudes about DUI: Individuals who drive after using cannabis have positive attitudes about DUI. Specifically, they feel it is safe, sensible, pleasant, and acceptable. These positive attitudes may promote DUI behavior. Based on this survey, these attitudes are informed by six behavioral beliefs. Research needs to be compiled (or, perhaps even conducted) to better understand to what degree cannabis use impacts driving. Specifically: Individuals reported that they feel calmer, more alert, and more cautious when they drive under the influence of cannabis. Is this reflected in their performance or is this merely their perception? Furthermore, individuals reported that they are not likely to get arrested, that their reaction time will not be slower, and that they are not more likely to be in an accident when they drive under the influence of cannabis. Are these beliefs accurate?
- Educational materials and interventions need to be designed to address these beliefs. In some cases, research results may not be available and additional research may need to be conducted.
- Perceived norms: Individuals

who drive after using cannabis have different perceptions about whether such behavior is acceptable to others (injunctive norms) and is common (descriptive norms). Accurate information about the acceptability and prevalence of DUI should be included in all conversations about cannabis, driving, and DUI interventions. Safety advocates can unintentionally increase inaccurate perceptions about norms by using such language as "there is an epidemic of DUI" or "everyone seems to think it is OK to drive under the influence of cannabis." While such language can raise attention and concern, it can also foster beliefs that increase DUI behavior.

### Recommendation #2: Interventions should be designed for a variety of settings.

This survey revealed that those who DUI do so in a variety of situations. Specifically, they are more likely to be in situations where they need to drive to run errands or drive home after using cannabis when out or at a party (and for some, even driving to work or school). Therefore, efforts to address DUI cannot only address social settings, but must address DUI in a variety of contexts. DUI policies should be developed by schools and workplaces. Education should not only address using cannabis in a social setting, but should address driving in any situation.

### Recommendation #3: Interventions should seek to align with existing values.

Those who use cannabis and drive under the influence are more likely to value enjoyment in life, stimulation, and self-direction and less likely to value security, tradition, and conformity. Therefore, interventions need to be designed that align with these values to increase the likelihood of acceptance.

## References

Fishbein, M., & Ajzen, I. (2010). Predicting and Changing Behavior: The Reasoned Action Approach (1<sup>st</sup> edition). New York: Psychology Press.

Gerrard, M., Gibbons, F. X., Houlihan, A. E., Stock, M. L., & Pomery, E. A. (2008). A dual-process approach to health risk decision making: The prototype willingness model. *Developmental Review*, 28(1), 29–61. <http://doi.org/10.1016/j.dr.2007.10.001>

### For More Details . . .

The research is documented in Report FHWA/MT-16-010/8882-309-02, <http://www.mdt.mt.gov/research/projects/trafficsafety.shtml>.

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