

# Center for Health & Safety Culture

[www.chsculture.org](http://www.chsculture.org)

## **Driving Under the Influence of Cannabis and Alcohol**

Key Findings Report from 2018 Survey

Prepared for:  
Washington Traffic Safety Commission  
621 8th Avenue SE – Suite 409  
Olympia, WA 98501

December 2, 2018



P.O. Box 170548  
Bozeman, MT 59717  
406-994-7873

## Contents

Introduction.....	3
Survey Methodology .....	3
DUICA Behavior .....	4
DUICA Behavior and Demographics .....	5
DUICA Traffic Safety Culture .....	6
Basic Behaviors .....	7
Overall Model.....	8
Willingness to Drive Under the Influence of Alcohol and Cannabis.....	9
Attitude and Behavioral Beliefs.....	10
Perceived Injunctive Norms and Normative Injunctive Beliefs .....	11
Perceived Descriptive Norms and Normative Descriptive Beliefs .....	12
Perceived Control to Avoid DUICA Behaviors .....	13
Values.....	14
Concern for Traffic Safety .....	15
Assumptions .....	16
What YOU Can Do .....	17
Questions to Foster Meaningful Dialogue.....	17

## Introduction

Alcohol and drug impaired driving is the leading contributing factor in Washington fatal crashes.<sup>1</sup> A national survey conducted in 2008 reported that one in five respondents had driven within two hours of consuming alcohol in the past year.<sup>2</sup> In June 2014 (one month prior to the legalization of recreational cannabis in Washington), a roadside survey of drivers in Washington found that 69% of participants had used cannabis at least once in their lifetime, and 11% had driven within two hours of using cannabis at least once in the past 12 months.<sup>3</sup> Driving under the influence of alcohol and cannabis combined is a growing concern.

The Washington Traffic Safety Commission (WTSC) engaged the Center for Health and Safety Culture (CHSC) in the Western Transportation Institute of Montana State University to explore traffic safety culture in Washington State as it relates to driving under the influence of alcohol and cannabis (DUICA). This report summarizes the key findings of a survey of a representative sample of adults in Washington about their values, attitudes, beliefs, and behaviors regarding DUICA. The report reviews the survey methodology, summarizes the findings about DUICA behavior, and then examines the shared values, attitudes, and beliefs of respondents. Recommendations are provided at the end.

## Survey Methodology

The CHSC developed a draft of the survey based on behavioral model (see below) and pilot tested the survey twice with a convenience sample of adults (age 18 to 65) in Washington recruited online. To participate in the pilot, the participants had to be over the age of 18, drive a vehicle monthly or more often, consume alcohol monthly or more often, and consume cannabis monthly or more often. The survey was refined based on the pilot testing process. CHSC contracted with NORC at the University of Chicago (formerly the National Opinion Research Center) to implement the survey using their AmeriSpeak's panel. Table 1 summarizes NORC's methodology. NORC invited 373 respondents to participate; 137 completed screening interviews (37%), and 135 were considered eligible (99%). Of the 135 considered eligible, 133 (99%) completed the survey. Participants were offered a cash incentive to participate (\$10 initially and \$15 after several reminders).

The AmeriSpeak's panel was supplemented with 737 respondents from the online opt-in panel Toluna. To be eligible for inclusion in the survey, Toluna respondents must have been age 18-65 and living in Washington state. NORC uses a three-step process to develop statistical weights to align the sample with the general population: weighting the AmeriSpeak respondent sample, weighting the Toluna opt-in respondent sample, and finally combining the completed interview respondents from both sample sources. All results provided in this report are based on weighted responses.

---

<sup>1</sup> Grondel, D.T., Hoff, S., and Doane, D., (2018). Marijuana Use, Alcohol Use, and Driving in Washington State: Emerging Issues With Poly-Drug Use on Washington Roadways. Washington Traffic Safety Commission.

<sup>2</sup> Drew, L., Royal, D., Moulton, B., Peterson, A., Haddix, D., (2010). National Survey of Drinking and Driving: Attitudes and Behaviors 2008, Insight Policy Research.

<sup>3</sup> Pacific Institute for Research and Evaluation (2014). Washington State Roadside Survey.

**Table 1. Summary of NORC's Methodology**

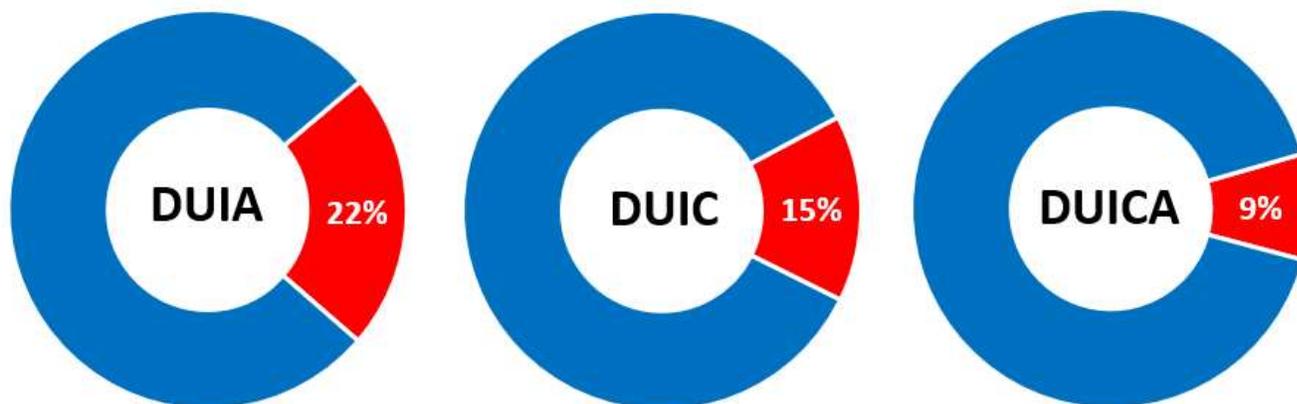
“Funded and operated by NORC at the University of Chicago, AmeriSpeak® is a probability-based panel designed to be representative of the US household population. Randomly selected US households are sampled using area probability and address-based sampling, with a known, non-zero probability of selection from the NORC National Sample Frame. These sampled households are then contacted by US mail, telephone, and field interviewers (face to face). The panel provides sample coverage of approximately 97% of the U.S. household population. Those excluded from the sample include people with P.O. Box only addresses, some addresses not listed in the USPS Delivery Sequence File, and some newly constructed dwellings. While most AmeriSpeak households participate in surveys by web, non-internet households can participate in AmeriSpeak surveys by telephone. Households without conventional internet access but having web access via smartphones are allowed to participate in AmeriSpeak surveys by web. AmeriSpeak panelists participate in NORC studies or studies conducted by NORC on behalf of governmental agencies, academic researchers, and media and commercial organizations.”

Source: “Washington State Driving Under the Influence of Cannabis And Alcohol Study 2018,” AmeriSpeak Field Report, June 08, 2018, NORC at the University of Chicago.

## DUICA Behavior

Among survey respondents, 6 in 10 (60%) report consuming alcohol in the past 30 days (similar to the findings of the 2015-2016 National Survey on Drug Use and Health and the Behavioral Risk Factor Surveillance Survey of 2016, 60% and 59%, respectively). However, cannabis use is significantly higher among respondents with 42% reporting consuming in the past 12 months (compared to 20% in the 2015-2016 National Survey on Drug Use and Health).

Past 12-month DUIA, DUIC, and DUICA self-reported behaviors are 22%, 15%, and 9%, respectively (Figure 1). Driving under the influence was defined as driving within two hours of consuming the substance.



**Figure 1. Past 12-month Impaired Driving Behaviors**

Among those who do DUICA, about half report doing it rarely and just over a one-quarter report doing it monthly or more often (Figure 2).

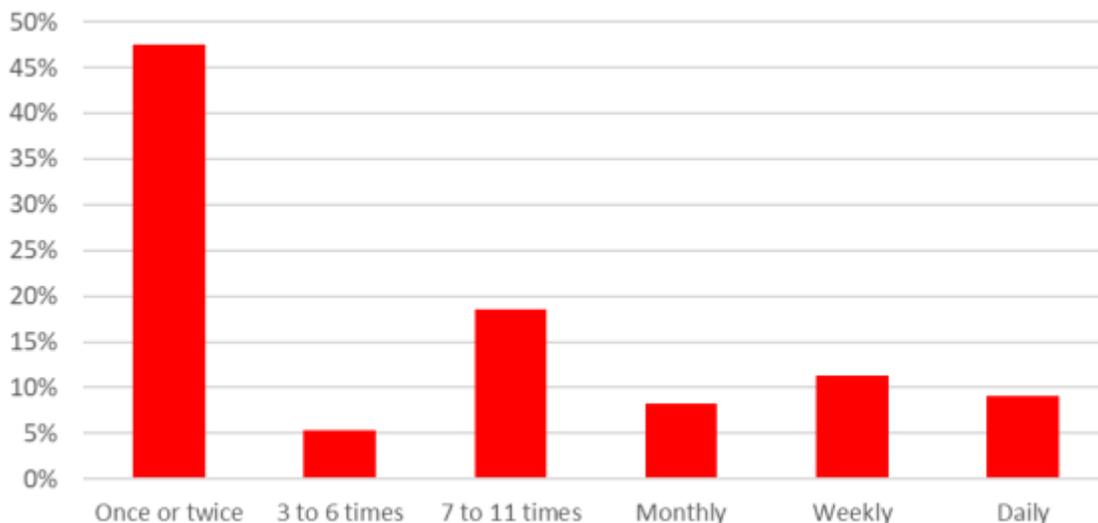


Figure 2. Frequency of Behavior in Past 12 Months Among Those DUICA

## DUICA Behavior and Demographics

- Males are three times more likely (1.8 to 5.4,  $p < 0.10$ ) to DUICA than females.
- DUICA decreases with age.<sup>4</sup>
- Education attainment has no statistically significant association with DUICA.<sup>5</sup>
- Those living in the eastern portion of the state are slightly more likely to DUICA than those living in the western.<sup>6</sup>
- Chronic users of cannabis are no more likely to DUICA than non-chronic users.
- Whether a respondent indicated using cannabis for medical use, recreational use, or both has no effect on DUICA.
- Whether a respondent uses cannabis for physical, mind, emotional, or spiritual benefit has no effect on DUICA.

<sup>4</sup> Logistic regression revealed odds ratio of 0.582,  $p < 0.001$ .

<sup>5</sup> Logistic regression revealed odds ratio of 1.14,  $p = 0.08$ .

<sup>6</sup> Chi-Square tests revealed  $\chi^2 (2, N=292) = 4.38$ ,  $p < 0.04$ .

## DUICA Traffic Safety Culture

CHSC defines traffic safety culture as the shared values, attitudes, and beliefs of a group of people which affect their traffic safety decisions. To determine which values, attitudes, and beliefs are related to a specific traffic safety decision (like to drive after consuming alcohol and cannabis), the CHSC uses a behavioral model (Figure 3). Each component of the model is assessed on the survey. Most components are assessed with two or more questions. The internal reliability of these components was high (as measured by Chronbach's alpha). Linear regression modeling showed that 68% of DUICA behavior among users of cannabis was predicted by willingness and intention ( $F(2,286)=300.12$ ,  $p<0.001$ ). Similarly, 40% of willingness ( $F(4,818)=135.3$ ,  $p<0.001$ ) and 48% of intention ( $F(4,828)=181.0$ ,  $p<0.001$ ) are predicted by attitudes and perceived norms (injunctive and descriptive).

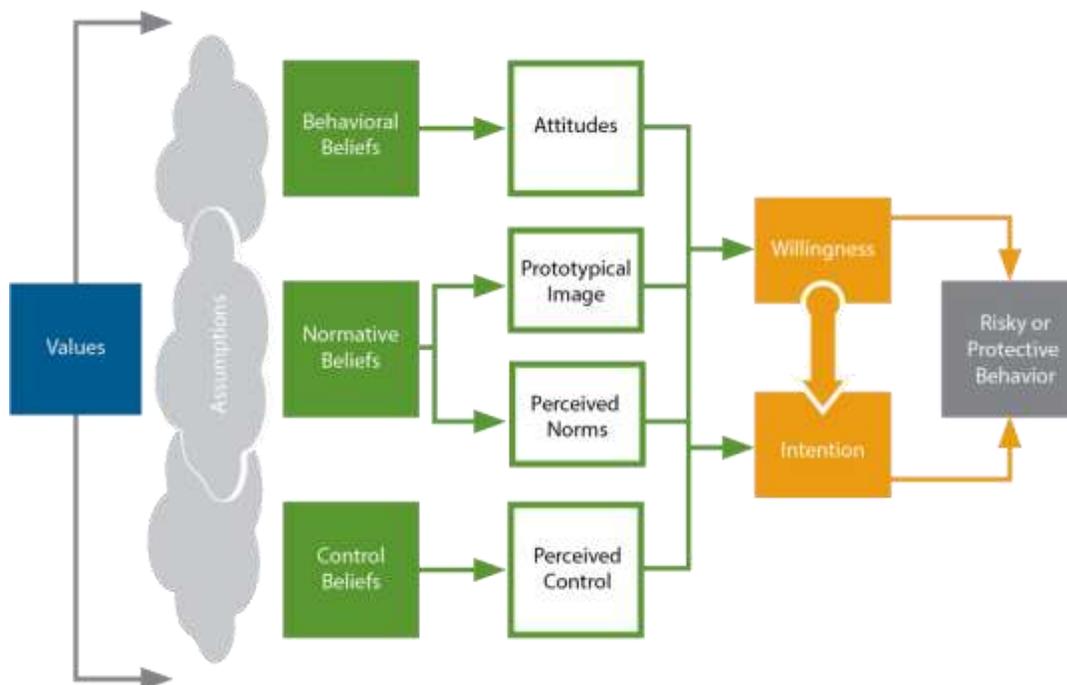


Figure 3. Behavioral Model Used to Inform the Design of the Survey

In the subsequent sections, each component of the behavioral model is explored by comparing the average (i.e., mean) responses of three distinct groups of respondents: those who do not use cannabis, those who use cannabis but do not DUICA, and those who DUICA. The bars on each graph represent the 95% confidence interval for the mean.

## Basic Behaviors

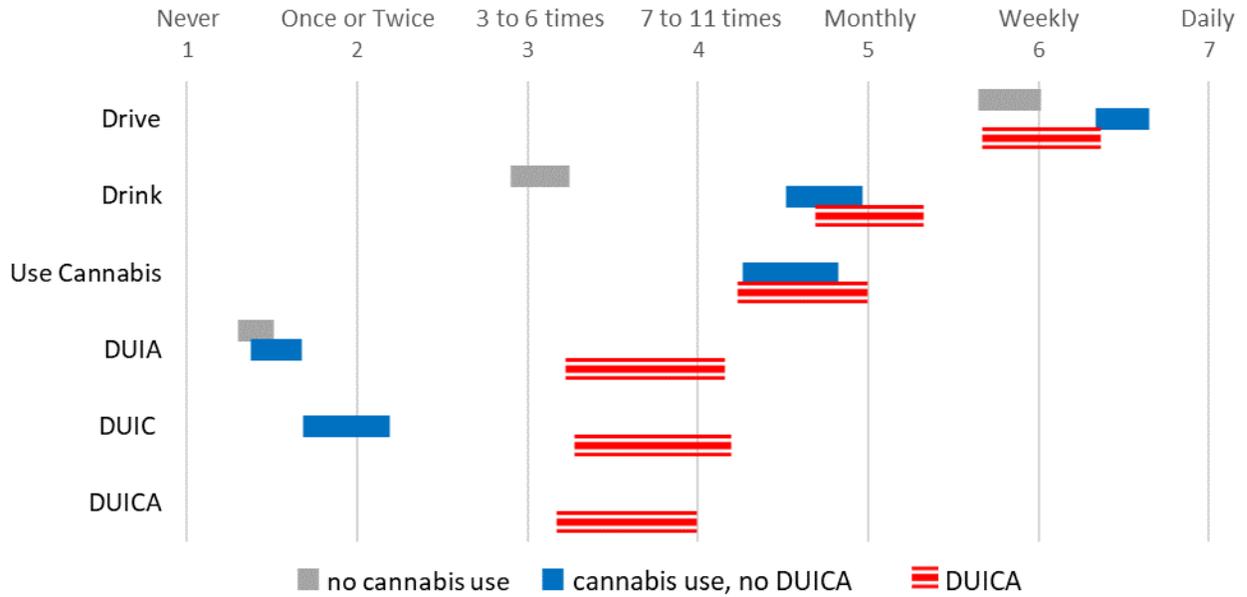


Figure 4. Prevalence of Basic Behaviors

### Observations

- Those who consume cannabis tend to consume alcohol more frequently than those who do not.
- Frequency of consumption of cannabis is similar for those who DUICA and those who do not.
- Most adults in Washington (78%) do not drive within two hours of consuming alcohol.
- Most adults in Washington (85%) do not drive within two hours of consuming cannabis.
- Most adults in Washington (91%) do not drive within two hours of consuming cannabis and alcohol.
- Those who DUICA tend to also drive under the influence of cannabis (alone) and under the influence of alcohol (alone).

## Overall Model

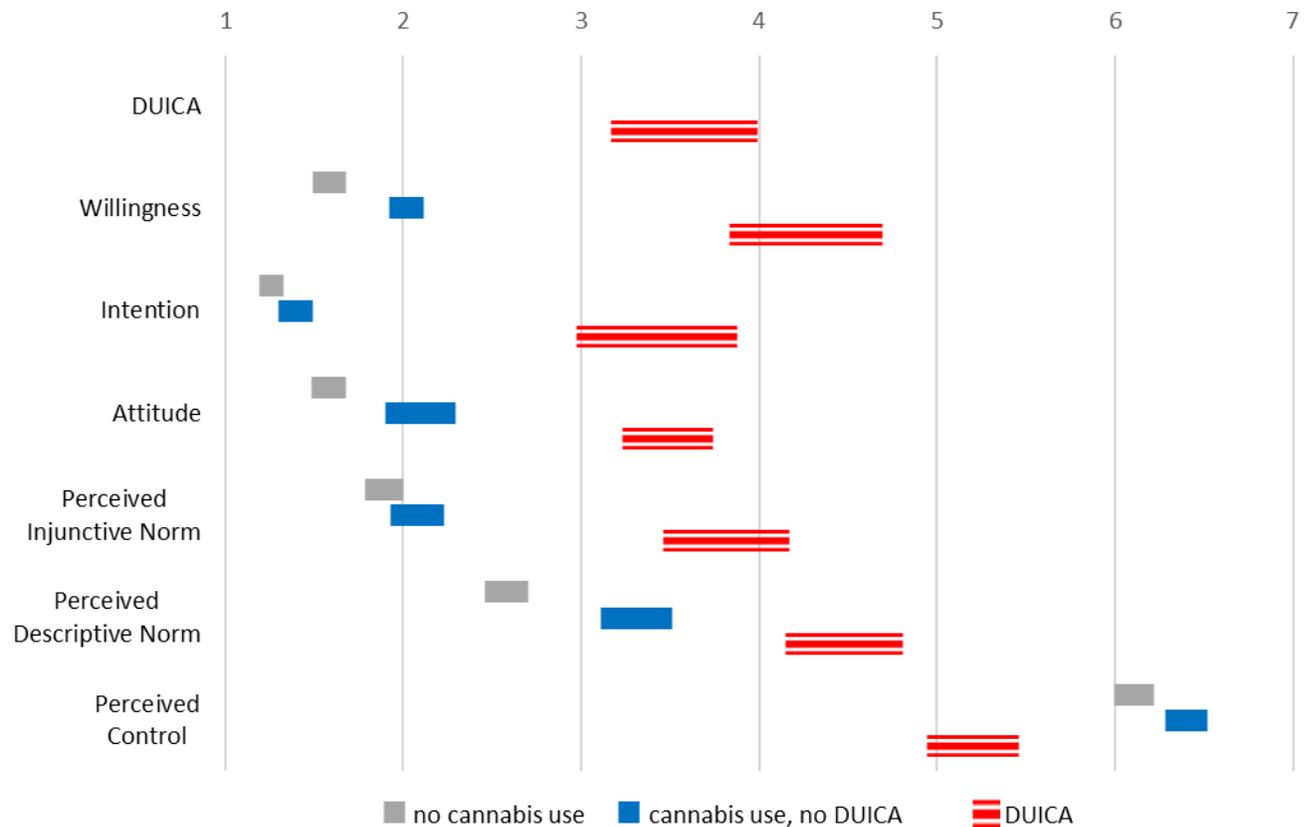


Figure 5. Means of Model Components

### Observations

- Those who DUICA have much greater willingness to DUICA than others. However, even those who don't DUICA (and even don't consume cannabis) have some willingness to drive after consuming cannabis and alcohol.
- Intention is slightly lower than willingness.
- On average, everyone has a negative attitude (i.e., value less than 4) about DUICA; however, those who do DUICA have a more positive attitude.
- On average, most people have a perception that people should not DUICA (perceived injunctive norms); however, those who do DUICA perceive it to be more acceptable.
- Everyone over-estimates the prevalence of DUICA behavior (perceived descriptive norms).
- Most people have a sense of control about DUICA; however, that sense of control is lower for those who engage in the behavior (perceived control).

## Willingness to Drive Under the Influence of Alcohol and Cannabis



Suppose you are in a situation where you have consumed alcohol and cannabis in the past 2 hours (even if you don't consume alcohol or marijuana). How willing would you be to drive in the following situations?

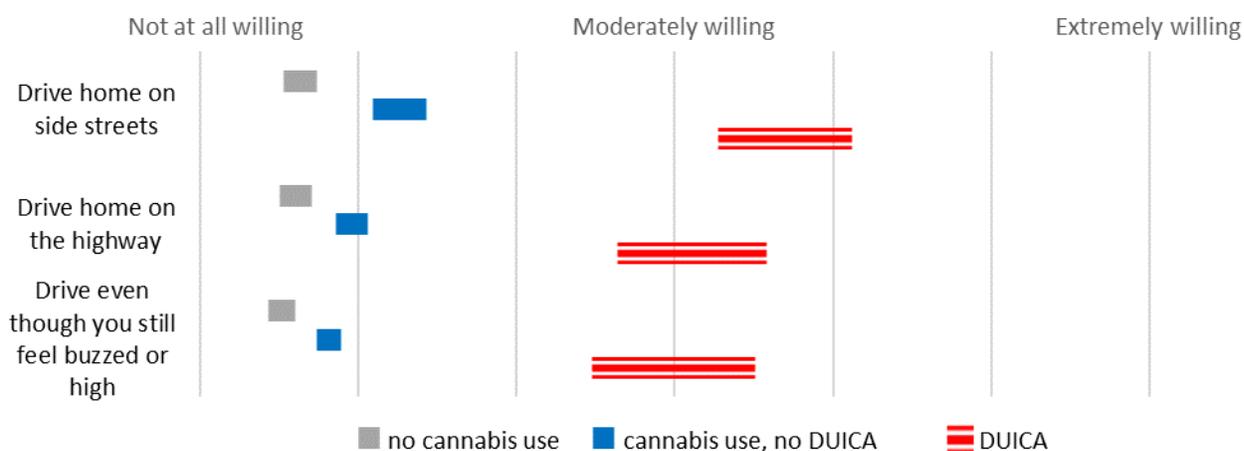
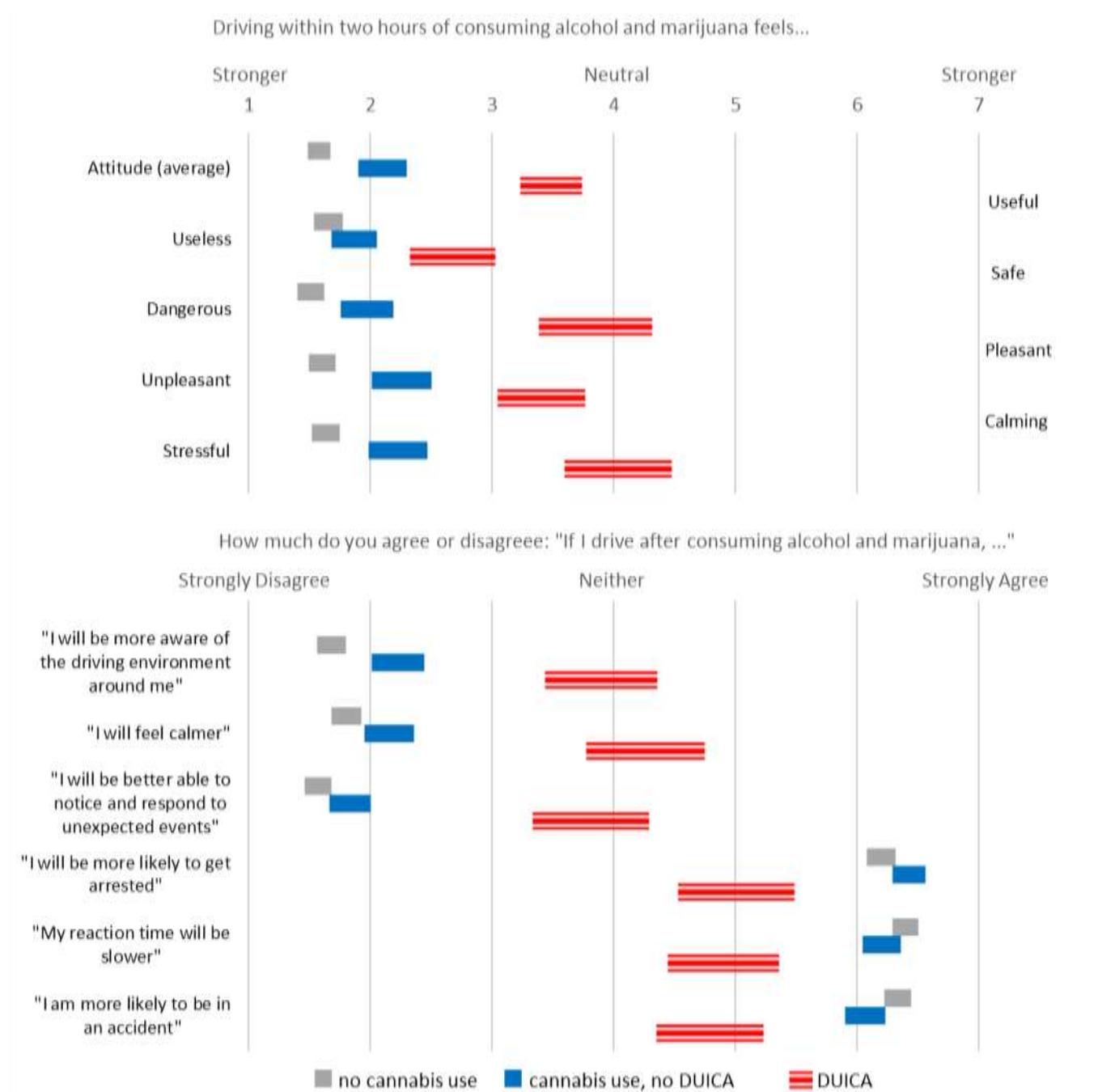


Figure 6. Means of Willingness to Drive Under the Influence of Alcohol and Cannabis

### Observations

- Willingness is somewhat similar for each of the three situations.
- Those who DUICA are moderately willing to drive even though they still feel buzzed or high.

## Attitude and Behavioral Beliefs



**Figure 7. Means of Attitudes and Behavioral Beliefs**

### Observations

- Most adults in Washington (81%) have a negative attitude about DUICA (less than 3).
- Those with a positive attitude about DUICA are twice as likely to DUICA compared to those with a negative attitude.
- Those who DUICA feel it is safer, more pleasant, and more calming (relative to others).
- Those who DUICA are more likely to agree with potential positive expectancies and less likely to agree with negative expectancies (relative to others).

## Perceived Injunctive Norms and Normative Injunctive Beliefs



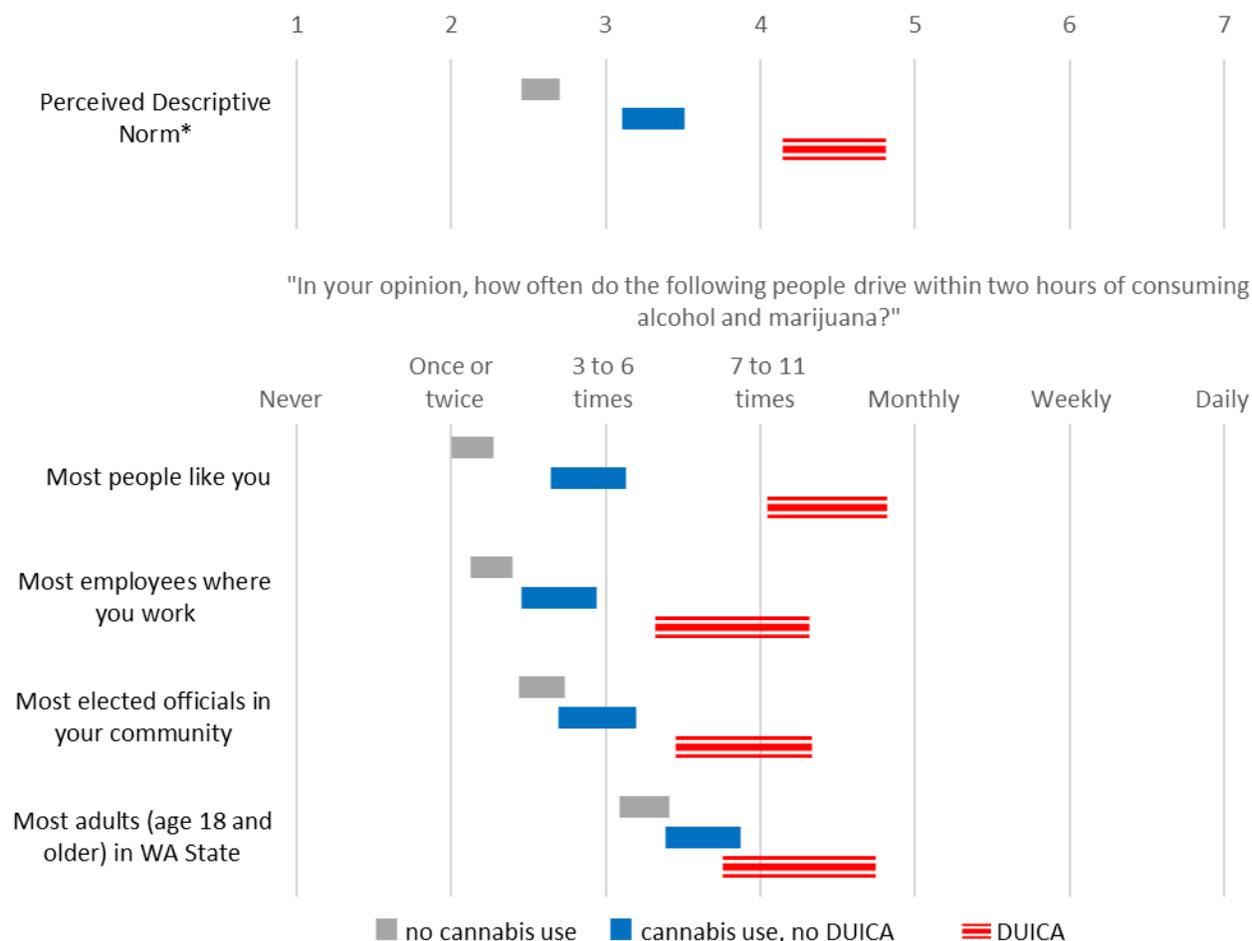
**Figure 8. Means of Perceived Injunctive Norms and Normative Injunctive Beliefs**

### Observations

- Most adults in Washington (83%) believe it is unacceptable to drive within two hours of consuming alcohol and marijuana.
- Those who believe DUICA is acceptable are more than 4.5 times as likely to DUICA compared to those who believe it is unacceptable.
- Most people who do not DUICA believe DUICA is unacceptable and perceive most others share similar views.
- Most people who DUICA believe DUICA is more acceptable (relative to others) and perceive that others feel likewise.

\*Perceived Injunctive Norm is an average of responses to three questions: Would most people important to you feel it was acceptable or unacceptable if you drive within 2 hours of consuming alcohol and marijuana? Would most people important to you oppose or support you if you drive within 2 hours of consuming alcohol and marijuana? Would most people who are important to you approve or disapprove if you drive within 2 hours of consuming alcohol and marijuana?

## Perceived Descriptive Norms and Normative Descriptive Beliefs



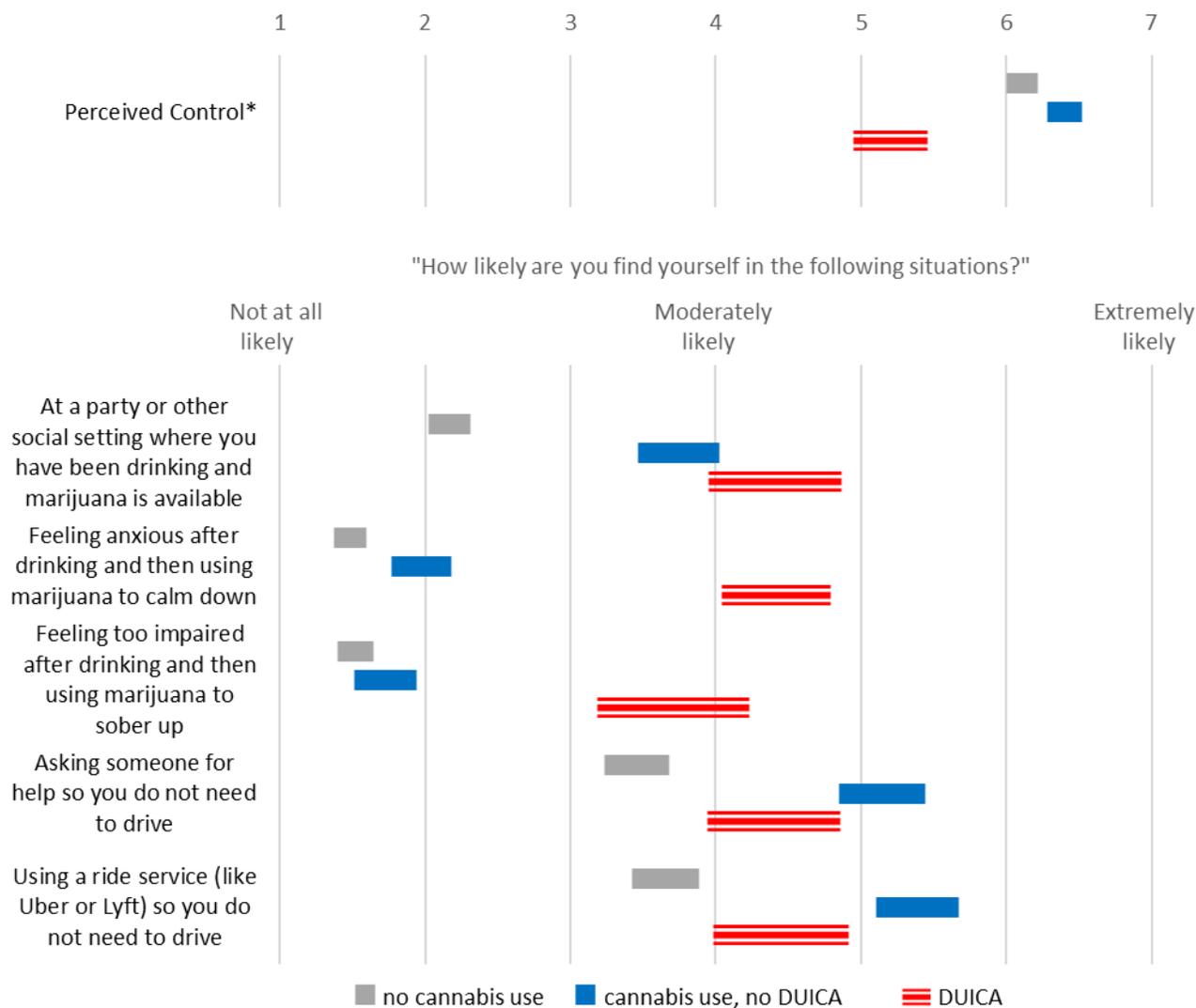
**Figure 9. Means of Perceived Descriptive Norms and Normative Descriptive Beliefs**

### Observations

- Most adults in Washington (91%) do not drive within two hours of consuming cannabis and alcohol.
- Everyone is over-estimating the prevalence of DUICA behavior.
- Those who perceive most people DUICA frequently are 2.5 times as likely to DUICA as compared to those who perceive most people do not DUICA frequently.
- Those who DUICA have greater misperceptions about the prevalence of DUICA behavior than those who do not.

\*Perceived Descriptive Norm is an average of responses to three questions: In the past 12 months, how often do you think most people like you drove within 2 hours of consuming alcohol and marijuana? In the past 12 months, how many people similar to you do you think drove within 2 hours of consuming alcohol and marijuana? How common do you think it is for people like yourself to drive within 2 hours of consuming alcohol and marijuana?

## Perceived Control to Avoid DUICA Behaviors



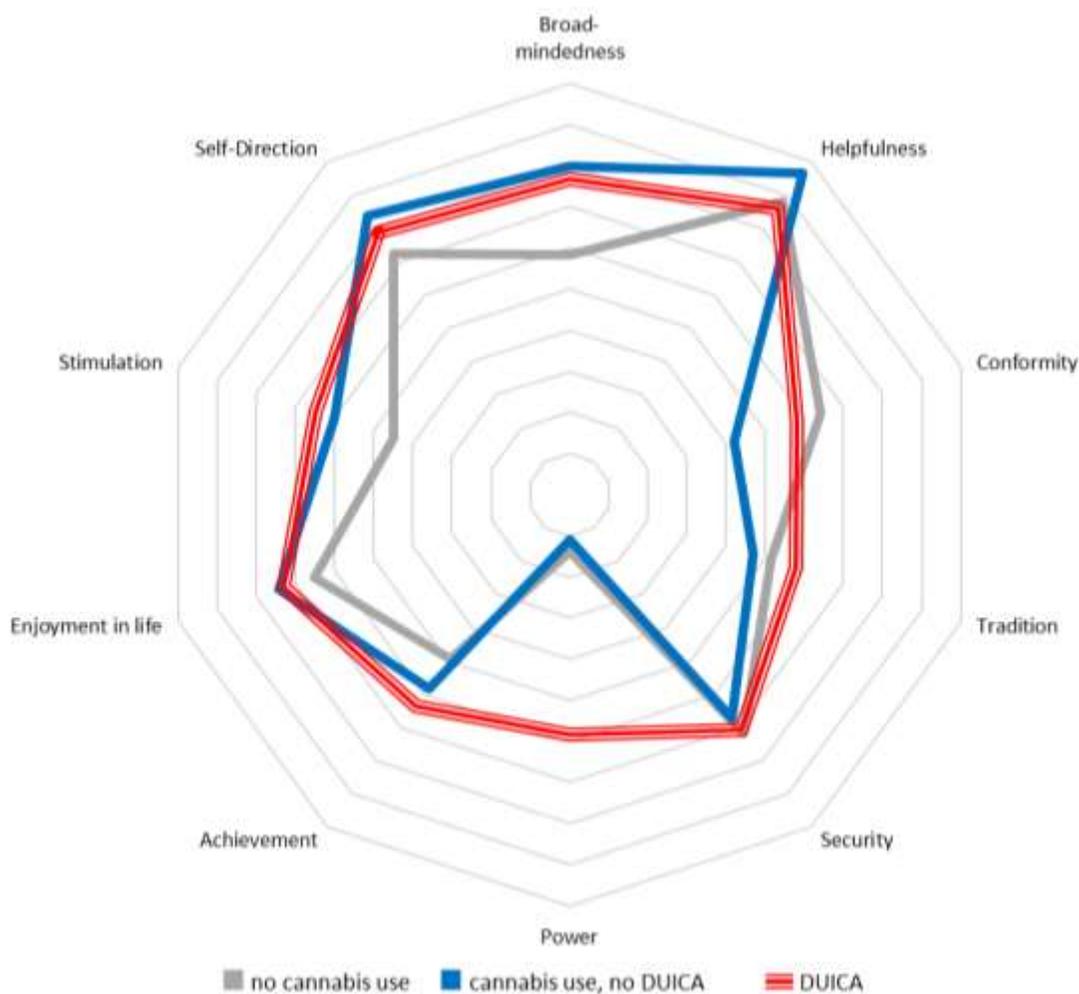
**Figure 10. Means of Perceived Control and Control Beliefs**

### Observations

- On average, all respondents have a moderate to strong sense of control about avoiding DUICA behavior.
- Those who have low levels of perceived control are more than 3.5 times as likely to DUICA compared to those with high levels of perceived control.
- Those who DUICA are more likely to find themselves feeling anxious or feeling too impaired to drive and using cannabis to manage those feelings than others.
- Everyone is moderately likely to ask others or using ride services to avoid DUICA behaviors.

\*Perceived Control is an average of responses to three questions: How much do you agree or disagree with the following statement? "If I really wanted to, I could make sure that I never drive a vehicle within 2 hours of consuming alcohol and marijuana." How easy or difficult would it be for you to refrain from driving a vehicle within 2 hours of consuming alcohol and marijuana? How confident are you that you can avoid driving a vehicle within 2 hours of consuming alcohol and marijuana?

## Values



**Figure 11. Means of Values**

### Values

Broad-mindedness (beauty of nature and arts, social justice, a world at peace, equality)

Helpfulness (honesty, forgiveness, loyalty, responsibility)

Conformity (obedience, honoring parents and elders, self-discipline, politeness)

Tradition (respect for tradition, humbleness, accepting one's position in life, devotion)

Security (national security, family security, social order, cleanliness)

Power (social power, authority, wealth)

Achievement (success, capability, ambition, influence on people and events)

Enjoyment in life (gratification of desires, self-indulgence)

Stimulation (daring, a varied and challenging life, an exciting life)

Self-Direction (creativity, freedom, curiosity, independence, choosing one's own goals)

### **Observations**

- Those who DUICA tend to value power more than others.
- Everyone tends to value helpfulness highly.

## Concern for Traffic Safety

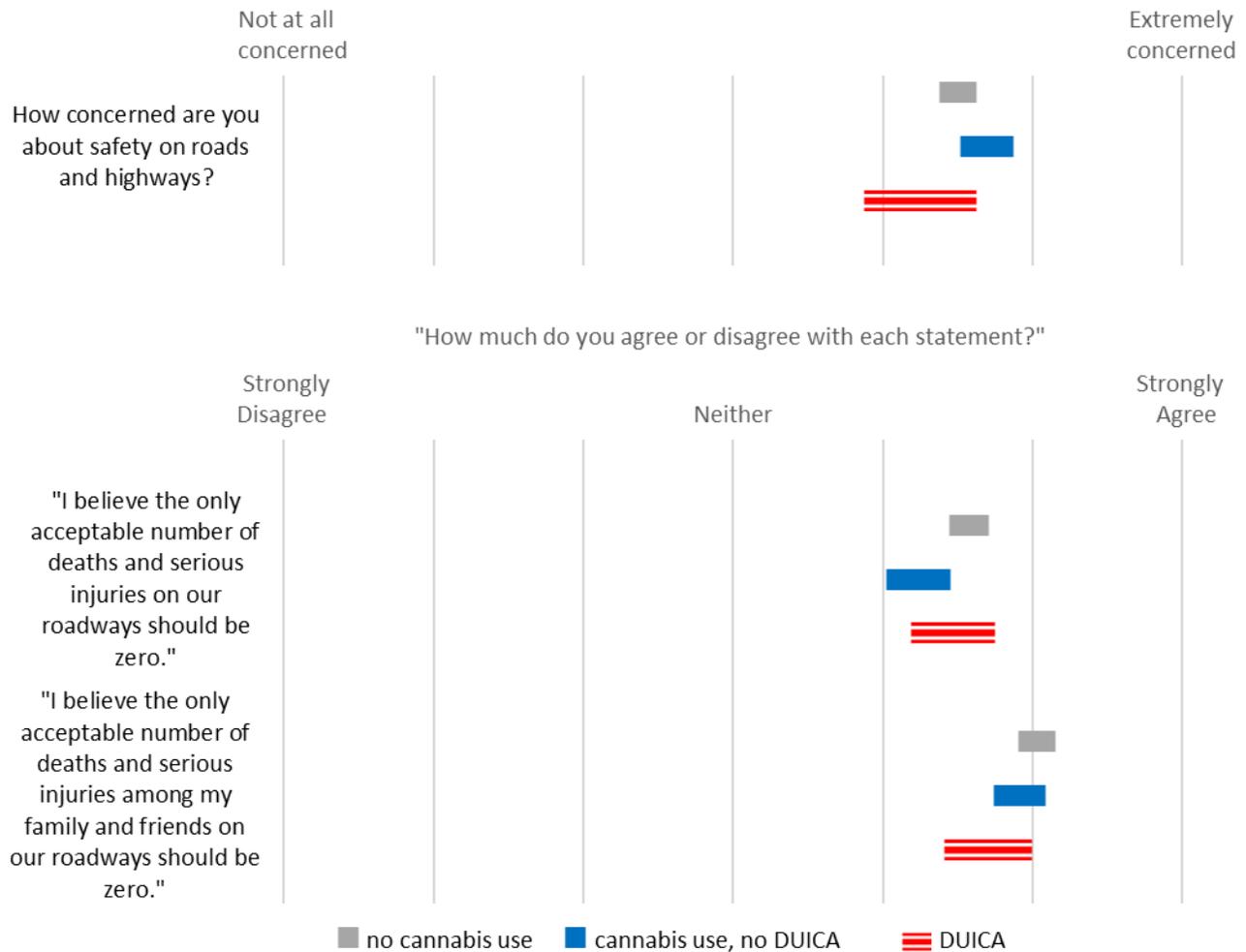
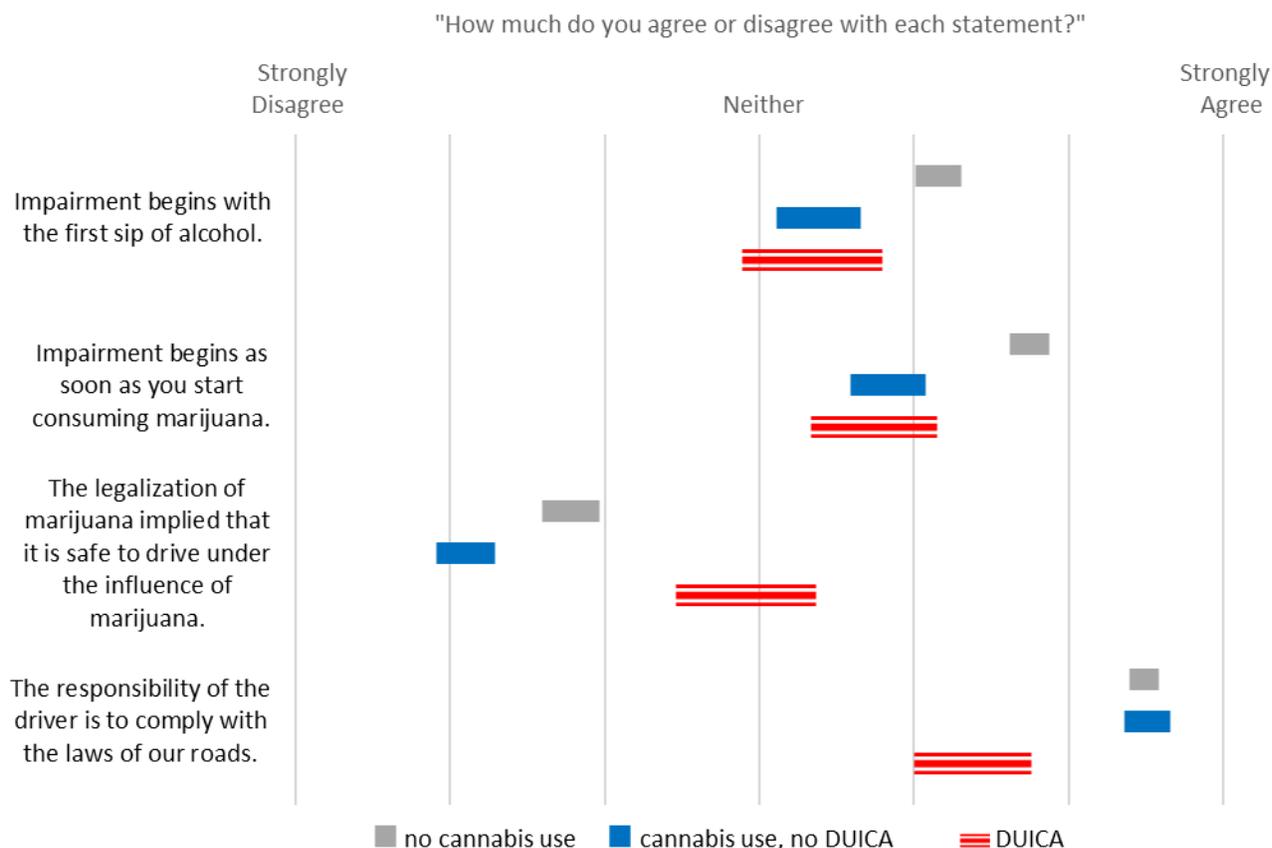


Figure 12. Means of Concern for Traffic Safety

### Observations

- Most adults in Washington (81%) are moderately or more concerned about safety on roads and highways.
- Most adults in Washington (74%) agree the only acceptable number of deaths and serious injuries on our roadways should be zero.
- General concern for traffic safety is similar among all three groups.
- All three groups have similar levels of agreement with the goal of zero traffic-related deaths and serious injuries.

## Assumptions



**Figure 13. Means of Assumptions**

### Observations

- Most adults in Washington (64%) agree that impairment begins with the first sip of alcohol.
- Most adults in Washington (76%) agree that impairment begins as soon as you start consuming cannabis.
- Most adults in Washington (91%) agree that it is the responsibility of the driver is to comply with the laws of our roads
- On average, most people tend to agree (although not strongly) that impairment begins with the first sip of alcohol or as soon as you start consuming cannabis.
- Those who DUICA are much less likely to disagree that legalization implied it was safe to drive under the influence of cannabis.
- On average, those who DUICA agree less that it is their responsibility to comply with traffic safety laws.

## What YOU Can Do

While the results show that many adults have healthy beliefs, attitudes, and behaviors about driving after consuming alcohol and cannabis, there are opportunities to improve.

- Share these results with community members, key stakeholders, and local leaders. Use the questions listed below to foster constructive dialogue.
- Frame communications about impaired driving in the context of safety.
- Review materials, media, and strategies and revise or augment language to establish that:
  - Driving after consuming alcohol or cannabis increases the risk of a crash.
  - Most people in Washington State never drive after consuming alcohol or cannabis.
  - Most people in Washington State believe driving after consuming alcohol and cannabis is unacceptable.
  - Using cannabis after consuming alcohol does not reduce crash risk; it increases crash risk.
    - While some may feel that using cannabis after drinking calms them, this feeling of calmness should not be interpreted as being a safer driver. Feeling anxious about driving after drinking should be a signal not to drive.
  - People should plan ahead to:
    - avoid driving after consuming alcohol or cannabis,
    - use alternative transportation, or
    - stay where they are.
  - Communication about the legalization of cannabis should include reiteration of laws prohibiting impaired driving and emphasizing that driving under the influence of cannabis increases crash risk.

### Questions to Foster Meaningful Dialogue

#### Questions to Focus Collective Attention

- What opportunities can you see that the data are revealing?
- What do we still need to learn about this issue?
- What would someone who had a very different set of beliefs than you do say about these data?

#### Questions to Reveal Deeper Insights

- What has had real meaning for you from what you've seen in the data?
- What surprised you? What challenged you? What encouraged you?
- What needs clarification?
- What's been your major learning, insight, or discovery so far from these data?

#### Questions to Create Forward Movement

- What's possible here?
- What will it take to create change?
- What needs our immediate attention going forward?

Adapted from Brown, J., Isaacs, D., Community, W. C., Senge, P., & Wheatley, M. J. (2005). *The World Café: Shaping Our Futures Through Conversations That Matter* (1st edition). San Francisco, CA: Berrett-Koehler Publishers.



**Center for  
Health & Safety  
Culture**

[www.chsculture.org](http://www.chsculture.org)