

## INTRODUCTION

“Cannabis” refers to different forms of the drug derived from the leaves and flowers of its namesake plant *Cannabis sativa*. Cannabis is the most commonly used “illicit” drug in the United States (see Figure 1). For recreational purposes, it is used for its intoxicating effects that include euphoria and relaxation but can also produce anxiety in inexperienced users.



**FIGURE 1: Past month users of six most common ‘illicit’ drugs in US for 2017 (SAMHSA, 2017).**

The principal psychoactive compound of cannabis is delta-9-tetrahydrocannabinol (THC), which alters neural activity in brain regions associated with cognitive abilities, especially psychomotor control and attention allocation. Because these abilities are necessary for driving, THC can impair driving behavior and increase crash risk.

Some cannabis users believe they are aware of their impairment and can compensate. However, there is no consistent evidence that users develop tolerance to the effects of THC, nor that they can compensate fully across all aspects of driving.

## TRAFFIC SAFETY

Concerns are being raised about the impact of laws that legalize cannabis on traffic safety. Such concerns assume that (1) legalization changes perceptions about driving under the influence of cannabis (DUIC), and that (2) DUIC increases fatal crash risk.

*But are both these assumptions valid?*

1. Previous research in Washington State concluded that adolescents reported less perceived harm and more reported use of cannabis after the legalization of cannabis (Cerda et al. 2017). Table 1 shows responses from a representative sample of adults in Washington State. Nearly 1 in 5 adults agreed the new law implied it was safe to DUIC. Those agreeing it was safe to DUIC were more than twice as likely to DUIC themselves.

**TABLE 1: Percentage of Washington State Respondents Disagreeing or Agreeing that Legalizing Recreational Cannabis Meant it Was Safe (DUIC).**

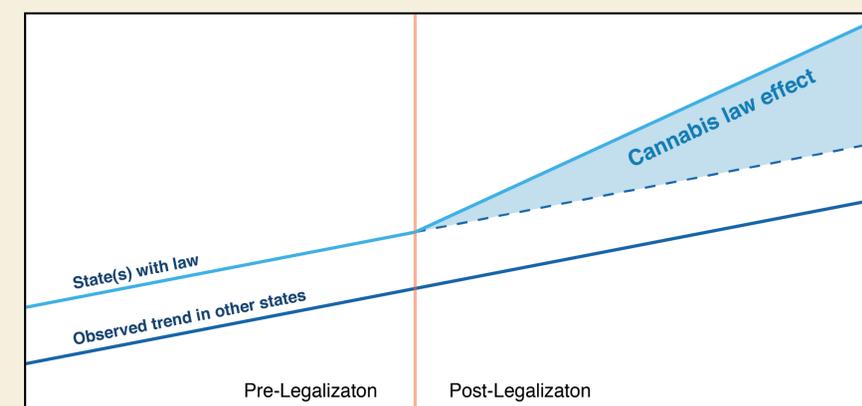
“The legalization of cannabis implied that it is safe to drive under the influence of cannabis.”		
Disagree	Neither	Agree
69.4%	12.2%	18.4%

2. The effect of THC on driver impairment and crash risk is very complex. Many factors related to the individual, the drug, and the driving task influence these outcomes. Consequently, reported effects vary considerably. However, analytic methods that account for this variability estimate that DUIC drivers are more likely to be responsible for a crash (especially those related to inattention or speeding) and nearly twice as likely to be fatally injured in the crash.

## LEGISLATION

Asserting that a cannabis legalization law “caused” an observed increase in fatal crashes is very difficult. Fatal crashes are caused by the combination of many factors. Therefore, it is not sufficient to only demonstrate that fatalities (or fatality rate) increased after the law was implemented. Other factors such as increased vehicle travel or changing economic conditions (etc.) that may have coincided with the law could have been the real cause of changes in traffic fatalities.

The most valid assessment method is to compare the crash data of states with the law (cases) to those states without the law (controls). Importantly, cases and control states must be matched on important factors that can also influence crash risk. Moreover, the primary comparison is not between states but rather comparisons within to see if the fatalities in the post-law period are different from what was predicted based on the annual trend over the pre-law period (see Figure 2).



**FIGURE 2. Illustration of assessment method to identify effect of cannabis law (Coyle 2018).**

## CONCLUSION

To date, the few studies that have used the method in Figure 2 only assessed a few states (Oregon and Washington) with relatively short post-law periods. And so, conclusions about the effect of such laws are inconclusive. It is necessary to expand efforts to consider more states over longer assessment periods.

As Table 1 shows, passing these laws can change perceptions about the harm caused by cannabis including DUIC. It is therefore important to consider how the justification for such laws is communicated.

Regardless, DUIC does increase crash risk. Admittedly, the adjustment of risk for age and gender may lower the risk estimate. But this does not mean that DUIC is not risky. Rather, it only means age and gender themselves impose a greater risk than DUIC. Regardless of age and gender, all drivers have a higher crash risk when they DUIC.

## CONTACT INFORMATION

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