



# Drivers' Use of Marijuana in Washington State

## Background

In July 2014, Washington State allowed legal sales of recreational marijuana. Working with the Washington Traffic Safety Commission, NHTSA assisted the State in conducting a roadside study to examine the prevalence of marijuana use before and after sales began. The study also examined drivers' use of alcohol and other drugs.

National roadside studies have been conducted approximately every decade since the 1970s. This study used a similar research design as the national studies but included several enhancements. It included more than 70 over-the-counter, prescription (antidepressants, sleep medications, etc.), and illegal drugs (cocaine, opioids, etc.) that may impair driving-related skills.

## Project Objective

This project's objective was to examine whether the percentage of drivers who tested positive for marijuana increased after sales of the drug became legal and what the effect was on alcohol-impaired driving.

Data was collected in three waves: (1) immediately before implementation of legal sales, (2) six months after implementation, and (3) one year after implementation.

## Results

- Across the three waves, 14.6%, 19.4%, and 21.4% of drivers tested positive for marijuana. The increases were not significant.
- There was a statistically significant increase in daytime prevalence of marijuana-positive drivers between Wave 1 (7.8%) and Wave 3 (18.9%).
- While there was also an increase in drivers positive for marijuana at night across each successive wave (17.5%, 19.8%, and 22.2%), these were not statistically significant.
- Marijuana and alcohol were the most common substances for the drivers in the study.

- There were no significant changes in alcohol use, either with or without marijuana. Alcohol use varied across the three waves with 6.0%, 3.9%, and 4.4% of participants testing positive for alcohol. This was not a statistically significant change. Use of alcohol and marijuana together was not common, varying from .04 percent to 1.3 percent of drivers across waves.
- Although direct comparisons are not possible due to some differences in methodology, marijuana use in Washington was higher than in the 2013-2014 National Roadside Survey (using nighttime numbers, 12.6% of drivers in the national study were positive for THC, versus 17.5% to 22.2% of drivers participating in Washington depending on the wave).
- As the presence of marijuana and some other drug types can be detected for days or even weeks after use, it is important to note that this study examined the prevalence of selected drugs and alcohol. We were not able to determine whether people were impaired at the time of participation. We considered a driver positive for marijuana if we found THC (delta-9-tetrahydrocannabinol), the psychoactive substance in marijuana.
  - ◆ Washington set 5 nanograms per milliliter (ng/mL) or higher of delta-9-THC in the blood within two hours of driving as the per se level, at which the driver is guilty of driving while under the influence of THC. The study found a reduction in the percentage of THC-positive drivers who were over the per se limit. In Wave 1, 14.5% of drivers were over the 5 ng/mL limit, while in Wave 2, this decreased to 5.3%, a statistically significant reduction. In Wave 3, it increased to 9.2%.

## Method

For each of the three waves, we collected data from six sites in Washington State. Data collection at each site was conducted on Fridays during the day, from either 9:30 to 11:30 a.m., or 1:30 to 3:30 p.m., and on Friday and

Saturday nights from 10 p.m. to midnight, and from 1 to 3 a.m. (actually, early the next morning). Each of these sessions in each general site was at a different location.

Although the general sites (such as King County) remained the same, the exact locations within some sites varied across waves. Although there were practical considerations for selecting locations such as traffic flow and safety, the five locations in each site were chosen randomly in the boundaries of the cooperating local law enforcement agency's area of jurisdiction. This approach provided as much as possible a representative sample of drivers for that site. Locations were not selected based on assumptions of where there would be a high percentage of drug-or alcohol-positive drivers. Police officers were on site for the safety of the drivers and research teams.

Participation among Washington's drivers was high. Drivers were selected at random as they approached a study location. They were offered a modest monetary incentive of \$10 for an oral fluid sample, and \$50 for a blood sample.

Drivers' use of alcohol was determined from a breath sample; drug use was determined by an oral fluid or blood sample. Drivers were assured of anonymity. The teams followed a strict protocol to ensure that drivers who were thought to be impaired received a safe trip home, without involving law enforcement.

Drivers were assured they could drive on if they did not wish to participate. There were almost 2,400 participants. We did not collect any personal identifiers, such as name, address, driver license number, or license plate number.

## Discussion

NHTSA and the States use the data from studies like these to track trends in alcohol-positive and drug-positive drivers and to understand where we should focus efforts.

This study measured prevalence of THC-positive drivers. It did not address whether an increased prevalence of THC-positive drivers is related to greater impairment among drivers or greater crash risk.



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As in all field research, there are limitations in this study, including:

- A larger number of sites across the state of Washington would have increased the representativeness of the sample. Also, some of the locations within sites varied across waves.
- A larger number of participants would have increased the accuracy of the results.
- We cannot be sure that drivers who chose not to participate, and thus did not enter the study, were not somehow different from those who did participate (non-response bias).
- We did not sample drivers across all seven days of the week and all hours of the day. This limits the generalizability of the results.
- While baseline measures were obtained prior to legalized sales of marijuana, they were obtained after the law legalized use of marijuana, so the baseline for this study may be inflated.
- As one of the first States to enact a law legalizing marijuana for recreational use, Washington State may not be representative of other States across the Nation.

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