Driver Behavior & Performance

An Evaluation of Data from Drivers Arrested for Driving Under the Influence in Relation to Per se Limits for Cannabis

This study examines the relationship between toxicological test results and performance on a battery of physiological and psychomotor measures used by law enforcement officers among drivers arrested for DUI.

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ABSTRACT

While the exact relationship between cannabis use and increased risk for crash involvement remains unclear, cognitive and psychomotor effects of cannabis use in the period immediately after use can impact vehicle control and judgment and present some risk for deterioration in driving performance.

Background

- Cannabis is in the spotlight in the United States due to increased acceptance of its medical and recreational use
- One of the major concerns shared by both opponents and proponents of greater access to cannabis is its impact on driver performance and traffic safety; both sides recognize that the cognitive and psychomotor effects of cannabis use in the period immediately after use can impact vehicle control and judgment and present some risk for deterioration in driving performance
- These concerns have led to a strong desire among lawmakers and traffic safety advocates to consider laws that criminalize cannabis-involved driving including laws that set a quantitative threshold for concentration of delta-9- tetrahydrocannabinol (THC), the active component of cannabis, in a person's blood. This threshold would constitute an offense per se in an effort to discourage cannabis-impaired driving

Objective

- The objective of this study was to determine whether data from drivers arrested for suspected driving under the influence (DUI) supported any particular quantitative threshold for a per se law for THC

Methods

- Data from two sources were evaluated:
  - 602 drivers arrested for DUI in which only THC was present, along with a sample of 349 drug-free controls, in which full records of the subjects' performance in the Drug Recognition Expert (DRE) exam were available. The DRE exam is an assessment of physiological standards and performance on psychophysical tests, including the Standardized Field Sobriety Test (SFST) battery; and
  - 4,799 drivers arrested for DUI who tested positive for one or more cannabinoids (THC, hydroxy-THC, and carboxy-THC), and for which demographic information and comprehensive toxicology testing results were available

Key Findings

- Compared to drug free controls, the DRE arrestees indicated poorer performance in the psychophysical tests (walk-and-turn, one-leg-stand, and finger-to-nose tests)
- Indicators of red, bloodshot and watery eyes, eyelid tremor, lack of convergence, and rebound dilation all showed significantly greater incidence in the cannabis-positive subjects

Analysis of the same data was conducted considering whether indicators of impairment differed between subjects with blood THC concentrations above or below 5 ng/mL, the threshold for per se driving under the influence of cannabis adopted in Colorado, Washington, and Montana

- The finger-to-nose test was the only indicator for which performance differed according to whether subjects were in the higher (≥5 ng/mL), or lower (<5 ng/mL) THC group. The number of misses on the finger-to-nose test was greater in the higher THC group

- Analyses of alternative threshold THC concentrations from 1-10 ng/mL did not identify a threshold level of the THC concentration such that, if used as per se limit, would provide an acceptable level of agreement with the SFST

- Among all cannabis-positive drivers arrested for DUI, 70 percent had THC concentrations below 5ng/mL

- The majority of cannabis-positive drivers arrested for DUI also tested positive for alcohol and/or other drugs; only 23 percent were positive only for cannabinoids

Conclusions

- All of the candidate THC concentration thresholds examined would have misclassified a substantial number of driver as impaired who did not demonstrate impairment on the SFST, and would have misclassified a substantial number of drivers as unimpaired who did demonstrate impairment on the SFST

- Based on this analysis, a quantitative threshold for per se laws for THC following cannabis use **cannot** be scientifically supported

SUGGESTED CITATION

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