NATIONAL ADVANCED DRIVING SIMULATOR

DRIVING INNOVATION

FOR SAFER IOWA ROADS

January 2018

DRUG IMPAIRED DRIVING

OF THE **210 MILLION** AMERICAN DRIVERS ARE ON AT LEAST **1 PRESCRIPTION** MEDICATION

Around 5%, or more than 5 million AMERICAN DRIVERS HAVE USED A MEDICATION FOR A **NON-MEDICAL** PURPOSE IN THE LAST MONTH

According to the 2016 National Survey on Drug Use and Health (NSDUH), in 2016, 20.7 million people aged 16 or older drove under the influence of alcohol and 11.8 million drove under the influence of illicit drugs. And even more use prescribed medications.

Although most people view driving as a simple task of daily life, it is actually quite complex. Safe driving requires sensory perception, thinking, decision-making, and memory, along with nerve and muscle control. As the opioid epidemic continues, prescription medication use increases, and more states legalize the use of marijuana, drugged driving will remain a problem on US roadways.

Most often, people associate drugged driving with the use of illicit drugs such as marijuana, K2/spice, cocaine, heroin, opium, and meth. In the US, approximately 24 million people are active users of illicit drugs. However, although illicit drug use is a significant public health risk that also impacts driving safety, the number of users is dwarfed by those using over-the-counter and prescription drugs for medical reasons. As people age, there is a general increase in the number of medications used to maintain good health. More than 10% of American drivers today are taking five or more medications. These medications, along with how they are combined, can have a myriad of effects on driver performance.

Other factors such as age, fatigue, medical conditions, and psychological functioning may have adverse effects. When combined with drugs or multiple drugs, driver performance may be impaired to such an extent that the driver is no longer capable of safe operation of a motor vehicle. As drug use of all kinds rises, fully evaluating effects on driving is a crucial public safety issue. Although other areas of driver impairment have been described and studied, drug impairment is an area still in its early development.

The University of Iowa has conducted a number of studies on antihistamines, sleep aids, pain relievers, stimulants, and marijuana to better understand the effect these drugs have on driver impairment in a safe and reproducible environment at the National Advanced Driving Simulator. Our groundbreaking work on the impacts of marijuana on driving performance has shed light on the challenges of linking blood levels of drugs to changes in performance. With our partners, we are working to understand the role of marijuana in fatal crashes and how tablet-based applications can be used to determine drug impairment, rather than just drug presence in the system. We remain committed to better understanding how different classes and combinations of drugs impact safety on the road.

FAST FACTS

- In studies conducted at the National Advanced Driving Simulator, marijuana use was associated with:
  - An increased tendency to drive below the speed limit
  - Increased following distance
  - Lane weaving
- It's not always drowsiness. In studies with our miniSims, prescription and non-prescription drugs had different effects on drivers. Combinations of these, such as using both opioids and caffeine, also resulted in unpredictable effects when used together.

The case for future research

Drivers involved in fatal crashes are now more likely to test positive for the presence of a drug than to test positive for alcohol (43% to 37%), but the extent to which various drugs contribute to these crashes remains unclear. Some drugs have not been studied to determine their impact on driving, and others do not have a clear relationship. For drugs that cross the blood/brain barrier, it is currently nearly impossible to directly link measurable levels of the drug to observed impairment. Future work is needed to provide better tools for law enforcement to identify drug-impaired drivers and document the link between drug usage and crash risk.

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