New Research Shows DRUID App, Using Brain-Function Testing, Can Distinguish Between Alcohol and Cannabis Impairment

Study demonstrates ability to identify the cause, not just the presence, of impairment

CAMBRIDGE, MA, UNITED STATES, February 11, 2026 /EINPresswire.com/ -- Impairment Science, Inc. today announced the results of a new research study demonstrating that data generated by its DRUID® mobile app can, in supervised human testing, reliably distinguish between alcohol-related impairment and cannabis-related impairment. The findings represent a major advance in impairment science, showing that digital cognitive and psychomotor testing may identify not only whether a person is impaired, but also the likely cause of that impairment.

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> *Max Daniller-Varghese, PhD*

The study, titled Preliminary Research to Determine Whether Data Generated by DRUID Can Distinguish Between Alcohol and Cannabis Impairment, analyzed nearly 600 supervised test sessions from participants who consumed alcohol on one occasion and cannabis on another. Using advanced machine-learning techniques, researchers found that alcohol and cannabis produce distinct, measurable impairment signatures in DRUID test data.

"Historically, impairment detection has focused on identifying chemicals in the body," said Rob Schiller, CEO of Impairment Science, Inc. "But chemical detection - especially for cannabis - does not reliably measure impairment, and it cannot address the many non-chemical causes of impairment. Our results show strong evidence that alcohol and cannabis affect cognition and motor performance in different ways, and that DRUID can detect those differences."

Key Findings
"Across hundreds of machine-learning models, we observed consistently strong and well-calibrated performance in distinguishing alcohol from cannabis impairment," said Max Daniller-Varghese, PhD, co-author of the study.
• More than 300 models produced machine learning F1 accuracy scores above 0.85 for both substances, a level of accuracy considered good to excellent.
• High accuracy for alcohol classification did not come at the expense of cannabis accuracy,

indicating robust and well-calibrated models.
• Results were replicated across nearly 2,000 feature combinations; each tested 1,000 times to ensure stability.

Why This Matters
Accurately identifying the cause of impairment has long been one of the most difficult challenges in public safety, occupational health, and clinical assessment. The findings come amid growing recognition that substance-based detection approaches - particularly for cannabis - have not produced reliable, widely deployable solutions despite years of development and investment.

These results suggest that a performance-based, brain-function approach may succeed where substance-detection technologies have struggled. By focusing on how the brain and body are functioning, rather than on the presence of specific chemicals, this approach offers a promising new path forward.
"This research supports the idea that impairment itself may be the most reliable signal," Schiller said. "It opens the door not only to distinguishing alcohol from cannabis, but potentially to identifying other sources of impairment such as fatigue, concussion, or medical conditions."

Read the full study

About Impairment Science, Inc.
Impairment Science, Inc. develops technology to measure functional impairment for industry, academia, medicine, and athletics. Its DRUID app, along with DRUID Enterprise, helps organizations and individuals proactively manage risk, improve safety outcomes, and support performance across safety-sensitive industries. (www.impairmentscience.com)

Christopher B Bensley
Impairment Science Inc
+1 617-612-5800
email us here

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