Laws Based on Rapid Drug Tests Are Unscientific And Unfair

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Laws based on roadside saliva tests for drug-impaired driving, especially for marijuana, are quietly being implemented in state legislatures across the country. Alabama, Michigan, and Kansas already have programs in place, and Minnesota is about to join the fray. While this may seem to be an admirable effort, it is a classic example of what happens when law enforcement and science clash.

Currently, roadside drug DUI laws are not simply lagging behind the science, they actively contradict it. It is fairly straightforward to determine whether a driver is impaired by drinking. A roadside Breathalyzer test measures the concentration of alcohol in a driver's breath, and the magnitude of the readout is proportional to the level in the blood, a known measure of the degree of impairment.

But the same cannot be said for drugs, either prescription or recreational. Of particular importance is THC, the primary psychoactive drug in cannabis. For this drug, which is second only to alcohol in terms of impaired driving, blood concentrations do not correlate well with driving performance.

If field sobriety tests are being used as a measure of impairment from drugs, it is fair to ask how good they are. By any measure, it is safe to say that these tests fail miserably.

In a recently published article in JAMA Psychiatry, researchers at the University of California, San Diego, performed a double-blind, placebo-controlled randomized clinical trial to evaluate how accurate field sobriety tests are in identifying drivers under the influence of THC.

It showed that tests administered by law enforcement officers could differentiate between individuals who had consumed THC versus those who had not at certain time points, but, as the study's lead author noted in a press release,

"[f]ield sobriety tests are useful additions to overall evaluations of drivers but are not accurate enough on their own to determine THC impairment." New effective measures for identifying cannabis impairment are needed to ensure the safety of all drivers on the road.

And, as the authors wrote, "One court concluded that 'there is as yet no scientific agreement on whether, and, if so, to what extent, these types of tests are indicative of marijuana intoxication.'"

As states attempt to crack down on drivers who are impaired by drugs — reflected in the growing patchwork of differing state laws — multiple technologies have been developed to rapidly determine the presence of drugs, both legal and otherwise. But roadside tests provide only a yes-no answer — whether the drug can be detected within the limit of the instrument. Presence is not indicative of impairment.

The fundamental problem with these state efforts is that we have neither the technology to measure drug levels, especially with a rapid test, nor laws or guidelines to properly interpret measurements of these levels, even if this information were available.

But government officials often think it is better to do something, valid or not, than be accused of negligence. Therefore, largely meaningless tests are increasingly being developed and used in an attempt to detect impaired drivers, just as they have been used against workers in a variety of occupations. People can lose their jobs based on yes-no tests that cannot determine individuals' ability to either work or drive.

The increased use of spurious drug testing has been propelled by the decriminalization of marijuana. According to the Centers for Disease Control and Prevention, that change in the law presents an enormous challenge to public safety because of driving impaired by cannabis use.

The agency reports that in 2018, "approximately 12 million (4.7%) U.S. residents aged [16 years or older] reported driving under the influence of marijuana, and 2.3 million (0.9%) reported driving under the influence of illicit drugs other than marijuana" during the previous 12 months.

Thus, there are large and growing numbers of potentially drug-impaired drivers on the road, but no scientifically valid method to determine their level of impairment.

A yes-no test may be punitive, and it does not meaningfully reflect impairment for most drugs, which is especially true for cannabis. First, unlike alcohol, Delta-9 THC — the primary psychoactive chemical in cannabis — is metabolized, and thus cleared, very slowly from the body; it is stored in fat tissues where it can persist for days or even weeks.

It is problematic that a yes-no test cannot distinguish between a driver who is impaired from recently smoking several cannabis cigarettes, and another who took a couple of puffs a week earlier and is not impaired at all.

Although a concentration of five nanograms per milliliter of Delta-9 THC in the blood is often considered the threshold for impairment, a 2022 article in the journal Nature concluded that "single measurements of [Delta-9 THC] in blood, and now in exhaled breath, do not correlate with impairment following inhalation."

In Kansas, they've purportedly solved this conundrum by simply ignoring it. In an attempt to address drivers' impairment, state troopers now use a rapid, roadside instrument called SoToxa, which can detect THC as well as five other classes of drugs. But this ostensible solution may be worse than the problem.

SoToxa, like previously developed tests, determines only whether or not the drug is present in saliva at the level of detection of the instrument: an essentially useless bit of information. Why? Because pharmacology does not work that way.

Just like "the dose makes the poison" — an adage first coined by Paracelsus, the father of modern pharmacology, in the 16th century — the dose also determines the degree of impairment.

Although courts are not allowing SoToxa results to be cited as evidence at this time, it is likely that positive tests will eventually show up as black marks on some drivers' records, especially since the tests also detect commonly used, legal prescription drugs for conditions like attention-deficit/hyperactivity disorder and anxiety.

Four other states are in various stages of implementing these tests, so we shouldn't be surprised to see these faulty tests spreading throughout the country.

The repercussions of faulty drug tests may be worse when it comes to employment. There are a number of industries, including transportation, health care and construction, that require drug testing, and workers who fail a yes-no test for common recreational drugs, as well as certain prescription drugs, can lose their jobs.

A truck driver who tests positive for THC can be terminated, even though the test may detect a pharmacologically insignificant level of the drug. Worst of all, this can occur even if the driver hasn't actually used cannabis. Hemp-based CBD oil, which is now legal and commonly used in the U.S., can contain up to 0.3% of THC.
This alone can cause a positive test.

The disconnect between legality and illegality is perhaps most obvious here. How can an unimpaired person who used a perfectly legal product be prosecuted or lose their job?

We're not advocating a transportation system full of drug-addled truck drivers or train operators, but given the wholesale decriminalization of marijuana by many states, our archaic standards must be updated if they are going to be useful and fair.

Unfortunately, this is easier said than done. Even [Stop Drugged Driving](#), an organization that is especially concerned with driving under the influence of drugs, calls impairment thresholds "a fool's errand" because there is no correlation between THC levels and the degree of impairment.

Similarly, a [2016](#) technical report issued by the AAA Foundation for Traffic Safety concluded, "[b]ased on [its] analysis, a quantitative threshold for per se laws for THC following cannabis use cannot be scientifically supported." Although many countries, especially in Europe, use a zero tolerance policy, where the presence of a drug is considered evidence of impairment, we cannot recommend this approach. It is both scientifically inaccurate and unfair to determine guilt or innocence based on advancements in analytical chemistry instruments, which can now detect chemicals at concentrations millions of times lower than what was possible in the [1960s](#).

Ultimately, it would be an easy fix to adopt a zero tolerance policy, or to codify an arbitrary drug concentration that has little or nothing to do with actual impairment, but these laws are both punitive and contrary to scientific principles, and there is no question that unimpaired people would be caught in the net.

It is unfortunate that reliable standards have not been established to save lives, but this does not warrant the use of deeply flawed testing policies as window dressing. As in medicine, it is better to do no harm.