

Press Release

Driving Simulator Experiment by DEKRA and Partners:

Cannabis and driving: Less confidence in one's own abilities, but no increased caution

- ▶ Survey, blood tests, and simulator drive before and after consumption
- ▶ Average speed increased under the influence of cannabis
- ▶ Self-assessment of THC blood levels is often difficult

Less confidence in their own driving skills, but higher speeds: People who get behind the wheel after using cannabis apparently do not automatically drive more cautiously. On the contrary: The results of a new driving simulator experiment conducted by DEKRA in collaboration with the Chair of Engineering Psychology at TU Dresden and the Institute for Work and Health (IAG) of the German Social Accident Insurance (DGUV) show that driving speeds increased—in some cases significantly—after cannabis use.

The study, which examined the impact of cannabis use on participants' assessment of their own driving abilities, their perceived impairment, and their actual driving behavior, involved 41 participants with driver's licenses and practical driving experience, with an average age of just over 24 years. They were interviewed several times and provided multiple blood samples – once before consumption and four times afterward. They drove in the simulator for 20 minutes on three separate occasions: first while sober, then half an hour after consuming cannabis, and finally two hours after consumption. "For the consumption phase, the participants were asked to take a 'typical after-work dose to relax' – a dose they usually take – from cannabis they had brought themselves," explains Dr. Thomas Wagner, traffic psychologist and head of the officially recognized assessment centers for driving fitness at DEKRA in Germany.

The extent to which participants felt impaired was assessed on a five-point scale ranging from "not noticeable" to "severe." Half an hour after consuming cannabis, 63% of the participants felt slightly impaired; after two hours, that figure had dropped to 49%. No one reported a more severe level of impairment.

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Contact Wolfgang Sigloch
Phone +49.711.7861-2386
Fax +49.711.7861-742386
E-Mail wolfgang.sigloch@dekra.com

DEKRA e.V.
Corporate Communications
Handwerkstraße 15
70565 Stuttgart, Germany
www.dekra.com/en/press-overview

When asked to self-assess their own driving safety – that is, whether they would drive a car in their current state – all participants felt safe to drive before the sober drive; half an hour after cannabis use, 17% felt safe, and two hours after use, 49% felt safe. Among participants who use cannabis more frequently, there was a smaller influence of the actual blood THC level on self-assessment compared to participants who use it less frequently.

How does driving behavior change after cannabis use?

To analyze driving behavior during the simulator drives, speed and lane-keeping accuracy were evaluated on an 800 meter-long, narrow stretch of country road without a center marking. The speed limit was 80 km/h. There were no critical situations that required a reaction, so the participants were able to drive unimpeded in their lane.

The scientists were particularly struck by the differences in average speed between the individual trips: During drives following cannabis use, drivers drove progressively faster than when sober. One in ten participants drove, at times, significantly faster than the speed limit. The study also examined how well the participants stayed in their lane. Under the influence of cannabis, 39% (30 minutes after consumption) and 32% (two hours after consumption), respectively, deviated significantly from the ideal lane. However, there were also participants who performed better in this regard after cannabis use compared to driving while sober.

Overall, the blood THC levels among all participants were relatively low. “The low level of intoxication among the participants, who predominantly classified themselves as occasional users, is reflected in their self-assessment of mild impairment, as well as in a reduced assessment of driving safety and less optimistic confidence in their own driving abilities,” says Dr. Thomas Wagner.

In contrast to other studies, no reduction in average speed was observed after cannabis use. On the contrary: Driving speed increased. “Given the speed limit of 80 km/h, this suggests a tendency toward a more careless approach to traffic regulations,” says the traffic psychologist. “In summary, one can say: After consuming cannabis, the participants had less confidence in their own driving abilities, but this did not make them drive any more cautiously.”

Self-assessment is often difficult

Another challenge for self-assessment is the fact that the amount of THC contained in, say, a “joint” can vary greatly. As a result, users often have no way of knowing how much THC they are actually consuming. “Like all psychoactive substances, cannabis

affects our nervous system and thus aspects of performance that are essential for safe driving,” said Dr. Thomas Wagner. “The discrepancy shown in our experiment between the self-reported impairment on the one hand and driving behavior on the other – which does not become more defensive as a result – is a further argument for not compromising on safety when setting THC limits for drivers.”



About DEKRA

For more than 100 years, DEKRA has been a trusted name in safety. Founded in 1925 with the original goal of improving road safety through vehicle inspections, DEKRA has grown to become the world's largest independent, non-listed expert organization in the field of testing, inspection, and certification. Today, as a global partner, the company supports its customers with comprehensive services and solutions to drive safety and sustainability forward. In 2025, DEKRA generated revenue of 4.4 billion euros. More than 48,000 employees are providing qualified and independent expert services in approximately 60 countries across five continents. DEKRA holds a Platinum rating from EcoVadis, placing it among the top 1% of the world's most sustainable companies.