

Research Update is published by the Butler Center for Research to share significant scientific findings from the field of addiction treatment research.

## Driving Under the Influence of Cannabis

In the United States (U.S.) since 2012, 10 states and the District of Columbia have legalized recreational cannabis, and 34 states have legalized medical cannabis.<sup>1</sup> As the landscape of cannabis policies and use continues to evolve, there is an imperative to understand the consequences of policy decisions and the impact of cannabis use on cognitive functioning and overall health and well-being. One specific area of concern is cannabis's effect on driving ability. This report will examine the available research on driving under the influence of cannabis and its associated risks for morbidity and mortality, particularly as the use of cannabis is increasingly normalized.

### National Data on Driving Under the Influence

Data collected by the National Highway Traffic Safety Administration (NHTSA) and the Centers for Disease Control and Prevention (CDC) indicate that the incidence of driving under the influence of cannabis is on the rise in the U.S.<sup>2,3</sup> This is in contrast to the percentage of traffic fatalities that can be attributed to alcohol-impaired driving, which has steadily decreased in the U.S. for almost 40 years.<sup>4</sup> Just under one-third of traffic fatalities were caused by drinking and driving in 2018.<sup>4</sup> In fact, in a survey of driving habits completed by the NHTSA, it was determined that between 1973 and 2013/2014, there was an 80 percent reduction in the number of alcohol-impaired drivers who were on the road on weekend nights.<sup>2</sup> The success in limiting alcohol-impaired driving can be attributed, in part, to organized efforts to reduce the incidence of this behavior, led by groups such as Mothers Against Drunk Driving (MADD).<sup>5</sup> The same NHTSA survey that has been recording data on drinking and driving since 1973 only began collecting data on individuals driving under the influence of other drugs in 2007. This survey has found that while the prevalence of driving under the influence of alcohol is decreasing, driving under the influence of cannabis is on the rise. Between 2007 and 2014, the survey found that the number of nighttime weekend drivers who tested positive for delta 9 tetrahydrocannabinol (THC), the psychoactive component of cannabis, increased by nearly 50 percent, the largest increase among all drugs in the survey.<sup>2</sup>

While it is difficult to determine how many people are driving under the influence of cannabis, the CDC reported that, in 2018, nearly 5 percent of US residents indicated that they had driven under the influence of cannabis in the past year.<sup>3</sup> Individuals age 21 to 25 were the most likely to report that they had done so, with 16- to 20-year-olds being the second most likely age group to engage in this behavior.<sup>3</sup> Given the increased normalization of cannabis use due to legalization in many states,<sup>1</sup> it is important that we begin to understand the impact that cannabis use can have on driving capabilities.

### Cannabis's Effects on Driving Ability and Consequences of Driving Under the Influence of Cannabis

Data suggest that individuals who drive after using cannabis are twice as likely to get into an accident compared to when they are sober.<sup>6</sup> These data have been called into question due to a lack of a consistent way for law enforcement to report crash statistics related to cannabis impairment. This is because there is no standard guidance with regard to when testing for impairment of drugs other than alcohol should occur in relation to traffic accidents or violations.<sup>7</sup> In addition, when testing is completed, it is difficult to determine how impaired someone is by considering THC levels in the blood alone. The amount of THC in an individual's blood does not directly correlate with their level of impairment, as blood alcohol content (BAC) does with alcohol.<sup>2,7</sup> This is because THC metabolizes at a different rate than alcohol.<sup>8</sup> Alcohol metabolizes steadily, creating a steady decline in BAC that has been found to accurately reflect cognitive impairment.<sup>8</sup> THC blood concentration spikes while using cannabis, but then metabolizes quickly, dropping exponentially once consumption stops.<sup>8</sup> This metabolic pattern means that THC blood concentration does not accurately reflect impairment, which lasts longer than the high levels of THC in the blood

### THE HAZELDEN BETTY FORD FOUNDATION EXPERIENCE

The Hazelden Betty Ford Foundation helps individuals, families and communities affected by addiction. Hazelden Betty Ford addresses cannabis misuse and addiction in both their inpatient and outpatient settings. Cannabis misuse and addiction are treated with evidence-based therapies such as Twelve Step facilitation, cognitive-behavioral therapy and motivational enhancement therapy, among others, depending on individual needs.

### QUESTIONS

**Question:** Does taking cannabidiol (CBD) with cannabis make it safer to drive?

**Response:** While there has been speculation that taking CBD with cannabis (THC) will improve an individual's ability to drive, there is no conclusive scientific evidence to support this.<sup>18</sup> One study found that CBD combined with THC may actually increase driving impairment.<sup>10</sup> Currently not enough research has been conducted to draw solid conclusions on the overall effect that CBD has on THC impairment,<sup>18</sup> which means that CBD should not be relied upon to improve driving ability after cannabis consumption.

### HOW TO USE THIS INFORMATION

**For individuals:** Research strongly suggests that driving under the influence of cannabis impairs individuals' ability to drive safely. Even though several states have legalized cannabis, it is still illegal to drive under the influence in the U.S. Therefore individuals under the influence of cannabis, or any other substances, should avoid operating a motor vehicle under any circumstances.

**For service providers:** Consider sharing the available evidence regarding the risks of driving under the influence of cannabis with your clients.

## Driving Under the Influence of Cannabis

and drops at a steadier rate.<sup>9</sup> Another barrier to developing accurate testing is that, when comparing equal amounts of THC consumption, people who regularly consume cannabis (e.g., daily) are less impaired than those who consume it even slightly more occasionally (e.g., weekly).<sup>6, 7</sup> Even with these difficulties, it has been determined that 20–30 percent of accidents involving cannabis occur directly due to cannabis use.<sup>9</sup>

In addition to considering rates of motor vehicle accidents related to impairment from cannabis, the evidence regarding what it does to an individual's ability to operate a motor vehicle is a crucial issue to investigate. One study found that driving under the influence of cannabis can impact an individual's ability to remain acutely aware of their surroundings,<sup>10</sup> while many other studies have found that it hinders the motor skills that are needed to operate a vehicle safely (e.g., steering).<sup>6, 11, 12, 13</sup> In addition, these effects on motor skills can last for up to 3.5 hours after using.<sup>11, 12</sup> Furthermore, there is evidence that driving impairment can persist even after the initial "high" from cannabis wears off,<sup>11</sup> indicating that cannabis users don't necessarily know at what point they are safe to resume driving.

### Barriers to Studying Cannabis's Effects on Driving Capabilities

The body of research regarding cannabis-impaired driving has grown significantly in recent years; however, there are various barriers to interpreting this research. In addition to crash statistics being called into question due to inconsistent reporting, there is a paucity of research related to driving under the influence of cannabis in general, as the substance has been largely illegal for many years.<sup>7</sup> As a result, federal funding for research in this area has been limited.<sup>14</sup> When federal funding is available, researchers must use federal supplies of cannabis, which are usually less potent than more widely available cannabis (from dispensaries or on the black market).<sup>14</sup> In addition, federal supplies of cannabis typically do not include the same variety of products as is available to the general public (e.g., edibles, wax, oils, etc.).<sup>14</sup> This limits the generalizability of the federally funded studies.<sup>14</sup>

One consequence of the lack of federal resources for cannabis research<sup>14</sup> and inconsistent reporting from law enforcement<sup>1, 7, 15</sup> is that research into driving under the influence of cannabis often relies on self-report data.<sup>3, 16</sup> These data provide insight into the problem but are likely to underrepresent the true rates of driving under the influence of cannabis due to the perceived legal consequences of admitting to driving under the influence.<sup>7</sup> Overall, there is a great need to improve the research in this area so that the potential impact on morbidity and mortality can be mitigated.

### Moving Forward

Impairment from cannabis limits the effectiveness of motor skills needed to operate a motor vehicle,<sup>6, 11, 12, 13</sup> and increases the risk of being involved in a traffic accident.<sup>17</sup> Some mitigation efforts, like warnings on product labels to discourage operating heavy machinery after using cannabis, have been implemented in states where cannabis has been legalized.<sup>7</sup> Still the difficulty in testing for and measuring impairment and the lack of research regarding driving under the influence of cannabis make it difficult to ensure that policies adequately address the public health consequences of cannabis-impaired driving.<sup>7</sup> Improved measurement and data collection are necessary in order to better understand driving under the influence of cannabis and its consequences. With this information, research- and data-driven policies can more adequately respond to the public health consequences of this issue. More research is needed to better understand the effects of THC on a person's ability to operate a motor vehicle and to develop a standardized way for law enforcement to determine whether a person's driving ability has been impacted by the amount of THC they have consumed and at what time point it was consumed. Standardized testing and recording methods for driving under the influence of cannabis will allow policymakers to better determine the scale of this issue and how best to craft policies to reduce the potential harms of cannabis-impaired driving.

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