

AUTO SAFETY IN THE AGE OF MARIJUANA LEGALIZATION

by
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A capstone project submitted to Johns Hopkins University in conformity with the
requirements for the degree of Master of Arts in Public Management

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ABSTRACT

The United States is seeing a new era of marijuana legalization. Currently, nine states have legalized marijuana¹, and in 2018, an additional twelve states are expected to consider following suit². Legalization of marijuana presents challenges in auto safety for Americans: in 2015, approximately 28% of car accident deaths were caused by distracted driving, and among drugs, marijuana was the most commonly found substance in the blood of drivers involved in car crashes caused by driving under the influence³.

This capstone attempts to grapple with this consequential matter by proposing a policy-driven solution to car accidents and fatalities caused by marijuana-impaired driving. It proposes the passing of a law by the U.S. Congress to put a federal limit on marijuana-impaired driving. Modeled after the Federal Uniform Drinking Act of July 1984, states that fail to adopt and implement the limit would be subject to partial revoking of federal highway funds. Upon consideration of science and enforcement capacities, however, it is recommended to vote against the proposal. Paul Weinstein, Founder and Director of the Public Management Program at Johns Hopkins University, was the advisor for this capstone project.

¹ National Conference of State Legislatures, "State Medical Marijuana Laws," *NCSL*. January 15, 2018. <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>

² Sanders, Linley. "Marijuana Legalization 2018: Which States Might Consider Cannabis Laws This Year?" *Newsweek*. January 2, 2018. <http://www.newsweek.com/marijuana-legalization-2018-which-states-will-consider-cannabis-laws-year-755282>

³ Brady, Joanne, and Guohua Li. "Trends in Alcohol and Other Drugs Detected in Fatally Injured Drivers in the United States." *American Journal of Epidemiology* 179, no. 6 (January 29, 2014): 692-99.

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MEMORANDUM

TO: The Honorable Elaine Chao, Secretary of Transportation
FROM: Yaesul Park, Public Management Master of Arts, Johns Hopkins University
RE: Auto Safety in the Age of Marijuana Legalization
DATE: January 9, 2018

Action-Forcing Event

The year of 2018 will welcome the widest spread of marijuana legalization—9 states⁴, to be exact, with expectations of at least 12 additional states to consider following suit⁵. While the legalization of marijuana may have wide economic support across both the Democratic and Republican parties, the public health implications on auto safety—specifically, accidents caused by driving under the influence—may increase. Driving under the influence of marijuana is known to be one of the leading causes of impaired driving⁶.

Statement of the Problem

Today, distracted driving is the primary cause of auto accidents⁷. And marijuana is the drug most commonly found in the blood of drivers involved in car crashes caused by driving under the influence⁸. Legalization of marijuana has increased access and

⁴ National Conference of State Legislatures, “State Medical Marijuana Laws,” *NCSL*. January 15, 2018. <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>

⁵ Sanders, Linley. “Marijuana Legalization 2018: Which States Might Consider Cannabis Laws This Year?” *Newsweek*. January 2, 2018. <http://www.newsweek.com/marijuana-legalization-2018-which-states-will-consider-cannabis-laws-year-755282>

⁶ National Council on Alcoholism and Drug Dependence, Inc. “Driving While Impaired—Alcohol and Drugs.” *NCADD*. June 26, 2015. <https://www.ncadd.org/about-addiction/driving-while-impaired-alcohol-and-drugs>

⁷ United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. *TRAFFIC SAFETY FACTS* Research Note. HS ed. 812 381. Washington, D.C. Accessed January 30, 2018.

⁸ Brady, Joanne, and Guohua Li. “Trends in Alcohol and Other Drugs Detected in Fatally Injured Drivers in the United States.” *American Journal of Epidemiology* 179, no. 6 (January 29, 2014): 692-99.

availability of the drug, and along with it, the likelihood of people driving under the influence. An increase in impaired driving leads to a higher likelihood of auto accidents, injuries, and possible deaths. When drivers are distracted, they often engage in erratic and harmful behavior including failure to keep in the proper lane, overcorrecting, taking wrong turns, driving on the opposite side of the road, and engaging in reckless acts. All of these factors can lead to minor to major injuries including death. In 2016, the United States experienced its deadliest year of car accidents in history, with a total of 4.6 million seriously injured and 40,000 fatalities, a 6% increase from 2015⁹. Out of the 40,000 total deaths, impaired driving was leading cause for 28% of them, responsible for the deaths of 10,497 persons¹⁰. While exact estimates on marijuana-caused fatal crash costs are not yet available, a comparison to alcohol-impaired driving shows that there are profound economic consequences as well. The U.S. Department of Transportation in 2016 released statistics that show that alcohol-impaired crashes cost \$44 billion, among which persons between 25 and 34 years comprised 27% compared to other age groups¹¹.

In addition, a question of morality, right and wrong—and our integrity as a society should be considered. Auto accidents, by nature, involve the collision of two or more drivers. Regardless of the consequences on the driver influenced by marijuana, the damage inflicted on the opposing side, who are innocent civilians, are undue, and our society would be ill-served to be ignorant of such conversations. In addition to physical injuries, individuals involved in auto accidents are required to overcome economic

⁹ KOROSEC, KIRSTEN. "2016 Was the Deadliest Year on American Roads in Nearly a Decade." *Fortune*. February 15, 2017. Accessed January 30, 2018. <http://fortune.com/2017/02/15/traffic-deadliest-year/>.

¹⁰ United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. Traffic Safety Facts Alcohol-Impaired Driving. HS ed. Vol. DOT. 812 450.

¹¹ United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. Traffic Safety Facts Alcohol-Impaired Driving. HS ed. Vol. DOT. 812 450.

burdens: in 2016, the National Safety Council estimated approximately \$432 billion in property damage transactions from car accidents¹².

Today, the following 9 states and districts have legalized recreational marijuana, in alphabetical order: Alaska, California, Colorado, District of Columbia, Maine, Massachusetts, Nevada, Oregon, Vermont, and Washington¹³. An additional 29 states have legalized medical marijuana (Figure 1), and an additional 6 states will consider legislation to legalize this year, including: New Jersey, Michigan, Oklahoma, Utah, Missouri, and Virginia¹⁴. If the laws are passed, impaired driving from wider access to marijuana could be prevalent in 33 of 50 states by the end of this year. A study released by Arcview Market Research indicates that these states will boost the current cannabis industry from \$16 billion in 2017 to \$40 billion by 2021¹⁵.

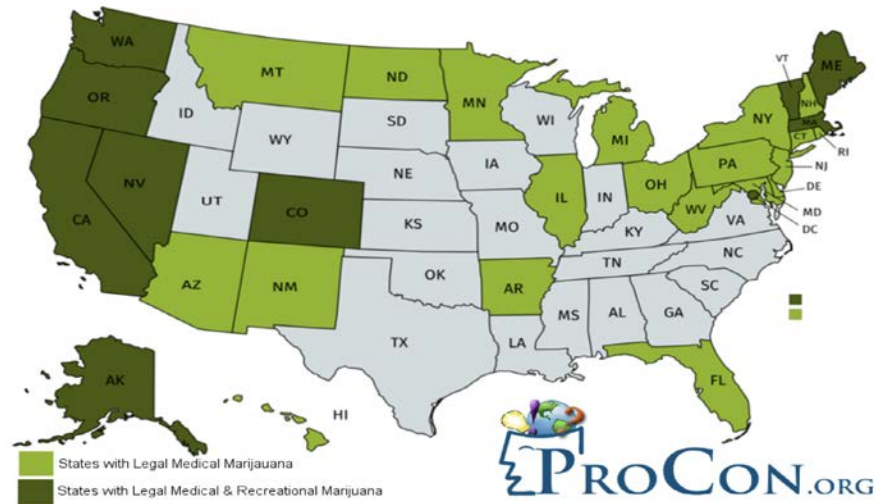
¹² KOROSEC, KIRSTEN. "2016 Was the Deadliest Year on American Roads in Nearly a Decade." Fortune. February 15, 2017. Accessed January 30, 2018. <http://fortune.com/2017/02/15/traffic-deadliest-year/>.

¹³ Robinson Melia. "Here's where you can legally smoke weed in 2018." Business Insider. January 23, 2018. Accessed January 28, 2018. <http://www.businessinsider.com/where-can-you-can-legally-smoke-weed-2018-1/#alaska-1>.

¹⁴ Angell, Tom. "These States Are Likely To Legalize Marijuana In 2018." Forbes. December 26, 2017. Accessed January 25, 2018. <https://www.forbes.com/sites/tomangell/2017/12/26/these-states-are-likely-to-legalize-marijuana-in-2018/2/#5c53520d1b04>.

¹⁵ The Arcview Group. "NEW REPORT: Legal Marijuana Industry to Generate \$40 billion in Economic Impact by 2021." The Arcview Group. January 2, 2018. Accessed January 20, 2018. <https://globenewswire.com/news-release/2018/01/02/1277236/0/en/NEW-REPORT-Legal-Marijuana-Industry-to-Generate-40-billion-in-Economic-Impact-by-2021.html>.

Figure 1: Marijuana Legalization Map¹⁶



The most common consumers of marijuana, according to the Cannabis Consumer Report completed in May of 2017, are between the ages of 21 and 35 years; the second largest group of consumers were aged 36 and 45 years. Furthermore, the study shows that females comprise 58.35% as opposed to males who make up 41.65% of consumers¹⁷. In addition, the trends of cannabis and driving have shown an increasing prevalence of marijuana among influenced drivers: out of 23,591 drivers, 39.7% tested positive for alcohol and 24.8% for non-alcohol drugs, which later rose to approximately 33% of fatal car crash drivers testing positive for drugs in 2009¹⁸.

So, how does marijuana influence driving? A study published by the National Institute of Health (NIH) in 2010 found that both alcohol and marijuana impair judgment

¹⁶ "29 Legal Medical Marijuana States and DC Laws, Fees, and Possession Limits." November 30, 2017. Accessed January 20, 2018. <https://medicalmarijuana.procon.org/view.resource.php?resourceID=000881>.

¹⁷ Bolivar, Larisa E. "Cannabis Consumers Coalition: 2017 Report on Cannabis Consumer Demographics and Consumption Habits Cannabis Consumers Coalition." Consumers Shaping Industry and Policy, May 2017, 1-22. Accessed January 30, 2018.

¹⁸ Brady, Joanne, and Guohua Li. "Trends in Alcohol and Other Drugs Detected in Fatally Injured Drivers in the United States." *American Journal of Epidemiology* 179, no. 6 (January 29, 2014): 692-99.

and motor control functions—but each substance does so in varying fashion¹⁹. Alcohol inhibits one’s ability to perform refined, high-skilled tasks (e.g., steering), whereas cannabis was found not to negatively impact such exercises²⁰. Instead, marijuana cripples a driver’s ability to perform very basic tasks (e.g., tracking) described as “highly automatic driving functions” that alcohol did not inhibit²¹. The explanation for such discrepancy is because the rate and way tetrahydrocannabinol (THC), the chemical responsible for marijuana, gets absorbed and affects a person’s body varies more person to person than does alcohol²².

After conducting driving simulations and defined courses, results showed that regular or “experienced” marijuana smokers who were administered 7mg THC or about 1/3 of a joint (note: “experienced” is not defined by NIH) experienced minimal damage to cognitive function and ability to drive safely²³. Researchers estimate that this is due to experienced smokers retaining a conscious level of body awareness, and underestimating their ability to drive, producing extra-careful efforts to get home safely—functions such as reducing speed and staying within lanes²⁴. Whereas alcohol consumers who were given BAC 0.04% or a little less than two 5 oz. drinks (e.g., can of beer, glass of wine, etc.), on average, overestimate their ability to dutifully operate vehicles, which creates

¹⁹ United States. U.S. Department of Health and Human Services National Institutes of Health. PMC US National Library of Medicine National Institutes of Health. *THE EFFECT OF CANNABIS COMPARED WITH ALCOHOL ON DRIVING*. By Andrew Sewell, James Poling, and Mehmet Sofuoglu. Accessed May 1, 2010. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2722956/>.

²⁰ Ibid.

²¹ Ibid.

²² United States. U.S. Department of Health and Human Services National Institutes of Health. PMC US National Library of Medicine National Institutes of Health. *THE EFFECT OF CANNABIS COMPARED WITH ALCOHOL ON DRIVING*. By Andrew Sewell, James Poling, and Mehmet Sofuoglu. Accessed May 1, 2010. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2722956/>.

²³ United States. U.S. Department of Health and Human Services National Institutes of Health. PMC US National Library of Medicine National Institutes of Health. *THE EFFECT OF CANNABIS COMPARED WITH ALCOHOL ON DRIVING*. By Andrew Sewell, James Poling, and Mehmet Sofuoglu. Accessed May 1, 2010. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2722956/>.

²⁴ Ibid.

higher frequencies of swerving, missed turns, speeding, etc.²⁵ It should be noted that when participants took higher doses of marijuana, individuals were not able to retain conscientious approaches to performing duties, ultimately diverging from lanes, failing to correctly read speedometers²⁶, and lagging in response to traffic light changes²⁷ or stepping on the brake after quick traffic light changes²⁸. Lastly, the most prohibitive of all was when participants used alcohol and marijuana together; danger rose exponentially²⁹.

History/Background

The issue of impaired driving first became a public conversation in 1897 when a young cab driver in his mid-twenties slammed his vehicle into a building while drunk in London³⁰. The United States, soon thereafter, came to grapple with the same issue, implementing the nation's first law against impaired driving in 1910 in the state of Indiana³¹. The ramifications of auto safety as a result of impaired driving, primarily through the use of alcohol, became clearer and subsequently, through the early 1900's, academic scholars stepped forward in producing devices to combat such accidents. First of its kind was Dr. Rolla Harger, who in 1936, claimed a patent on the *Drunkometer*, a

²⁵ United States. U.S. Department of Health and Human Services National Institutes of Health. PMC US National Library of Medicine National Institutes of Health. *THE EFFECT OF CANNABIS COMPARED WITH ALCOHOL ON DRIVING*. By Andrew Sewell, James Poling, and Mehmet Sofuoglu. Accessed May 1, 2010. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2722956/>.

²⁶ Crancer A, Jr, Dille JM, Delay JC, Wallace JE, Haykin MD. Comparison of the effects of marihuana and alcohol on simulated driving performance. *Science*. 1969 May 16;164(881):851–854. <https://www.ncbi.nlm.nih.gov/pubmed/5767792>

²⁷ Smiley A, Moskowitz H, Ziedman K. Driving simulator studies of marijuana alone and in combination with alcohol. Paper presented at: 25th Conference of the American Association for Automotive Medicine; 1981.

²⁸ Rafaelsen L, Christrup H, Bech P, Rafaelsen OJ. Effects of cannabis and alcohol on psychological tests. *Nature*. 1973 Mar 9;242(5393):117–118. <https://www.ncbi.nlm.nih.gov/pubmed/4144367>

²⁹ Ibid.

³⁰ "1897 First Drunk Driving Arrest." This Day in History September 10 Lead Story. 2018. Accessed February 13, 2018. <http://www.history.com/this-day-in-history/first-drunk-driving-arrest>.

³¹ Girard, James E. "Forensic Toxicology." In *Criminalistics: Forensic Science, Crime, and Terrorism*, 284-86. 4th ed. Burlington, MA: Jones & Bartlett Learning, LLC, 01803.

device that resembled the silhouette of a blown-up balloon to detect intoxication; it was only approximately 20 years later that in 1953, Robert Borkenstein, who served as former state police in Indiana and also as a university professor, invented the *breathalyzer*³². By 1957, all 50 states passed implied consent laws subjecting drivers to an agreement that he or she would agree to a test for intoxication upon request, or face criminal charges with possible result of license suspension between 6 months to a year³³.

The bartering and transaction of marijuana was a commodity was legal—and even encouraged—within the United States from the 1600s to the late 1800s, as a means of producing goods such as sails, clothing, and rope³⁴. National sentiment toward marijuana took a turn, however, in the early 1900s after the Mexican Revolution of 1910, when immigrants became associated with its recreational use, creating public fear and stigma in the positive uses of it³⁵. In response, the U.S. Congress passed the Marijuana Tax Act of 1937, effectively criminalizing the commodity and confining its legal use exclusively to medical and industrial purposes³⁶. Subsequently, the restrictions on the drug became stricter with federal laws including the Boggs Act of 1952 and Narcotics Control Act of 1956 creating infrastructures to administer mandatory sentences for offenders of a 2-10

³² "1897 First Drunk Driving Arrest." This Day in History September 10 Lead Story. 2018. Accessed February 13, 2018. <http://www.history.com/this-day-in-history/first-drunk-driving-arrest>.

³³ Girard, James E. "Forensic Toxicology." In *Criminalistics: Forensic Science, Crime, and Terrorism*, 284-86. 4th ed. Burlington, MA: Jones & Bartlett Learning, LLC, 01803.

³⁴ "Marijuana Timeline." Frontline. Accessed February 10, 2018. <https://www.pbs.org/wgbh/pages/frontline/shows/dope/etc/cron.html>.

³⁵ Moran, Thomas J. "Just a Little Bit of History Repeating: The California Model of Marijuana Legalization and How it Might Affect Racial and Ethnic Minorities." *Washington and Lee Journal of Civil Rights and Social Justice*, 8th ser., 17, no. 2 (April 1, 2011): 556-90. Accessed January 30, 2018.

³⁶ Ransom, Jesse J. "Anslingerian" Politics: The History of Anti-Marijuana Sentiment in Federal Law and How Harry Anslinger's Anti-Marijuana Politics Continue to Prevent the FDA and Other Medical Experts from Studying Marijuana's Medical Utility. Technical paper. School of Law, Harvard University. Cambridge, MA: Harvard Law School, 1999. 1-75.

years and/or a fine of up to \$20,000³⁷. By 1957, all 50 states had passed implied consent laws subjecting drivers to an agreement that they would agree to a test for intoxication upon request, or face criminal charges with possible result of license suspension for a duration of 6 months to a year³⁸. Subsequently, the U.S. Congress passed the Controlled Substances Act in 1970 that instituted categories under which drugs would fall, differentiating schedule 1, which was “deemed as having no valid medical uses and a high potential for abuse”³⁹.

The use of marijuana is more widespread than any other illicit drug in the country⁴⁰. Its use is present among younger individuals, with 11 million people between 18 years to 25 years old using marijuana in 2015⁴¹. In a national poll, the number of those who say they have tried marijuana has increased significantly from 1969 to 2015 (below). In 2005-2007, there were approximately 5.1 million users who used marijuana every day; by 2013, that number had reached over 8 million⁴². Of teenagers between 12 to 17 years old, 1% claimed to frequently consume the drug, and 6% had tried it before reaching 18 years of age⁴³. Figure 2 shows, in dollar revenue, how much the American people are spending on the drug:

³⁷ Cantor, Donald J. "Journal of Criminal Law and Criminology." *The Criminal Law and the Narcotics Problem*, 2nd ser., 51, no. 5 (Nov. & dec. 1961): 1-17.

³⁸ Girard, James E. "Forensic Toxicology." In *Criminalistics: Forensic Science, Crime, and Terrorism*, 284-86. 4th ed. Burlington, MA: Jones & Bartlett Learning, LLC, 01803.

³⁹ Martin, Scott. "History A Brief History of Marijuana Law in America." *TIME*. April 20, 2016. Accessed April 23, 2018. <http://time.com/4298038/marijuana-history-in-america/>.

⁴⁰ NIH National Institute on Drug Abuse. "Drug Facts What Is Marijuana?" *Marijuana*. February 2018. Accessed April 22, 2018. <https://www.drugabuse.gov/publications/drugfacts/marijuana>.

⁴¹ NIH National Institute on Drug Abuse. "Drug Facts What Is Marijuana?" *Marijuana*. February 2018. Accessed April 22, 2018. <https://www.drugabuse.gov/publications/drugfacts/marijuana>.

⁴² *Ibid.*

⁴³ *Ibid.*

Figure 2: Dollars Spent by Americans on Marijuana ⁴⁴

How much are people spending on marijuana?

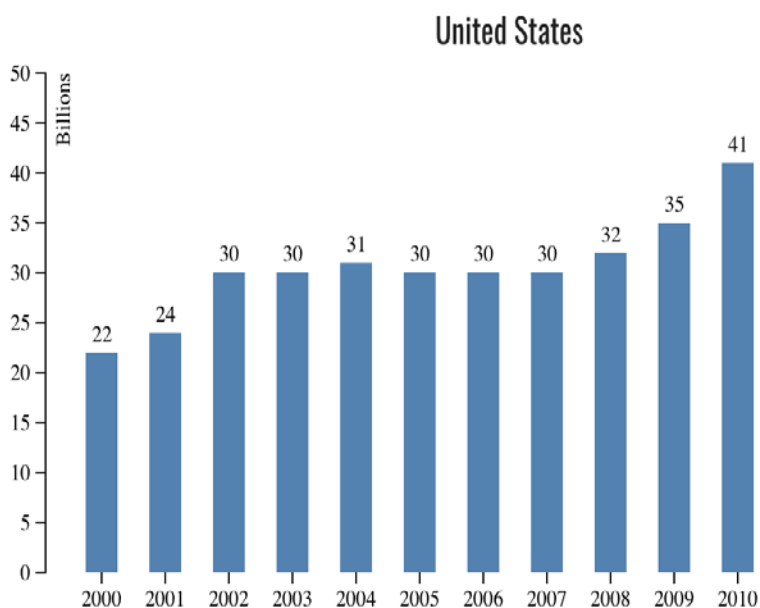
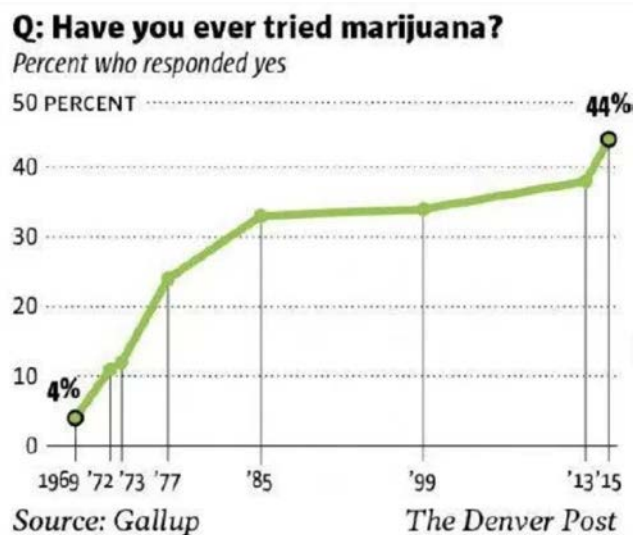


Figure 3: Poll asking Americans, “Have you ever tried marijuana?” ⁴⁵



⁴⁴ NIH National Institute on Drug Abuse. "Drug Facts What Is Marijuana?" Marijuana. February 2018. Accessed April 22, 2018. <https://www.drugabuse.gov/publications/drugfacts/marijuana>.

⁴⁵ Denver Post. "Q: 'Have You Ever Tried Marijuana?' Charting U.S. Answers, from 1969-2015." *NEWS*, October 22, 2015. Accessed April 22, 2018. <https://www.denverpost.com/2015/10/22/q-have-you-ever-tried-marijuana-charting-u-s-answers-from-1969-2015/>.

Furthermore, marijuana impairment while driving has increased among states recently, particularly among those that have legalized the drug. In 2017, the Centers for Disease Control and Prevention (CDC) published a journal that stated that as of 2014, the country was seeing 7,000 new marijuana users everyday, and that drivers with marijuana in their blood were up by 13% in 2017, an increase of 7% compared to drivers in 2007⁴⁶. In June 2017, CNBC published a study by the Highway Loss Data Institute with findings that 3 states with legal recreational weed (Oregon, Washington, Colorado) were seeing an increase in auto accidents of approximately 3%, compared to when marijuana was illegal⁴⁷. Specifically, it was found that Oregon saw a 4.5% increase and 6.2% in Washington⁴⁸.

This trend has been true particularly in the state of Colorado. While alcohol-impaired drivers involved in fatal crashes increased by 17% from 2013 to 2016, those who tested positive for marijuana increased by a 145% in 2016, compared to 47% in 2013⁴⁹. In 2013, approximately 10% of fatal crash drivers tested positive for cannabis, and by 2016, that rose to 20%. States are also seeing a rise in drivers with marijuana and no other substance in their system: in 2014, more than 52% tested positive for cannabis and by 2016, that grew to 69%. Similar trends for the state of Washington are shown in figure 4 below. While sixteen states have implemented zero tolerance and six states per

⁴⁶ Center for Behavioral Health Statistics and Quality (CBHSQ). Behavioral Health Trends in the United States: Results from the 2014 National Survey on Drug Use and Health. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2015. HHS Publication No. SMA 15-4927, NSDUH Series H-50.

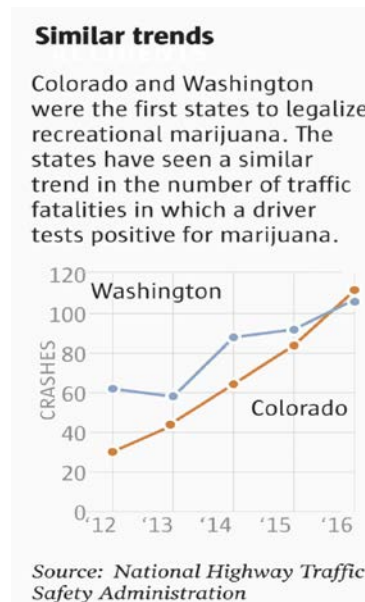
⁴⁷ LeBeau, Phil. "Auto Crashes Are on the Rise in Marijuana States." *CNBC*, June 22, 2017. Accessed April 15, 2018. <https://www.cnbc.com/2017/06/21/auto-crashes-are-on-the-rise-in-marijuana-states.html>.

⁴⁸ Ibid.

⁴⁹ Denver Post. "Q: 'Have You Ever Tried Marijuana?' Charting U.S. Answers, from 1969-2015." *NEWS*, October 22, 2015. Accessed April 22, 2018. <https://www.denverpost.com/2015/10/22/q-have-you-ever-tried-marijuana-charting-u-s-answers-from-1969-2015/>.

se laws—laws that limit a certain amount of the cannabis substance—the effectiveness of these policies is yet to be determined⁵⁰.

*Figure 4: Marijuana-Related Car Crash Statistics*⁵¹



The legalization of marijuana within the last several decades, however, has turned the tide and direction of federal policy, and, furthermore, government mechanism available to respond to impaired driving has also changed. While the recreational use of marijuana has become increasingly accepted in the public sphere, the negative implications on health and auto safety among drivers have remained the same. Today, according to the National Conference of State Legislatures, the federal law for impaired driving is 0.08 g/mL blood alcohol intoxication; a nation-wide law on marijuana impaired

⁵⁰ United States. Governors Highway Safety Association. Drug Impaired Driving Marijuana Drug-Impaired Driving Laws. <https://www.ghsa.org/state-laws/issues/drug-impaired-driving>

⁵¹ Migoya, David. "Exclusive: Traffic Fatalities Linked to Marijuana Are up Sharply in Colorado. Is Legalization to Blame?" *News Marijuana*, August 25, 2017. Accessed April 22, 2018. <https://www.denverpost.com/2017/08/25/colorado-marijuana-traffic-fatalities/>.

driving limit has yet to be imposed⁵². There are, however, regulations on a state-to-state basis, as indicated in figure 5.

Figure 5: Marijuana Impaired Driving and State Marijuana Laws⁵³

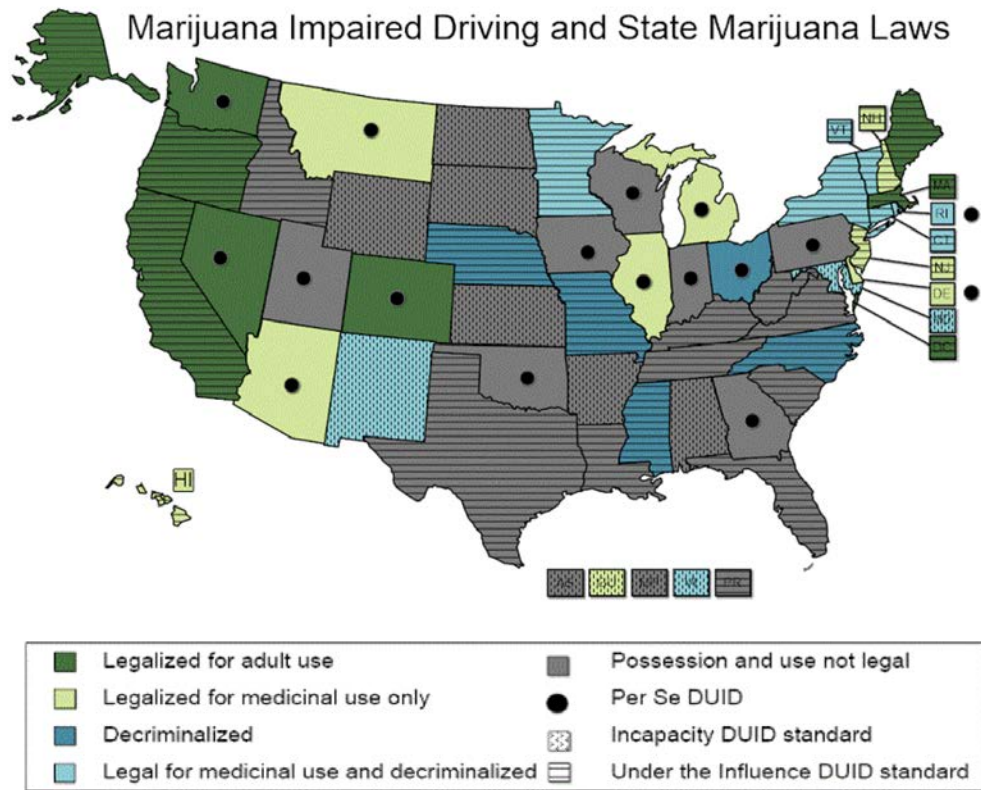


Figure 5 Key (verbatim from source):⁵⁴

- Legalized for adult use means that adults over 21 can grow, purchase, possess and consume specified amounts of marijuana.
- Legalized for medicinal use means that adults with the appropriate medical license can grow, purchase, possess and consume specified amounts of marijuana.
- Decriminalized means that the state has made possession of marijuana a civil-rather than criminal-offense authorizing a fine for violations.

⁵² "Statistics ." DRUGGED DRIVING. May 3, 2017. Accessed January 30, 2018.
<http://www.ncsl.org/research/transportation/drugged-driving-overview.aspx>.

⁵³ "Statistics ." DRUGGED DRIVING. May 3, 2017. Accessed January 30, 2018.
<http://www.ncsl.org/research/transportation/drugged-driving-overview.aspx>.

⁵⁴ "Statistics ." DRUGGED DRIVING. May 3, 2017. Accessed January 30, 2018.
<http://www.ncsl.org/research/transportation/drugged-driving-overview.aspx>.

- *Per se DUID makes it an offense for a driver to have marijuana in their body while operating a motor vehicle.*
- *Under the influence DUID standard requires the driver to be under the influence of or affected by marijuana.*
- *Incapacity DUID standard requires the marijuana in a driver's system make the driver incapable of driving safely. The prosecutor must show a connection between drug ingestion and the incapacity of the driver.*
- *This map does not include at least 13 states that have approved medical use of low-THC cannabis/marijuana products.*

Policy Proposal

The policy goal is to reduce the number of accidents caused by marijuana usage among drivers. One way to achieve this goal would be for the U.S. Congress to pass a law that sets a federal limit on marijuana-impaired driving. The specific limit should be determined after conferring with the significant players in the field including your agency, the Centers for Disease Control and Prevention, and the state governments. Currently, decision makers are still grappling with the average amount that impairs drivers⁵⁵. The law will require each of the 50 states to adopt and implement this federal limit within two fiscal years of the law being passed. Any and all states that fail to do so will face penalties by losing federal highway funds, initially of 5% the first fiscal year, up to 10% of total federal highway funds. Once the maximum 10% is reached, states that fail to pass the federal standard will continuously lose 10% of federal funds until the measure is passed. The percentage of loss of federal highway funds reflects the model implemented under the Federal Uniform Drinking Act of July 1984, in which President Reagan signed into law the minimum drinking age of 21 after U.S. Congress passed the bill; further analysis and success of this model is provided in the policy analysis section

⁵⁵ United States. National Institutes of Health. National Institute on Drug Abuse. Effects of Marijuana – with and without Alcohol – on Driving Performance. Bethesda, MD, 2015.

of this paper⁵⁶. Implementing a federal limit will offer a clear, nation-wide expectation across state borders of the standard each driver will be held to. Furthermore, it will create solutions to reduce fatalities on the road. Particularly among states that have legalized marijuana, there are increases in auto accidents and deaths, which this law would help combat.

Currently, according to the Governors Highway Safety Association, 16 states have zero tolerance laws (i.e., any amount of drugs are illegal) and 6 states have per se laws (i.e., a set amount of determined drugs are deemed illegal)⁵⁷. Regardless of the current law a state may have—whether the limit is below or above the newly-adopted federal limit—this standard will target all 50 states equally, with intentions to increase coordination and clarity, and to provide an upfront solution to states that are expected to legalize marijuana in the future.

Furthermore, every driver in the United States will be subject to the federal limit. It will be applied equally to drivers of all ages, regardless of their state of permanent residence. In addition, driver licenses of all types that grant rights to operate motor vehicles on will face equal limitations for marijuana-impaired driving; this includes class 1, class 2, and types A, B, C, D, M1, and M2⁵⁸. A sample annotated list of motor vehicles that would be subject in the state of Connecticut is provided below in figure 6.

⁵⁶ Weisman, Steven R. "REAGAN SIGNS LAW LINKING FEDERAL AID TO DRINKING AGE." New York Times, 1984. Accessed April 9, 2018. <https://www.nytimes.com/1984/07/18/us/reagan-signs-law-linking-federal-aid-to-drinking-age.html>.

⁵⁷ United States. Governors Highway Safety Association. Drug Impaired Driving Marijuana Drug-Impaired Driving Laws. <https://www.ghsa.org/state-laws/issues/drug%20impaired%20driving>

⁵⁸ "TYPES OF DRIVER'S LICENSES." Digest of Motor Laws. Accessed April 15, 2018. <http://drivinglaws.aaa.com/tag/types-of-drivers-licenses/>.

Figure 6. Various Types of Driver's License in State of Connecticut⁵⁹

CONNECTICUT

Class 1: Any non-commercial motor vehicle.

Class 2: Any non-commercial motor vehicle, including a combination of motor vehicle and trailer or trailing unit used exclusively for camping or any other recreational purpose.

Commercial Licenses (must be renewed every 4 years):

- Class A: Any combination of vehicles with GVWR of 26,000 lbs. or more, where the towing vehicle is in excess of 10,000 lbs.
- Class B: Any combination of vehicles with GVWR of 26,000 lbs. or more; or any vehicle towing a vehicle less than 10,000 lbs.
- Class C: Any single commercial vehicle with a GVWR of less than 26,000 lbs., or any vehicle towing a vehicle less than 10,000 lbs. that is designed to carry at least 16 passengers; or vehicles carrying hazardous materials.

Because the number and types of licenses vary across states, the state governments are to use their discretion and judgment to ensure the federal marijuana-limit covers all licenses that authorize driving vehicles on roads in their respective state.

Persons who wish to engage in marijuana consumption and/or activities will be required to stay under the limit before getting behind the wheel. Today, laws against driving under the influence of alcohol not only prohibit the driving of a motor vehicle but also require drivers to abstain from operating a vehicle on any terms. The same prohibition will apply to the new federal marijuana legal limit (e.g., turning on a car engine, changing gears, etc. will equally qualify as a crime). Fines and penalties upon conviction are to be determined at the discretion of each state, deemed appropriate by the state legislature. The states are to specify fines and penalties appropriate for first-time, second-time, and subsequent offense charges. This will provide states the flexibility and discretion necessary for their governments to use current DUI offense charges, which currently vary from state to state. Furthermore, allowing such authority and decisions to be made at state levels will foster encouraged collaboration. For reference, the state of

⁵⁹ "TYPES OF DRIVER'S LICENSES." Digest of Motor Laws. Accessed April 15, 2018. <http://drivinglaws.aaa.com/tag/types-of-drivers-licenses/>.

Kansas implements one of the lightest penalties for license suspensions for first-time offenders of driving under the influence of alcohol (license suspension of 30 days) while the state of Rhode Island implements one of the harshest (license suspension of up to 18 months)⁶⁰. State responses to offenders may include—but are not limited to—mandatory treatment and/or education, driver license suspension, and imprisonment. In addition, drivers are to pay penalty fees for infringing upon the new federal marijuana-impaired driving limit. Referring to the state of California as a possible model—and assuming current rates for alcohol-impaired driving fees would apply to marijuana-impaired driving offenses—an annual average of 149,738 drivers would be convicted and incur approximate revenue between \$58,397,820 to \$149,738,000 (a single charge ranges between \$390 and \$1000 for the first, second, and third offense that are committed within a 10-year range)⁶¹.

Coordination with local governments will be required: police officers who currently monitor and pull drivers over will also require drivers to participate in marijuana-related tests. Additionally, the Department of Motor Vehicles (DMV) in each respective state will be expected to amend their driver license tests, educational pamphlets, and corresponding government and public websites to educate drivers of the federal law and the implications each driver will face upon infringing such legal limits. Lastly, the Department of Transportation in each state (e.g., Virginia Department of

⁶⁰ "State-by-State DUI Penalties." Find Law. Accessed February 27, 2018. <http://dui.findlaw.com/dui-laws-resources/state-by-state-dui-penalties.html>.

⁶¹ United States of America. California Department of Motor Vehicles. State of California. ANNUAL REPORT OF THE CALIFORNIA DUI MANAGEMENT INFORMATION SYSTEM ANNUAL REPORT TO THE LEGISLATURE OF THE STATE OF CALIFORNIA . By Edmund Brown, Jr., Brian P. Kelly, and Jean Shiimoto. Vol. IN ACCORDANCE WITH ASSEMBLY BILL 757 CHAPTER 450, 1989 LEGISLATIVE SESSION. CA: CDMV, 2015. 1-192. <https://www.dmv.ca.gov/portal/wcm/connect/77b8b0e3-c20b-42b0-8670-451d9c9262cd/S5-250.pdf?MOD=AJPERES>

Transportation, Oregon Department of Transportation) will be responsible for collecting and retaining annual data that will be subject to review by the federal Department of Transportation and the Executive Office of the President. Once the bill is passed in the U.S. Congress, the law will go into effect after 90 days.

The expected costs of implementing the bill are low. The currently existing infrastructure of police officers on the ground will cover costs of monitoring drivers costs on highways and roads. These police officers will serve on the frontlines of ensuring motor safety and reducing accidents. Secondly, the costs of amending educational pamphlets, programs, and online public resources at Department of Motor Vehicles in individual states are not expected to be high. The only potential source of funding required might be additional staff needed at the state Department of Transportation to record, analyze, and submit annual data on marijuana-impaired driving offenses. Annual revenues from fines shall be collected and re-allocated by state governments and/or organizations that the state deems to be appropriate. The federal government would create suggested guidelines and recommendations on what states will do with the funds. This would include improving monitoring, assessing, and reducing marijuana-impaired driving accidents. Furthermore, the incurred fees should also be shared with local governments for police officers and those who need budget for assessment tools (e.g., breathalyzers, blood tests, etc.). Lastly, the Department of Motor Vehicle shall receive funding, should it need dollars to generate additional educational materials.

Policy Analysis

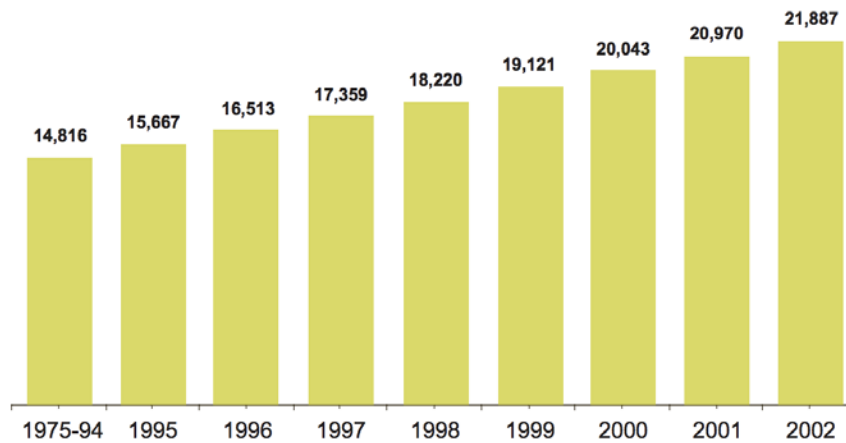
The legislation, if passed by Congress, aims to reduce the number of car accidents and, ultimately, the number of injuries and deaths from marijuana-impaired driving. Historically, the use of federal highway funds as a means to create compliance among states has been effective. For example, the Federal Uniform Drinking Act of July 1984, passed by the U.S. Congress, required all states to raise the minimum age for public possession and purchase of alcohol to 21 years of age⁶². The legislation allowed the federal government to withhold 5% of federal highway construction funds for fiscal year 1987, if a state failed to raise the minimum age to 21 years by October 1, 1986, and, subsequently, up to 10% of funds for the 1988 fiscal year, if that state did not implement the standard by October 1, 1987⁶³. The National Highway Traffic Safety Administration produced a report in March 2005 stating that as a result of the Federal Uniform Drinking Act of July 1984, approximately 21,887 lives were saved as of 2002⁶⁴. Figure 7 offers a comprehensive chart from the report.

⁶²Weisman, Steven R. "REAGAN SIGNS LAW LINKING FEDERAL AID TO DRINKING AGE." New York Times, 1984. Accessed April 9, 2018. <https://www.nytimes.com/1984/07/18/us/reagan-signs-law-linking-federal-aid-to-drinking-age.html>.

⁶³Miron, Jeffrey, and Elina Tetelbaum. "Does the Minimum Legal Drinking Age Save Lives?" *Economic Inquiry* 47, no. 2 (2009): 317-36. Accessed April 18, 2018. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:4319664>.

⁶⁴United States. Department of Transportation. NHTSA. Traffic Safety Facts Research Note Calculating Lives Saved Due to Minimum Drinking Age Laws. By John Kindelberger. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/809860>

Figure 7. Cumulative Estimated Number of Lives Saved by Minimum Legal Drinking Age Laws, 1975-2002⁶⁵



Furthermore, the legislation is likely to institute change that is not only effective but efficient. The annual cost of auto accidents to the federal government is an estimated \$35 billion, of which the state and local government burden is \$15 billion⁶⁶. Out of these accidents, more than 10,265 or 29% of all car accident fatalities were from impaired driving, with 16% due to drugs, both legal and illegal⁶⁷. According to the National Institutes of Health (NIH), the government pays for: 1) 12.6% of police-reported accidents (7.1% federal, 5.5% state/local); 2) 6.7% of total costs which includes value of lost quality of life (3.8% federal, state/local 2.9%)⁶⁸. In dollar value, the government covers approximately \$103,000 (federal) and \$72,700 (state/local) per death⁶⁹. The number of deaths specifically due to marijuana is not available. As CNN has reported in

⁶⁵ United States. Department of Transportation. NHTSA. Traffic Safety Facts Research Note Calculating Lives Saved Due to Minimum Drinking Age Laws. By John Kindelberger. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/809860>

⁶⁶ USA. CDC Centers for Disease Control and Protection. Impaired Driving: Get the Facts. https://www.cdc.gov/motorvehiclesafety/impaired_driving/impaired-driv_factsheet.html

⁶⁷ Compton RP, Berning A. Traffic Safety Facts Research Note: drugs and alcohol crash risk. Washington, DC: NHTSA; 2015 [cited 2016 Feb 5]. Available at URL: http://www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug_and_Alcohol_Crash_Risk.pdf

⁶⁸ United States. NCBI PMC. Association for the Advancement of Automotive Medicine. *Costs of Crashes to Government, United States, 2008*. By Ted Miller, Soma Bhattacharya, and Eduard Zaloshnja. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3256813/>

⁶⁹ Ibid.

April 2017, only 57% of those involved in car accident deaths were tested for drugs, and among those who were, about 35% tested positive for cannabis⁷⁰. Hence the specific dollar amount the federal, state, and local governments would save is still to be studied. However, it is clear that an effective policy that reduces deaths would significantly reduce the financial burden on the government.

In addition, there currently exist infrastructure and practices in testing for marijuana impaired driving on the road. Such methods would allow for a quick ramp-up and implementation of the law if it passes. The current methods are listed below:

1) A 12-step assessment of mental and physical exercises (e.g., walking in a straight line, reciting the alphabet backwards, etc.)⁷¹.

2) Blood, breath, or urine test, or combination of the three. Blood tests are already being practiced in various states including Colorado and California. In the State of California, drivers will initially be screened for bloodshot eyes, odor, and varying mental and physical exercises⁷². If officers determine or suspect with ample proof that the driver is under the influence of marijuana, the driver will be referred to police phlebotomists who will use blood tests to determine marijuana levels⁷³. The Colorado Department of Transportation states that “Colorado revokes driving privileges for any individual who fails to cooperate with the chemical testing process requested by an

⁷⁰ Jimison, Robert. "'Drugged Driving' Surpasses Drunken Driving among Drivers Killed in Crashes, Report Finds." *'Drugged Driving' Surpasses Drunken Driving among Drivers Killed in Crashes, Report Finds*, April 28, 2017. Accessed March 22, 2018. <https://edition.cnn.com/2017/04/27/health/drugged-driving-death-rates-report/index.html>.

⁷¹ Berger, Matthew. "Why It's Difficult to Develop a Roadside Test for Marijuana." Healthline. January 25, 2018. Accessed April 18, 2018. <https://www.healthline.com/health-news/difficult-to-develop-roadside-test-for-marijuana#1>.

⁷² Davis, Kristina. "Police Are Using New Mouth-swab Tests to Nab Drivers under the Influence of Marijuana and Other Drugs." *Los Angeles Times*, March 17, 2017. Accessed April 18, 2018. <http://www.latimes.com/local/lanow/la-me-mouth-swab-drugs-test-police-pot-20170317-story.html>.

⁷³ Ibid.

officer during the investigation of an alcohol or drug-related DUI arrest. Any driver who refuses to take a blood test will immediately be considered a high-risk driver”⁷⁴.

3) Saliva/swab tests. While saliva tests are not as widespread as the twelve-step assessment and/or blood, breathe, or urine test, states including Vermont, California, and Michigan have begun to entertain saliva tests and mouth-swabs⁷⁵. Canada also has adopted a pilot program using an oral screening device that detects “cannabis, amphetamines, methamphetamines, cocaine, opiates and benzodiazepines”⁷⁶. The success and effectiveness of the device is yet to be seen⁷⁷.

4) Breathalyzer. Currently, there are no breathalyzers on the market that can detect marijuana accurately⁷⁸. The technology of breathalyzers is being developed; two of the most promising are by Stanford University and Hound Labs, an institution located in Oakland, California. Mike Lynn, the CEO of Hound Labs, stated in December 2017 that his lab was finalizing its third model that detects THC levels in marijuana. At Stanford University, scientists have used magnetic nanotechnology, which has formerly been used for cancer screening to detect marijuana presence levels⁷⁹. If the device reaches full

⁷⁴ United States. Colorado Department of Transportation. FAQs: Cannabis and Driving.

<https://www.codot.gov/safety/alcohol-and-impaired-driving/druggeddriving/marijuana-and-driving>

⁷⁵ The Associated Press. "Saliva Tests to Screen Drivers for Marijuana Proposed in Vermont." *The Cannabist*. February 27, 2018. Accessed March 20, 2018.

<https://www.thecannabist.co/2018/02/27/marijuana-saliva-tests-vermont/100111/>.

⁷⁶ Thatcher, Amelia. "Canada Royal Canadian Mounted Police." Finding a Roadside Drug Test Using Saliva Samples to Convict High Drivers. October 3, 2017. Accessed April 17, 2018. <http://www.rcmp-grc.gc.ca/en/gazette/finding-a-roadside-drug-test>.

⁷⁷ *Ibid*.

⁷⁸ Kirby, Carrie. "Stanford Engineers Develop the 'potalyzer,' a Roadside Saliva Test for Marijuana Intoxication." September 8, 2016. Accessed April 18, 2018.

<https://news.stanford.edu/2016/09/08/potalyzer-roadside-marijuana-tests/>.

⁷⁹ Kirby, Carrie. "Stanford Engineers Develop the 'potalyzer,' a Roadside Saliva Test for Marijuana Intoxication." September 8, 2016. Accessed April 18, 2018.

<https://news.stanford.edu/2016/09/08/potalyzer-roadside-marijuana-tests/>.

success, police would administer tests by swabbing and detecting results on smartphones and/or laptops in under three minutes⁸⁰.

While successful implementation of the legislation is possible, there are potential challenges ahead. First, the statistics that academic scholars and federal government have relied on to prove that federal laws (such as the minimum drinking age) have been effective in reducing DUI related deaths have been questioned in academic circles. In 2009, authors Jeffrey Miron and Elina Tetelbaum published a study challenging the results found in previously released federal reports and academic journals that claimed the minimum legal drinking age (MLDA) led to negative correlation of accidents⁸¹. Miron and Tetelbaum argue that it was not MLDA, but rather a series of “landmark improvements...in the accident avoidance and crash protection features of passenger cars” that caused a decline in accidents⁸². Furthermore, their research shows that the while MLDA lowered rates of DUI related deaths by 5% in six states and 10% across nine states, the remaining geographic regions saw an increase of up to 10%⁸³. Lastly, the study found that among that states that adopted MLDA before or during 1983, the death tolls dropped 16.7% but rose again three to six years later⁸⁴.

Second, it is unclear that marijuana impacts driving in identical ways as alcohol.

While studies have begun to find similarities to encourage a federal limit, further research

⁸⁰ Kirby, Carrie. "Stanford Engineers Develop the 'potalyzer,' a Roadside Saliva Test for Marijuana Intoxication." September 8, 2016. Accessed April 18, 2018. <https://news.stanford.edu/2016/09/08/potalyzer-roadside-marijuana-tests/>.

⁸¹Miron, Jeffrey, and Elina Tetelbaum. "Does the Minimum Legal Drinking Age Save Lives?" *Economic Inquiry*47, no. 2 (2009): 317-36. Accessed April 18, 2018. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:4319664>.

⁸²Miron, Jeffrey, and Elina Tetelbaum. "Does the Minimum Legal Drinking Age Save Lives?" *Economic Inquiry*47, no. 2 (2009): 317-36. Accessed April 18, 2018. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:4319664>.

⁸³ Ibid.

⁸⁴ Ibid.

needs to be done to create 100% certainty. In 2015, federal research by the National Institute on Drug Abuse tested driving performance through virtual reality simulations of drivers under the influence of alcohol and marijuana and compared the results⁸⁵. Drivers were tested and measured based on three areas: “weaving within the lane, the number of times the car left the lane, and the speed of the weaving”⁸⁶. The study showed that participants with blood concentrations of 13.1 µg/L THC that included the main “psychoactive ingredient in marijuana” showed greater numbers of weaving in lanes, an identical behavior of participants who were under the influence of alcohol at the 0.08 breath level⁸⁷. Marijuana, however, did not negatively impact the number of times the driver left the lane nor the speed at which he or she weaved while operating the vehicle, while alcohol did⁸⁸. Lastly, it should be noted that the combination of the two substances made for heightened levels of intoxicated driving, with drivers weaving within lanes despite being below impairment levels of either substance individually⁸⁹.

Third, while methods to test for marijuana levels exist, the accuracy of certain methods like blood tests may need to be further evaluated. This would delay the implementation of the law. In a study published by the Cell Press Reviews by Marilyn Huestis and Michael Smith, the authors conclude that because marijuana levels can rise, drop, and leave within a span of three hours—although it can take longer—administering the blood test at a second site could result in false negative results due to the level of

⁸⁵ United States. National Institutes of Health. National Institute on Drug Abuse. Effects of Marijuana – with and without Alcohol – on Driving Performance. Bethesda, MD, 2015.

⁸⁶ Gray, Eliza. "How Much Does Marijuana Impact Your Driving?" TIME Drugs. January 23, 2015. Accessed April 15, 2018. <http://time.com/3930541/marijuana-impact-driving/>.

⁸⁷ United States. National Institutes of Health. National Institute on Drug Abuse. Effects of Marijuana – with and without Alcohol – on Driving Performance. Bethesda, MD, 2015.

⁸⁸ Ibid.

⁸⁹ United States. National Institutes of Health. National Institute on Drug Abuse. Effects of Marijuana – with and without Alcohol – on Driving Performance. Bethesda, MD, 2015.

marijuana wearing off during the time of transportation⁹⁰. This could complicate police officers' ability to accurately assess and charge impaired drivers of operating vehicles under the influence, and possibly release those who should be facing charges⁹¹. Huestis, one of the authors of the study states, "If someone is driving impaired, by the time you get their blood sample, you've lost 90 percent or more of the drug. So, we have to change what we do at the roadside"⁹². Saliva tests face similar challenges. In the state of Michigan, saliva tests are currently being used in pilot programs to determine their accuracy⁹³. For instance, State Policy Special First Lt. Jim Flegel uses a portable saliva test device called the Alere DDS2 that determines the presence of drugs in five minutes⁹⁴. Because marijuana impairs individuals differently and because there are so many variations of the drug, using a single saliva device imposes challenges in accurately assessing impairment levels⁹⁵. Michael Komorn, president of Michigan Medical Marijuana Association, stated that, "Nobody should be compelled to take this test until we've got some confirmation that it is an accurate test...that's basic fundamental liberty and freedom, that government shouldn't be able to subject individuals to tests"⁹⁶.

⁹⁰ Gray, Eliza. "How Much Does Marijuana Impact Your Driving?" *TIME*. Accessed June 23, 2015. <http://time.com/3930541/marijuana-impact-driving/>.

⁹¹ Ibid.

⁹² Berger, Matthew. "Why It's Difficult to Develop a Roadside Test for Marijuana." Healthline. January 25, 2018. Accessed April 18, 2018. <https://www.healthline.com/health-news/difficult-to-develop-roadside-test-for-marijuana#1>.

⁹³ The Associated Press. "Michigan Police Face Questions about Using Experimental Saliva Drug Test at DUI Stops." *The Cannabist*. November 27, 2017. Accessed April 10, 2018. <https://www.thecannabist.co/2017/11/27/michigan-marijuana-drug-test-driving/93306/>.

⁹⁴ Ibid.

⁹⁵ The Associated Press. "Michigan Police Face Questions about Using Experimental Saliva Drug Test at DUI Stops." *The Cannabist*. November 27, 2017. Accessed April 10, 2018. <https://www.thecannabist.co/2017/11/27/michigan-marijuana-drug-test-driving/93306/>.

⁹⁶ The Associated Press. "Michigan Police Face Questions about Using Experimental Saliva Drug Test at DUI Stops." *The Cannabist*. November 27, 2017. Accessed April 10, 2018. <https://www.thecannabist.co/2017/11/27/michigan-marijuana-drug-test-driving/93306/>.

Furthermore, a nationwide law has the potential to create pushback from states, as a signal and request to the federal government for autonomy and state discretion in determining the legal limit for marijuana impaired driving. When MLDA was passed, a coalition of 7 states banded together to resist the change: Colorado, Iowa, Louisiana, Montana, South Dakota, Texas, and West Virginia⁹⁷. These states set sunset laws on the federal standard and requested nullification of the law, if the Federal Uniform Drinking Act of July 19 was found unconstitutional (the Supreme Court ruled in favor of Federal Uniform Drinking Act of July 19 shortly after, and hence, encouraged states to oblige)⁹⁸. Hence, even if the legislation to set a federal minimum legal limit for marijuana passes, the longevity and effectiveness of the law on a long-term basis (e.g., decades) may be difficult to guarantee.

Additionally, legal challenges to the federal government, while unlikely, are possible. When the Federal Uniform Drinking Act of July 19 was passed, South Dakota sued the federal government on the claims that the federal government abused its spending powers, and, consequently, the 21st Amendment of the U.S. Constitution, by passing a bill that made federal highway funds contingent upon following a standardized minimum drinking age⁹⁹. The Supreme Court, in a 7-to-2 decision, ruled in favor of the federal government, claiming that the federal government had used reasonable means for the advancement of society's "general welfare" and deeming the law constitutional¹⁰⁰. Hence, while a legal precedent exists authorizing federal highway funds as a compliance

⁹⁷The Associated Press. "Michigan Police Face Questions about Using Experimental Saliva Drug Test at DUI Stops." *The Cannabist*. November 27, 2017. Accessed April 10, 2018.
<https://www.thecannabist.co/2017/11/27/michigan-marijuana-drug-test-driving/93306/>.

⁹⁸ Ibid.

⁹⁹ "South Dakota v. Dole." Oyez LII Supreme Court Resources Justia Supreme Court Center.
<https://www.oyez.org/cases/1986/86-260>.

¹⁰⁰ Ibid.

tool, the introduction of a new substance, marijuana, to the conversation may spur pushback from unexpected states that oppose marijuana. If the legislation faces a big opposition from the states, it may become difficult to pass and implement the bill.

The ability to enforce the law may be constrained by budget and time. Currently, the enforcement of driving while impaired (DWI) has been under review for its complex, inefficient, and administratively heavy duties to complete an arrest and/or charge¹⁰¹. A publication released by the National Highway Traffic Safety Administration in 2015 presented the current challenges of enforcing arrests for impaired drivers, from intimidation by drivers to office-related issues like inefficient administrative systems and outdated technology¹⁰². A survey among police officers indicated the desire for renewed technology, streamlined forms, barcodes, and phone apps to expedite certainty and increase efficiency¹⁰³. Furthermore, 56% expressed that staffing was poor, 25% indicated inadequate budget, and 6% noted that orderly systems for efficiency were necessary to improve current processes¹⁰⁴. A typical DWI arrest takes between 1 and 6 hours to complete tasks including “arrest report, probable cause affidavit/narrative, implied consent form, Standardized Field Sobriety Test (SFST) form, DWI investigation report, breath testing forms, summons/citation/ticket, license suspension, constitutional rights

¹⁰¹ United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. *Driving While Impaired Arrest Process Improvement Six Case Studies of Strategies Used by Law Enforcement to Reduce the Cost and Time of Processing a DWI Arrest*. DOT HS 812 308. Washington, D.C.

¹⁰² United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. *Driving While Impaired Arrest Process Improvement Six Case Studies of Strategies Used by Law Enforcement to Reduce the Cost and Time of Processing a DWI Arrest*. DOT HS 812 308. Washington, D.C.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

waiver, vehicle tow/impound, and booking form”¹⁰⁵. The publication does not indicate how much money the arrests and enforcement of DWI costs the government¹⁰⁶. Lastly, police phlebotomists present huge challenges due to real-time fluctuations in wait-time, as some police departments sent suspects to local trauma centers for testing¹⁰⁷. If local trauma centers are full, far away, and or unavailable, the implementation of this law would be exponentially difficult since time is of the essence for blood tests¹⁰⁸.

Political Analysis

Before considering external stakeholders and the political ramifications of what the law would do, it is important to consider internal politics and the dynamics within the Trump Administration in regards to marijuana legalization. President Trump, earlier this year, allowed administration officials and the Department of Justice to pursue states that had decriminalized the production and sale of marijuana¹⁰⁹. Attorney General Jeff Sessions, one of the leading opponents of legalization, revoked President Obama’s initiative that had initially deterred federal prosecutors from making legal charges and stated in his memo to U.S. attorneys that “...the previous issuance of guidance undermines the rule of law”¹¹⁰. Furthermore, it should be acknowledged that under current federal law, marijuana is illegal and ticketing or arresting drivers for marijuana-

¹⁰⁵ United States. U.S. Department of Transportation. National Highway Traffic Safety Administration. *Driving While Impaired Arrest Process Improvement Six Case Studies of Strategies Used by Law Enforcement to Reduce the Cost and Time of Processing a DWI Arrest*. DOT HS 812 308. Washington, D.C.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ Savage, Charlie, and Jack Healy. "Trump Administration Takes Step That Could Threaten Marijuana Legalization Movement." *New York Times*, January 4, 2018. Accessed March 20, 2018. <https://www.nytimes.com/2018/01/04/us/politics/marijuana-legalization-justice-department-prosecutions.html>.

¹¹⁰ Ibid.

impaired driving may create confusion. Furthermore, such enforcement may imply a submission to permitting marijuana use. With these conversations in mind, one should consider if introducing a federal limit on marijuana-influenced driving suggests the administration is agreeing to the legalization of marijuana or not. The conversation could be framed as a public health issue that requires a sense of urgency to ensure the administration is taking action to prevent auto accidents and injuries caused by marijuana impaired driving. Once the law is passed, states could be pursued individually, one by one, if the administration decides to continue rescinding the legalization of marijuana. Public buy-in to repeal an already instituted policy may become an even bigger hurdle to overcome, particularly given the bureaucratic processes involved in making change.

External stakeholders should also be considered. First, the state governments and officials including governors and state and local leaders have equity in the conversation. The National Governors Association, in March 2017, gathered for its winter meeting and produced an outcome that called for the “Inclusion of language to facilitate the safe administration of state marijuana programs, which recognizes that the legal growth, manufacture and use of marijuana is an emerging issue facing governors”¹¹¹. The Chair of the Homeland Security and Public Safety Committee, Arkansas Governor Asa Hutchinson, and Vice Chair Oregon Governor Kate Brown led this effort¹¹². While support for a federal limit may be divided among individual states according to state constituents and the elected officials’ respective party affiliations, the National Governors

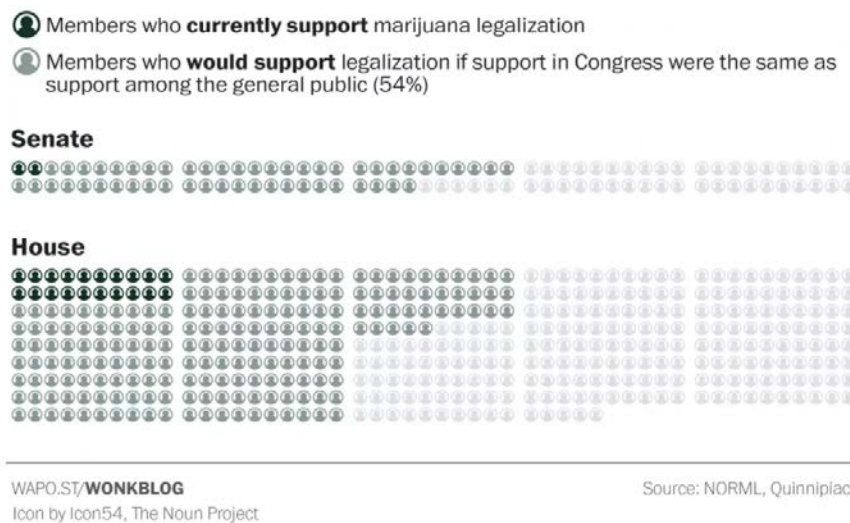
¹¹¹ "Governors Adopt Policy Positions During NGA Winter Meeting." National Governors Association. March 2, 2017. Accessed March 25, 2018. <https://www.nga.org/cms/news/2017/winter-meeting-policy-positions>.

¹¹² Ibid.

Association at large is most likely to support federal regulation to limit marijuana-impaired driving to reduce risk of injuries and fatalities on the road.

Additionally, members of U.S. Congress will play a consequential role in the introduction and passage of this law. *The Washington Post*, in late 2016, published a poll conducted by the National Organization for the Reform of Marijuana Laws that showed the level of support for legalization¹¹³. The poll showed that 54% of members of Congress were inclined to support legalization “if support in Congress were the same as support among the general public” as shown in figure 8¹¹⁴. Along similar lines, members of Congress that have been vocally opposed to legalization and/or supportive of heavy regulation are predicted to support the federal limit, and those who have showed support for legalization and/or deregulation are more likely to oppose the law.

*Figure 8. Members of U.S. Congress Who Support Legalization*¹¹⁵



¹¹³ Ingraham, Christopher. "Meet the Senators and Congressmen Who Support Marijuana Legalization." *The Washington Post Democracy Dies in Darkness*, September 29, 2016. Accessed April 13, 2018. https://www.washingtonpost.com/news/wonk/wp/2016/09/29/meet-the-senators-and-congressmen-who-support-marijuana-legalization/?utm_term=.c12045b3dfed.

¹¹⁴ Ingraham, Christopher. "Meet the Senators and Congressmen Who Support Marijuana Legalization." *The Washington Post Democracy Dies in Darkness*, September 29, 2016. Accessed April 13, 2018. https://www.washingtonpost.com/news/wonk/wp/2016/09/29/meet-the-senators-and-congressmen-who-support-marijuana-legalization/?utm_term=.c12045b3dfed.

¹¹⁵ Ibid.

Across party lines, Democrat and Independent voters tend to be supportive of the legalization of marijuana. In October 2017, a Gallup poll indicated that the majority of Republicans, for the first time, were supportive of legalizing marijuana, compared to 42% in 2004¹¹⁶. So what does opinion of marijuana-impaired driving look like across party lines? While exact figures are not available, history and studies conducted on driving under the influence of alcohol indicates that Republicans are more likely to support heavier regulations and stricter guidelines than Democrats¹¹⁷. For example, Arizona and Alaska, both Republican-leaning states have more rigorous penalties for DUI offenses than say, California or Oregon, both blue states¹¹⁸. Similar patterns are likely to appear across party lines for a federal limit on marijuana-impaired driving. Furthermore, these patterns may appear between states that have legalized vs. not legalized marijuana. In other words, in response to the new federal limit on marijuana-impaired driving, Republican states are more likely to support the restriction, whereas Democratic states are not. Using the most recent presidential election as reference, approximately 30 states would lean Republican and express support for regulation¹¹⁹.

Additionally, non-governmental organizations on either side of the issue are expected to be vocal. The National Organization for the Reform of Marijuana Laws (NORML), for example, is a non-governmental organization that leads efforts to mobilize

¹¹⁶ Montanaro, Domenico. "All-Time High: Majority Of Republicans Support Pot Legalization For First Time." *NPR*, October 25, 2017. Accessed April 20, 2018. <https://www.npr.org/2017/10/25/559989879/all-time-high-majority-of-republicans-support-pot-legalization-for-first-time>.

¹¹⁷ Hickman, Charles. "STRICTEST VERSUS MOST LENIENT STATES ON DUI: IS IT A RED V. BLUE ISSUE?" *LifeSafer*. April 7, 2016. Accessed April 20, 2018. <https://www.lifesafes.com/blog/strictest-versus-lenient-states-dui-red-v-blue-issue/>.

¹¹⁸ Hickman, Charles. "STRICTEST VERSUS MOST LENIENT STATES ON DUI: IS IT A RED V. BLUE ISSUE?" *LifeSafer*. April 7, 2016. Accessed April 20, 2018. <https://www.lifesafes.com/blog/strictest-versus-lenient-states-dui-red-v-blue-issue/>.

¹¹⁹ "Presidential Results." *Election 2016*. Accessed April 12, 2018. <https://edition.cnn.com/election/2016/results/president>.

public support to legalize responsible use of marijuana by adults. The organization released an article on March 21, 2018 stating that a study published by the National Bureau of Economic Research indicates no correlation between an increase in car accident deaths and regulation of marijuana in the states of Colorado and Washington¹²⁰. More specifically, the study led by researchers at the University of Oregon found that states yielded insignificant differences in traffic patterns after legalizing marijuana and that “In summary, the similar trajectory of traffic fatalities in Washington and Colorado relative to their synthetic control counterparts yield little evidence that the total rate of traffic fatalities has increased significantly as a consequence of recreational marijuana legalization”¹²¹. Organizations such as NORML could be expected to oppose federal regulations and/or additional laws that limit recreational and/or medicinal uses of marijuana, as studies have been used to indicate that the substance has had minimal effect on traffic injuries.

Lastly, public opinion on the legalization of marijuana is divided across varying demographic groups. A study by the Harvard Kennedy School of Government found that 44% of 18 to 29 year olds supported legalization in contrast to 34% who opposed¹²². Furthermore, support was found to be divided across political party lines. Specifically, Democrats were found to be more supportive of legalization at 49% compared to Republicans at 32%¹²³. Figure 10 provides a more detailed account of opinions across

¹²⁰ Armentano, Paul. "Study: Traffic Fatalities Have Not Increased As A Consequence Of Legalization." Policy. March 21, 2018. Accessed March 25, 2018. <http://blog.norml.org/2018/03/21/study-traffic-fatalities-have-not-increased-as-a-consequence-of-legalization/>.

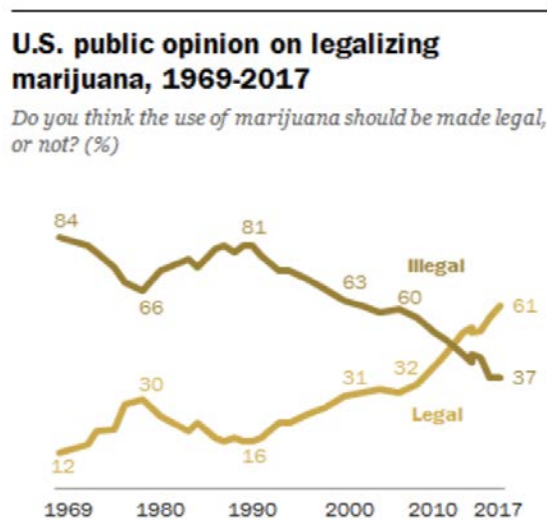
¹²¹ Armentano, Paul. "Study: Traffic Fatalities Have Not Increased As A Consequence Of Legalization." Policy. March 21, 2018. Accessed March 25, 2018. <http://blog.norml.org/2018/03/21/study-traffic-fatalities-have-not-increased-as-a-consequence-of-legalization/>.

¹²² *Political Issue: Marijuana*. Harvard IOP The Kennedy School. 2012. Accessed March 20, 2018. <http://iop.harvard.edu/survey/details/political-issue-marijuana>.

¹²³ Ibid.

party lines. Whites supported legalization at 49% and 32% opposed; African-Americans supported at 38% and 36% opposed; Hispanics supported at 37% and 37% opposed¹²⁴. In yet another poll conducted and published in January 2018 by the Pew Research Center, 61% of Americans or about six out of every ten Americans expressed their support for legalization¹²⁵. Figure 9 below shows the trends of public support for legalization from 1969 to 2017¹²⁶.

Figure 9. Percentage of Public that Support Legalization of Marijuana¹²⁷



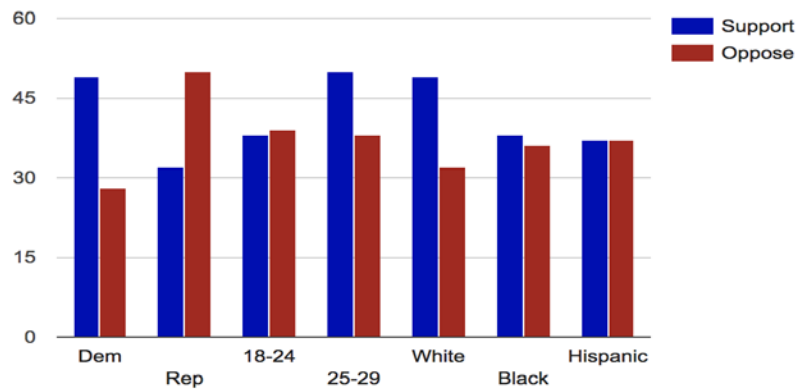
¹²⁴ *Political Issue: Marijuana*. Harvard IOP The Kennedy School. 2012. Accessed March 20, 2018. <http://iop.harvard.edu/survey/details/political-issue-marijuana>.

¹²⁵ Geiger, Abigail. "About Six-in-ten Americans Support Marijuana Legalization." Pew Research Center. January 5, 2018. Accessed April 9, 2018. <http://www.pewresearch.org/fact-tank/2018/01/05/americans-support-marijuana-legalization/>.

¹²⁶ Ibid.

¹²⁷ Ibid.

Figure 10. Party Affiliation in Relation to Support for Marijuana Legalization
*Source: Harvard Kennedy School of Government*¹²⁸



Recommendation

I recommend that you oppose this law for several reasons. First, marijuana is illegal at the federal level and still illegal under most state laws. Therefore, in most states, driving while under the influence of marijuana would already be a crime, so a federal law would be redundant. States that have chosen to legalize marijuana might consider legislation like this on an individual basis. Second, a sound and reliable method of testing for marijuana levels has not yet been selected, and that should precede legislation like this proposal. Finally, an accurate blood level that impairs safe driving should be determined before a law is made. Without better information about what blood level is safe for driving and appropriate testing, the law would not only be nearly impossible to pass and enforce due to lack of credibility, but it would also create chaos in the implementation stage due to states lacking infrastructure available to follow through with the law. Politically, it is unlikely that this law would advance under the current Congress and administration.

¹²⁸ *Political Issue: Marijuana*. Harvard IOP The Kennedy School. 2012. Accessed March 20, 2018. <http://iop.harvard.edu/survey/details/political-issue-marijuana>.

The process to identify a reliable testing method and illegal blood levels may be more difficult than expected—the variations of the types of marijuana are many, and the way marijuana takes place in and out of blood streams are a bit different than alcohol, which many of the models we discussed are based on. However, the federal government, including agencies like the U.S. Department of Health and Human Services (HHS), could task the National Institutes of Health (NIH), and, specifically, the National Institute on Drug Abuse (NIDA), to work with private and academic circles to engage in lab tests, simulations, and studies.

In the future, if a reliable testing method and illegal level of marijuana have been determined, the passage of the law could help create assurance of safety and clear instructions among drivers on the road. The pros of such law is that it would positively impact and protect public health by providing the American people with clear directions on the framework within which the use of marijuana is legal (among states that have legalized) and the consequences drivers will face if the laws are not adhered to. Furthermore, such a framework would give gravity to the issue of respecting how other drivers, who have not used marijuana, could be put in harm's way. Similar to laws around alcohol-impaired driving, the law proposed in this paper aims to protect innocent civilians on the road. Those who have chosen not to partake in recreational marijuana should be protected from compromised drivers on the road. For those who are under medical conditions, required to take marijuana for health purposes, the limit would protect and serve as a checkpoint to ensure those drivers are fit to drive before getting in the car.

Lastly, this law will encourage lawmakers, implementers, academics, and, most importantly, the public to entertain what conversations we should be having in the age of legal marijuana. The time we have now should be used to build bipartisan political coalitions on Capitol Hill and among state governments. This would allow for a more efficient and swift process if and when this legislation, in the future, is introduced and passed into law.

CURRICULUM VITAE

Yaesul Park most recently served as a Policy Advisor at the Domestic Policy Council at the White House during President Barack Obama's Administration. Prior to that, she provided counsel to the Deputy Secretary, Under Secretary, and Deputy Under Secretary at the Department of Agriculture, where she focused on conservation, trade, and international development. Her work included the Trans-Pacific Partnership (TPP), Trade Promotion Authority (TPA), and Agribusiness Trade Missions (ATMs). She started her career in public service as an intern at the White House in the Office of Cabinet Affairs. Park, who is a native of Corvallis, Oregon, graduated from Emory University with a major in political science and a minor in sociology.