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Attitudes, beliefs, and changing trends of cannabis usage among college students

Addison L. Jendza

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Cannabis, specifically, marijuana has a complicated history in the United States where it started off as an ingredient in medicines, went to become highly taboo and illegal, and now is slowly becoming legalized medically and recreationally in the United States. There are legal barriers in preventing research on marijuana making it difficult for all its benefits and detriments to be known and proven. Marijuana is most used among college students and people within the age range of 18-25 making them a priority population. Students (n""74) on Eastern Michigan University's (EMU) campus were randomly selected to participate in taking a 22-question descriptive survey to gather information on their knowledge, attitudes, and beliefs of marijuana and its use. Without the ability to conduct research on marijuana, there are many challenges that will arise affecting people's health and safety, especially with its growing legalization in the U.S.

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ATTITUDES, BELIEFS, AND CHANGING TRENDS OF CANNABIS USAGE AMONG COLLEGE STUDENTS

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Abstract

Cannabis, specifically, marijuana has a complicated history in the United States where it started off as an ingredient in medicines, went to become highly taboo and illegal, and now is slowly becoming legalized medically and recreationally in the United States. There are legal barriers in preventing research on marijuana making it difficult for all its benefits and detriments to be known and proven. Marijuana is most used among college students and people within the age range of 18-25 making them a priority population. Students (n=74) on Eastern Michigan University's (EMU) campus were randomly selected to participate in taking a 22-question descriptive survey to gather information on their knowledge, attitudes, and beliefs of marijuana and its use. Without the ability to conduct research on marijuana, there are many challenges that will arise affecting people's health and safety, especially with its growing legalization in the U.S.

Introduction

Marijuana, the dried leaves of the cannabis plant, is the most popular illicit drug in the United States (Centers for Disease Control and Prevention [CDC], 2018). The cannabis plant and all its uses have a long, complex history within the U.S. dating back hundreds of years. That history includes multiple policy changes for marijuana use in the U.S. where it went from a legal, even common, substance to where using it became highly illegal and a taboo in society. Now, marijuana is becoming legal again for both medical and recreational uses within individual states, but it still illegal at the federal level. It is most used among college students and college-aged young adults making them a priority population (Schulenberg, Johnston, O'Malley, Bachman, Miech, & Patrick, 2017). Due to its recent legalization recreationally in Michigan in the November 2018 midterm election, there was a curiosity about what this population knew about marijuana and their beliefs and attitudes surrounding it. The purpose of this study is to explore the history of marijuana, its medical uses, and the issues prohibiting research about it while examining the knowledge, beliefs, and attitudes of marijuana among students at EMU.

History of the Cannabis Plant

According to Brewer (2013), the cannabis plant can be divided into two forms each having different purposes. Hemp is a product that can be used as a material to make items such as rope, paper, and clothing (Newton, 2017). Marijuana is a controversial substance because it causes mental and physical effects that some find useful for medicinal purposes and others find dangerous with no benefits (Brewer,

2013, p. 458). The cannabis plant has a long history from how it was used centuries ago, to how it became so taboo, and currently to its slow acceptance as a medicine and recreational drug in the U.S.

The Origin of Cannabis

Cannabis sativa has been found to be one of the oldest plants used around the world (Newton, 2017). Archeologists have found hemp, fibers and seeds derived from the cannabis plant, on pieces of pottery that were made approximately twelve thousand years ago. Although these pieces were found in Taiwan, *Cannabis Sativa* has been spread around the world. In North America particularly, it is believed that the plant had been brought over through a variety of routes from animals crossing the Bering Strait with cannabis seeds to Vikings and other travelers carrying it over. The Spanish brought it over to what is now South America and Mexico with plans to grow and supply their home country, but the environment was not conducive to grow cannabis and create hemp. It was also said that the farmers blamed the plant and its mental and physical influence for causing them to not grow it well (Newton, 2017).

Britain's Hemp

As more settlers immigrated into America, the British colonies began to grow and develop, and soon the British were having similar issues as the Spanish originally did with the lack of hemp available for the mainland. In the beginning of the 1600s, the colonies started to mandate that each farmer needed to grow a specified amount of hemp in order to supply the mainland, but that hemp was needed and used in the colonies instead. With the lack of hemp sent to the Mainland, tension was created between the colonies and Britain. The French decided to follow in suit with Britain

and Spain in developing plantations in North America, but it never became as much of an important crop as it did to the British colonies. Hemp was so versatile and valuable that it became a way for people to pay their taxes and other forms of debt for more than a hundred years. It began in Virginia through the Act for the Advancement of Manufactures in 1682, and soon after, other colonies began passing laws allowing for hemp to be used as a form of payment within their own borders (Nelson, 2016).

According to Newton (2017), Hemp was such a highly useful commodity that countries like Spain, the United States, and especially England relied on Russia for a bulk of their supply because they were not able to keep up with the demand that their own country needed. In 1807, however, with the implementation of the Treaty of Tilset, all trade ended between Russia and England. As an attempt to still satisfy their high demand for hemp, England took impermissible control of the United States' ships to sail to Russia and buy their supply of hemp. It was this conflict between the United States and England that helped ensue in the War of 1812 (Newton, 2017).

As popular as hemp seemed to be, in 1850, it was only the 18th most profitable crop in the United States (Newton, 2017). Its downfall started by other crops becoming more popular such as cotton. During the Civil War, the Confederate side made hemp not as necessary anymore since they stopped the transportation of cotton to other places allowing for the South to have an abundance of cotton. As a result, this stopped the need for hemp to make rope. After the war, hemp usage was still declining, and eventually by the 20th century, its main uses was for the oil derived from its seeds and bird seed (Newton, 2017).

Marijuana Throughout Time

Marijuana, like hemp, has been around and used for thousands of years, since according to Brewer (2013, p. 458) 2737 BCE in China where it was used early on as a medicine for a myriad of symptoms and conditions. It has a long history in the Eastern parts of the world, but in the Western parts, its popularity began only somewhat recently. Doctors began testing out marijuana as treatment for their patients, and pharmaceutical companies began creating products with marijuana as an ingredient around 1850 (Newton, 2017). In 1860, physicians who had conducted experiments and tests on the drug gathered and discussed their varying results, which included beneficial support and some harmful opposition in using marijuana as a medicine (Newton, 2017). The Ohio State Medical Society held this event that is known as the United States' first professional gathering debating medical marijuana (Newton, 2017).

The Original Research of Marijuana

William Brooke O'Shaughnessy is a doctor known for his research on using marijuana as treatment for medical conditions (Newton, 2017). He was working in India with the British East India Company alongside other doctors when he observed how they used marijuana as a medicine. He then began his own research and found that it successfully treated Cholera symptoms, pain, and even muscle spasms. His research inspired others to study marijuana as well, and in 1895, it was determined by the Indian Hemp Drugs Commission, "that the use of hemp had no injurious physical, mental, or moral effects on users of the drug and that, in fact, it had a number of

beneficial effects in the treatment of a variety of diseases and disorders" (Newton, 2017, p. 36).

The Beginning of the Taboo

Although the commission's conclusion of O'Shaughnessy's research seemed to give a clear answer about marijuana, people around the world were concerned about narcotics and their effects (Newton, 2017). There were international conventions held discussing these drugs, and at one of the later meetings, the U.S. wanted marijuana listed along with the narcotics. They were unsuccessful at this one meeting in 1912, but later on at the 1925 International Convention on Narcotics Control, representatives from Egypt and Turkey told graphic stories about how the effects of marijuana caused medical issues that led to bodies decomposing and minds that went psychotic. There was not an immediate response from these claims, but they did add to the general dislike of using marijuana for any purpose. For the beginning of the 20th century, the focus was not solely marijuana, but it was any drug that changed a person's state of mind. Marijuana was classified as a narcotic, which it is not anymore (Newton, 2017).

Motivation Behind Criminalization

According to Newton (2017), there are three reasons that drove the U.S. to criminalize marijuana with such a harsh demeanor. The first is racism toward Mexican immigrants. The anti-marijuana laws began passing on the western side of the country where many Mexican immigrants were entering the U.S. during the 1910s. The stereotype surrounding them was that they are not smart and that they have poor moral compasses. Smoking marijuana was a common practice among these

immigrants, and this combined with the stereotype instigated the creation of the anti-marijuana laws. The second reason is that it was believed that people who were addicted to more dangerous drugs such as heroin and cocaine would start smoking marijuana as well. There were already strict laws in existence regarding opiates and cocaine, but it was a common fear that if people could not obtain these drugs, they would switch to marijuana. Lastly, marijuana was beginning to be disapproved all over the world and not just the U.S. In multiple international conventions, marijuana was negatively conveyed, which influenced the U.S. to follow suit in the world's anti-marijuana agenda (Newton, 2017).

Religious Views Mixed with Political Views

The views of marijuana usage were changing around the world from what it was formerly known as a safe, versatile medicine to the views that it was immoral and harmful to those who used it (Newton, 2017). The U.S. was not opposed to this change, either. In the early 1900s, politicians started making laws in favor of marijuana prohibition both nationally and within the states. The states were the first ones to start regulating and limiting marijuana production and use. The criminalization of marijuana within the states first began in 1913 with California passing a piece of legislation that made marijuana use illegal, but it was so unpopular that Utah is formally known as the first state to create such a law. It began with the Mormon Church prohibiting the use of marijuana because it was a common teaching of their church that all mind-altering drugs were forbidden. The story behind this says that members of the church made a religious journey to Mexico where they learned about smoking marijuana, and they continued doing so once they were back in the

U.S. Soon after the Mormon Church made their decision with marijuana, the state of Utah followed in making a law forbidding marijuana use. Some are skeptical that this was the reason behind the creation of Utah's law, and it is also believed that Utah simply followed California's lead. The states' laws played a significant role that led to the creation of the U.S. government legally stigmatizing marijuana. First, marijuana was originally grouped in with all narcotics since it affected a person's mental state, but it was not the prime drug aimed toward reducing abuse. The Narcotic Drug Import and Export Act of 1922 focused on cocaine and opiates, but since marijuana was not the original target in reducing drug use, it was not included in the act. It was included, however, ten years later in the updated Uniform Narcotics Drug Act in 1932 with no formal statement as to why it was just then added in. The push to include marijuana as a harmful drug is largely credited to Harry Anslinger who began his role in the political efforts by first acting as assistant commissioner in the U.S. Bureau of Prohibition then becoming commissioner of the Federal Bureau of Narcotics. His work led to the creation of the Marihuana Tax Act of 1937. The bill had majority support except from Dr. William C. Woodward from the American Medical Association (AMA) who said that there was nothing factually proving the dangers of marijuana, which makes for a little cause in trying to outlaw it. His words were immediately shut down and disregarded, and the Marihuana Tax Act became official on October 1, 1937. It did not strictly ban marijuana, but it made it more complicated for people to associate in anything to do with marijuana. It mandated new taxes for marijuana, and it required anyone who worked with or used marijuana to inform the government and be placed on record. On the same day it became

official, the first two arrests were made in Colorado in violation of the new bill (Newton, 2017). Ironically, according to Ghosh et al. (2016) on January 1st, 2014, Colorado became the first state to allow people to sell marijuana recreationally.

Boggs Amendment

The next legal change was the Boggs Amendment to the Harrison Narcotic Act in 1951 (Newton, 2017). After the 1937 act, there was a need to update the laws in regards to two problems that the government was struggling to solve and control. They wanted to know where marijuana stood along with other drugs, and they wanted to find a way to decrease the use among citizens. After World War II, Boggs, the representative for which the bill was named after, claimed that more people were using drugs, and that formed the ground on the creation of the amendment. Congress made it official on November 2, 1951, and the punishments if caught with or using marijuana became substantially harsher. There was a common belief between Harry Anslinger and other politicians that crime was connected with drug use and that drug use was the main cause of crime (Newton, 2017).

Despite the growing hatred of drugs among many politicians, there were groups in opposition to what the government was spreading about these substances such as the U.S. Public Health Service (Newton, 2017). Such organizations wanted drug use to become decriminalized and for addiction to be seen as a medical issue. As a result, they published information to the public educating them. In retaliation, the opposing politicians submitted their own sets of information to the public depicting their own beliefs. Eventually, another committee was come together to form more reasons why drug use should have even harsher laws, and soon enough Congress

implemented the Narcotic Control Act of 1956. The Act took away the possibility of probation as a punishment and the opening of facilities for addicts to receive treatment (Newton, 2017).

Controlled Substances Act of 1970

Many laws were passed since the Marihuana Tax Act of 1937, but starting in the sixties, these laws began to fall apart (Newton, 2017). In 1965, Harvard professor, Dr. Timothy Leary, was arrested for marijuana possession. He took a family vacation to Mexico, and when they returned, authorities found that his daughter possessed marijuana. Dr. Leary, protecting his daughter, took blame and went to jail for a month with a $30,000 fine. Eventually, the U.S. Supreme Court became involved, and with this as the first marijuana-related case they have ever dealt with, they soon ruled that the 1937 act unconstitutional because it forced citizens to testify or confess against themselves. Once the Marihuana Tax Act of 1937 was done away with, there was no regulation regarding marihuana in the U.S. for a short time until the Comprehensive Drug Abuse Prevention and Control Act of 1970. Within this act, there is the Controlled Substances Act of 1970 (CSA), and it is still followed today. Now, marijuana is not regulated by tax but instead by jail sentences and fines. It abandoned the cruel justices that the Boggs amendment called for, and it started to provide programs to help users and increase the distribution of methadone for those who overdosed. It separated marijuana from opiates and cocaine by creating a group to solely focus and research cannabis. In 1972, the group stated that it found persecuting marijuana users criminally was unjust because the drug was not dangerous enough to do so. The CSA includes the five schedules, which are still followed today, and they

are used to determine how dangerous illegal drugs are. Each schedule is a different rank based on three factors: how addictive the drug is, how medically beneficial it is, and how dangerous it can be to the patients who were prescribed it and cared for by medical doctors. The first schedule is the strictest because it classifies drugs such as marijuana as addictive, unable to be used as medicine, and highly dangerous when used. Marijuana has been listed as a Schedule I drug since the creation of the schedules, but almost two hundred drugs have been placed in and shifted among the five schedules since then (Newton, 2017).

The Shafer Report

The National Commission on Marihuana and Drug Abuse otherwise known as the Shafer Commission delved deeply into researching marijuana and its effects to determine how unsafe the drug might be and if punishments for its use would be appropriate to discipline marijuana users (Newton, 2017). Despite the facts the committee determined about how marijuana use should not be a criminal act in law, politicians still wanted the public to believe the opposite about marijuana. While the Shafer Commission was gathering their information, it was at the same time President Nixon focused on an antidrug campaign for his reelection. He wanted the public to believe that all drugs were bad drugs and worthy of criminalization, and as a result, citizens' harsh views on drugs did not soften despite the recently found information that marijuana use was not a reason to persecute. In fact, the Shafer report only made citizens more aware of the potential risks and hazards of alcohol (Newton, 2017).

Jimmy Carter's Presidency

President Jimmy Carter had opposite views on drugs than Nixon did, and while he was in office, he decriminalized drug use and promoted efforts to help those already suffering from addiction and keep people from ever starting (Newton, 2017). He had stated, "[p]enalties against possession of a drug should not be more damaging to an individual than the use of the drug itself" (Newton, 2017, p.78). It was also suggested by his administration that the reason why Nixon was so against marijuana was because it was about the ethnicity of the people who were commonly known to smoke marijuana.

From the 1980s to Today

After Carter's term, every presidency after had similar views on drugs that Nixon and his administration had, and it has been a constant battle as the decades have gone on (Newton, 2017). In the 1980s when Ronald Reagan became president, regulations on drugs hardened. Reagan's spokesperson for drug use, Carlton Turner, had a myriad of reasons to promote their antidrug agenda. Turner had said that marijuana use was unlike how an American citizen should act. When it was found out that the government unlawfully poisoned cannabis plants, Turner made it publically known that he thought anyone who smoked the toxic plants and died was an appropriate punishment. He also wished death for those who sold marijuana. His crusade continued up until he claimed that marijuana use turned people gay and fed into the HIV/AIDS epidemic that was happening at that time. After this statement, Reagan released Turner from his duties as drug czar (Newton, 2017).

In 1986, the Anti-Drug Abuse Act was implemented to accommodate what is believed to be the correct punishments for possession and use. Ever since then, the federal laws are still much of the same today (Newton, 2017). Within the states, however, there have been major changes for the past few decades. Many states have made medical marijuana legal, and beginning with Colorado, they first allowed marijuana to be used recreationally in 2012, but they actually allowed it to be sold in 2014 (Ghosh et al., 2016). Since then, multiple other states have followed in suit, and others will have it on ballots during elections in the coming years. Despite this progression, there is still much controversy over cannabis use and the actual medical benefits people receive from it.

Medical Uses of Cannabis

There is much controversy and speculation over the medical benefits of cannabis and cannabis products. While there are more than one hundred chemicals in cannabis, tetrahydrocannabinol (THC) is the chemical or cannabinoid that creates the high people feel when using cannabis, but cannabidiol (CBD) is the cannabinoid in marijuana that research has suggested to be medically beneficial (National Institute on Drug Abuse [NIDA], 2015). As described in the above section, cannabis has been researched for hundred of years, but there are still questions as to how useful it is as a medicine and what kinds of conditions it can treat. Over half of the states have legalized marijuana medically, and many have legalized it recreationally (National Academies of Sciences, Engineering, and Medicine [NASEM], 2017). With these changes in policy, there are still questions about the advantages and disadvantages of cannabis use, but there are also still barriers in place that prevent the research of

cannabis (NIDA, 2015). While there is some proof that cannabis can be used as treatment for certain medical conditions, there is still much more research needed to be done to make any concrete conclusions.

Chronic Pain

According to (NASEM, 2017) chronic pain is the most popular medical condition that people list under a reason why they need medical marijuana. It has been reported that more people are choosing marijuana over other pain medications like opiates. Using marijuana to treat chronic pain has been tested in studies for specific medical conditions such as neurothapy, pain caused from chemotherapy, and rheumatoid arthritis. In a review of the studies on the use of marijuana for chronic pain, NASEM (2017) found many results concluding that marijuana can be used to treat chronic pain, but there are limitations. The studies reviewed used a variety of methods of using cannabis, like spraying nabiximols, a liquid sprayed in the mouth containing equal amounts of THC and CBD, inhaling, or eating it. As a result, the best form of cannabis available to treat chronic pain is unknown. The amount of cannabis a patient should take and how often it should be taken is still unknown. All of these unanswered questions require more reliable research to be done (NASEM, 2017).

Nausea and Vomiting Caused by Chemotherapy

Cannabis has been used as a treatment for the nausea and vomiting side effects of chemotherapy for decades (NASEM, 2017). In 1985, synthetic cannabis medications, nabilone and dronabinol, became available forms of treatment for this condition. Through the studies that have been conducted, the results state that these

drugs may treat nausea and vomiting better than the placebo treatment, but it has not been proven that they are better than other existing treatments on the market (NASEM, 2017).

Epilepsy

Millions of Americans suffer from epilepsy, which is a broad term for multiple brain disorders that result in seizures (NASEM, 2017). It is often mentioned that marijuana is an effective treatment in reducing the amount of seizures epileptics may have, but there are few controlled studies that support this claim. (Kolikonda, Srinivasan, Enja, Sagi, & Lippmann, 2016). Most of the supportive episodes in favor of this form of treatment are unofficial and sporadic occurrences where people have attempted to use medical marijuana in order to treat seizures, but there are also incidences where medical marijuana wasn't as successful as some claim it to be (Kolikonda et al., 2016). Of the trials that have been done, there have been issues with the reliability of the reports such as no placebo group used for comparison and a high risk for bias (NASEM, 2016). There are studies currently in progress testing medical marijuana as a treatment for epilepsy (NASEM, 2017).

Psychosis and Schizophrenia

Psychosis disorders and schizophrenia are mental conditions that include hallucinations, delusions, lowered brain function, tendency to seclude from activities with others, and lowered ability to convey emotion (NASEM, 2017). According to the NIDA (2018), the symptoms of schizophrenia and psychosis are side effects of inhaling or consuming a large quantity of cannabis. Rather than looking at these symptoms as merely side effects, there are multiple studies that look into cannabis as

a cause for developing psychosis disorders and schizophrenia. In Marconi, Di Forti, Lewis, Murray, & Vassos's (2016) review, they determined that a dose-response relationship existed between marijuana use and these mental health disorders. Heavy marijuana use leads to a greater possibility for developing psychosis and schizophrenia, but there is not enough research available that identifies the exact dosage (Marconi et al., 2016).

Cannabis as an Addictive Substance

Marijuana Use Disorder is a condition that develops when marijuana use has become an issue that affects one's life and that can lead to addiction (NIDA, 2018). The disorder develops when a person's brain becomes accustomed to having a certain level of marijuana in the system, and about thirty percent of all marijuana users have a marijuana use disorder (NIDA, 2018). According to the Centers for Disease Control and Prevention (CDC) (2018), having a marijuana use disorder can lead to addiction, and about ten percent of all those who use marijuana will become addicted. According to the NIDA (2018), it is difficult for there to be a solid number of how many people are addicted because of the weak distinction between dependence and addiction. Not unlike the CDC, they report that nine percent will become dependent on it (NIDA, 2018). There are also concerns about the amount of THC in marijuana because the content percentages have been increasing over time. (NIDA, 2018; CDC, 2018). With this increase, brain function and development could be severely impacted, and it is unknown as to how much this increase can impact addiction (NIDA, 2018; CDC, 2018).

Asthma

According to Chatkin, Zani-Silva, Ferreira, & Zamel (2017), it has been said that cannabis can be used to treat asthma because marijuana slightly opens the airways when inhaled, also known as a mild bronchodilator effect. As research has improved over the decades, the results now indicate that smoking marijuana can cause more harm to asthmatics than good. Smoking tobacco cigarettes has been proven multiple times to make asthma and its symptoms much worse. There is now growing information on the harmful effects of smoking cannabis, In comparison, both tobacco and marijuana smoke release harmful chemicals such as ammonia, hydrocyanic acid, and nitrosamines. Marijuana and tobacco are smoked using different materials and techniques of inhalation. Tobacco cigarettes often have filters, and when smoking a cigarette, the inhalations are shallower with less smoke going into the lungs at one time. Marijuana users often take larger inhalations because they want the maximum amount of THC to enter their system thus creating the high effect. With inhaling more smoke, however, significantly higher levels of tar and carbon monoxide are held within the body. Using marijuana as a treatment for asthma has been looked into dating back to the early 1970s. There are recorded accounts of U.S. soldiers and how they used hashish while stationed overseas in 1972. The soldiers who would usually take 25g of hashish would suffer from sore throats, but the soldiers who used twice that amount suffered much more by having a hard time breathing, coughing more, and not having the ability to participate in physical activity as much as before. Other studies conducted around the same time suggested that marijuana could be used as a bronchodilator in both people living with and without

asthma. In one specific participant with asthma, that individual's airways closed up enough after smoking marijuana to where a breathing treatment was needed. The same occurrence happened a week later with the same patient. Another review conducted decades later found that smoking marijuana for a long period of time was correlated to worsening breathing problems and other symptoms even after smoking tobacco was accounted for. Despite this relationship, lung function evaluations were not greatly affected by smoking marijuana for a continued time. Overall, there seems to be a short widening effect that enables easier breathing, but over time, research suggests that continuous marijuana smoking can lead to swollen respiratory organs. There is also evidence of cell damage, an increased amount of asthma attacks, and more lung problems. As a result, there is a strong possibility of a dose-dependent relationship where the amount of marijuana smoked can affect how damaging the health effects are. Although it is possible to account for tobacco use, individuals who smoke both marijuana and tobacco make it hard for researchers to differentiate which adverse health effects are caused by which substance that was smoked (Chatkin et al., 2017).

Allergies

There have been cases where people have suffered from what seems to be a cannabis allergy (Chatkin et al., 2017). People have suffered from allergies due to pollen from a cannabis plant with symptoms such as swollen eyes and congestion within the sinuses. In one particular study, fifteen participants inhaled marijuana and had a multitude of symptoms that mimic an allergic reaction. The reactions went away after the marijuana was no longer present, and they came back once stimulated

with it again. Aside from pollen, there are questions about whether components of marijuana can cause the allergic reactions. One component, Can s3, is present in plants other than cannabis, which can relate food allergies with the cannabis allergy. There is still more research needed to be done, however, in order to identify other allergens. People are also able to suffer from allergic reactions from cannabis from physical contact. In order to diagnose the allergy, researchers are currently creating better skin tests that better identifies it (Chatkin et al., 2017).

Marijuana as a Treatment for Opioid Addiction

The U.S. is in the midst of an opioid epidemic, and cannabis has been considered to be a treatment option to those suffering from chronic pain and opioid addiction. In a survey where participants self-reported on whether they were taking an opioid for pain and their beliefs on how cannabis use affected them, 841 said they were using or recently used opioids, and sixty-one percent said they were taking them along with cannabis (Reiman, Welty, & Solomon, 2017). According to the results, participants favored using marijuana along with their opioid medications because it worked better than the opioids, it enabled them to take less opioids, and they would rather experience the side effects of using marijuana than the side effects of opioids (Reiman, Welty, & Solomon, 2017). Overall, most of the participants would use cannabis as a treatment especially if it were easier to access. In Shi, Liang, Bao, An, Wallace, & Grant's, (2019) study, no positive correlation was found between legalized recreational marijuana and the amount of prescribed opioids in people covered by Medicaid. The amount of Schedule III opioids prescribed decreased with the probable reasoning to be that marijuana can be effective in treating the same type

of pain that these opioids are meant to treat (Shi, Liang, Bao, An, Wallace, & Grant, 2019). According to Vigil, Stith, Adams, & Reeve's (2017) study, legalizing medical marijuana decreases the use of and deaths by opioids. Over eighty percent of the participants decreased the amount of opioids they were taking suggesting that they were replacing the opioids with cannabis (Vigil, Stith, Adams, & Reeve, 2017). Multiple reasons were suggested as reasoning behind this replacement such as: increased public health efforts to educate on the opioid epidemic, marijuana might work better than opioids, and marijuana has less harmful side effects (Vigil, Stith, Adams, & Reeve, 2017).

Marijuana Research Difficulties

Marijuana, as a controversial substance, has not been researched to its full extent in the U.S. NASEM (2017) reviewed hundreds of studies done within both the U.S. and in other countries in order to make conclusions about what medical conditions marijuana use is able to treat. Unfortunately, due to a lack of research, there are still many unanswered questions without proven solutions. There is plenty of interest in the U.S. to conduct cannabis research, but there are federal barriers in the way that prevent researchers from receiving Drug Enforcement Agency (DEA)-approved medical marijuana to use in their studies (Peters et al., 2016).

The two main obstacles in researching marijuana are (1) obtaining a license that allows for cannabis to be grown legally for medical research purposes and (2) the Schedule I classification of marijuana (Peters et al., 2016). As of right now, the University of Mississippi is the only one with this license (Peters et al., 2016). In 2016, the DEA asked for those wanting this license to apply to be able to grow

cannabis for research because they thought it would be beneficial to have more than one manufacturer, but as of July 2018, there were twenty-six applications for these licenses awaiting decisions from the U.S. Department of Justice and the DEA (Schatz et al. 2018). The Schedule I classification of marijuana is another inhibiting factor because, as mentioned before, it states that marijuana has "no currently accepted medical use" (Peters et al., 2016). Since marijuana and other Schedule I drugs are suppose to be the most dangerous of all drugs, it is harder to do research on them compared to drugs within other schedules that classifies drugs such as cocaine and methamphetamines as somewhat safer (Peters et al., 2016). Without having the ability to conduct this research on medical marijuana, it is hard to disprove its classification (Peters et al., 2016).

Prevalence

According to the Substance Abuse and Mental Health Services (SAMHSA) (2017), college-aged individuals, ages 18-25, are the largest group of marijuana users. Out of the 24 million people ages 12+ that used marijuana in 2016, 7.2 million of them were in the age range of 18-25. While this trend has remained relatively consistent for many years, it has been slightly increasing over time. In 2012, 18.7% of people in this age group used in the past month, which classifies them as current users. In 2016, the amount had risen to 20.8% (SAMHSA, 2017).

In Schulenberg, Johnston, O'Malley, Bachman, Miech, & Patrick's (2017) survey on college students and young adults on their drug use, just over 50% have tried using marijuana at least once in their life. 38.3% of college students used marijuana in the past year, and 21.2% used it in the past month. The percentage drops

down to 4.4% for the amount of people that used it everyday for the past thirty days. College-aged individuals have the highest amount of users annually, within the past month, and daily. Men generally use marijuana more than females. 40% of males used it in the past year compared to 34% of females, and 26% of males used it in the past thirty days compared to 20% of females. As for daily use, 10% of males use it daily compared to 6.2% for females. Regionally, more people ages 19-30 used marijuana in the past year in the West and Northeast than in the Midwest and South regions of the United States (Schulenberg et al., 2017).

Methods

This study is a descriptive research study. Participants were current students on Eastern Michigan University's campus, and they were all between the ages of eighteen and twenty-five. They were randomly selected throughout various buildings on campus, specifically the Student Center, Pray-Harrold, and Porter. They were approached in-person and asked to participate anonymously in a 22-question descriptive survey. The survey was Institutional Review Board (IRB) approved, and all procedures were followed in obtaining consent, distributing the survey, and keeping anonymity. The survey contained questions asking about the participant's demographical information and their knowledge, beliefs, behavior, and attitudes surrounding cannabis and marijuana.

Results

See appendix B for complete survey.

Demographics

There were 74 total participants who were all currently students at EMU when the survey was distributed. Tables 1-4 depict the demographic information collected. Table 1 depicts the participants' gender identity where 23 identified as male, 47 identified as female, 3 identified as gender variant/non-conforming, and one participant preferred not to answer.

Table 1

Variable		%	n
Gender			
	Male	31.08	23
	Female	63.51	47
	Transgender Male	0	0
	Transgender Female	0	0
	Gender Variant/Non-conforming	4.05	3
	Prefer not to answer	1.35	1
	Total		74

In Table 2, the majority of participants were white with a few other participants listed that they were white mixed with other ethnicities (68.92% solely white and 5.40% white with other ethnicities). Following the majority sample were Black/African American at 10.81% and Asian/Pacific Islander at 9.46%. Two participants marked Other, and one participant marked Black/African American, Native American/Alaskan Native, and Other as their ethnicities.

Table 2

Variable		%	n
Ethnicity			
	Asian/Pacific Islander	9.46	7
	Black/African American (AA)	10.81	8
	Hispanic/Latino	1.35	1
	White	68.92	51
	Other (O)	2.70	2
	White; Asian/Pacific Islander	2.70	2
	White; Black/African American	2.70	2
	Black/AA; Native American/Alaskan Native; O	1.35	1
	Total		74

Table 3 lists classification of the participants' year in school. Of the 74 total participants, the majority were sophomores and seniors with 21 participants each with freshmen as the next highest class at 18 followed by the juniors as the lowest participating class at 14.

Table 3

Variable		%	n
Year in school			
	Freshman	24.32	18
	Sophomore	28.38	21
	Junior	18.92	14
	Senior	28.38	21
	Total		74

Table 4 lists the age ranges of the participants. The most common age range was 18-20 holding 59.46% of the participants. The next highest age range was 21-22 (25.68%) followed by 23-25 (14.86%).

Table 4

Variable		%	n
Age			
	18-20	59.46	44
	21-22	25.68	19
	23-25	14.86	11
	Total		7

Knowledge

Questions 5-9 on the survey were 'yes no' questions assessing the participants' knowledge on cannabis. The participants were only given the options "yes" or "no" to choose from, but they had the option to skip the question as well resulting in classifying their answers as non-applicable. One participant wrote in an answer on their survey, which is classified below as Other. All of the questions received a majority of correct answers, but K4 is the outlier in receiving the most incorrect answers. K4 stated that marijuana is most used by college and college-aged students, which 63.51% responded "yes" in agreement while 35.41% responded "no" in disagreement.

Table 5

Variable	Correct Answer		Incorrect Answer		N/A		Other	
	n	%	n	%	n	%	n	%
K1	64	86.49	8	10.81	1	1.35	1	1.35
K2	69	93.24	4	5.41	1	1.35	0	0
K3	70	94.59	2	2.70	2	2.70	0	0
K4	47	63.51	26	35.41	1	1.35	0	0
K5	58	78.38	15	20.27	1	1.35	0	0

Beliefs

The participants were asked to rate their beliefs of cannabis and marijuana using a 5-point Likert scale from Strongly Agree to Strongly Disagree. Comparing answers between B7 and B8, more participants answered "Strongly Agree" and "Agree" when posed with the statement that medical marijuana is becoming more socially acceptable than when posed with the statement that recreational marijuana is becoming more socially acceptable.

Table 6

Variable	B6		B7		B8		B9		B10		B11	
	n	%	n	%	n	%	n	%	n	%	n	%
SA	12	16.22	20	27.03	12	16.22	0	0	5	6.76	1	1.35
A	31	41.89	44	59.46	41	55.41	8	10.81	15	20.27	17	22.97
N	22	29.73	7	9.46	16	21.62	45	60.81	27	36.49	37	50.00
D	8	10.81	3	4.05	4	5.41	19	25.68	24	32.43	17	22.97
SD	0	0	0	0	1	1.35	2	2.70	2	2.70	2	2.70
O	1	1.35	0	0	0	0	0	0	1	1.35	0	0

B12 and B13 asked questions regarding how likely the participants believe that marijuana will be legalized federally for medicinal and recreational use. Of the 74 responses, majority believe that marijuana will likely be legalized federally both medicinally and recreationally.

Table 7

Variable	B12		B13	
	n	%	n	%
Very Likely	21	28.38	6	8.11
Likely	38	51.35	33	44.59
Undecided	7	9.46	13	17.57
Unlikely	8	10.81	13	17.57
Very Unlikely	0	0	9	12.16

Attitudes/Behavior

Of the sample population, 37.84% have used marijuana recreationally as shown in Table 8 (A14).

Table 8

Variable	%	n
A14		
Yes	37.84	28
No	60.81	45
N/A	1.35	1

Of the sample population, 94.59% have not used medical marijuana depicted in Table 9 (A15). Of the 5.41% who have, they were asked to write down the conditions they have used it to treat. Some of the conditions written in were anxiety, headaches, back pain, insomnia, and nausea. When rating the effectiveness of their medicinal use for marijuana, the participants either responded with "completely effective" or "fairly effective."

Table 9

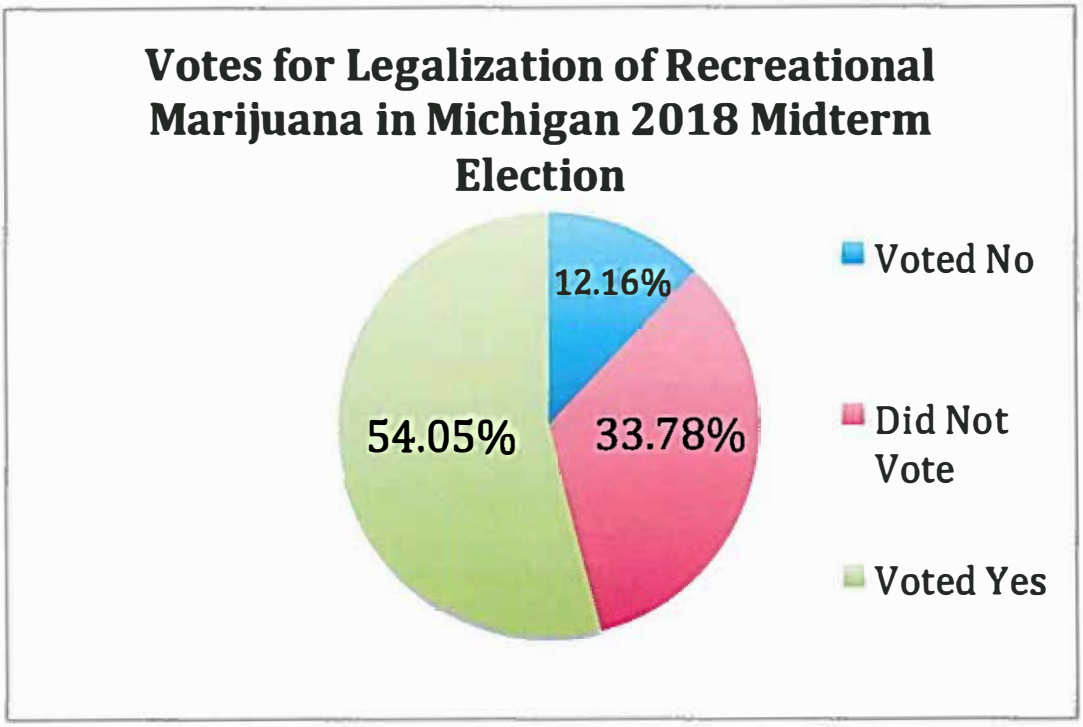
Variable	%	n
A15		
Yes	5.41	4
No	94.59	70

With marijuana becoming legalized recreationally in Michigan, only two participants "Strongly Agree" that their recreational marijuana use has increased since its legalization (A16). Majority of the participants (32) "Strongly Disagree" that their use recreational marijuana has increased since its legalization in Michigan.

Table 10

Variable	%	n
A16		
Strongly Agree	2.70	2
Agree	4.05	3
Neutral	21.62	16
Disagree	22.97	17
Strongly Disagree	43.24	32
N/A	5.40	4

Figure 1



Participants were asked how they voted, if they voted, in the November 2018 election (A17). Just over half of the participants voted for recreational legalization of marijuana in Michigan. About one-third of the participants did not vote at all in the election, and about 12% voted against the legalization of recreational marijuana in Michigan.

Figure 2

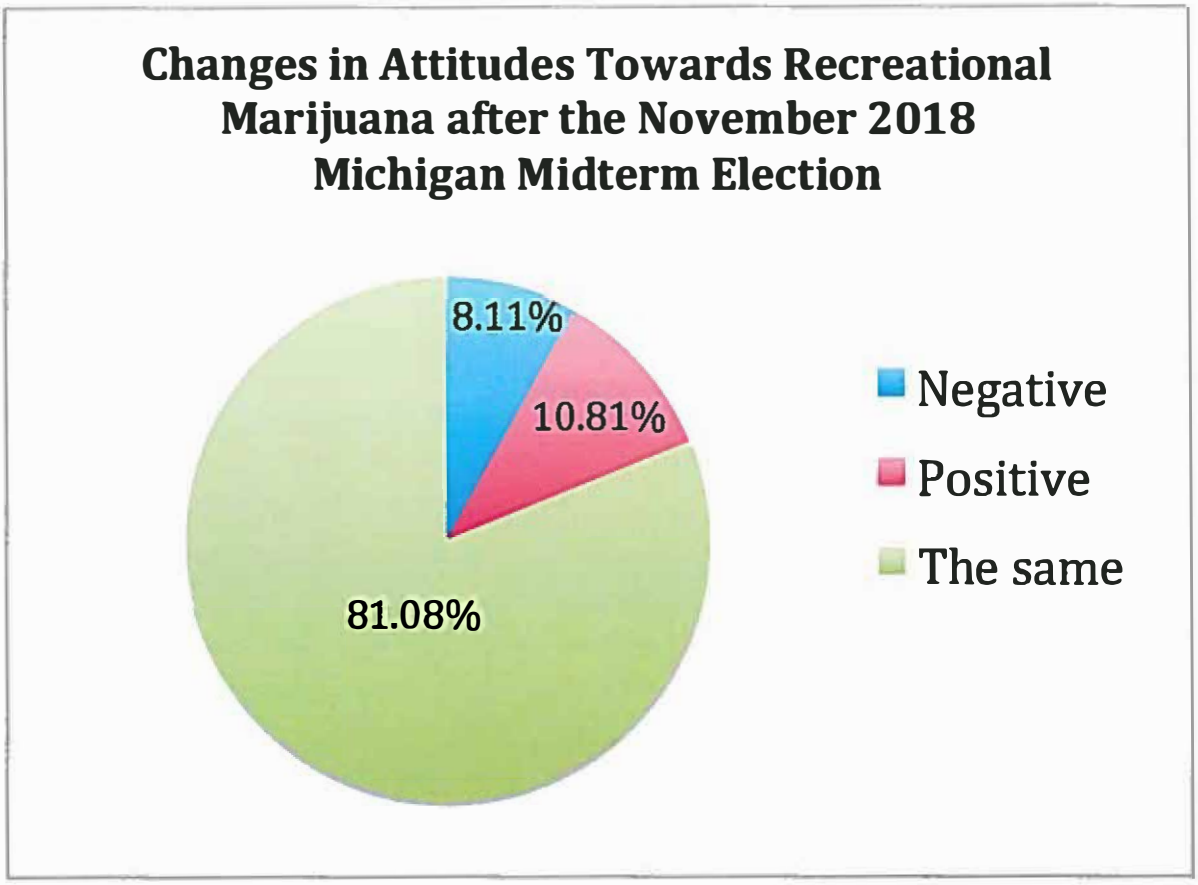


Figure 2 depicts how the participants perceive that their attitudes have changed about recreational marijuana since its recent legalization (A18). Over eighty percent of the participants feel that their attitude towards marijuana has stayed "the same" since its legalization. Just over ten percent of the participants claim that their attitudes towards recreational marijuana have grown more positive while about eight percent of the participants feels that their attitude has grown more negative towards marijuana.

Discussion

As a substance that has been around for thousands of years, cannabis has been used for so many different purposes. Its derivative, marijuana, only became more relevant in the U.S. within the past couple hundred years. Marijuana and its use among people has had a complicated past, and it will continue to have a complicated future.

When I first started this research, I had one research question in mind, and that was (1) why did marijuana become so stigmatized and illegal when there was seemingly so much evidence that it could be used as a medicine? Ever since I started researching the answer to this question, more questions started to appear. The next question I asked was (2) what is marijuana proven to treat anyway? When I started researching this particular answer, I couldn't find anything that proved marijuana to be effective against any health conditions. Everything was "strongly suggested." As a result, I was led to my third question: (3) why is there such a lack of research on marijuana? I found answers, of course, to these three questions, but there are still so many other questions that need answers, especially surrounding the safety of using marijuana. Without the ability to do research to prove its medicinal uses and find ways to use it safely, there are many challenges that will come from this lack of research, especially with its growing legalization in the U.S. I divided these challenges into three categories: loss of benefits, risks, and public health concerns.

First, the loss of benefits are all the ways marijuana could be beneficial to people, specifically for medicinal use, but without the proper research to support medicinal use, we have no idea to what extent the potential benefits are in using it.

Also, there aren't proper laws in place that allow people to access medical marijuana and use it safely. Reiman, Welty, & Solomon (2017) discussed some of the benefits that could come from using marijuana as a treatment for pain rather than opioids. There are people in the world that could benefit from using marijuana in place of opioids, and the quality of their lives could increase.

Next, there are multiple risks surrounding the use of marijuana that need to be identified. Every single drug has its risks, and marijuana is no different. Among the abundance of questions with unknown answers, one question asks about safest, most effective way to use marijuana. Marijuana can be smoked, vaped, eaten, and more. It is unknown which of these methods is the safest in the short-term and, more importantly, in the long term. Smoking marijuana is a common method to using it, but there is little research surrounding what it could do to a person's internal organs, especially their lungs, over time. Chatkin et al. (2017) explored this topic and the possible allergens that the cannabis plant may contain, but there is still much unknown information.

Lastly, there are multiple public health problems that may result from the lack of research and the growing legalization of marijuana within the U.S. that need addressing. There is a need to change the current laws surrounding marijuana and implement new ones to make research possible and to ensure the safety of citizens. There will also need to be ones on making medical marijuana affordable and accessible to those who need it. Along with policy implementation, there is a need for a growth in education and awareness efforts to the general population while also targeting specific groups. College students and college-aged individuals ages 18-25

are the population that uses marijuana the most (SAMHSA, 2017). It may be best to target them and populations who are at a higher risk than others. There is also the issue of high driving. The amount of people who may be at risk to high drive will likely increase as legalization continues. There are efforts needed to find ways to best address this issue and prevent the loss of lives due to driving under the influence.

With college students and college-aged students as a relevant population, and with the 2018 midterm election where the people of Michigan voted to legalize marijuana, I was curious to see what students on EMU's campus might know, believe, and perceive about marijuana. I created a survey inquiring about these topics and distributed paper copies in person to students on campus. It was a 22-question survey that was completed by 74 participants.

With its recent legalization in Michigan, I expected recreational marijuana use to increase, but from the results gathered from the sample population, it did not appear that the participants' use increased. Only two participants "Strongly Agreed" that their use increased while only three participants "Agreed" that their use increased. In fact, the majority of participants (32) "Strongly Disagreed" that their use increased. It does not appear that the change in laws affected many of the participants' use or desire to use possibly because the law only allows for individuals 21 and up to use and grow marijuana. The law does not allow for anyone, no matter their age, to buy or sell recreational marijuana, which prohibits access. If there was any desire to use, the law may be a barrier to the participants in not having access to it. Also, 44 of the participants are between the ages of 18-20, so majority of the participants are legally not allowed to use marijuana anyway.

When posed with the statement, "Smoking marijuana is safer for your health than smoking tobacco," 12 participants "Strongly Agreed," 31 "Agreed," and 22 were "Neutral." Evidence suggests that marijuana might be more dangerous than tobacco cigarettes although the extent is still unknown. With majority of the participants agreeing or strongly agreeing that smoking marijuana is safer than smoking tobacco, there is a reinforced need for research about the similarities and differences between smoking marijuana and tobacco and a need to educate about those factual findings.

When tested on their knowledge of marijuana, every question was answered with the majority of responses as the correct answer. There was one outlier, however, that had only 47 participants answer it correctly with 26 answering it incorrectly. It appears that a significant amount of participants do not believe that marijuana is most used by college and college-aged individuals ages 18-25. It was found that majority of the sample population does not use marijuana where only 28 participants have used marijuana recreationally, and only four have used it medically. A possible thought behind why a significant amount of participants believe that their population is not the one that uses marijuana most may be because most of them have never used marijuana. There may also be a limitation to this finding. One participant answered "No" when asked if they have ever used marijuana as a treatment for a medical condition, but proceeded to list conditions that they have used it for under the question asking for what conditions. It might have been perceived that the question asking about using marijuana as a treatment was referring to if they used prescribed medical marijuana, which it was not. In future related studies that may ask a similar question to this, making the distinction between prescribed medical marijuana and

using marijuana as a medical treatment might result in clearer answers from the participants.

Conclusion

With college students and college-aged students as a highly effected population, there was a desire to find out their knowledge, attitudes, and beliefs about it to see where they may stand on this topic. It was found that an overwhelming majority of the participants did not perceive their marijuana use to increase upon legalization recreationally in Michigan. The vast majority of the participants knew basic information about marijuana, but a significant amount did not view their own population to be the age group that uses marijuana the most.

Throughout much of the cannabis plant's history, marijuana has been a controversial substance that is now becoming more acceptable to use recreationally and medically in the U.S. Knowing the reasons why marijuana became so taboo and the direction the U.S. is headed with marijuana gives a better understanding to how it affected people in the past and how it affects people now. The laws are slowly becoming reversed from what they started as so long ago. It is a gradual, but progressive change happening that the U.S. has not seen before. With these historical changes, it is a priority for research to be conducted in order to gauge a sense of how helpful marijuana can be for medicinal purposes, how safe it is to use, and what the risks behind using might be. Its Schedule I status and difficulty to obtain licenses to grow cannabis for research purposes needs to end in order for the research to keep up with the societal changes.

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Appendix A

IRB Confirmation Letter

Feb 14, 2019 4:58 PM EST

Addison Jendza
Eastern Michigan University, School HPHP

Re: Exempt - Initial - UHSRC-FY18-19-225 Attitudes, Beliefs, and Changing Trends of Cannabis Usage Among College Students

Dear Addison Jendza:

The Eastern Michigan University Human Subjects Review Committee has rendered the decision below for Attitudes, Beliefs, and Changing Trends of Cannabis Usage Among College Students. You may begin your research

Decision: Exempt

Selected Category: Category 2 (i) Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Renewals: Exempt studies do not need to be renewed. When the project is completed, please contact human.subjects@emich.edu

Modifications: Any plan to alter the study design or any study documents must be reviewed to determine if the Exempt decision changes. You must submit a modification request application in Cayuse IRB and await a decision prior to implementation.

Problems: Any deviations from the study protocol, unanticipated problems, adverse events, subject complaints, or other problems that may affect the risk to human subjects must be reported to the UHSRC. Complete an incident report in Cayuse IRB.

Follow-up: Please contact the UHSRC when your project is complete.

Please contact human.subjects@emich.edu with any questions or concerns.

Sincerely,

Eastern Michigan University Human Subjects Review Committee

Appendix B

Survey

Demographics

Please specify your ethnicity.

White
Hispanic or Latino
Black or African American
Native American or American Indian
Asian / Pacific Islander
Other

What is your current age?

18-20
21-22
23-25

To which gender do you most identify with?

Male
Female
Transgender Male
Transgender Female
Gender Variant/Non-conforming
Prefer not to answer

What is your classification in college?

Freshman
Sophomore
Junior
Senior

Knowledge, Beliefs, and Attitudes

Please circle/highlight the answer that you think best fits each question.

Knowledge

1. Cannabis is the plant that marijuana comes from.

Yes No

2. Cannabidiol (CBD), a component found within marijuana, is used to treat medical conditions.

Yes No

3. Tetrahydrocannabinol (THC) is the component of marijuana that gives the high effect from using marijuana.

Yes No

4. Compared to other groups, marijuana is most used by college students and college-aged students.

Yes No

5. Medical marijuana is most used to treat chronic pain.

Yes No

Beliefs

6. Smoking marijuana is safer for your health than smoking tobacco.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. Medical marijuana use is becoming more socially acceptable.

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. Recreational marijuana use is becoming more socially acceptable.

Strongly Disagree Disagree Neutral Agree Strongly Agree

9. Students at my university are more likely to use marijuana than students at other universities.

Strongly Disagree Disagree Neutral Agree Strongly Agree

10. My peers' use of marijuana has increased since its legalization in Michigan.

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. Marijuana use on my college campus has increased since its recreational legalization in Michigan.

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. How likely do you think it is that marijuana will be federally legalized for medical use?

Very Unlikely Unlikely Undecided Likely Very Likely

13. How likely do you think marijuana will be federally legalized recreationally?

Very Unlikely Unlikely Undecided Likely Very Likely

Attitudes

14. Have you ever used marijuana recreationally?

Yes No

15. Have you ever used marijuana as a treatment for a medical condition?

Yes No

a. If yes, what condition?

b. How effective do you feel it was?

Not at all Somewhat Fairly Effective Completely

16. My recreational use of marijuana has increased since its legalization in Michigan.

Strongly Disagree Disagree Neutral Agree Strongly Agree

17. Did you vote for recreational legalization in Michigan in November 2018?

A. Yes, I voted for the legalization of recreational marijuana.
B. No, I voted against the legalization of recreational marijuana.
C. I did not vote in the November 2018 Michigan election.

18. Since the legalization of recreational marijuana in Michigan, is your attitude toward
marijuana more

Positive Negative The Same