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Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA MERCED

Cannabis in the New Millennium: Current Trends and Future Directions

A dissertation submitted in partial satisfaction of the requirements for the degree

Doctor of Philosophy

in

Public Health

by

Rudiel Justo Fabian Sanchez

2024

Committee in charge:

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2024

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Explanation of Acronyms

<u>Acronym</u>	<u>Explanation</u>
CBA	Cost Benefit Analysis
CDC	Centers for Disease Control and Prevention
CEA	Cost Effectiveness Analysis
CUA	Cost Utility Analysis
BIA	Budget Impact Analysis
HOR	Health Outcomes Research
EM	Economic Modeling
MA	Marginal Analysis
MP	Marginal Probabilities
SIS	Socioeconomic Impact Studies
CER	Comparative Effectiveness Research
HTA	Health Technology Assessment
DCE	Discrete Choice Experiment
HPI	Health Place Index
LA	Los Angeles
BA	Bay Area
SJV	San Joaquin Valley
WTP	Willingness to Pay

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<https://ncpc.ucmerced.edu/resources/covid-19-tobacco-vaping>.

Fabian, R., Brown, P., Gonzalez, M., Yopez, M., Song, A., Cameron, L. (2022). Survey evidence on behavior of smokers and vapers to the introduction of a retail flavor ban on the retail outlets in California.
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Abstract

University of California, Merced

Cannabis in the New Millennium: Current Trends and Future Directions

A dissertation submitted in satisfaction of the requirements for the degree of Doctor of
Philosophy in Public Health

By Rudiel Fabian Sanchez

June 2024

The legalization of cannabis in the state opened several opportunities and challenges across various sectors. Public health officials and stakeholders have raised concerns regarding legal cannabis regulation and steps that need careful consideration. Public health policy makers have, broadly, two approaches that they can use when deciding how to regulate legal cannabis. One approach is to treat cannabis like tobacco and seek to reduce or eliminate its use among the population. An alternative policy approach would be to treat cannabis like alcohol. Rather than try to eliminate its use among the public, the focus of this type of policy would be to mitigate the harms that might emerge from over or inappropriate use. It is unclear what approach will ultimately be adopted for cannabis use. However, from a rational policy perspective, the decision should consider the risks and benefits from cannabis use, as well as the public's perceptions, including tradeoffs that people are willing to make when making decisions about personal cannabis consumption and use among others in the society in which they live. This dissertation aimed to provide information on the risks and benefits, and perceptions of cannabis use to inform the policy discussion. The first chapter examined the relationship between cannabis and alcohol consumption and expands its investigation on identifying the relationship between tobacco and vaping over three-time periods and across three regions in California: Los Angeles, the Bay Area, and Rural San Joaquin Valley. The second chapter, through a discrete choice experiment (DCE) explored the tradeoffs and preferences that individuals are willing to make in a pain treatment decision, while promoting greater access and use of cannabis for medical and/or recreational purposes and the increased risks that can come with greater use. The third and final chapter employed information from the second chapter to perform marginal probabilities that explicitly explored policy options that would encourage cannabis over opioids. The results from this dissertation found that treating cannabis like alcohol will result in a more tolerant approach.

Chapter 1: Introduction

Section 1: Introduction

1.1 Early Cannabis History

Cannabis (marijuana) has a long history of use in the Americas, dating back thousands of years. There is some evidence that Native Americans knew about the psychoactive properties of the cannabis plant (Bonini et al., 2018). They may have cultivated some varieties to produce higher levels of tetrahydrocannabinol (THC), the chemical responsible for marijuana's mind-altering effects, which were used in religious ceremonies and healing practices (Aggarwal et al., 2009). In the early colonial era, hemp (a variety of cannabis) was cultivated for its strong fibers which were used to make textiles, rope, paper, and other products (Piluzza et al., 2013). Hemp farming was encouraged by colonial governments, and laws in some colonies required farmers to grow hemp (Duvall, 2019). The early history of this plant predates the nation's founding and has been influenced by various cultural, economic, and political factors.

1.2 18th and 19th centuries

During the 18th and 19th century cannabis was commonly used in medicine in the U.S. Doctors and pharmacists prescribed cannabis tinctures and extracts to treat a variety of ailments, including pain, inflammation, insomnia, and digestive disorders (Bonini et al., 2018). Cannabis was included in the United States Pharmacopeia and was readily available in pharmacies throughout the country (Gieringer, 1999). While historical records are limited, there is evidence to suggest that cannabis was used recreationally in the United States during this time (Gieringer, 1999). Cannabis smoking became popular among certain groups, although it was not as widespread as it would later become in the

20th century. Overall, during the 18th and 19th centuries, cannabis was an important crop in the United States, valued for its industrial, medicinal, and potentially recreational properties (Piluzza et al., 2013). Its cultivation and use were widespread, and it was considered a valuable part of American agriculture and medicine until changing attitudes and increasing regulation began to shape its perception in the early 20th century (Guy et al., 2004). Concerns about the potential dangers of cannabis use started to emerge, fueled in part by the temperance movement and increasing efforts to regulate drugs and substances perceived as harmful (Mills, 2000).

1.3 Recreational Use and Regulation

The 20th century marked a significant turning point in the history of cannabis in the U.S. characterized by shifting attitudes, changing laws, and the emergence of prohibitions policies (Slaughter, 1988). In early 20th century cannabis was largely unregulated and relative common, its use became increasingly popular, especially among Mexican immigrants and African Americans (Lee, 2013). This led to the first regulations on cannabis, with states such as California and Texas passing laws restricting its use. These laws were often driven by racial prejudice and xenophobia (Lee, 2013). In the early 1930s, fueled by sensationalist media and political agendas, cannabis became demonized as a dangerous drug (Däumichen, 2016). Propaganda against cannabis were all over the country that portrayed cannabis as a gateway to crime, violence, and insanity, contributing to public hysteria and the perception of cannabis as a menace to society. While state governments had banned cannabis by then, the federal government remained hesitant, in part because therapeutic uses of the plant were still being explored and large industries profited from commercial application of hemp fiber, seeds and oil (Däumichen,

2016). By 1937, the federal government passed the Marihuana Tax Act, which effectively banned the cultivation and sale of cannabis by imposing heavy taxes and strict regulations (McAllister, 2019). While the act did not explicitly criminalize cannabis possession, it made it difficult to obtain legally and marked the beginning of federal prohibition of cannabis in the United States.

1.4 War on Drugs

The 1960s and 1970s were pivotal decades in the history of cannabis in the U.S., marked by significant social, cultural, and political changes that shaped attitudes and policies towards the plant. Cannabis use became more widespread during this time, particularly among young people in which cannabis was often used recreationally, as well as for spiritual, creative, and social purposes further normalizing its consumption among the public. According to Farber (2013) this time period saw a resurgence of interest in cannabis as part of the broader counter culture movement. Cannabis became associated with rebellion, experimentation, and alternative lifestyles. There were also efforts to legalize cannabis. Groups such as the National Organization for the Reform of Marijuana Laws (NORML) were founded during this time, advocating for decriminalization or legalization of cannabis, and promoting education about the plant's medicinal benefits (Tramel, 2018). Despite growing calls and efforts for a cannabis reform, the Nixon administration declared a "War on Drugs" in the early 1970s, intensifying law enforcement efforts targeting drug use and trafficking, leading to stricter penalties for cannabis-related offenses (Tramel, 2018). The Controlled Substances Act of 1970 classified cannabis as a Schedule I drug, alongside heroin and lysergic acid diethylamide

(LSD), effectively criminalizing its possession, cultivation, and distribution at the federal level (Mead, 2019).

Despite federal crackdowns, several states started decriminalizing cannabis possessions in the late 1970s (Reuter, 2013). This included reduced penalties for possession of small amount of cannabis to fines rather than imprisonment, which shifted attitudes towards the plant (Reuter, 2013). This time period witnessed the beginning of organized advocacy for the medical use of cannabis. Many organizations pushed for medical legalization, citing its potential benefits in treating conditions such as cancer, chronic pain, and HIV/AIDS (Bonini et al., 2018). Overall, the 60s and 70s were transformative decades in the history of cannabis, characterized by its increased use, federal government crackdowns on drugs use, shaping the trajectory of cannabis policies in the years to come.

1.5 Medical Legalization

Historically, cannabis has been used for medical purposes for centuries. However, its criminalization made it difficult for researchers to study its potential medical benefits. For decades cannabis was stigmatized as a dangerous drug with no legitimate medical use (Lashley & Pollock, 2019). As time progressed, attitudes towards cannabis changed. Patients suffering from medical conditions found relief from cannabis when other treatments failed (Choo et al., 2016; Busse et al., 2018; Aviram et al., 2020). Scientific research into the medical properties of cannabis evolved, new findings showed that cannabis compounds such as cannabinoids (CBD) produce various therapeutic effects (Bonini et al., 2018; Aviram et al., 2020; Pagano et al., 2022). These led to a groundswell of support for medical cannabis legalization.

States began to pass laws allowing for medical cannabis use, starting with California in 1996 (Hasin et al., 2017). As more states followed suit, the federal government's views towards cannabis began to change. In 2013, the U.S. Department of Justice issued the Cole Memorandum, which advised federal prosecutors not to prioritize the enforcement of cannabis laws in states where it had been legalized for medical or recreational use (Bolitho, 2016; Mead, 2019). As more evidence of medical cannabis benefits mounted, even countries around the world began to legalize medical cannabis, for example, Netherlands legalized medical cannabis use in 2000 and Canada legalized it in 2001 (Simons-Morton, 2010).

Today medical cannabis legalization is a complex patchwork of laws and regulations varying across different states of the U.S. As new research findings emerge, its understanding deepens and attitudes continue to evolve, the cannabis use for medical purposes will play an increasingly important role in the healthcare system of the U.S., and even around the world (Aguilar et al., 2018).

1.6 Recreational Legalization

Some argue that the war on drugs was a failure to curb drug use and its disproportionate impact on marginalized communities became apparent (Tonry, 1995; Martin, 1990; Earp et al., 2021). As public opinion towards the allowance of recreational cannabis use continues to change across the country and evidence of the relative safety compared to other substances emerged, calls for legalization got stronger. Others argue that legalization could bring economic benefits, including undermining illegal drug markets, tax revenue, reducing crime, and incarceration rates, all while allowing safer access to the substance (Newman et al., 2021; Kavousi et al., 2021). These are some of

the factors that led some states to take the initial step to legalize cannabis for recreational purposes. In 2012, Colorado and Washington became the first U.S. states to legalize recreational cannabis making a significant turning point on in the drug policy landscape (DISA, 2024). Other states followed suit, and as of this writing 23 states have fully legalized cannabis for both, recreational and medical use (DISA, 2024; Newman et al., 2021).

Recreational cannabis legalization has sparked a booming industry creating economic opportunities, but it has also led to reevaluation of drug policy. On one side, legalization has also open new access door to the substance where those in need of cannabis, perhaps for medical use are no longer required to obtain a medical green card. In California, people are allowed to have up to six cannabis plants at home, for personal use (Belackova et al., 2019). However, challenges remain, legalization also left some concerns about harm reduction, and public health. These has raised concerns about potential health risks, particularly for young people, as well as issues related to impaired driving, workplace safety, and addiction. There are also ongoing debates about the racial and social equity implications of legalization, with calls for policies that address the harms of past drug enforcement practices and ensure that marginalized communities benefit from the legal cannabis industry (Belackova et al., 2019).

Despite the legalization trend at the state level, cannabis remains illegal at the federal level in the United States. However, there have been some notable policy shifts, such as the Obama administration's hands-off approach to states with legalized cannabis and legislative efforts to reform federal cannabis laws, including proposals to provide protections for states with legal cannabis programs (Peoples, 2021). Cannabis policies

have changed and will continue to unfold as people's attitudes change towards the substance. The history of cannabis in the U.S. reflects changing attitudes, social dynamics, political forces, and ongoing efforts to strike a balance between public health, health safety and individual freedoms.

Section 2: Lack of Health Economics Methods Used in Cannabis Research

2.1 Health Economics

The intersection between health economics and the topic of cannabis is a complex and relatively unexplored area with a lack of robust research.

Health economics, as a field, allows for the examination of problems faced in understanding how resources are allocated to maximize health outcomes (Hurley, 2000). By applying economic theories of consumer, producer and social choice health economics aims to understand the behavior of individuals, health care providers, public and private organizations, and governments in decision-making (Johns Hopkins, 2022) .

2.2 Barriers to perform cannabis research

For a long time, cannabis research has been hindered by legal and regulatory constraints. This legal barrier has limited the collection of comprehensive data necessary for detailed economic analysis. Secondly, there is a significant gap in standardized data collection regarding the use of cannabis. Unlike other pharmaceuticals and medical treatments, the variability in cannabis strains, methods of consumption, and dosing makes it challenging to create a uniform dataset. This inconsistency complicates the application of traditional health economics methods, which rely on standardized and comparable data.

Additionally, the long-term health impacts of cannabis use are not yet fully understood. Many studies focus on short-term outcomes, leaving a gap in the literature regarding the chronic effects of cannabis consumption on health and productivity. Especially now that almost half of the U.S. state allow cannabis activities for medical and recreational use (DISA, 2024). Without a clear understanding of these long-term impacts, cost-benefit analyses and economic evaluations remain incomplete. Moreover, the cannabis market operates in a unique economic environment influenced by both legal and illicit activities. This duality introduces complexities in pricing, taxation, and market dynamics that are not typically encountered in other health economics studies. The shadow economy of illegal cannabis trade distorts market data (Parker et al., 2019), making it difficult to accurately assess the economic impact of legalization and regulation.

Furthermore, there is a lack of comprehensive cost-effectiveness studies comparing cannabis to other treatments. There is also a lack of understanding preferences of cannabis use as a pain treatment for physical pain. It is known that cannabis has been widely used for medical purposes, but the extent of its use remains unexplored. While anecdotal evidence and preliminary studies suggest potential therapeutic benefits of cannabis for conditions such as chronic pain, epilepsy, and anxiety (Tambaro et al., 2014; Bonini et al., 2018), rigorous economic evaluations comparing these outcomes to traditional treatments are scarce. This deficit impedes the ability of policymakers to make informed decisions based on cost-effectiveness and budget impact analyses.

Lastly, the stigmatization of cannabis use has historically deterred academic and institutional support for in-depth economic research. Despite changing public perceptions

and increasing legalization, the residual stigma may still influence the allocation of research funding and resources.

The field of health economics has not yet fully embraced the topic of cannabis due to legal barriers, data variability, limited understanding of long-term effects, unique market conditions, lack of comparative cost-effectiveness studies, and historical stigma (Hurley, 2000; Caulkins & Nicosia, 2010). As legalization continues to spread throughout the country and societal views evolve, there is an urgent need for comprehensive health economics research to better inform policy and public health decisions surrounding cannabis use.

Section 3: Types of Health Economics Methods and Cannabis Research

Health economics employs a variety of methods to measure and evaluate the use and impact of cannabis. These methods help in understanding the economic implications, health outcomes, and policy effects associated with cannabis use. Below are some key health economics methods used in this context:

3.1 Cost-Effectiveness Analysis (CEA)

Definition: CEA compares the relative costs and outcomes (effects) of different courses of action (Haas & Hall, 1998; April & Murray, 2017).

Application in Cannabis Research:

- Evaluates the cost per unit of health outcome (e.g., cost per quality-adjusted life year (QALY) gained) for medical cannabis versus other treatments.
- Assesses the value for money of cannabis-based interventions for conditions like chronic pain, epilepsy, or post-traumatic stress disorder PTSD.

3.2 *Cost-Benefit Analysis (CBA)*

Definition: CBA compares the total expected costs of a project or decision against its total expected benefits, both quantified in monetary terms (Mouter et al., 2020).

Application in Cannabis Research:

- Measures the overall economic impact of cannabis legalization by comparing the costs (e.g., regulatory expenses, healthcare costs from potential misuse) with the benefits (e.g., tax revenues, reduced law enforcement costs, medical benefits).

3.3 *Cost-Utility Analysis (CUA)*

Definition: A form of cost-effectiveness analysis that specifically uses QALYs as the measure of benefit (Angevine & Berven, 2014; Petitti, 1999).

Application in Cannabis Research:

- Evaluates the cost per QALY of medical cannabis treatments.
- Helps in determining the most efficient allocation of healthcare resources by comparing cannabis treatments with other medical interventions.

3.4 *Budget Impact Analysis (BIA)*

Definition: BIA assesses the financial impact of adopting a new intervention within a specific budget context, often from the payer's perspective (Garattini & van de Vooren, 2011).

Application in Cannabis Research:

- Estimates the short-term and long-term financial impact on healthcare budgets if medical cannabis is covered by insurance or public health programs.

- Analyzes how changes in cannabis policy might affect state or federal healthcare budgets.

3.5. Health Outcomes Research

Definition: Studies that measure the end results of healthcare services to understand the effectiveness of interventions (Clancy & Eisenberg, 1998).

Application in Cannabis Research:

- Investigates the health outcomes of cannabis use for various medical conditions.
- Compares the effectiveness of cannabis-based treatments to conventional treatments in real-world settings.

3.6. Economic Modeling

Definition: Uses mathematical models to simulate the potential economic impacts of various scenarios (Basu & Martin, 2009).

Application in Cannabis Research:

- Projects the economic effects of different regulatory frameworks for cannabis (e.g., legalization, medical-only use, decriminalization).
- Models the potential public health outcomes and associated costs under different levels of cannabis consumption.

3.7. Market Analysis

Definition: Studies the market dynamics, including supply, demand, pricing, and competition (Barret, 1996).

Application in Cannabis Research:

- Analyzes the cannabis market, including pricing trends, consumer behavior, and market segmentation.
- Assesses the economic impact of illicit versus legal cannabis markets.

3.8. Socioeconomic Impact Studies

Definition: Investigates the broader social and economic effects of cannabis use and policies (Larry et al., 2020).

Application in Cannabis Research:

- Evaluates the impact of cannabis legalization on employment, tax revenue, and social equity.
- Studies the socioeconomic consequences of cannabis use on different population groups.

3.9. Comparative Effectiveness Research (CER)

Definition: Compares the benefits and harms of different interventions and strategies to prevent, diagnose, treat, and monitor health conditions (Sox & Goodman, 2012).

Application in Cannabis Research:

- Compares the effectiveness of cannabis-based treatments against other standard treatments.
- Provides evidence to inform clinical guidelines and policy decisions.

3.10. Health Technology Assessment (HTA)

Definition: Systematic evaluation of the properties, effects, and/or impacts of health technology, aimed at informing decision-making (Sacchini et al., 2009).

Application in Cannabis Research:

- Evaluates medical cannabis as a health technology, considering its safety, efficacy, cost-effectiveness, and broader impact on the healthcare system.
- Informs policy and reimbursement decisions regarding cannabis-based therapies.

3.11 Discreet Choice Experiment (DCE)

Definition: A DCE is a powerful method used in health economics to measure preferences by presenting individuals with a set of hypothetical scenarios or choices and asking them to select their preferred option. These preferences are expressed in probability values that individuals are willing to make in a decision, given its risks and benefits (de Bekker-Grob et al., 2010; Wilson et al., 2023).

Application in Cannabis Research:

- This approach can be particularly useful for understanding preferences related to cannabis use. It helps understand the preferences of individuals regarding various attributes of cannabis products, such as method of consumption, cost, THC/CBD content, legality, and availability.
- This provides a broader picture and detailed information which is valuable for decision-making.

3.12 Willingness-to-Pay (WTP)

Definition: Willingness to pay (WTP) is a key concept in health economics, reflecting the maximum amount an individual is willing to spend to obtain a good or service. In the context of cannabis use, understanding WTP can provide valuable insights into how much consumers value different aspects of cannabis products (Bala et al., 2012).

Application in Cannabis Research:

- Understanding WTP can help design effective public health campaigns by highlighting which attributes are most valued by consumers, thereby targeting key areas for education and harm reduction.
- Policymakers can ensure that cannabis products with high therapeutic value are affordable for medical patients, balancing WTP with accessibility.

Section 4: COVID-19 and Cannabis Consumption

4.1 Barriers to perform research during Covid-19

The COVID-19 pandemic, which dramatically altered daily life and healthcare priorities worldwide, also highlighted significant gaps in research on cannabis consumption. Despite the increased visibility and potential implications of cannabis use during this period, several factors contributed to the scarcity of robust studies in this area.

Firstly, the immediate focus of the global research community shifted to understanding and combating COVID-19 itself. Resources, funding, and research efforts were predominantly directed toward studying the virus, developing vaccines, and understanding its transmission and health impacts. This reallocation of priorities left less capacity for examining other areas, including cannabis consumption.

Secondly, the pandemic disrupted ongoing research activities and data collection efforts. Lockdowns, social distancing measures, and restrictions on non-essential activities limited researchers' ability to conduct fieldwork, clinical trials, and in-person interviews. This disruption was particularly challenging for cannabis research, which often relies on detailed, in-person methodologies to gather comprehensive data on usage patterns, health impacts, and social behaviors.

Furthermore, the pandemic exacerbated existing challenges in cannabis research related to regulatory and legal barriers. In many jurisdictions, cannabis remains a controlled substance, subject to stringent regulations that complicate research efforts (Piomelli, 2019). The additional bureaucratic hurdles introduced by the pandemic, such as delays in approvals and supply chain disruptions, further hindered the ability to initiate or continue cannabis studies (Schuster & Bird, 2021).

The variability in cannabis products and consumption methods also posed significant challenges (Lin et al., 2022). With an increase in home-based consumption during lockdowns, individuals' access to different strains, potencies, and forms of cannabis (e.g., edibles, tinctures, smokables) varied widely (Lin et al., 2022). This diversity makes it difficult to collect standardized data, an issue that was compounded by the pandemic's disruption of regulated supply chains and increased reliance on informal or illicit sources.

Moreover, the mental health impact of the pandemic created a complex backdrop for studying cannabis use. Many individuals turned to cannabis for stress relief, anxiety, and coping with isolation (Lin et al., 2022; Fabelo-Roche et al., 2021) but the relationship between cannabis consumption and mental health is multifaceted and not fully understood. Distinguishing the effects of cannabis from the broader mental health impacts of the pandemic posed a significant methodological challenge for researchers.

The pandemic led to economic hardships and changes in social behaviors that affected cannabis consumption patterns (Compton et al., 2023; Mielau et al., 2023; Zvolensky et al., 2020). Job losses, financial strain, and shifts in daily routines influenced how and why people used cannabis (Zvolensky et al., 2020) creating a dynamic and

rapidly changing landscape that was difficult to study in real-time. Researchers needed longitudinal data to understand these patterns fully, but the pandemic's ongoing nature made it challenging to gather such data promptly.

Also, there was a lack of comprehensive public health messaging and education about cannabis use during the pandemic (Compton et al., 2023; Vidot et al., 2020). With healthcare systems overwhelmed by COVID-19, there was limited capacity to address public education on safe cannabis use, potential risks, and harm reduction strategies. This gap in public health guidance likely influenced consumption behaviors in ways that are not yet fully understood or documented.

The COVID-19 pandemic underscored and exacerbated the existing challenges in cannabis research, leading to a significant gap in our understanding of cannabis consumption during this period. The immediate focus on the pandemic, disruptions to research activities, regulatory barriers, variability in cannabis products, complex mental health interactions, economic impacts, and lack of public health messaging collectively contributed to this research void. Addressing these gaps will require renewed efforts and resources to better understand cannabis use in the context of public health crises and beyond.

Section 5: The importance of performing cannabis research

5.1 Safety and Efficacy of Medical Use

From a public health perspective, conducting research on cannabis is crucial due to its profound implications for population health, safety, and well-being. As cannabis use becomes more widespread and its legal status evolves, understanding its effects is essential for developing informed public health strategies. According to current research,

after its legalization, cannabis is increasingly being used for medicinal purposes to treat conditions such as chronic pain, epilepsy, multiple sclerosis, and nausea associated with chemotherapy, and other chronic diseases (Hameed et al., 2023; Benedict et al., 2022; Maharajan et al., 2019). Rigorous research is essential to understand the safety and efficacy of cannabis for these conditions. This involves determining appropriate dosages, identifying potential side effects, and understanding long-term impacts. Evidence-based research can guide healthcare providers in making informed decisions about prescribing cannabis, ensuring patient safety and effective treatment.

5.2 Understanding Health Impacts

According to previous research, cannabis use does come with some short- and long-term health effects. Short-term effects, such as impaired cognitive and motor functions, can increase the risk of accidents and injuries, particularly in activities such as driving behind the wheel (Kroon et al., 2021; Cuttler et al., 2020; Cohen et al., 2019). Long-term effects might include respiratory issues from smoking, assuming that the substance is inhaled, mental health disorders such as anxiety and depression, and potential impacts on cognitive development, especially among adolescents (Cuttler et al., 2020; Lovell et al., 2020; Boumparis et al., 2019). Cannabis has also potential for abuse and addiction, known as cannabis use disorder (CUD) (Levell et al., 2020). Research is necessary to understand the prevalence and risk factors for CUD, and to develop effective prevention and treatment strategies. This includes studying the interplay between cannabis and other substances, such as alcohol and tobacco, to create comprehensive approaches to substance abuse prevention. Research can also focus on vulnerable populations, such as adolescents, pregnant women, and individuals with pre-existing

mental health conditions. Thorough research can elucidate these health effects, helping to develop public health campaigns that educate the public about potential risks of harm and promote safe use practices.

5.3 Harm Reduction strategies

Research can also aid in developing and implementing harm reduction strategies for cannabis users. This includes safer consumption methods (e.g., vaping vs. smoking), understanding the impact of different cannabis products (e.g., edibles vs. concentrates), and providing education on avoiding dangerous practices like combining cannabis with other drugs. According to previous research, adolescents are more likely to mix cannabis use with other substances (Meier et al., 2019; Knapp et al., 2019; Storholm et al., 2018) which is considered dangerous and sets cannabis as a substitute and for others as a complementary product.

5.4 Public Health Policy and Regulation

Robust scientific research is vital for informing public health policies and regulations regarding cannabis. Policymakers need data on the health effects, both positive and negative of cannabis use to create regulations that protect public health. This includes understanding the impact of legalization on usage rates, particularly among vulnerable populations like adolescents. Research can help design policies that mitigate risks, such as impaired driving and workplace safety concerns, while maximizing potential benefits.

Section 6: The current study

Since the recreational cannabis legalization in the state of California in 2016, the state has witnessed mixed public health outcomes. The primary purpose of legalization

was to create a regulated and controlled framework for the production, distribution, and consumption of cannabis. This regulation aimed to ensure product safety, prevent illegal sales, and protect public health by establishing standards for the cultivation, processing, and sale of cannabis products. By applying a framework, it was also intended to generate significant tax revenue for the state. Proposition 64 stipulated that tax revenues from cannabis would support youth programs, environmental protection, and public safety initiatives (California Prop 64). Additionally, legalization aimed at diminishing the illegal cannabis market, reduce criminal justice cost, and stimulate economic development. While these objectives were designed to create a balanced approach to cannabis legalization that maximizes benefits while addressing potential risks and challenges, current research have found major changes in its use.

Previous studies have found that cannabis use is associated with increase health risks across a range of physical and mental health outcomes (Health & Medicine, 2017; Romero-Sandoval et al., 2018) but they have also identified several medical benefits (Vickery & Finch, 2020; Dhawal kirchof, 2017; Kalant, 2001). As a result there is a concern as how to properly regulate cannabis since consumption comes with risks and benefits, and it is difficult to ascertain the extent to which the increased use by the general population is for medical and/or recreational use.

Identifying the risks and benefits from increased use of cannabis has policy implications moving into the future. Public Health policy makers have, broadly, two approaches that they can use when deciding how to regulate cannabis. One approach is to treat cannabis like tobacco and seek to reduce or eliminate its use among the population. The implications of these approach would be to pursue policies that focus on the negative

aspects of cannabis use and use regulatory and other means (such as taxes) to reduce its use, especially for recreational purposes.

An alternative policy approach would be to treat cannabis like alcohol. Rather than try to eliminate its use among the general public, the focus of this type of policy would be to mitigate the harms that might emerge from over or inappropriate use. This might include more severe penalties for driving under the influence of cannabis, restricting its use among the young (especially children who might be accidentally poisoned), and campaigns targeting people who might be susceptible to depression or suicide (which has been shown to be associated with cannabis use). But unlike the Public Health approach to tobacco (in which a zero-tobacco use policy is the explicit goal), treating cannabis like alcohol would result in a more tolerant approach.

It is unclear what approach will ultimately be adopted for cannabis use. However, from a rational policy perspective, the decision should consider the risks as well as the benefits from cannabis use. In addition, the policy should also consider the public's perceptions, including the tradeoffs that people are willing to make when making decisions about personal cannabis consumption and use among others in the society in which they live.

The work presented here is using principles of health economics to inform how cannabis should be treated as a legalized substance, all while balancing the risks and benefits from its use. This information is critical for researchers and policy makers i) to properly analyze if cannabis is a substitute or complementary good, ii) to identify its preferences for medical use, especially among those who experience physical pain, and iii) evaluate potential cannabis policies.

The first study will examine the relationship between cannabis and alcohol consumption and expands its investigation on identifying the relationship between tobacco and vaping over three-year periods and across three regions in California: Los Angeles, the Bay Area, and Rural San Joaquin Valley. It will investigate the behavior towards single product use as well as the co-use of substances. I will by explicitly investigate the following research questions: i) did the co-use of cannabis and alcohol consumption increase during the Covid-19 pandemic? ii) did the use of alcohol only increase during the pandemic? iii) did dual-use of smoking and vaping increase during the pandemic? iv) did smoking only increased during the pandemic? v) were there differences among rural and urban regions in the co-use and independent use of these substances during the pandemic?

The second study, through a discrete choice experiment (DCE), will investigate the tradeoffs and preferences that individuals are willing to make in a pain treatment decision, while promoting greater access and use of cannabis for medical and/or recreational purposes and the increased risks that can come with greater use. It will also calculate the willingness-to-pay (WTP) by sub-groups which reflects the maximum sum amount of monetary value an individual is willing to pay for a good.

The third study will use information from the second study and will explore potential policy options by performing a marginal analysis (MA). The marginal analysis in this paper will explicitly explores five policy options [i) doubling the price of opioid, ii) emphasizing high addictiveness of opioid, iii) lowering the price of cannabis by half, iv) emphasizing lower side effects of cannabis, and v) emphasizing lower addictiveness of

cannabis] that would encourage cannabis over opioids. It will also calculate the willingness-to-pay by pain levels explored in the second study.

Chapter 2: Assessing the Interplay Between Cannabis and Alcohol During the COVID-19 Pandemic

Introduction

In 1996, California approved Proposition 215, which exempted certain patients and their primary caregivers from criminal liability under state law for the possession and cultivation of cannabis for medical use (State of California-Attorney General Office, 2023). By adopting Proposition 215, California became the first U.S., state in the nation to have legalized medical cannabis. This approach initiated a wave of cannabis legalization reform across the U.S., and abroad (Dolan et al., 2022). In 2012, the states of Washington and Colorado legalized cannabis for recreational use (Hall & Lynskey, 2016). As of February 2024, twenty-four U.S., states (Alaska, Washington, Oregon, California, Colorado, Nevada, Arizona, New Mexico, Montana, Minnesota, Michigan, Ohio, Illinois, Missouri, Virginia, Maryland, Delaware, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, Vermont, and Maine), including Washington D.C., have legalized cannabis for medical and recreational use, and all of them have either followed a ballot initiative or a legislative action approach (Ballotpedia, 2023).

After the recreational cannabis legalization, a trend towards increased cannabis use has been observed (Mennis et al., 2023; Hall & Lynskey, 2016; Cerda et al., 2019) which has raised concern about the abuse of its use and the potential co-use with other

substances such as alcohol (Yurasek et al., 2017). Alcohol use remains the most common drug use in the U.S. and previous studies have found that alcohol abuse leads to substance use disorder (Frances et al., 2013; Witkiewitz & Vowles, 2018; North & Yutzy, 2018). Some studies have claimed that the co-use of these two substances is extremely dangerous and may result in greater risks of harm than the use of either substance alone (SAMHSA, 2017; Dolan et al., 2022; Roche et al., 2019). Additionally, epidemiological studies have indicated that the abuse of both substances tends to be higher among young adults who are more likely to co-use them and drive behind the wheel which exposes them to greater risks of vehicle accidents (Gunn et al., 2019; Cuttler et al., 2018).

Cannabis popularity has grown across states, and its use is very often considered for social activities, especially among young adults (Van Laar et al., 2020) who are more likely to use them simultaneously with alcohol (Gunn et al., 2022; Ramirez et al., 2020; Yurasek et al., 2017; Hasin, D. 2017). Due to its legalization and its increasing availability, this topic has brought up a debate with alcohol consumption, and whether these two substances are complements or substitutes. One side suggests that alcohol and cannabis are used as complements in which liberalization of cannabis laws results in increased use of both cannabis and alcohol (Guttmannova et al., 2015; O'Hara et al., 2016; Williams et al., 2004; Wen et al., 2015), while the other side argues of substitution effect resulting from liberalization of cannabis laws as well (Kadden et al., 2009; Anderson et al., 2013; Pacula & Sevigny, 2013). Both sides have presented substantial evidence, for example, Guttmannova et al. (2015) have found that changes in cannabis use over time are linked to changes in alcohol use which suggests a complementary relationship. Anderson et al. (2013) mention that legalization is associated with sharp

decreases in the price of cannabis and alcohol consumption, which suggests that cannabis and alcohol are substitutes.

The debate remains, but this topic has received increased attention after cannabis recreational legalization in the state and the uncertainty it left at the policy level as to how this substance should be regulated. Two approaches seem to be clear; one is to treat cannabis as tobacco products, which means seeking to reduce or eliminate its use among the population by focusing on negative aspects of cannabis and using regulatory means such as high taxes. The second option is to treat it as alcohol, rather than trying to eliminate its use, the focus would be at the policy level which would be to mitigate the harms from over or inappropriate use. In addition, this would include adopting severe penalties for those who drive under the influence of cannabis and restricting its use among the youth, including campaigns targeting people who might be susceptible to depression or suicide. It is unclear as to what approach the state would ultimately take, but from a rational policy perspective, the decisions should consider the public's opinion, the risks, and benefits.

The purpose of this cross-sectional study is to examine the relationship between cannabis and alcohol consumption over three-year periods and across three regions in California: Los Angeles, the Bay Area, and Rural San Joaquin Valley. It also expands its investigation on identifying the relationship between tobacco and vaping during this time frame. The pandemic time-periods marked a unique opportunity to investigate the matter of substance use behavior as most people remained indoors and isolated from their everyday activities but with plenty of time to potentially consume harmful substances at home.

Methods

Data Sources: Three cross-sectional surveys were conducted during the COVID-19 pandemic in California. The first wave was conducted in June 2020, the second wave in January 2021, and the third wave in February 2022. The survey targeted three regions of the state; Los Angeles, the Bay Area, and the Rural San Joaquin Valley (identified and screened by zip code of the respondent). All surveys were conducted online via Qualtrics. At the end of the survey, participants were compensated at the discretion of the software company, Qualtrics. An Institutional Review Board approved this study.

Measures:

Smoking status: As per previous studies, smokers were identified as having smoked any product (cigarette, cigar, cigarillos, smokeless tobacco, or hookah) more than 100 times in their lifetime and in the last 30 days, and vapers as people who had vaped more than 100 times in their lifetime and in the last 30 days (Syamlal et al., 2014; Braak et al., 2019). Most ‘vapers’ also reported meeting the criteria for being a smoker as well, suggesting that they should be viewed as ‘dual users.’ Based on these responses, participants were categorized into one of three categories: Smoker (does not vape), smoke and vape (dual user), and non-smoker/vaper.

Alcohol user: The same questions were used to identify this group, having used alcohol more than 100 times in their lifetime in the last 30 days.

Cannabis and Alcohol user: This group was identified as having used cannabis and alcohol more than 100 times in their lifetime and in the last 30 days. A non-user group of either substance was also created from their responses.

Region: Participants were categorized as living in one of three regions based on their zip code: Los Angeles, Bay Area, and Rural San Joaquin Valley.

Demographics: All participants were asked about their age, gender, race/ethnicity, self-reported political views (liberal to conservative), and education level.

Health literacy: From prior studies (Cameron et al., 2023; Morris et al., 2006; Chew et al., 2004), participants were assessed based on a five-point scale on how confident they feel filling out medical forms, reading and understanding medical instructions and procedures, and their confidence in helping others understand instructions and other medical information.

Overall threat to COVID-19: Included the level of threat that they thought COVID-19 posed to them personally, to their family and friends, and to their local community.

Health Place Index Score: Comprises indicators that represent community health conditions. All scores were linked by the participant's zip code.

Analysis: Zip codes were used to identify and categorize participants by region. Descriptive statistics were used to identify substance use by participants subgroups and behavior changed before the pandemic and at time of survey. Logistic regression analyses were performed to identify the relationship of cannabis and alcohol, smoking and vaping across time periods and region. These regressions also identified predictors of substance use during the Covid-19 pandemic. All analyses were performed in STATA 18.

Results

Demographics of sample: As shown in Table 1, among the 1,962 participants who completed the surveys, 49% were male, 50% were Non-Hispanic White, 60% had less than a 4-year degree, 27% reported to be extremely conservative, and the average age was 43.96 years. From the entire sample, 36% were non-users of cannabis and alcohol (n=693), 26% reported to be co-users of cannabis and alcohol (n=519), and 38% claimed to use alcohol only (n=750). For the rest of the groups, 70% were non-users of smoking and vaping (n=1,374), 21% reported to be dual users of smoking and vaping (n=410), and 9% reported to smoke tobacco only (n=178). It is noteworthy to mention that males dominated substance use across all groups.

Table 1: Demographics by group (%)

	Total (N=1,962)	Alcohol Only (N=750)	Cannabis & Alcohol (N=519)	Non-Users of Cannabis & Alcohol (N=693)	Smoking Only (N=178)	Smoking & Vaping (N=410)	Non-Users of Smoking & Vaping (N=1,374)
Sex/Gender							
Male	49%	53%	47%	46%	46%	56%	47%
Female	43%	44%	42%	44%	45%	34%	46%
Other	8%	3%	11%	10%	9%	10%	7%
Race/Ethnicity							
White	50%	54%	47%	48%	47%	45%	52%
Hispanic	38%	37%	43%	38%	48%	43%	36%
Asian	7%	7%	4%	10%	3%	6%	8%
Black	3%	2%	6%	2%	2%	6%	2%
Other	2%	--	--	2%	--	--	2%
Education							
<4-year degree	60%	49%	68%	65%	74%	63%	57%
≥4-year degree	40%	51%	32%	35%	26%	37%	43%
Conservatism							
Extremely	27%	28%	29%	24%	22%	36%	25%
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age (in years)	43.96 (13.31)	45.90 (13.48)	32.09(12.57)	44.24 (13.26)	35.25 (12.77)	26.96 (8.98)	46.49 (12.70)

Table 2 reports the behaviors of substance use before and during the pandemic by group, survey year, and regions. Overall, participants were asked about their prior use of substances (pre-pandemic) in which 38% (n=744) reported having used alcohol only, 29% (n=579) reported co-used cannabis and alcohol, 33% (n=639) were non-users of either product (cannabis nor alcohol), 8% (n=159) smoked tobacco only, 23% (n=441) claimed to smoke and vape (dual-use), and 69% (n=1,362) were non-smokers nor vapers. As for their consumption during the pandemic, 38% (n=750) said to have used alcohol only, 26% (n=519) reported to co-use cannabis and alcohol, 36% (n=693) were non-users of either product (cannabis nor alcohol), 9% (n=178) smoked only, 21% (n=410) reported to smoke and vape (dual-use), and 70% (n=1,374) were non-smokers nor vapers. Participants were categorized by region, among alcohol users only the majority reported being from the Bay Area (45%), among co-users of cannabis and alcohol, most were from the Los Angeles region (31%), followed by rural San Joaquin Valley (29%). For tobacco smokers only, most reported being from the rural San Joaquin Valley (12%), and most dual users of smoking and vaping reported being from Los Angeles region (27%). In this table you can also find reported frequencies by 'survey-year' and group. Even though this is not a strong measure of consumption behavior change, the frequency reported varied across survey years.

Multiple logistic regressions were used to assess reported predictors of substances used by groups, and all groups can be found in Table 3. In the first group, the co-use of alcohol and cannabis or cannabis only or alcohol only were compared against non-users of alcohol and cannabis. Among all the predictors included in the model, there were statistically significant associations with being Asian, having a higher education, but health literate, considering COVID-19 a higher threat, an interaction between age and survey year 2021, and including people living with comorbidities. The model reports an increase in the co-use of these substances but only in the survey year 2021 ($\beta = 0.60, P < 0.001$). Table 4 reports the same group but across regions. Based on the results, there was a statistically significant increase in the co-use of these substances in Los Angeles ($\beta = 0.96, P < 0.001$) and the San Joaquin Valley region ($\beta = 0.54, P < 0.05$).

Table 3: Logistic Regression by Group

Independent Variables	Alcohol and Cannabis or Cannabis Only or Alcohol Only VS Non-Alcohol and Non-Cannabis (N=1,962)	Alcohol Use Only VS Alcohol and Cannabis or Cannabis Only (N=1,269)	Smoking and Vaping or Vaping Only or Smoking Only VS Non-Smoking and Non-Vaping (N=1,962)	Smoking Only VS Smoking and Vaping or Vaping Only (N=588)	Substance Use Score (N=1,962)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	0.04	0.75***	-0.63***	0.82***	-0.39***
	0.13	0.17	0.14	0.23	0.07
male	0.03	-0.07	0.42***	-0.16	0.13*
	0.11	0.14	0.12	0.23	0.06
asian	-0.46*	-0.09	0.36	-0.44	-0.04
	0.20	0.32	0.27	0.57	0.11
black	0.34	-0.85*	0.41	-1.17	0.47**
	0.29	0.38	0.31	0.66	0.16
hispanic	0.34	-0.10	1.02***	-0.66	0.29
	0.27	0.37	0.31	0.62	0.15
education	0.52***	0.15	0.34*	-1.14***	0.32***
	0.13	0.19	0.17	0.33	0.07
healthliteracy	0.29**	-0.87***	0.96***	-0.95***	0.53***
	0.11	0.14	0.12	0.21	0.06
threat_covid	0.95***	0.60	0.26	-1.57	0.31
	0.30	0.53	0.42	0.85	0.16

rural	-0.10	-0.02	-0.04	0.22	-0.13*
	0.11	0.16	0.13	0.23	0.06
conservative	0.15	0.44*	0.10	-1.12***	0.15*
	0.13	0.17	0.14	0.27	0.07
surveyyear21	0.60***	-1.04***	1.87***	-0.12	0.79***
	0.16	0.21	0.20	0.41	0.09
surveyyear22	0.70	-1.61**	2.61***	-1.15	1.18***
	0.37	0.51	0.40	0.70	0.21
ageXsurveyyear21	-0.53*	1.53***	-2.46***	-0.06	-0.85***
	0.21	0.34	0.37	0.73	0.11
ageXsurveyyear22	-0.42	1.43***	-2.12***	1.35	-0.91***
	0.25	0.35	0.34	0.74	0.14
hispanicXsurveyyear21	-0.26	-0.68	-1.04**	0.25	-0.22
	0.37	0.50	0.40	0.73	0.20
hispanicXsurveyyear22	-0.25	0.17	-1.42**	1.39	-0.52*
	0.45	0.61	0.48	0.87	0.26
HPIScore	0.14	0.54***	-0.37***	-0.06	-0.13*
	0.10	0.13	0.11	0.19	0.06
comorbidity	0.55***	-0.21	0.36**	0.01	0.31***
	0.12	0.16	0.14	0.24	0.07
arthritis	0.14	-0.31	0.42**	0.27	0.20**
	0.14	0.18	0.16	0.27	0.07

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4: Alcohol and Cannabis or Cannabis Only or Alcohol Only VS Non-Alcohol and Non-Cannabis by Region

Independent Variables	All sample (N=1,962)	Los Angeles (N=644)	Bay Area (N=619)	San Joaquin Valley (N=615)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	0.04 0.13	0.06 0.25	0.32 0.25	-0.12 0.21
male	0.03 0.11	0.06 0.19	0.05 0.19	-0.14 0.19
asian	-0.46* 0.20	0.11 0.37	-0.95** 0.31	-0.22 0.42
black	0.34 0.29	0.20 0.55	0.69 0.60	0.15 0.45
hispanic	0.34 0.27	0.93 0.72	0.03 0.65	0.20 0.36
education	0.52*** 0.13	0.63** 0.24	0.64** 0.24	0.24 0.23
healthliteracy	0.29** 0.11	0.47* 0.21	0.25 0.20	0.11 0.19
threat_covid	0.95*** 0.30	0.46 0.52	1.01 0.59	1.22* 0.51
rural	-0.10 0.11	- -	- -	- -
conservative	0.15 0.13	0.11 0.23	-0.07 0.25	0.30 0.21
surveyyear21	0.60*** 0.16	0.96*** 0.29	0.32 0.30	0.54* 0.28
surveyyear22	0.70 0.37	0.94 0.61	14.27 443.54	0.23 0.56
ageXsurveyyear21	-0.53* 0.21	-1.34*** 0.42	-0.17 0.34	-0.20 0.38
ageXsurveyyear22	-0.42 0.25	-0.58 0.45	-0.28 0.42	-0.55 0.50
hispanicXsurveyyear21	-0.26 0.37	-0.87 0.87	-0.23 0.85	-0.15 0.52
hispanicXsurveyyear22	-0.25 0.45	-0.67 0.93	-13.40 443.54	0.06 0.65
HPIScore	0.14 0.10	0.30 0.19	0.14 0.20	0.11 0.18
comorbidity	0.55***	0.67***	0.45*	0.54**

	0.12	0.21	0.21	0.21
arthritis	0.14	0.46	-0.26	0.20
	0.14	0.26	0.24	0.24

* $p < .05$; ** $p < .01$; *** $p < .001$

In the second group, results on the use of alcohol only compared against co-users of alcohol and cannabis or cannabis only can be found. According to the model, nine predictors were statistically significant, African American, older adults with lower health literacy but with higher conservative values living in zip codes with higher HPI scores were associated with alcohol use only, as well as the interaction between age and survey years 2021 and 2022. Overall, the results suggest that alcohol use decreased in 2021 ($\beta = -1.04$, $P < 0.001$) and 2022 ($\beta = -1.61$, $P < 0.05$). The comparison across regions can be found in Table 5, in which Los Angeles ($\beta = -1.48$ & $\beta = -4.20$, $P < 0.001$) and Bay Area ($\beta = -1.35$ & $\beta = -1.63$, $P < 0.01$) had similar predictions of a decrease in alcohol consumption in 2021 and 2022.

Table 5: Alcohol Use Only VS Alcohol and Cannabis or Cannabis Only by Region

Independent Variables	All sample (N=1,269)	Los Angeles (N=429)	Bay Area (N=405)	San Joaquin Valley (N=379)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	0.75*** 0.17	0.40 0.30	0.65* 0.32	1.10*** 0.30
male	-0.07 0.14	0.12 0.26	-0.22 0.28	-0.03 0.27
asian	-0.09 0.32	-0.09 0.54	-0.83 0.56	0.75 0.68
black	-0.85* 0.38	-0.88 0.71	-1.31 0.69	-0.73 0.68
hispanic	-0.10 0.37	-0.69 0.79	-0.37 1.03	0.25 0.53

education	0.15	0.08	0.11	0.33
	0.19	0.36	0.41	0.32
healthliteracy	-0.87***	-1.28***	-1.09***	-0.21
	0.14	0.25	0.26	0.27
threat_covid	0.60	0.32	-0.68	1.17
	0.53	1.00	1.40	0.92
rural	-0.02	-	-	-
	0.16	-	-	-
conservative	0.44*	0.09	0.75*	0.50
	0.17	0.32	0.36	0.29
surveyyear21	-1.04***	-1.48***	-1.35**	-0.52
	0.21	0.36	0.45	0.38
surveyyear22	-1.61**	-4.20***	-1.63**	-0.63
	0.51	1.31	1.09	0.80
ageXsurveyyear21	1.53***	3.07**	1.27*	1.01
	0.34	1.08	0.50	0.58
ageXsurveyyear22	1.43***	2.35***	1.13*	1.45
	0.35	0.70	0.56	0.77
hispanicXsurveyyear21	-0.68	0.36	-0.24	-1.64*
	0.50	0.99	1.27	0.77
hispanicXsurveyyear22	0.17	3.32*	0.04	-1.23
	0.61	1.48	1.42	0.92
HPIScore	0.54***	0.56*	0.52	0.67*
	0.13	0.24	0.27	0.26
comorbidity	-0.21	-0.37	-0.44	-0.05
	0.16	0.28	0.31	0.30
arthritis	-0.31	-0.58	-0.25	-0.17
	0.18	0.32	0.35	0.32

* $p < .05$; ** $p < .01$; *** $p < .001$

A model on the dual use of smoking and vaping or vaping only or smoking only compared against non-users of smoking and vaping was also performed. The results suggest that young age, Hispanic, male, educated, but health literate, living in zip codes with lower HPI scores, with comorbidities and arthritis were associated. In addition, the interaction between age and survey years 2021 and 2022, and the interaction between Hispanic and the same survey years came out significant as well. The dual use of

smoking and vaping increased throughout 2021 ($\beta = 1.87, P < 0.001$) and 2022 ($\beta = 2.61, P < 0.001$). Table 6 has the results across regions, in which an increase of these substances can be observed in all regions and in both years. Los Angeles ($\beta = 2.43$ & $\beta = 3.47, P < 0.001$), Bay Area ($\beta = 1.98$ & $\beta = 3.36, P < 0.001$), and San Joaquin Valley ($\beta = 1.38$ & $\beta = 1.90, P < 0.001$).

Table 6: Smoking and Vaping or Vaping Only or Smoking Only VS Non-Smoking and Non-Vaping by Region

Independent Variables	All sample (N=1,962)	Los Angeles (N=644)	Bay Area (N=619)	San Joaquin Valley (N=615)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	-0.63*** 0.14	-0.58* 0.26	-0.07 0.27	-0.71*** 0.22
male	0.42*** 0.12	0.50* 0.23	0.48* 0.24	0.19 0.21
asian	0.36 0.27	0.48 0.49	0.53 0.49	0.34 0.52
black	0.41 0.31	0.24 0.74	-0.06 0.59	1.11* 0.49
hispanic	1.02*** 0.31	1.51* 0.68	0.99 0.89	0.81 0.43
education	0.34* 0.17	0.71* 0.33	0.18 0.37	-0.06 0.27
healthliteracy	0.96*** 0.12	1.23*** 0.23	1.15*** 0.24	0.64*** 0.20
threat_covid	0.26 0.42	-0.47 0.71	0.49 0.95	0.51 0.69
rural	-0.04 0.13	- -	- -	- -
conservative	0.10 0.14	0.67* 0.26	0.06 0.29	-0.21 0.24
surveyyear21	1.87*** 0.20	2.43*** 0.34	1.98*** 0.43	1.38*** 0.34
surveyyear22	2.61*** 0.40	3.47*** 0.72	3.36*** 1.03	1.90*** 0.60
ageXsurveyyear21	-2.46*** 0.37	-3.09*** 0.78	-2.31*** 0.57	-1.95** 0.64

ageXsuryear22	-2.12*** 0.34	-4.38*** 1.07	-2.63*** 0.65	-0.76 0.55
hispanicXsuryear21	-1.04** 0.40	-1.53 0.82	-1.37 1.10	-0.63 0.57
hispanicXsuryear22	-1.42** 0.48	-2.30* 0.93	-1.88 1.30	-1.00 0.69
HPIScore	-0.37*** 0.11	-0.35 0.21	-0.39 0.23	-0.25 0.20
comorbidity	0.36** 0.14	0.67** 0.24	0.35 0.27	0.19 0.23
arthritis	0.42** 0.16	0.57 0.31	0.03 0.33	0.53* 0.27

* $p < .05$; ** $p < .01$; *** $p < .001$

In the fourth group, results on smoking tobacco products only compared against smoking and vaping or vaping only can be found. It is noteworthy to mention that most smokers also tend to vape which suggests that they should be seen as dual users. The statistically significant variables associated were older adults, less educated, health literate, and with conservative values. In addition, the results indicate a decrease in smoking tobacco products but not statistically significant in either year. Similar findings were observed across regions, and they were all presented in Table 7.

Table 7: Smoking Only VS Smoking and Vaping or Vaping Only by Region

Independent Variables	All sample (N=588)	Los Angeles (N=226)	Bay Area (N=140)	San Joaquin Valley (N=199)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	0.82*** 0.23	0.08 0.06	0.09 0.09	0.26*** 0.07
male	-0.16 0.23	-0.04 0.06	0.00 0.09	-0.03 0.07
asian	-0.44 0.57	0.02 0.17	-0.14 0.20	-0.10 0.18
black	-1.17 0.66	-0.14 0.19	-0.11 0.20	-0.16 0.13

hispanic	-0.66	-0.03	-0.43	-0.09
	0.62	0.21	0.39	0.15
education	-1.14***	-0.06	-0.29	-0.32**
	0.33	0.10	0.16	0.10
healthliteracy	-0.95***	-0.23***	-0.21*	-0.06
	0.21	0.06	0.08	0.07
threat_covid	-1.57	-0.11	-0.48	-0.59*
	0.85	0.25	0.33	0.27
rural	0.22	-	-	-
	0.23	-	-	-
conservative	-1.12***	-0.31***	-0.22*	-0.17*
	0.27	0.08	0.10	0.08
surveyyear21	-0.12	-0.08	-0.02	-0.04
	0.41	0.12	0.18	0.12
surveyyear22	-1.15	-0.10	-0.28	-0.32
	0.70	0.19	0.30	0.19
ageXsurveyyear21	-0.06	0.21	-0.32	0.11
	0.73	0.29	0.24	0.26
ageXsurveyyear22	1.35	0.24	0.57*	0.36
	0.74	0.49	0.27	0.20
hispanicXsurveyyear21	0.25	-0.03	0.47	0.04
	0.73	0.23	0.43	0.19
hispanicXsurveyyear22	1.39	0.29	0.53	0.22
	0.87	0.26	0.45	0.22
HPIScore	-0.06	-0.04	0.02	0.05
	0.19	0.05	0.07	0.07
comorbidity	0.01	0.04	-0.07	0.01
	0.24	0.07	0.09	0.07
arthritis	0.27	-0.05	0.14	0.10
	0.27	0.07	0.11	0.09

* $p < .05$; ** $p < .01$; *** $p < .001$

Lastly, a group score was created to determine the likelihood of using one or more substances. In this predictor, all substances' scores were added, and the results were also reported in Table 3. Statistically significant associations were being young, African American, male, educated but health literate, in rural areas, with conservative values, from zip codes with lower HPI scores, living with comorbidities and arthritis. As scores

increased, so did in survey years 2021 ($\beta = 0.79, P < 0.001$) and 2022 ($\beta = 1.18, P < 0.01$). There were also statistically significant associations between age and survey year 2021 and 2022, and the interaction between Hispanics and survey 2022 only. The model also suggested similar results across regions in both years (Table 8), Los Angeles ($\beta = 1.19$ & $\beta = 1.59, P < 0.001$), Bay Area ($\beta = 0.60$ & $\beta = 1.84, P < 0.001$), and San Joaquin Valley ($\beta = 0.58$ & $\beta = 0.80, P < 0.001$).

Table 8: Substance Use Score by Region

Independent Variables	All sample (N=1,962)	Los Angeles (N=644)	Bay Area (N=619)	San Joaquin Valley (N=615)
	Coefficient SE	Coefficient SE	Coefficient SE	Coefficient SE
age	-0.39*** 0.07	-0.30* 0.13	-0.11 0.13	-0.51*** 0.12
male	0.13* 0.06	0.12 0.11	0.12 0.10	0.01 0.11
asian	-0.04 0.11	0.11 0.21	-0.16 0.16	0.05 0.25
black	0.47** 0.16	0.33 0.30	0.42 0.27	0.74*** 0.26
hispanic	0.29 0.15	0.63 0.38	0.16 0.34	0.20 0.21
education	0.32*** 0.07	0.35 0.14	0.27* 0.13	0.19 0.13
healthliteracy	0.53*** 0.06	0.71*** 0.11	0.54*** 0.10	0.28* 0.11
threat_covid	0.31 0.16	0.02 0.30	0.42 0.31	0.42 0.28
rural	-0.13* 0.06	- -	- -	
conservative	0.15* 0.07	0.35** 0.13	0.04 0.13	0.09 0.12
surveyyear21	0.79*** 0.09	1.19*** 0.15	0.60*** 0.15	0.58*** 0.16
surveyyear22	1.18*** 0.21	1.59*** 0.37	1.84*** 0.48	0.80* 0.33
ageXsurveyyear21	-0.85***	-1.47***	-0.58***	-0.55*

	0.11	0.24	0.17	0.22
ageXsuryear22	-0.91***	-1.32***	-0.87***	-0.65*
	0.14	0.25	0.21	0.30
hispanicXsuryear21	-0.22	-0.54	-0.34	-0.05
	0.20	0.45	0.44	0.30
hispanicXsuryear22	-0.52*	-1.10*	-1.07	-0.17
	0.26	0.52	0.58	0.38
HPIScore	-0.13*	-0.06	-0.13	-0.12
	0.06	0.10	0.10	0.11
comorbidity	0.31***	0.41***	0.28*	0.25*
	0.07	0.12	0.11	0.12
arthritis	0.20**	0.34*	-0.04	0.23
	0.07	0.13	0.12	0.14

* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

The purpose of this study was to identify the relationship between cannabis and alcohol, as well as between smoking and vaping during the first three years of the Covid-19 pandemic. This was accomplished by looking at substance use in 2020, 2021 and 2022. The study was also concentrated among three regions: Los Angeles, Bay Area, and rural San Joaquin Valley. Groups of substance use were generated independently and compared against one another. Given these parameters, the results from this study suggest that there are significant differences regarding substance use, in this case the co-use of substances increased, and single product use decreased during pandemic time-periods.

Independently, cannabis and alcohol are considered two of the most commonly use substances in the country and in state of California (CHCF, 2022; Yurasek, A., Aston, E., & Metrik, J., 2017). The findings in this paper suggest that cannabis and alcohol behaved as complementary products. This means that participants were more likely to co-use them and its co-use consumption increased across survey years suggesting a positive

relationship between these two substances. Previous studies have found similar results, for example O'Hara et al. (2016) looked at alcohol and cannabis use among college students and found that students reported to co-use both substances approximately once a month at both, between and within levels. Williams et al. (2004) reported similar findings among a similar sample of college students, price adjustments of cannabis products showed to be negative related to both alcohol and cannabis participation.

To continue, we observed a similar trend across regions, which has not been reported before. When people co-used the substances, an increase was also observed, reinforcing the complementary existence between them. However, independent alcohol use showed the opposite in the model, having decreased across survey years. Addition to the findings, males reported to consume alcohol more frequently than its counter parts, including the co-use of cannabis and alcohol. Substance use, in particular cannabis and alcohol, is generally associated with males; indeed, the significance of this relationship remains among this group, however, females are trailing the same path (White A. 2020; White et al., 2015; USDHHS, 2023; Erol, A., & Karpyak, V.M., 2015) where the consumption of cannabis has more than doubled among them. Even though this paper did not investigate gender differences, overall, its findings indicate that while the use of alcohol alone is on the decline, the co-use of cannabis and alcohol is on the rise. Some studies in California have claimed that recreational legalization has increased the risk of alcohol and cannabis use among adolescents (Paschall et al., 2022) who are more likely to engage in substance use for social events.

This study also investigated the relationship between tobacco and vaping. In the sample, most vapers reported meeting the criteria for being a smoker as well, suggesting

that they should be viewed as dual users. While the results indicate a decrease in smoking only, dual using increased, suggesting that these two products have a complement relationship between them. This is consistent with what has been found by Cotti et al. (2018) and Aboukk and Adams (2017). These results should be interpreted with caution. The complement effect analyzed here may have potentially been driven by the fact that vaping and tobacco smoking is common among young people (HHS, 2016). Vaping alone has been associated with younger adults and it has been reported that it is an easier transition for them to combustible tobacco after being hooked on vaping (O'Brien et al., 2021; Berry et al., 2019; Agaku, I., 2017). A result of that is nicotine addiction which leads to the administration of these substances through different methods. There is an urgent need for better evaluation and intervention in the dual use of tobacco and vaping to predict and mitigate the possible health risks, particularly because the potential risks remain uncertain and partially undefined (Hernandez-Perez et al., 2023).

Limitations

There are a few limitations in this paper. First, the cost of substances was not available, changes in price could influence the demand of these substances and help deliver sturdy results. Second, this study had relatively small convenient sample of two groups; cannabis users only, and vapers only, a large sample of each group could have provided power for independent group analysis. Third, this was a cross-sectional study, which collected data from the population at specific points in time but not from the same individuals. Further research is needed in this area, and the limitations found in this paper should be considered.

Conclusion

Understanding the association between cannabis and alcohol use is of critical public health and policy importance. This study used cross sectional data to investigate the relationship between these two substances, as well as smoking and vaping across regions of California during the first three-years of the Covid-19 pandemic. The findings provide insight into substance use behavior during a critical time in the world. In addition, it also contributes to the increasing concern of recreational cannabis legalization and its unclear approach as to how should be regulated. The results support a complement relationship between cannabis and alcohol. The same relationship was observed between smoking and vaping. This suggest that these substances, in particular, cannabis and alcohol, might fall into the same category. Further research is needed to investigate the cross-price elasticities of cannabis and alcohol, and between smoking and vaping, and to examine the potential differences among subpopulations. Local and state interventions are also essential for stronger regulations toward substance use in order to prevent dangerous consumption among young adults, especially among those who may be complementing these products.

Chapter 3: Exploring Preferences of Pain Treatments Among Older Adults in California: A Discreet Choice Experiment

Introduction

Pain is an unpleasant and emotional experience associated with actual or potential tissue damage (Treede, 2018). It is also one of the most common reasons adults seek medical care in the U.S. (Schappert & Burt, 2006). According to the Centers for Disease Control and Prevention (CDC), approximately one in five U.S. adults experienced chronic pain in 2019, and one in fourteen experienced “high impact” chronic pain in the same year. As people age, the incidence of physical pain increases, and every year, millions of Americans experience persistent pain. Gaskin & Reichard (2012) found that in 2008, the total cost attributable to pain in the U.S. ranged from \$560 to \$635 billion. Physical pain, in general, is costly and challenging to treat (Boehnke et al., 2019).

Due to the high expenses of pain treatments, many individuals living with pain have turned to cannabis as an alternative form of pain management (Shi et al., 2019). There is evidence that cannabis contains medical benefits and has been used to treat conditions such as chronic pain, multiple sclerosis, nausea, vomiting, cancer, posttraumatic disorder, epilepsy, and cachexia (National Academies, 2017), to name a few. However, recreational cannabis use has been associated with motor vehicle accidents, psychosis, depression, suicide, and schizophrenia (CDC, 2023).

Cannabis remains prohibited at the federal level in the U.S., but despite this prohibition, 24 states have legalized it for medical and recreational use (Ballotpedia, 2023). California became the first state to have legalized cannabis for medical use in 1996 and the sixth state to have adopted recreational legalization in 2016 (Orenstein, D.,

& Glantz, S., 2019). Since its full implementation, cannabis has become widely available in the state, and its retail market expanded rapidly across cities and counties that have allowed it. Including easy access to cannabis for any type of use.

Previous studies have reported that people with pain conditions have turned to cannabis, but some of them have investigated specific conditions in which cannabis has been used before, low back pain or cancer patients (Shi et al., 2019; Wilson et al., 2023). There is limited evidence as to what extent older adults living with pain are willing to trade pharmacotherapy drugs for cannabis. Through a discrete choice experiment (DCE), this study intends to explore the tradeoffs and preferences that older adults are willing to make between promoting greater access and use of cannabis for medical and/or recreational purposes and the increased risks that can come with greater use. DCE measures patient preferences expressed in probability values that individuals are willing to make in a treatment decision, given its risks and benefits (Wilson et al., 2023).

Methods

Development of attributes and levels

A two-stage process was followed to develop potential attributes. Phase one included a literature review of studies evaluating pain management, pain measurements, and pain treatment options. After careful consideration, 9 potential attributes were derived from literature and later consulted with an expert in the field. The levels for each attribute were then selected and defined, resulting in 3-5 levels per attribute. The 9 attributes were then used in phase two of the process, which consisted of one-on-one interviews with 10 participants. Invitation letters for recruitment were created and distributed in the nearby downtown cannabis dispensary. After a few responses, a

snowball sampling method was used in the process of reaching out to more participants willing to provide their personal experience with physical pain, and their use or knowledge of medical cannabis. It is important to note that participants did not need to have any prior experience with cannabis use. Those interested were emailed an invitation letter and a consent form (see Appendix). Most of the participants were Hispanic females, half of them were over 60 years old, and the other half were between 18 and 35 years of age (Table 1).

Table 1: Demographic Characteristics of Interviewees

Interviewee	Sex/Gender	Race/Ethnicity	Age (years)
1	Female	Hispanic	62
2	Female	Hispanic	60
3	Female	White	66
4	Female	White	69
5	Male	White	35
6	Female	White	66
7	Female	Hispanic	34
8	Female	Hispanic	18
9	Male	Hispanic	35
10	Male	Hispanic	29

A saturation point was reached after 10 interviews. All participants were compensated with a \$30 Amazon gift card upon completion of the interview. Each recorded interview was cleaned and coded in the Dedoose software program. The interview process was done to have a better understanding of which of the 9 attributes were the most and least important to the participants who have or have not experienced some type of physical pain in their life, resulting in 7 final attributes. The 7 final attributes are as follows: 1)

type of pain treatment, 2) amount of pain before pain treatment, 3) amount of pain after pain treatment 4) access/ease of getting pain treatments, 5) addictiveness, 6) side effects, 7) cost (Table 2).

Table 2: Attributes and Levels

Attributes	Levels
Type of pain treatment	Over the counter medication Medical cannabis Opioid None
Amount of pain <u>before</u> pain treatment	Mild (1 to 3 out of 10 on the pain scale) Moderate (4 to 7 out of 10 on the pain scale) High (8 to 10 out of 10 on the pain scale)
Amount of pain <u>after</u> pain treatment	None (0 out of 10 on the pain scale) Mild (1 to 3 out of 10 on the pain scale) Moderate (4 to 7 out of 10 on the pain scale) High (8 to 10 out of 10 on the pain scale)
Access/ease of getting pain treatments	None Easy access Moderately difficult to access Hard to access
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings Moderately addictive/would experience some withdraws or cravings when trying to quit Highly addictive/would be very difficult to quit/strong withdrawals and cravings
Side effects	Not at all or minimal (0% chance) Small probability of getting side effects (20% chance) Moderate probability of getting side effects (60% chance) High probability of getting side effects (90% chance)
Cost	No cost (free) \$2.00 per treatment/\$6.00 per day \$5.00 per treatment/\$15.00 per day \$15.00 per treatment/\$45.00 per day \$25.00 per treatment/\$75.00 per day

After final selection of the attributes and levels, the DCE choices were designed and validated using JMP Pro 17 software (SAS Institute Inc.). SAS is capable of generating designs that are highly efficient (de Bekker-Grob et al., 2010). A full profile design was generated and randomized with all attributes and levels inserted accordingly, as seen on Table 2, the 7 attributes with 3-5 levels per attribute. After multiple test designs with a targeted sample size of 300, the best relative design was chosen based on the efficiency score (D-efficiency) of 96%, resulting in 8 versions and 16 choice sets per version.

Each choice set contained three choice options, the third choice being a “none-treatment” option and was included with the intention to have it as an alternative for no treatment preference. However, values (levels) were given to this option and all levels remained the same across all versions and choice sets within them, except under the “amount of pain” attribute. While carefully evaluating the third-choice option, there was a high probability that participants will always choose ‘no pain’ after pain treatment if they were given this level under Choice 3. Therefore, a decision was made to keep the ‘same’ amount of pain before and after pain treatment based on the randomization from Choice 1 and 2. For example, if the “amount of pain before pain treatment” was *high* under Choice 1, then it remained *high* on Choice 2 and *high* on Choice 3, but it also remained *high* on the “amount of pain after pain treatment” attribute under Choice 3 only (see Figure 1 for an example). It also is essential to mention that in Choice 1 and Choice 2, pain levels after treatment (e.g., none, mild, moderate, high) varied by choice sets. Once the survey was completed and properly developed on the launch platform, it was then piloted and tested.

Figure 1: Example of a Choice Set with *High Pain*

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u> pain treatment	High	High	High
Amount of pain <u>after</u> pain treatment	None	Mild	High
Access/ease of getting pain treatments	Hard to access	Easy access	No access
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

DCE Administration

Before completing the DCE section, participants were presented with a practice scenario that mimicked the purchasing of two vehicles (see Appendix). Each vehicle choice had six attributes (color, make, miles, number of doors, model year and cost) with 2-3 levels each. Once familiarized with the format, they were taken to the administration of the DCE study where they were introduced to the 7 attributes and its levels, as previously presented in Table 2. Once on the DCE section, participants were assigned

random versions in which they expressed their treatment preference (over the counter medication, medical cannabis, opioid or none) in 16 different scenarios with randomized levels and by choosing between 3 Choice options, Choice 3 always being a “none-treatment” option.

Study Sample

An online survey was developed in the Qualtrics platform and conducted through Dynata in December 2023 ($n=301$). The survey targeted adults (≥ 40 years of age). The age quota was implemented in order to obtain a sample from older adults who are more likely to have experienced some type of physical pain in their life and have been exposed to different pain treatments. The survey also targeted three regions of the state, Los Angeles, Bay Area, and Rural San Joaquin Valley. All participants were provided with a consent form and implied consent by taking the survey and were compensated upon completion by their panel provider. This study was approved by the University of California Merced institutional review board.

Measures

In addition to the DCE section, participants also responded to questionnaires on their experience with chronic pain, their previous experience with cannabis for recreational or medical use, their opinion on current cannabis policies and demographics.

Pain Scale: To determine their amount of pain experienced, participants were provided with a 10-point pain scale (Harvard Health Publishing) and labeled mild, moderate, and high (Von Korff et al., 2019). Mild being from 1 to 3 out of 10, moderate being 4 to 7 out of 10, and high being 8 to 10 out of 10 on the pain scale.

Cannabis use: As per previous studies cannabis users (recreational or medical) were identified as having used cannabis in the last 3 months, and in the last week (CDC, 2017).

Region: Participants were categorized in three regions based on their collected zip code: Los Angeles, Bay Area, and Rural San Joaquin Valley.

Demographics: All participants were asked to provide their age, 40 years old being the base year, gender, race/ethnicity, self-reported political views (liberal to conservative), income, marital status, and education level.

Data Analysis

Descriptive statistics were used to characterize the demographics of the participants. For the discrete choice experiment (DCE) analysis, a conditional logit model (CLM) was used (Hauber et al., 2016) in Stata 18, in which the dependent variable was the respondent's choice for each hypothetical scenario, and the independent variables were the attribute levels. The first model included all the attributes as seen in Table 1, and in the second model, cost and side effect were linearized.

Additionally, linearized models were performed by pain levels (mild, moderate, severe), sub-group analysis and the willingness-to-pay (WTP) was calculated for each group. These sub-groups included chronic pain (who have experienced and who have not experienced), recreational cannabis (users and non-users), and finally medical cannabis (users and non-users).

Results

Sample

A sample of 301 Californian adults participated in the survey, aged 40 to 97 years of age with the mean age of 63.28 (\pm 13.93 years). Of the entire sample, respondents were mostly female (51%), mostly Non-Hispanic White (72%), with 4-year degree or higher (53%), identified themselves as extremely conservative (22%), and (45%) said to be retired at the time of survey. Participants were equally distributed by region, from Los Angeles (33%), Bay Area (33%) and from the San Joaquin Valley (34%) (Table 3).

Table 3 also reports the chronic pain groups, those who have not experienced chronic pain in their life (37%) and those who have (63%). Participants who have experienced chronic pain were mostly female (56%), Non-Hispanic White (75%), did not have a higher degree (53%), identified as conservative (21%), were mostly from the San Joaquin Valley (38%) and had a mean age of 62.5 (\pm 14.30 years).

Table 3: Demographic characteristics of study participants and chronic pain group %

	Total (n=301)	Have <i>not</i> experienced chronic pain (n=112)	Have experienced chronic pain (n=189)
Sex/Gender			
Male	49%	59%	44%
Female	51%	41%	56%
Race/Ethnicity			
White	72%	67%	75%
Hispanic	11%	11%	10%
Black	5%	6%	4%
Asian	8%	12%	5%
Other	4%	4%	6%
Education			
<4-year degree	47%	36%	53%
\geq 4-year degree	53%	64%	47%
Conservatism			

Extremely	22%	22%	21%
Age (in years)			
40-49	20%	18%	22%
50-64	32%	27%	35%
65+	48%	55%	43%
Regions			
Los Angeles	33%	36%	32%
Bay Area	33%	38%	30%
San Joaquin Valley	34%	26%	38%

DCE Results: Entire Sample

Results from the conditional analysis can be found in Table 4, and two separate models were included in this table. Model 1 provides the coefficient for each attribute assigned in this model. Model 2 reports the results after cost and side effects were linearized. After performing the first model, results indicated that the least preferred type of treatment was the “no treatment” option. In Model 1, the decision was to compare “no treatment” against every other type of treatment presented in Table 2, and the results on this model suggest that the most preferred type of treatment was “OTC” ($\beta = 1.04$, $P < 0.001$), followed by “cannabis” ($\beta = 0.87$, $P < 0.001$), and “opioid” ($\beta = 0.61$, $P < 0.001$) being the third most preferred method. The effectiveness of the treatment was measured in step levels, one had two steps, from (high to mild or moderate to none), and the second had three steps, from (high to none). Ultimately, these levels “step2” ($\beta = 0.24$, $P < 0.001$) and “step3” ($\beta = 0.59$, $P < 0.001$) were the most preferred by participants. “Easy access” to treatments was also the most preferred method among them, and significantly disliked “hard access” ($\beta = -0.16$, $P < 0.01$). In addition, individuals were also averse to treatments with “high side effects”, “highly addictive”, and with “higher cost”.

DCE Results by Pain Levels

Additional linearized models were conducted by three different pain levels, mild, moderate, and severe (see Table 4). In the first model conducted by ‘mild’, only three predictors came out significant, participants disliked a “moderate” ($\beta = -0.46, P < 0.01$) and “highly addictive” ($\beta = -0.59, P < 0.01$), and “costly” ($\beta = -0.04, P < 0.001$) treatments, suggesting that with mild pain they do not have clear preferences. Under a ‘moderate’ level of pain, preferences changed significantly, having “OTC” ($\beta = 0.73, P < 0.001$) as the most preferred option, followed by “cannabis” ($\beta = 0.54, P < 0.001$). Participants also preferred a “step2” ($\beta = 0.27, P < 0.001$) effectiveness that would reduce the pain from moderate to none. They were also averse to treatments with “high side effects”, “moderate” and “highly addictive”, and with “higher cost”. For severe pain level almost all the predictors came out significant. At this level of pain, participants prefer all type of treatments provided as options, “OTC” ($\beta = 1.25, P < 0.001$), “cannabis” ($\beta = 1.05, P < 0.001$), and “opioid” ($\beta = 0.93, P < 0.001$). They also prefer a highly effective treatment, “step3” ($\beta = 0.35, P < 0.001$) that would reduce severe pain to none. In addition, the results also indicate a dislike for “hard access”, “moderate” and “highly addictive”, “high side effects”, and “costly” treatments.

Table 4: Conditional and Linearized Models for All Participants and by Pain Levels

	Model 1	Model 2		Model 3		
	Conditional	Linearized		Mild	Moderate	Severe
Attributes and levels	β (SE)	β	(SE)	β (SE)	β (SE)	β (SE)
Type of treatment						
None	-	-		-	-	-
Over the counter (OTC)	1.04***	0.91***		0.30	0.73***	1.25***

	(0.08)	(0.07)	(0.23)	(0.11)	(0.10)
Cannabis	0.87***	0.74***	0.50	0.54***	1.05***
	(0.08)	(0.07)	(0.27)	(0.10)	(0.10)
Opioid	0.61***	0.49***	0.21	0.17	0.93***
	(0.09)	(0.08)	(0.24)	(0.13)	(0.13)
Effectiveness					
Step1	-	-	-	-	-
Step2	0.24***	0.26***		0.27***	0.16
	(0.05)	(0.05)		(0.08)	(0.09)
Step3	0.59***	0.58***			0.35***
	(0.07)	(0.07)			(0.09)
Access to treatments					
Easy	-	-	-	-	-
Moderate	-0.06	-0.06	-0.18	0.05	-0.07
	(0.04)	(0.04)	(0.19)	(0.07)	(0.06)
Hard	-0.16*	-0.17**	-0.25	0.11	-0.29**
	(0.06)	(0.06)	(0.21)	(0.10)	(0.09)
Addictiveness					
None	-	-	-	-	-
Moderate	-0.33***	-0.33***	-0.46*	-0.36***	-0.29***
	(0.05)	(0.05)	(0.22)	(0.08)	(0.07)
High	-0.78***	-0.76***	-0.59*	-0.69***	-0.79***
	(0.06)	(0.06)	(0.26)	(0.09)	(0.09)
Side effect					
None	-				
Some chance (20%)	-0.14*				
	(0.06)				
Moderate chance (60%)	-0.22***				
	(0.05)				
High chance (90%)	-0.55***				
	(0.07)				
Linear	-	-0.01***	-0.00	-0.01***	-0.00***
	-	(0.00)	(0.00)	(0.00)	(0.00)
Cost					
No cost (free)	-				
\$2.00	-0.27***				
	(0.07)				
\$5.00	-0.39***				
	(0.07)				

\$15.00	-0.76***				
	(0.06)				
\$25.00	-1.14***				
	(0.08)				
Linear	-	-0.04***	-0.04***	-0.05***	-0.04***
	-	(0.00)	(0.01)	(0.01)	(0.00)

* $p < .05$; ** $p < .01$; *** $p < .001$

Sub-Group Analysis Results

Table 5 discloses the results among six sub-groups and compared them against the linear model. For those that have experienced chronic pain in their life stated that “OTC” ($\beta = 0.97, P < 0.001$) would be their first treatment option, followed by “cannabis” ($\beta = 0.81, P < 0.001$), and then “opioid” ($\beta = 0.67, P < 0.001$). The no chronic pain group had lower expectations but still preferred “OTC” ($\beta = 0.81, P < 0.001$) and “cannabis” ($\beta = 0.62, P < 0.001$), however, “opioid” was not significant under this group, suggesting that this treatment might not be an option for them. Both groups preferred highly effective treatments over the other options, including an “easy access” to them. In addition, they disliked treatments that might be considered “addictive”, with strong “side effects” and “higher cost”.

Individuals who use cannabis recreationally have different preferences as opposed to those who do not use them. For the recreational cannabis use group, the results indicate that they prefer to have “cannabis” ($\beta = 1.37, P < 0.001$) as their primary treatment, in fact, this group turned out to have a stronger preference score under this level. The non-user group preferred to have it as a secondary option ($\beta = 0.40, P < 0.001$), having “opioid” as their least preferred method for both groups. In addition, individuals in these groups had a stronger desire for maximum effectiveness of treatments, including “easy

access”. Users and non-users of recreational cannabis disfavor “costly” and “addictive” treatments, including those with high “side effects”.

The medical cannabis user group strongly preferred having “cannabis” ($\beta = 1.59$, $P < 0.001$) as their primary treatment, a similarity between this and the recreational group. The non-medical user group leaned towards having “cannabis” ($\beta = 0.45$, $P < 0.001$) as a second option. But the medical user group only preferred highly effective treatment “step3”, while the non-medical user leaned towards both “step2” and “step3” respectively, as well as having “easily accessible” treatment. Lastly, both groups were averse to having “costly”, high “side effects” and “addictive” treatments.

Table 5: Linearized Models by Sub-Group

	All	Chronic pain	No chronic pain	Recreational use	No recreational use	Medical use	No medical use
Attributes and levels	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Type of treatment							
Over the counter (OTC)	0.91*** (0.07)	0.97*** (0.08)	0.81*** (0.11)	0.96*** (0.11)	0.97*** (0.08)	1.06*** (0.13)	0.96*** (0.08)
Cannabis	0.74*** (0.07)	0.81*** (0.08)	0.62*** (0.11)	1.37*** (0.11)	0.40*** (0.09)	1.59*** (0.13)	0.45*** (0.08)
Opioid	0.49*** (0.08)	0.67*** (0.10)	0.18 (0.14)	0.90*** (0.13)	0.30** (0.11)	0.98*** (0.16)	0.39*** (0.10)
Effectiveness							
Step2	0.26*** (0.05)	0.25*** (0.07)	0.28*** (0.09)	0.24** (0.09)	0.30*** (0.07)	0.13 (0.10)	0.32*** (0.06)
Step3	0.58*** (0.07)	0.53*** (0.09)	0.67*** (0.12)	0.55*** (0.12)	0.67*** (0.09)	0.33* (0.14)	0.72*** (0.08)
Access to treatments							

Moderate	-0.06	-0.07	-0.05	-0.07	-0.06	-0.03	-0.08
	(0.04)	(0.06)	(0.08)	(0.07)	(0.06)	(0.08)	(0.06)
Hard	-0.17**	-0.19*	-0.13	-0.15	-0.18*	-0.07	-0.22***
	(0.06)	(0.08)	(0.10)	(0.10)	(0.08)	(0.11)	(0.08)
Addictiveness							
Moderate	-0.33***	-0.25***	-0.46***	-0.20**	-0.42***	-0.20*	-0.38***
	(0.05)	(0.06)	(0.08)	(0.08)	(0.06)	(0.09)	(0.06)
High	-0.76***	-0.69***	-0.89***	-0.49***	-1.00***	-0.37***	-0.98***
	(0.06)	(0.08)	(0.10)	(0.10)	(0.08)	(0.11)	(0.08)
Side effect							
Linear	-0.01***	-0.01***	-0.01***	-0.00***	-0.01***	0.00	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cost							
Linear	-0.04***	-0.04***	-0.04***	-0.04***	-0.05***	-0.04***	-0.05***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)

* $p < .05$; ** $p < .01$; *** $p < .001$

Willingness To Pay by Sub-Group

The willingness to pay (WTP) reflects the maximum sum amount of money an individual is willing to pay for a good or service (Markandya & Chiabai., 2019). The monetary value given to each level varies across sub-groups (see Table 6). Among the chronic pain (\$22.68) and no chronic pain (\$19.42) groups, WTP results suggest that both groups are willing to put a higher monetary value on “OTC” treatment compared to “cannabis” or “opioid”. However, the chronic group is willing to pay almost three times as much for “opioid” (\$15.66) compared to the no chronic pain group (\$4.20). Among the no chronic pain group, there is almost four times as much monetary loss among (-\$15.22) when individuals choose to go from “OTC” treatment to “opioid”. Both groups are also willing to pay twice as much for highly effective treatment, chronic pain group “Step 3” (\$12.35) and no chronic pain group (\$16.08) when compared to “Step2”. Another trajectory of monetary loss was seen on “moderate addictiveness” of a treatment, where the no chronic pain group (-\$10.87) has a higher loss than the chronic pain group (-\$5.82). The loss is even higher for the no chronic pain group (-\$21.26) compared to chronic pain (-\$16.00) when the treatment is considered “highly addictive”.

Among the recreational cannabis group, the results indicate that this group is willing to pay (\$33.99) for a “cannabis” treatment which is higher than the other treatments and almost four times as much higher than the no recreational group (\$8.35). Their willingness to pay more for this specific treatment could be explained by previous experience with “cannabis”. The no recreational group put a higher monetary value on “OTC” (\$20.13) than on any other treatment. In addition, both groups also prefer high effective treatments, in particular the recreational group is willing to pay twice as much

(\$13.69) for “Step3” compared to “Step2”, and the no recreational group who is willing to pay (\$13.88) for the same level of effectiveness. To continue, both groups would have twice as much monetary loss if they go from a “moderate addictive” to “high addictive” treatments.

Individuals who reported cannabis for medical purposes are willing to pay (\$37.18) for a “cannabis” treatment, higher than any other treatment or among groups. The no medical use group has a lower willingness to pay of (\$9.82). Also, this group showed a higher willingness to pay for “OTC” (\$20.97) suggesting their preference for this particular treatment. Both groups are also willing to pay twice as much for “highly effective” treatments. Additionally, the higher the addictiveness of the treatment, the higher of monetary loss the group would experience, for example, the medical use group would have twice as much loss from “moderate” (-\$4.61) to “high addictiveness” (-\$8.69). But the no medical use group would have almost three times as much monetary loss (-\$21.44) for the same levels, respectively.

Discussion

This study explored the tradeoffs and preferences that individuals are willing to make in a pain treatment decision, given its risks and benefits. Specifically targeted older adults and the likelihood of having cannabis as a pain management treatment option due to its greater access in California. Previous discrete choice experiment studies have either focus on purchasing behavior of cannabis products, or preferences for policy options for cannabis (Shanahan et al., 2014; Shi et al., 2019; Donnan et al., 2023). Only one study has looked at cannabis but among cancer survivor patients (Bentley et al., 2022) and did not explore all levels of physical pain such as in this study. To the best of the author's knowledge, this is the first DCE study in which cannabis was explore as a treatment option for general physical pain and not due to one specific sickness.

The findings suggest that, despite having “over-the-counter” (OTC) as the most preferred treatment for pain management under the entire sample, individuals are willing to have “cannabis” as a second treatment option, and having “opioid” and “no treatment” as their least preferred method. However, under the sub-group analysis, medical and recreational cannabis users preferred to have cannabis as their primary treatment option. Not surprisingly, individuals do prioritize highly “effective” treatments, and “easy” access to them. But they are also averse to highly “addictive”, “costly” and higher “side effect” pain treatments.

Cannabis users, either medically or recreationally, showed a higher preference for cannabis treatment. This may be due to the experience that they have with the cannabis and the familiarity with its products (Boehnke et al., 2019). Although not a discrete choice experiment, a Canadian study has found that medical cannabis users living with

chronic pain reported substituting cannabis for prescription drugs, particularly opioids (Lucas & Walsh., 2017). Boeknke et al. (2019) had similar findings with a U.S. sample, medical cannabis users had also substituted cannabis for opioids and other pain medications. Other studies have found a decrease in opioid use and a rise in medical cannabis use for pain among recent cannabis users (Piper et al., 2017; Reiman et al., 2017). Longitudinal studies with elderly cancer individuals found a discontinued in opioid use, including dosage use, and others with mixed conditions completely discontinued prescribed drugs (Haroutounian et al., 2016; Bar-Lev Schleider et al., 2018; Abuhasita et al., 2018). The potential benefits of cannabis use among different groups might explain its popularity among current and former users and their willingness to try first a non-pharmaceutical drug for pain management. Thus, not surprisingly, users of medical and recreational had the highest willingness-to-pay (WTP) for cannabis and placed the highest relative weight on this treatment option.

As reported in our findings, the two cannabis use groups also prioritized the effectiveness of the treatment. This is consistent with what has been found before and it is not surprising that individuals, in general, do care about the effectiveness of a treatment (Kruger et al., 2020; Bonn-Miller, 2013; Jennings et al., 2020; Li et al., 2019). This could also be explained by the experience that these individuals may have with cannabis. A few studies have found that experienced cannabis users were more likely to go back to using cannabis for pain management due to its fewer adverse effects (Piper et al., 2017; Corroon et al., 2017; Sexton et al., 2017). Boehnke et al. (2019) found that the two most common reasons for cannabis substitution from opioid use were improved symptom management and small side effects as well. Shi et al. (2019) found that former users,

including never users were more likely to use cannabis Cannabidiol (CBD) products for therapeutic reasons because of previous positive experience.

The current study does come with some limitations. Like any other study that relies on online convenience samples, the current study sample does not fully represent the study population of interest. Thus, future discreet choice experiment studies should take this into consideration and utilize a general representative sample. Second, our sample was predominantly Non-Hispanic White and did not have an equal ethnic representation of California residents. Third, only a small number of participants identifying groups that the literature reports having the highest rates of cannabis use were part of this study. Fourth, discreet choice experiments are composed of hypothetical scenarios that may not include all the important factors from a real-world setting. Though, findings from consumers preferences are essential for policymaking.

Conclusion

Participants were willing to trade risks, such the use of cannabis for a treatment that offers better control of physical pain. Treatment preferences changed under pain levels with a more favorable approach to OTC and cannabis under moderate and severe pain. Medical and recreational cannabis users were willing to have cannabis as their primary treatment option, and they had the highest willingness to pay for this particular treatment. There could be multiple factors that may explain the “trust” they have on this method, one being the familiarity with cannabis and experienced with its benefits. Overall, having greater access to cannabis may lead to higher consumption among older adults who are suffering from physical pain, but a lot remains unclear, such as its side effects in the short and long term. Findings from this study contribute to the existing

literature by examining the preferences and tradeoffs that older adults are willing to make when experiencing physical pain. These findings should be carefully taken into consideration for any future policy implications at the local, state or national level, especially jurisdictions that have currently allowed or are in the process of allowing cannabis activities.

Chapter 4: Cannabis as a Potential Substitute for Opioids: Evaluating Policy Options Through a Marginal Analysis

Introduction

Physical pain is an uncomfortable experience that no one wants to go through. Unfortunately, everyone has either experienced or will experience some type of physical pain in their life (Dahlhamer et al., 2016). As people live longer, the chances of experiencing physical pain are higher, but due to the innovative technology, there are plenty of pain treatment options to choose from. Some of them are easily accessible and can be obtained over the counter and others must be prescribed if a higher dosage is required. One of the common side effects of using opioids is the addictiveness of the substance which can lead to catastrophic consequences in life (Dahlhamer et al., 2016).

The U.S., opioid prescribing era more than quadrupled in the 1990s leading to an epidemic of opioid misuse and use disorder in the country that has since expanded into synthetic drugs (CDC, 2023), and the country currently witnessing six times more deaths from overdose compared to the 1990s. From 1999 to 2021, nearly 645,000 people died from an overdose involving any opioid, including prescription and illicit opioids (CDC,

2023). The second wave began in 2010 with rapid increases in overdose deaths involving synthetic drugs (CDC, 2023). Another major increase in opioid overdose was seen in 2020, in the middle of the Covid-19 pandemic in which measures such as isolation were a major contributor factor (Alexander et al., 2020; Katz et al., 2020, CDC, 2023). The opioid epidemic has become an immense problem in the country, and despite decades of research on the most effective means to treat opioid use disorder, overdose and relapse remain pervasive (Wiese et al., 2018). The abuse of opioid use causes significant morbidity and productivity loss to the country and it will take years to recover (CDC, 2023).

Multiple policies have been proposed and some have been implemented to regulate opioid over prescription (Rao, Humphreys & Brandeau, 2021), and all of those that have been implemented have at least some evidence of impact (Strang et al., 2012; Babor et al., 2018; NASEM, 2019). For example, in 2011 the U.S., proposed to return opioid prescribing to levels seen in other developed countries, and even though opioid prescriptions remain high in the U.S., the country has observed a positive outcome on this policy, a decrease of 12.4% on opioid prescriptions nationwide (CDC, 2021).

With the rising cost of pain treatments, limited efficacy, unwanted side effects, and perceived risk of dependency, patients are searching for additional treatments or other alternatives of pain management (Norrbrink et al., 2012). Studies have reported that patients with chronic conditions have turned to cannabis products as an alternative for pain management among those with chronic pain (Lucas, 2017; Okusanya et al., 2020). Others have reported that when used in conjunction with opioids, cannabis products lead to a greater cumulative relief of pain, resulting in a reduction in the use of opioids (Lucas,

2012). There is a growing body of evidence to support the use of cannabis as an adjunct to or substitute for prescription opioids in the treatment of pain. Research in other countries such as in Canada suggests that increasing access to cannabis products for medical or recreational use has significant positive impacts on public health and safety as a result of the substitution effect (Lucas, 2017; Wiese et al., 2018; Eichorn et al., 2022).

The U.S. is different when it comes to having friendly cannabis policies at the deferral level considering that cannabis activities remain illegal. Perhaps having open access to cannabis at all levels of government could help ease the rising cost of opioids but more importantly, ease the dependence on opioids and its misuse which leads to use disorder. This study aims to explore potential policy options by performing a marginal analysis given previous participants' preferences towards three different treatments and an opt-out option. The marginal analysis in this paper explores policy options that would encourage cannabis over opioids. One approach is to lower the cost of cannabis products, the second is to change people's perception towards the addictiveness of cannabis use, and the third is to also change people's perception towards cannabis side effects, all while increasing opioids. The marginal analysis specifically explores two treatment options: cannabis and opioids. The results will be the probability of selecting the best treatment option compared to one another. All treatment options will also be applied in three hypothetical scenarios of pain levels: mild, moderate, and severe.

Methods

An online survey was developed in the Qualtrics platform and administered by Dynata in December 2023. The survey targeted participants from three California regions, Los Angeles, Bay Area, and the San Joaquin Valley, resulting in a sample of 301.

Older adults (≥ 40 years of age) were targeted with the intention to collect data from this population who are more likely to have experienced some type of physical pain in their life and have been exposed to pain treatments. All participants were compensated at the discretion of the panel provider. This study was approved by the University of California Merced institution review board.

The data obtained from the online survey was primarily used in a discrete choice experiment (DCE) conducted in a previous study (Fabian, 2024) in which attributes and levels were designed to explore the tradeoffs and preferences that older adults are willing to make in a treatment decision for pain management given the risks and benefits from the treatments presented in the survey. In that study, 7 attributes with 3 to 5 levels (all randomized) in each were presented to participants in 8 different versions and 16 choice sets per version. The linearized model results from the DCE were used in this marginal analysis with additional questions from the survey.

Additional questions

Participants were asked to provide additional information based on three different pain levels:

*If you were experiencing **mild pain**, which could be annoying but doesn't really interfere with your daily living activities (e.g., muscle sourness, joint pain, or headache), how effective do you think each treatment would be in reducing your pain?*

*If you were experiencing **moderate pain**, which is a bit uncomfortable, and interferes with your daily living activities, it can be ignored for a period of time,*

but it is still distracting (e.g., back pain), how effective do you think each treatment would be in reducing your pain?

*If you were experiencing **severe pain**, which dominates your senses and significantly limits your ability to perform your daily activities (e.g., surgery, burn, or broken bone), how effective do you think each treatment would be in reducing your pain?*

For response selection, they were provided with three different pain treatment options to choose from, OTC, Cannabis, or Opioids. Based on their preferences they selected the best option accordingly. Additional questions were added to the survey that asked about Access, Side effects, Addictiveness, and Cost of these treatments:

How easy do you think it would be for you to access or get a hold of each of these treatments for pain?

What do you think would be your chance of getting negative side effects (e.g., nausea, constipation, dizziness) from each of the following?

How addictive do you think each of the following treatment options are?

How much do you think it would cost to get each of the following types of treatments?

Data Analysis

Descriptive statistics were used to characterize the entire sample demographics by pain levels, and to report perceptions of cannabis and opioids which were used in the foundation of the marginal analysis. As mentioned previously, results from the linearized

model of the entire sample performed in the DCE were used to estimate the marginal probabilities in this paper. Additionally, the willingness to pay (WTP) was calculated for the three pain levels (mild, moderate, and severe).

Marginal Probabilities

Marginal probability is a powerful tool for modeling how consumers make decisions to maximize utility. The basic idea is that decision-makers make choices based on costs and benefits associated with small changes in a given state (Melody, 1974). The marginal probabilities in this study were calculated using perceptions of the use of pain treatments. That is for the entire sample and for each group of pain levels (mild, moderate, and severe) separately. The probability of their perceptions (e.g., addictiveness, side effect, cost) was multiplied against the coefficient results from the linearized Conditional Logit Model (CLM) in the DCE and summed to estimate the utilities for each option. The marginal probabilities were then determined according to:

$$MP(C_i) = \exp(U_{C_i}) / (\exp(U_{C_i}) + \exp(U_{O_i}))$$

where $MP(C_i)$ is the probability of choosing cannabis for group i , U_{C_i} is the utility associated with choosing cannabis for group i , and U_{O_i} is the utility associated with choosing opioid for group i . The probability of choosing opioid over cannabis for group i was $1 - MP(C_i)$.

The marginal probabilities were calculated for several policy options aimed at promoting cannabis use. The base case was calculated using the strengths of preferences (coefficient values) from the DCEs (both combined for the entire sample and for each group separately) and the perceptions of each attribute (e.g., addictiveness, side effects,

and cost associated with each treatment option). Thus, the base case represents the probability of choosing between cannabis and opioids given their perceptions of each treatment. The ‘base case’ to which these policies were compared used their perceived values of each of the different attributes, with the final utility being the weighted average of the responses:

$$U_{Ci} = \sum_j (\sum_k (\text{prob}_k * \beta_k))$$

where j are the attributes, prob_k is the percentage who choose option k for attribute j , and β_k is the coefficient from the discrete choice results for group i corresponding to option k of attribute j . The marginal analysis performed would encourage cannabis over opioids and based on their perceptions there are five policy options, the policy options explored in the marginal analysis were as follows:

- Doubling the price of opioid
- Emphasizing high addictiveness of opioid
- Lowering the price of cannabis by half
- Emphasizing lower side effects of cannabis
- Emphasizing lower addictiveness of cannabis

Results

Sample

Study participants (N=301) were adults, aged 40 to 97 years of age with the mean age of 63.28 (\pm 13.93 years). Participants were mostly female (51%), mostly Non-Hispanic White (72%), with 4-year degree or higher (53%), identified themselves as extremely conservative (22%), and (45%) said to be retired at the time of survey.

Participants were equally distributed by region, from Los Angeles (33%), Bay Area (33%) and from the San Joaquin Valley (34%) (Table 1). The same table also reports demographics by levels of pain which were separated into four different groups.

Table 1: Demographic Characteristics of Study Participants by Levels of Pain %

	Total (n=301)	No Pain (n=103)	Mild (n=89)	Moderate (n=58)	Severe (n=51)
Sex/Gender					
Male	49%	45%	48%	50%	59%
Female	51%	55%	52%	50%	41%
Race/Ethnicity					
White	72%	73%	72%	78%	80%
Hispanic	11%	13%	11%	10%	8%
Black	5%	4%	5%	3%	6%
Asian	8%	6%	8%	7%	6%
Other	4%	4%	4%	2%	-
Education					
<4-year degree	47%	53%	54%	60%	57%
≥4-year degree	53%	47%	46%	40%	43%
Conservatism					
Extremely	22%	25%	24%	29%	29%
Age (in years)					
40-49	20%	15%	16%	10%	8%
50-64	32%	32%	33%	26%	33%
65+	48%	52%	52%	64%	59%
Regions					
Los Angeles	33%	26%	28%	21%	20%
Bay Area	33%	35%	33%	39%	35%
San Joaquin Valley	34%	39%	39%	40%	45%

Perceptions Results

Table 2 reports the results on the perceptions of cannabis and opioids. Overall, participants reported to have easier access to cannabis over opioids. This could be

explained by having legalized recreational cannabis use in the state of California in 2016, and most cities and counties have currently adopted some type of cannabis activities in their jurisdiction. Participants also reported to believe that they are less likely to get major side effects from cannabis use. From the entire sample, only (10%) reported cannabis to have 'high' side effects compared to opioids (43%). They also considered cannabis to be less addictive, only (15%) reported to consider it 'highly' addictive than opioids (71%). Fifty percent believed that cannabis is less costly (less than \$5) per treatment than opioids (24%). Similar results can be observed across groups where participants reported more favorable views towards cannabis than opioids.

Table 2: Perceptions of Cannabis and Opioids by Levels of Pain %

	All		No Pain		Mild		Moderate		Severe	
	Cannabis	Opioid	Cannabis	Opioid	Cannabis	Opioid	Cannabis	Opioid	Cannabis	Opioid
Access										
Very difficult	6%	25%	8%	27%	9%	27%	10%	27%	12%	30%
Difficult	10%	36%	11%	44%	10%	42%	10%	45%	8%	50%
Neutral	26%	20%	30%	17%	29%	21%	28%	21%	22%	16%
Easy	34%	11%	33%	6%	34%	6%	33%	2%	34%	4%
Very Easy	23%	8%	18%	6%	18%	4%	19%	5%	24%	-
Side Effect										
Not at all (0%)	18%	3%	19%	3%	18%	3%	24%	-	24%	2%
Small (20%)	41%	11%	39%	11%	41%	11%	31%	10%	33%	8%
Moderate (60%)	31%	43%	29%	40%	29%	42%	26%	40%	22%	43%
High (90%)	10%	43%	13%	46%	12%	44%	19%	50%	21%	47%
Addictiveness										
Not at all	9%	3%	9%	5%	7%	4%	7%	5%	12%	8%
Low	38%	4%	37%	6%	40%	6%	40%	5%	38%	6%
Moderate	38%	22%	42%	19%	41%	21%	34%	17%	32%	15%
Highly	15%	71%	12%	70%	12%	69%	19%	73%	18%	71%
Cost										
\$2 per treatment/\$6 per day	9%	6%	7%	8%	6%	5%	10%	7%	10%	14%

\$5 per treatment/\$15 per day	41%	18%	41%	18%	41%	19%	33%	10%	39%	10%
\$15 per treatment/\$45 per \$25 or more	39%	37%	39%	29%	39%	29%	40%	22%	35%	23%
per treatment/\$75 per day	10%	39%	13%	45%	14%	47%	17%	61%	16%	53%

Marginal Analysis

The marginal analysis uses perceptions from Table 2 and results from the linear DCEs reported in (Fabian, 2024) which explored the tradeoffs and preferences that older adults are willing to make in a treatment decision for pain management. The marginal analysis results suggest that all groups were sensitive to cost, side effects, and addictiveness. Table 3 shows the marginal probabilities for a choice between cannabis and opioids under a variety of conditions.

For the base case analysis, the results suggest that the probability of choosing cannabis over opioids was 69% overall, including 68% among the ‘mild’ group, 74% among the ‘moderate’ group, and 69% among the ‘severe’ group. The impact of doubling the price of opioids, emphasizing the high addictiveness of opioids, lowering the price of cannabis by half from the initial base case, emphasizing lower side effects, and addictiveness of cannabis, the results suggest that these policies had a large impact on the behavior of its users, increasing the probability to use cannabis instead of opioids. Among the ‘all’ group and compared from the base case, doubling the price of opioids led to a decrease in the probability of its use by 13%. Among the ‘mild’ group, after the implementation of the same policy, opioids decreased by 14%, and the probability among the ‘moderate’ group decreased by 12%. The ‘severe’ group had a similar trend, the probability of opioid decreased by 13% respectively. Emphasizing the addictiveness of opioid to 90% among the ‘all’ group and compared to the base case reduces the probability of its use by 7%. Among the ‘mild’ group, the probability decreased by 8%, ‘moderate’ experienced a 6% decrease, and ‘severe’ had a 6% decrease as well.

Lowering the cost of cannabis by half compared to the base case, the probability of cannabis use among the 'all' group increased by 7%, the 'mild' group had a 5% increase, the 'moderate' experienced a 5%, and the 'severe' had a 5% increase as well.

Emphasizing lower side effects of cannabis to 20% had a small impact among the 'all' group increasing the probability of using cannabis by only 2%, 'mild' increased by only 1%, 'moderate' increased by 2%, and 'severe' by only 1%. This means that opioid use would only have a relatively small impact reduction of 1% or 2% respectively.

Emphasizing lower addictiveness of cannabis to 10%, the probability of its use among the 'all' group increased by 6%, 'mild' observed a 7% increase, 'moderate' had a 5% increase, and lastly, the 'severe' group had a 4% increase.

Table 3: Marginal Probabilities by Levels of Pain

Policies	All		Mild		Moderate		Severe	
	Cannabis	Opioid	Cannabis	Opioid	Cannabis	Opioid	Cannabis	Opioid
Base case	69%	31%	68%	32%	74%	26%	69%	31%
Double cost of opioid	82%	18%	82%	18%	86%	14%	82%	18%
Emphasize addictiveness of opioid 90%	76%	24%	76%	24%	80%	20%	75%	25%
Lower the price of cannabis by half	74%	26%	73%	27%	79%	21%	74%	26%
Emphasize lower side effect of cannabis 20%	71%	29%	69%	31%	76%	24%	70%	30%
Emphasize lower addictiveness of cannabis 10%	75%	25%	75%	25%	79%	21%	73%	27%

Willingness to Pay by Levels of Pain

The willingness to pay (WTP) reflects the maximum sum amount of money an individual is willing to pay for a good or service (Markandya & Chiabai., 2019). The monetary value given to each level varies across sub-groups and this can be found in Table 4. The coefficient results used to calculate the WTP in this paper are derived from the linearized Conditional Logit Model performed in the DCE conducted by Fabian (2024). In this table, the choices consisted of three pain treatments, over-the-counter (OTC), cannabis, and opioids, as well as their effectiveness measured in Step2 and Step3. To continue, the choices also included access to these treatments, their addictiveness, side effects (linearizer), and cost (linearized).

According to the WTP results, when all three groups of pain levels (mild, moderate, severe) are compared to one another, the ‘severe’ group is willing to pay almost twice as much for “OTC” (\$29.46) treatment, twice as much for cannabis (\$24.77) and four times as much for opioid (\$22.04) if they were experiencing severe pain, and they are also likely to pay more for a higher effective treatment Step3 (\$8.27). The same group would also experience five times as much monetary loss if access to treatment goes from moderate (-\$1.62) to hard access (-\$6.77). In addition, this group would have the highest monetary loss compared to the other two groups if the treatment is considered highly addictive (-\$18.61). The ‘mild’ group is willing to pay almost twice as much for cannabis (\$11.59) than OTC (\$6.94) and almost three times as much more than opioids (\$4.82). This is the only group willing to put a higher monetary value on a cannabis treatment, meaning that individuals who have experienced mild pain are more likely to have cannabis as treatment.

Table 4: Willingness to Pay by Levels of Pain

	All	Mild	Moderate	Severe
Choice	WTP	WTP	WTP	WTP
Type of treatment				
Over the counter (OTC)	\$21.41	\$6.94	\$15.36	\$29.46
Cannabis	\$17.40	\$11.59	\$11.42	\$24.77
Opioid	\$11.61	\$4.82	\$3.51	\$22.04
Effectiveness				
Step2	\$6.14	-	\$5.81	\$3.68
Step3	\$13.75	-	-	\$8.27
Access to treatments				
Moderate	-\$1.40	-\$4.14	\$0.99	-\$1.62
Hard	-\$3.97	-\$5.83	\$2.22	-\$6.77
Addictiveness				
Moderate	-\$7.67	-\$10.63	-\$7.73	-\$6.76
High	-\$17.94	-\$13.64	-\$14.57	-\$18.61
Side effect				
Linear	-\$0.12	-\$0.04	-\$0.14	-\$0.11
Cost				
Linear	-\$1.00	-\$1.00	-\$1.00	-\$1.00

Discussion

This study estimated the potential impact of policies aimed at promoting cannabis use over opioids. Based on the marginal probability, the results suggest that all groups were sensitive to cost, the policy option of doubling the cost of opioids had the biggest impact on reducing the probability of opioid use and increasing cannabis use.

Emphasizing the addictiveness of opioids to 90% had a modest impact on the behavior of

its use, reducing it by an average of 7% across all pain level groups. Lowering the price of cannabis by half led to a modest impact on the probability of its use which increased to an average of 6% across all groups. Emphasizing lower side effects of cannabis to 20% increases the probability of using cannabis but by a relatively smaller margin of 2% on average. This policy option compared to the rest of them is the only one that had a smaller impact across all groups. Lastly, emphasizing lower addictiveness of cannabis to 10% led to an increased probability of its use by an average of 6% across all pain levels. To the best of the author's knowledge, this is the first study that have investigated the marginal probabilities between cannabis and opioids in the state. Most of the studies that have explored policy simulations of cannabis have emphasized cannabis legalization policies in foreign countries or regions where cannabis remains illegal.

The results from the willingness to pay from the entire sample suggest that OTC is the most preferred type of treatment with participants willing to pay up to (\$21.41) per treatment, a slightly higher amount compared to cannabis and opioids. Once compared across pain levels, the 'severe' group dominates the chart by being willing to pay the most for all pain treatments. This can be explained by participants having experienced severe physical pain at which level is intolerant for the human body. However, among the 'mild' group, participants were willing to pay the most for a cannabis (\$11.59) treatment compared to OTC or opioids.

The results from the 'mild group are consistent with the findings in previous studies that have investigated the use of cannabis as a treatment for chronic pain. Lucas (2012) found that participants were likely to try cannabis when they live with chronic pain and at the time of experiencing mild pain, they prefer to have cannabis instead of

opioids because it leads to a greater cumulative relief of pain. In addition, the author mentions that cannabis products prevent the development of tolerance to and withdrawal from opiates. Kvamme et al., (2021) had similar findings, participants were more willing to trade cannabis for opioids because of its natural elements. In our previous DCE study conducted by sub-groups of chronic pain, recreational and medical use, and non-users of each group, both, the recreational and medical users claimed that they prefer cannabis over opioids as their first type of treatment (Fabian, 2024). This could be explained by their previous experience with cannabis products. Previous cannabis users are more likely to have cannabis as a treatment, especially middle-aged and older patients (Haug et al., 2017; Banes et al., 2014; SAMHSA, 2021).

The findings reported in this paper are important following a potential announcement from the Federal Government that could reclassify its position on cannabis, acknowledging its medical benefits and by no longer considering cannabis a Schedule I substance-believed highly dangerous, addictive, and without medical use (e.g., Heroin, Methamphetamine, Methaqualone). If the reclassification gets adopted, cannabis will fall as a Schedule III controlled substance (e.g., Ketamine, Codeine, Tylenol), a less dangerous substance (Associated Press, 2024). This approach could open more avenues for research and a step closer for the Federal Government to decriminalize cannabis in the near future.

The current study has some limitations. First, the sample was predominantly Non-Hispanic White and did not have an equal ethnic representation of California residents. Second, like many studies that rely on online convenience samples, the current study sample does not fully represent the study population of interest. Future studies that

explore marginal analysis should take this into consideration and utilize a general representative sample. Lastly, since previous DCE results were used for this study, it is important to consider that DCEs are composed of hypothetical scenarios that may not have included all the important factors from a real-world setting. However, this type of scientific approach is the best tool available for examining trade-offs between different cannabis policies and their consequences (Shanahan, Gerard & Ritter, 2014).

Conclusion

There is substantial evidence that cannabis can be an effective treatment for physical pain, presenting a safe and viable alternative to pharmaceutical opiates (Lucas, 2012). Promoting cannabis use products as a safer alternative may lead to a reduction in opioid addiction which has been a major concern over the years in the country. Research suggests that cannabis has the potential to both, relieve suffering from chronic pain, and to reduce morbidity and mortality often associated with abusing opioids (Okusanya et al., 2020). The implications of these results provide an opportunity to promote cannabis use and avert the behavior of those who use opioids, especially those who abuse this type of treatment. The results suggest that doubling the price of opioids and lowering the cost of cannabis by half would have the most significant impact on consumer behavior, as well as lowering the perception of the addictiveness of cannabis use.

Chapter 5: Discussion

The purpose of this dissertation was to explore and inform the research community and policy makers about the positive and negative aspects of cannabis and what should be taken into consideration for its regulation. This dissertation makes a major contribution to the literature. The ongoing discussion on how to regulate cannabis is multifaceted, reflecting the complexities of balancing public health, safety, economic interests, and social justice. This debate encompasses various perspectives from policymakers, public health experts, industry stakeholders, and advocacy groups. From a public health standpoint, regulation involves addressing several key concerns to ensure the well-being of the population. This perspective focuses on minimizing potential health risks, preventing misuse, and promoting informed decision-making. While the discussion remains, this dissertation intended to fill in the gaps that are essential to understand when regulating cannabis, it is important to consider the risks from consumption as well its benefits for medical use. The chapters in this dissertation highlight the importance of understanding cannabis from a public health perspective.

Chapter one explored whether alcohol and cannabis complement or substitute each other. This topic has been debated over two decades with mixed findings and in the changing cannabis policy landscape, debates are moving rapidly and spill-over effects on other substances are of interest. This chapter examined how the use of one substance affects the use of the other by using cross-sectional data obtained on three-time periods during Covid-19 restrictions and across three regions of the state of California. One of the underlying questions has been the relationship of cannabis and alcohol and how they behave among users. To explore this topic, single product use and the co-use of these

substances was explored. In addition, the relationship between smoking and vaping was also investigated in this chapter.

Chapter two included a discrete choice experiment (DCE) conducted in three regions of the state of California. The DCE explored the potential use of cannabis as a pain treatment option and evaluated the tradeoffs and preferences that individuals are willing to make in a pain treatment decision, while promoting greater access and the increased risks that comes with its use. The DCE used factors that people value the most when it comes to selecting the most prefer treatment option which allowed to calculate the willingness-to-pay (WTP) by sub-groups which reflects the maximum sum amount of monetary value an individual is willing to pay for a good. This chapter is the first of its kind that explored cannabis as a treatment option in a DCE format and provided insight as to how much people value the factors that comes along with its use.

Chapter three used information from the second study, explicitly the values (coefficients) that the model predicted for each factor used in the DCE. It also used information on three levels of pain and perceptions of cannabis and opioid that were asked in the survey. This information allowed to explore policy options through marginal analysis (MA). The marginal analysis in this paper explicitly investigated options that would encourage cannabis over opioids. By doing so, the MA can help determine if cannabis use can serve as a substitute for opioids, potentially reducing opioid consumption. This is significant because opioids are highly addictive and associated with high rates of overdose and death. Understanding the extent to which cannabis can replace opioids for pain management and other uses could inform public health strategies to

combat the opioid crisis. While cannabis may have its own risks, they are generally considered lower than those associated with opioids. By examining the MA on these substances, policymakers can assess potential changes in healthcare costs. Reduced opioid use might lead to lower costs related to addiction treatment, emergency room visits, and long-term healthcare needs associated with opioid abuse. In addition to the MA, this chapter also calculated the WTP by pain levels which was part of the foundation in this chapter, exploring policy options by pain levels.

The results from this dissertation suggest that the regulation of cannabis should be a comprehensive and balanced approach involving policies that prioritize the well-being of the population by minimizing risks and maximizing benefits. The results support a complement relationship between cannabis and alcohol. This suggest that these substances might fall into the same category and therefore cannabis should be regulated with the same compelling approach as alcohol. That approach should balance public health and safety with individual freedoms. Like those used for alcohol, public health campaigns can educate consumers about responsible cannabis use, risks of overconsumption, and safe storage practices. This can help reduce instances of misuse and accidental ingestion. Establishing laws against driving under the influence of cannabis, similar to alcohol, can reduce the incidence of impaired driving and associated accidents. Public education on the risks of cannabis-impaired driving can further enhance road safety. In addition, allocating tax revenue from cannabis sales to fund addiction treatment and prevention programs, similar to those for alcohol, can address potential abuse and dependency issues. These services can offer counseling, rehabilitation, and support for those struggling with cannabis use.

Regulating cannabis like alcohol, while taking into consideration its medical benefits, allows for a balanced approach that addresses public health, safety, support medical use, and maximizes societal benefits. The discreet choice experiment results suggest that despite participants having a higher preference for over-the-counter treatments, cannabis was the second most preferred option, leaving opioids as a last resort for pain management. For those that have used cannabis regardless of medical or recreational experience would preferred to have cannabis as their primary pain treatment option. Multiple factors could explain the results of having cannabis over opioids, one being that opioid is considered highly addictive with multiple side effects. Therefore, while regulating cannabis these results should be considered. The third study explored policy options that should be taken into account. Overall, from a public health standpoint, regulating cannabis like alcohol offers a comprehensive approach to ensuring consumer safety, controlling access, reducing harm, and supporting public health initiatives. Leveraging established alcohol regulation frameworks allows for the development of a balanced and effective system that addresses the complexities of cannabis use while prioritizing the health and well-being of the population. This model promotes responsible use, enhances public safety, and provides economic support for ongoing public health efforts.

In the realm of cannabis research, the lens of health economics remains relatively unexplored. While most studies delve into the medical and psychological aspects of cannabis consumption, there is a notable dearth when it comes to exploring the health economics implications of its use, legalization, and regulation. Without a more comprehensive understanding of the health economics dynamics at play, policymakers

and stakeholders may find themselves navigating uncertain terrain, highlighting the pressing need for further research in this field.

Recommendations for future research

This dissertation provide insight into a framework that needs to be considered when regulating cannabis. The areas of exploration conducted in this dissertation were designed from lens of health economics, but other areas and techniques remain unexplored. Future research should aim to investigate the relationship between cannabis and alcohol by measuring the cross-price elasticities of cannabis and alcohol and to examine the potential differences among subpopulations. In addition, it is essential to conduct comprehensive cost-benefit analyses to evaluate the economic impact of cannabis legalization. This includes assessing potential benefits such as tax revenues and job creation, as well as costs related to healthcare utilization, substance abuse treatment, and regulatory enforcement. Furthermore, an economic evaluation of medical cannabis programs is required to assess the cost-effectiveness and cost-benefit of medical cannabis programs, including the impact on healthcare expenditures, patient outcomes, and quality of life. This research can inform decisions about the inclusion of medical cannabis in healthcare coverage and reimbursement policies. Lastly, to expand on this framework, an economic impact on healthcare utilization is essential to perform. This will examine the relationship between cannabis use and healthcare utilization, including emergency department visits, hospitalizations, and outpatient services. This research can provide insights into the healthcare costs associated with cannabis-related health conditions and inform resource allocation decisions.

By addressing these research areas, future studies can contribute to a better understanding of the dimensions of cannabis use and its impact on public health, healthcare systems, and broader socioeconomic outcomes.

Conclusion

After the cannabis legalization in the state of California, public health departments and stakeholders raised the alarm as how to regulate cannabis in the state. Legalization brought several significant changes and impacts to the state. It marked a new beginning for substantial economic benefits, regulatory improvements, and social justice advancements, however, proper regulation remained a concern. The debate as how to properly regulate cannabis is a discussion that has been going around without solution. This dissertation fills in that gap. In order to properly regulate cannabis, it is essential to have a deep understanding of what type of product cannabis acts like among consumers. It is also important to consider the risks and benefits that cannabis provides, especially the medicinal side. When people suffer from physical pain, it is very common to rely on opioids, however, the main concerns among consumers are the addictiveness and side effects that come along with its use. Therefore, people prefer an alternative to opioids, and cannabis is that option. Policymakers need to take these findings into consideration as well as the potential policy options explored in this dissertation. These considerations help protect public health and manage the cannabis market effectively.

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Appendix

Impact of COVID-19 in the US

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

TITLE OF THE STUDY: Impact of COVID-19 USA

INVESTIGATORS:

Paul Brown, PhD University of California, Merced
Linda Cameron, PhD University of California, Merced
Sheleigh Lawler, PhD University of Queensland
Robert McNeill, PhD University of Auckland
Alexandra Robbins-Hill University of Queensland
Gilda Zarate-Gonzalez University of California, Merced

PURPOSE

You are invited to participate in a research study that aims to understand the impact of COVID 19 on people. Anyone 18 years of age or older are invited to participate in this study. We anticipate that up to 1300 participants will complete this online survey.

PROCEDURES

The study involves completing an anonymous online survey questionnaire. The questionnaire asks about your level of stress, the factors that lead you to being stressed, ways that you cope, and some of the measures you are taking to protect yourself from getting COVID-19. In addition, we will also ask your views on the current restrictions. This online survey takes about 25 minutes to complete.

RISKS

There are no risks of physical discomfort from participation in this study. Responding to questions about stress could arouse feelings of discomfort or distress, but these feelings are likely to be temporary and similar to those normally experienced in the course of daily life. You can quit the survey at any time.

BENEFITS

It is possible that you will not benefit directly by participating in this study. However, you may indirectly benefit by becoming more aware of your views about the stress caused by COVID-19 and impact of the restrictions on your daily life.

CONFIDENTIALITY

Your responses to this research will remain anonymous. You do not need to share your name or any other information that would reveal your identity. All information will be kept strictly confidential.

COSTS/COMPENSATION

There is no cost to you beyond the time and effort required to complete the online questionnaire. You will be compensated upon survey completion by your panel provider.

RIGHT TO REFUSE OR WITHDRAW

Participation in this study is voluntary. You may refuse to participate in this study. You may change your mind and stop completing the questionnaire at any time. You may choose to not answer any questions on the questionnaire.

QUESTIONS

If you have any questions about this research project please contact Gilda Zarate-Gonzalez, MPH, CLC at gzarate-gonzalez@ucmerced.edu. For questions about your rights while taking part in this study call the Office of Research at IRB 209-228-4613 or write to the Office of Research, 5200 North Lake Rd, UC Merced, Merced, CA, USA 95343. The Office of Research will inform the Institutional Review Board which is a group of people who review the research to protect your rights. If you have any complaints or concerns about this study, you may address them to Ramesh Balasubramaniam, IRB Chair 209-228-2314, irbchair@ucmerced.edu.

CONSENT BY CLICKING THE ARROW BELOW AND PROCEEDING WITH THE SURVEY INDICATES THAT YOU HAVE DECIDED TO VOLUNTEER AS A RESEARCH SUBJECT AND THAT YOU HAVE READ AND UNDERSTOOD THE INFORMATION PROVIDED ABOVE.

QualityCheck We care about the quality of our survey data and hope to receive the most accurate measures of your opinions, so it is important to us that you thoughtfully provide your best answer to each question in the survey. Do you commit to providing your thoughtful and honest answers to the questions in this survey?

- I will provide my best answers
- I will not provide my best answers
- I can't promise either way

ZipCode What is the zip code of your home?

Q4 Thank you for agreeing to take this survey. As you are aware, COVID-19 (the coronavirus) had a significant impact on the daily activities of many people. We would like to know your views of COVID-19 and how it has affected your life. There are no right or wrong answers, we want to learn about your own views and experiences. To begin, we would like to learn about your **experiences** with COVID-19 up to this point in time.

COVIDTest_Symptoms **Since January 1, 2022**, have you had COVID-19-like symptoms (for example: fever, cough, shortness of breath)?

Yes (1)

No (2)

COVIDTest_ProxDiagno Since January 1, 2022, have you been in close proximity with someone who has been diagnosed with COVID-19?

Yes (1)

No (2)

COVIDTest_ProxSympto Since January 1, 2022, have you been in close proximity with someone who has had COVID-19-like symptoms (for example: fever, cough, shortness of breath)?

Yes (1)

No (2)

Q8 How many times have you been tested for COVID-19?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5+ (6)

Q9 Have you ever received a positive COVID-19 result?

- Yes (1)
- No (2)
- Waiting on results (3)
- Prefer not to answer (4)

Q10 Did you require hospitalization for treatment of COVID-19?

- Yes (1)
- No (2)

Q11 How many people in your family have been diagnosed with COVID-19?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4+ (5)

Q12 How many people in your family have passed away from COVID-19?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4+ (5)

Q239 Are you more breathless now than you were before your COVID illness?

- Yes (1)
- No (2)

Q240 Do you have a cough (different from any cough you may have had before COVID)?

Yes (1)

No (2)

Q243 How is your physical strength? Do you feel so weak that it is limiting what you can do (more than you were before your COVID illness)?

Yes (1)

No (2)

Q244 Do you have any aching in your muscles (myalgia)?

Yes (1)

No (2)

Q245 Is your sleep disturbed more than it was before your COVID illness?

Yes (1)

No (2)

Q246 Have you had any nightmares or flashbacks?

Yes (1)

No (2)

Q247 Is your mood low / do you feel down in the dumps / lacking in motivation / no pleasure in anything?

Yes (1)

No (2)

Q248 Do you find yourself feeling anxious/worrying more than you used to?

Yes (1)

No (2)

Q249 Do you have problems with your memory, concentration or with organizing your thoughts that you did not experience before your COVID illness?

Yes (1)

No (2)

Q13 Since January 1, 2022, are/were you working in healthcare with direct patient contact?

Yes (1)

No (2)

Q14 **Since January 1, 2022**, are/were you working in a job that you considered to be high risk for contracting COVID-19?

Yes (1)

No (2)

Q15 **Since January 1, 2022**, is/was anyone in your home working in healthcare with direct patient contact?

Yes (1)

No (2)

Q16 **Since January 1, 2022**, is/was anyone in your home working in a job that is considered to be high risk for contracting COVID-19?

Yes (1)

No (2)

Q251 What is your occupation?

Personal Care and Service Occupations Installation, Maintenance, and Repair Occupations (1)

Food Preparation and Serving Related Occupations Legal Occupations (2)

Protective Service Occupations Grounds and Buildings Cleaning and Maintenance Occupations (3)

Healthcare Support Occupations Management Occupations (4)

Computer and Mathematical Occupations Farming, Fishing, and Forestry Occupations (5)

Arts, Design, Entertainment and Technical Occupations Architecture and Engineering Occupations (6)

- Production Occupations Healthcare Practitioners and Technical Occupations (7)
- Office and Administrative Occupations Business and Financial Operations Occupations (8)
- Construction and Extraction Occupations Community and Social Service Occupations (9)
- Education, Training, and Library Occupations Life, Physical and Social Science Occupations (10)
- Sales and Related Occupations Transportation and Material Moving Occupations (11)
- Other: _____ (12)
-

Q17 In the last month, what has been your experience with health care overall?

- I have not sought healthcare (1)
- I tried to make an appointment but can't get one (2)
- I tried to make an appointment, but the wait is longer than I think is reasonable (3)
- I have successfully seen a provider in person (4)
- I have successfully seen a provider either by phone or video (5)
- I had an appointment either by phone or video (6)
- Other (7)
- None of the above (8)

Q18 In the last month, what has been the experience of your family members with healthcare services overall?

- None of my family members have sought healthcare (1)
- A member of my family tried to get an appointment but couldn't get one (2)
- A member of my family tried to make an appointment, but the wait is longer than I think is reasonable (3)
- A member of my family has successfully seen a provider in person (4)
- A member of my family has successfully seen a provider either by phone or video (5)
- A member of my family had an appointment cancelled (6)
- Other (7)
- None of the above (8)

Q19 What type of health insurance coverage do you currently have?

- Uninsured (1)
- Medicare & Medicaid (2)
- Medicare & others (3)
- Medicare only (4)
- Medicaid (5)
- Healthy Families/CHIP (6)
- Employment-based (7)
- Privately purchased (8)
- Other public (9)
- Don't know (10)

Q20 How worried are you about losing your health insurance coverage?

- Very worried (1)
- Somewhat worried (2)
- A little worried (3)
- Not worried at all (4)
- I am uninsured (5)

Q21 What level of health threat do you think COVID-19 poses to you personally?

Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5



Q22 What level of health threat do you think COVID-19 poses to your local community?

Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5

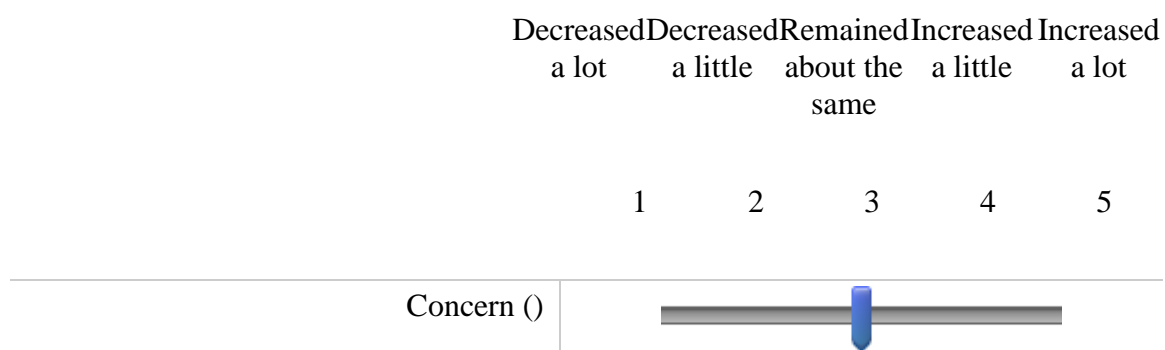


Q23 What level of health threat do you think COVID-19 poses to your family and friends?

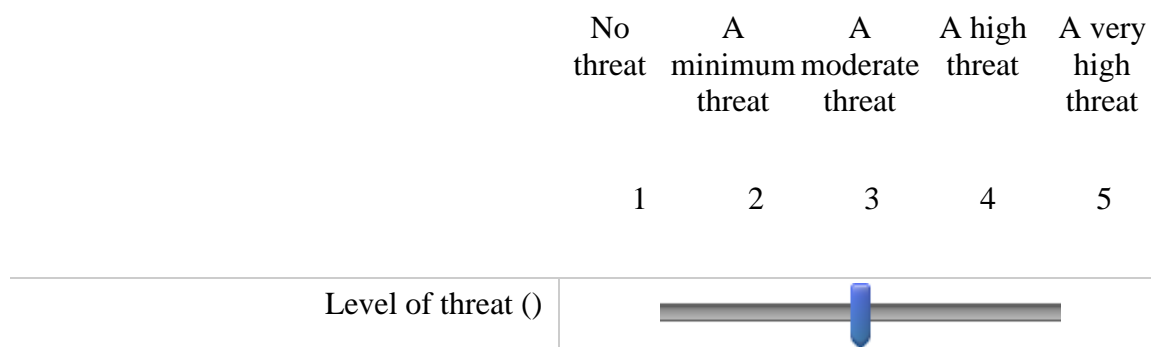
Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5



Q24 Thinking back to how you felt about COVID-19 on April 1st, 2020, has your concern about catching COVID-19:



Q25 What level of health threat do you think people who are not vaccinated for COVID-19 pose to you?



Q26 What level of health threat do you think people who are not vaccinated for COVID-19 pose to your local community?

No threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5

Level of threat ()	
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Q27 If you were unvaccinated for COVID-19, what level of threat do you think you would pose to others in your local community?

No threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5

Level of threat ()	
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Q28 What level of financial threat do you think COVID-19 poses to you personally?

Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5

Level of threat ()	
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Q29 What level of financial threat do you think COVID-19 poses to your local community?

Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5



Q30 What level of financial threat do you think COVID-19 poses to your family and friends?

Not at all a threat	A minimum threat	A moderate threat	A high threat	A very high threat
1	2	3	4	5



Q31 How much do you agree or disagree with the following statements?

	Strongly Disagree (1)	Somewhat Disagree (2)	Neutral (3)	Somewhat Agree (4)	Strongly Agree (5)
The number of COVID- 19 cases that have been reported worldwide worries me (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The number of COVID- 19 cases that have reported in my country worries me (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like it is only a matter of time and I will get COVID-19 (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q32 How much has COVID-19 impacted you?

	Not true of me at all (1)	A little true of me (2)	Somewhat true of me (3)	True of me (4)	Very true of me (5)
COVID-19 has had a negative financial impact on me (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lost job-related income due to COVID-19 (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was already seeking employment, and am having more difficulty due to COVID-19 (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have had a hard time getting needed resources such as food, toilet paper, or other supplies due to COVID-19 (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The COVID- 19 pandemic has had a negative impact on my mental health (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q33 Thinking about your time since **January 1, 2022**, how often have you practiced social distancing (this means: reducing your physical contact with other people in social,

work, or school settings by avoiding large groups and staying 3-6 feet away from other people)?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Most of the time (4)
- Always (5)

Q34 Thinking about your time since **January 1, 2022**, how often have you isolated or quarantined yourself (this means separating yourself from other people to protect yourself from getting COVID-19 or prevent others from getting it from you)?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Most of the time (4)
- Always (5)

Q35 In the past week, how often did you:

	Not at all (1)	1-2 times (2)	3-4 times (3)	4-5 times (4)	6 or more times (5)
Go into a store (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attend a school or workplace (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit friends or family members who live close by (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit friends or family members who live more than 15 minutes away (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attend a public event or gathering (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Go to a public setting such as a park, restaurant, or cafe where other people were close by (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attend family gatherings or family parties (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q36 In the past week, when you went into a public setting or visited people outside your home, how often did you:

	Never (1)	Rarely (2)	Sometimes (3)	Most of the time (4)	Always (5)
Use a face mask or covering (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stay at least 6 feet away from other people (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid touching your face (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use sanitizers to wipe off highly touched surfaces (shopping carts, doorknobs, etc.) before touching them yourself (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wash your hands immediately after returning home or leaving the place (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Change your clothes immediately after returning home (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q235 In the past month, how often did you wear a face mask or covering when you visited the following places?

	Always (1)	Sometimes (2)	Only when it's a requirement (3)	Never, I have not used a face mask or covering to go in public at all (4)
Grocery store or business (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Park (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workplace (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hospital or clinic (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q236 Do you plan to wear a face mask or covering in the next two weeks when going to the following places?

	Always (1)	Sometimes (2)	Only when it's a requirement (3)	I don't know / No opinion (4)
Grocery store or business (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Park (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workplace (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hospital or clinic (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q37 **If you are currently employed**, are you currently working for the same employer that you worked for at the start of the COVID 19 pandemic (that is, since February 1, 2020)?

- Yes (1)
- No (2)
- Not currently employed (3)

Q38 Why did you change jobs? Check all that apply.

- I stopped working because I am/was sick and under quarantine and had to find another job (1)
- I stopped working because someone in my household was sick or under quarantine and had to find another job (2)
- I stopped working because my place of work was closed and didn't offer a remote work option (3)
- I stopped working because I was laid off or lost my employment and had to find another job (4)
- I found another job that offered me a higher salary (5)
- I found another job that offered me safer work conditions (6)
- I found another job that allowed me to work from home (7)
- Other (8)

Q39 How much has COVID-19 impacted your day-to-day life?

- Not at all (1)
- A little (2)
- Moderately (3)
- Very much (4)
- Extremely (5)

Q40 Overall, how much stress has COVID-19 caused you?

- No stress (1)
- Mild stress (2)
- Moderate stress (3)
- Severe stress (4)
- Extreme Stress (5)

Q42 Please rate the extent to which you agree with the following about your experiences during the COVID-19 pandemic:

	Strongly Disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly Agree 7 (7)
I am frustrated or bored (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I don't have enough basic supplies (for example, food, water, medications, a place to stay) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am feeling more anxious (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am feeling more depressed (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've noticed changes in my normal sleep patterns (for example, sleeping more or less) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q43 Please rate the extent to which you agree with the following about your experiences during the COVID-19 pandemic:

I feel that I
am getting
enough
financial
support from
my own
income,
from family,
friends,
partners,
government,
an
organization,
or someone
else (7)

Q44 Please rate the extent to which you agree with the following about your experiences during the COVID-19 pandemic:

	Strongly Disagree 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Strongly Agree 7 (7)
I have tried to resist thoughts of COVID-19 (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have interpreted bodily sensations as a potential COVID-19 symptom (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that modern medicine won't be able to help me if I get COVID-19 (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that the hospitals won't be able to help me if I get COVID-19 (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that the hospitals won't have any beds available for me if I get COVID-19 (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q237 Please rate the extent to which you agree with the following statements:

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
Wearing a mask can help protect a person from getting COVID-19. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wearing a mask can help protect a person from passing COVID-19 on to others. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q45 How worried would you be about the risk of getting COVID-19 if you were...

	Not at all (1)	A little bit (2)	Somewhat (3)	Quite a bit (4)	Extremely (5)
In a small meeting room with 20 other people and neither you nor anyone else was wearing a mask? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In a small meeting room with 20 other people and all of you were wearing a mask? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inside a restaurant that is filled to capacity with other people and neither you nor anyone else wears a mask once they sit down at a table? (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Inside a restaurant that is filled to capacity with other people and all of you wear a mask except when eating or drinking? (6)



Q46 Thank you. We would now like to ask you about the information that you are getting about COVID-19 and where you are getting the information from.

Q47 Now please think about the health messages about COVID-19 you have received from the media. During the COVID-19 pandemic, do you feel that the health messages are:

- Always clear and concise (1)
- Somewhat clear and concise (2)
- Somewhat confusing (3)
- Always confusing (4)

Q48 To what extent do you believe that each of the following statements about COVID-19 is true?

	1 Not true at all (1)	2 (2)	3 Somewhat true (3)	4 (4)	5 Very true (5)
If you already have a problem with your lungs, you're more likely to be infected with COVID-19 (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you already have a problem with your lungs, you're more likely to have a severe reaction if you become infected with COVID-19 (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 can be spread through the air when people cough and sneeze (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 can be spread by touching contaminated surfaces, objects, and people (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The
symptoms for
COVID-19
are similar to
those of a
typical
influenza
(flu) infection
(5)



Q49 To what extent do you believe that each of the following statements about COVID-19 is true?

	1 Not true at all (1)	2 (2)	3 Somewhat true (3)	4 (4)	5 Very true (5)
Someone who contracts COVID-19 in my country will likely die (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medications are available that can prevent or cure COVID-19 (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibiotics will help people recover from COVID-19 (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 cannot be transmitted in hot climates (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 can be prevented by taking a hot bath or shower (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q50 To what extent do you believe that each of the following statements about COVID-19 is true?

	1 Not true at all (1)	2 (2)	3 Somewhat true (3)	4 (4)	5 Very true (5)
COVID-19 is spread through mosquito bites (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you have recovered from COVID-19, you are protected from a second infection (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q51 Do you think that the public health measures put in place in your region to contain the spread of COVID-19 are too extreme?

- Yes (1)
- Somewhat (2)
- No (3)
- Don't know (4)

Q238 Do you think that the mandates requiring people to wear a face mask or covering put in place in your region are effective in controlling the spread of COVID-19?

- Yes (1)
- Somewhat (2)
- No (3)
- Don't Know (4)

Q52 Do you think that the public health measures put in place in your region to contain the spread of COVID-19 are effective at controlling the spread?

- Yes (1)
 - Somewhat (2)
 - No (3)
 - Don't know (4)
-

Q53 With regards to COVID-19 restrictions in place over the last month, I feel that I have been:

- Not compliant (1)
- Somewhat compliant (2)
- Mostly compliant (3)
- Always compliant (4)

Q54 Why were you not always compliant?

Q55 Compared to this time last year, I feel that I have been

- Definitely less compliant (1)
- Slightly less compliant (2)
- About the same (3)
- Slightly more compliant (4)
- Definitely more compliant (5)

Q56 Why has this changed?

Q57 How much do you agree or disagree with the following statements?	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neutral (4)	Somewhat agree (5)	Agree (6)	Strongly Agree (7)
I am tired of all the COVID-19 discussions in TV shows, newspapers, and radio programs, etc. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am sick of hearing about COVID-19. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When friends or family members talk about COVID-19, I try to change the subject because I do not want to talk about it anymore. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel strained from following all of the behavioural regulations and recommendations around COVID-19. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am tired of restraining myself to save those who are most vulnerable to COVID-19. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am losing my
spirit to fight
against COVID-
19. (8)

Q58 At this point in time, how safe do you feel to:

	Very unsafe (1)	Unsafe (2)	Neutral (3)	Safe (4)	Very safe (5)
Go to the shops (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Go to school or work (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit your friends who live close to you (less than 15 minutes away) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit your friends who live over 15 minutes away from you (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit your family who live close to you (less than 15 minutes away) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit your family who live over 15 minutes away from you (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q59 How much do you agree with each of the following statements:	Strongly Disagree (1)	Somewhat disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
The media has exaggerated the extent of the COVID-19 outbreak (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Washing hands and coughing and sneezing into a tissue or my arm can protect myself and others from getting sick (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel able to do the things that have been recommended to protect myself from getting COVID-19 (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If it meant keeping my community safe, the government should be able to track my phone for ease of contact tracing during a pandemic
(5)

Q60 Which view most accurately reflects your views on mask wearing?

- Each individual should be able to decide whether they want to wear a mask or not (1)
- People should be encouraged to wear masks (2)
- People should be strongly encouraged to wear masks (3)
- People should be required to wear masks (4)
- People should be required to wear masks and fined if they do not (5)

Q61 Which view most accurately reflects your views on social distancing?

- Each individual should be able to decide whether they want to social distance or not (1)
- People should be encouraged to socially distance (2)
- People should be strongly encouraged to socially distance (3)
- People should be required to socially distance (4)
- People should be required to socially distance and fined if they do not (5)

Q62 How effective do you think mask wearing is in helping to prevent COVID-19?

- Not at all effective (1)
- Slightly effective (2)
- Somewhat effective (3)
- Moderately effective (4)
- Extremely effective (5)

Q63 How effective do you think socially distancing is in helping to prevent COVID-19?

- Not at all effective (1)
- Slightly effective (2)
- Somewhat effective (3)
- Moderately effective (4)
- Extremely effective (5)

Q64 In general, I believe vaccinations are important to protect the population

- Very true of me (1)
- Somewhat true of me (2)
- Neutral (3)
- Somewhat not true of me (4)
- Not true of me at all (5)

Q65 I receive an annual Influenza (flu) vaccination

- Yes (1)
- Sometimes (2)
- No (3)

Q250 I have vaccinated my children who are over 5 years old with a COVID-19 vaccine

- Yes (1)
- Not sure (2)
- No (3)
- Not applicable (I do not have children) (4)

Q66 I intend to vaccinate my child/ren with a COVID-19 vaccine when they are eligible

- Yes (1)
- Not sure (2)
- No (3)
- Not applicable (I don't have children) (4)

Q67 Have you received a dose of a COVID-19 vaccine?

- Yes (1)
- No (2)

Q68 Do you intend on being vaccinated against COVID-19?

- Yes (1)
- No (2)
- Not sure (3)

Q69 How many doses have you received? Please do not include any boosters.

- One dose and I am planning to get a second dose (1)
 - Two doses (2)
 - One dose and a second dose isn't recommended (3)
 - One dose and am not planning to get a second dose (4)
 - Two doses and a booster (5)
 - Something else (specify) (6)
-

Q70 Which vaccine did you receive?

Pfizer (1)

Moderna (2)

Johnson and Johnson (3)

Astra Zeneca (4)

Other (5) _____

Do not remember (6)

Q71 How easy was it to schedule your vaccination?

- Very difficult (1)
- Difficult (2)
- Neutral (3)
- Easy (4)
- Very easy (5)
- Do not remember (6)

Q72 How concerned are you about the safety of the COVID-19 vaccines?

- Not at all (1)
- Slightly concerned (2)
- Somewhat concerned (3)
- Moderately concerned (4)
- Extremely concerned (5)

Q73 How concerned are you that the COVID-19 vaccines may be ineffective?

- Not at all (1)
- Slightly concerned (2)
- Somewhat concerned (3)
- Moderately concerned (4)
- Extremely concerned (5)

Q74 How concerned are you about the possible side effects of the COVID-19 vaccines?

- Not at all (1)
- Slightly concerned (2)
- Somewhat concerned (3)
- Moderately concerned (4)
- Extremely concerned (5)

Q75 Which of the following, if any, are reasons that you have not yet been vaccinated?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I am concerned about possible side effects of a COVID-19 vaccine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know if a COVID-19 vaccine will work (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't believe I need a COVID-19 vaccine (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like vaccines (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My doctor has not recommended it (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan to wait and see if it is safe and may get it later (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think other people need it more than I do right now (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about the cost of a COVID-19 vaccine (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't trust COVID-19 vaccines (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't trust the government (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I worry about my fertility (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not worried about getting COVID or getting very sick with COVID (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't trust medical professionals (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have already had COVID (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It has not been convenient (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q76 What makes it difficult for you to get a COVID-19 vaccine? (Select all that apply.)

- I can't go on my own (I have a physical limitation). (1)
- It's too far away. (2)
- I don't know where to go to get vaccinated. (3)
- I'm not eligible to get a COVID-19 vaccine. (4)
- I have a medical reason that makes me ineligible to get vaccinated (e.g., I have had a severe allergy to vaccines in the past). (5)
- I don't have transportation. (6)
- The hours of operation are inconvenient. (7)
- The waiting time is too long. (8)
- It is difficult to find or make an appointment. (9)
- I am too busy to get vaccinated. (10)
- It was difficult to arrange for childcare. (11)
- I don't have time off work. (12)
- Other (13) _____

Q77 Would you recommend to your friends and coworkers that they get the vaccine?

Yes (1)

No (2)

Q78 Would you recommend to your family that they get the vaccine?

Yes (1)

No (2)

Q79 If your employer required you to get a vaccine for COVID-19 before you could work, would you...

Definitely get a vaccine (1)

Probably get a vaccine (2)

Not sure (3)

Probably not (4)

Definitely not (5)

Q80 How confident are you that the coronavirus vaccines are being distributed in a way that is fair?

- Not at all confident (1)
- Slightly confident (2)
- Somewhat confident (3)
- Moderately confident (4)
- Extremely confident (5)

Q81 Overall, how well do you think the Federal Government is managing the rollout and distribution of the COVID-19 vaccines?

- Poor (1)
- Fair (2)
- Good (3)
- Very good (4)
- Excellent (5)
- Don't know (6)

Q82 Overall, how well do you think the State Government in California is managing the rollout and distribution of the COVID-19 vaccines?

- Poor (1)
- Fair (2)
- Good (3)
- Very good (4)
- Excellent (5)
- Don't know (6)

Q83 Overall, how well do you think your local government or public health department is managing the rollout and distribution of the COVID-19 vaccines?

- Poor (1)
- Fair (2)
- Good (3)
- Very good (4)
- Excellent (5)
- Don't know (6)

Q84 We would now like to ask you some questions about your government's response to COVID-19. For each of the following, please indicate whether this represents your views.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neutral (3)	Somewhat Agree (4)	Strongly Agree (5)
I support Federal government measures to restrict the movement of my country's citizens to curb the spread of COVID-19 (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My government showed strong leadership and took quick action to stop the spread of COVID-19 early in the outbreak (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that my government responded adequately to stop the outbreak of the disease (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My
government
officials
currently
show strong
leadership
and are
taking
appropriate
action to
stop the
spread of
disease (4)



I want my
Federal
government
to penalize
those who do
not comply
with orders
to quarantine
or self-
isolate (5)



Q85 Please rate your level of trust that each of these sources would provide accurate information regarding COVID-19

	Strongly distrust (1)	Slightly distrust (2)	Unsure (3)	Slightly trust (4)	Strongly trust (5)
CDC (Center for Disease Prevention and Control) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
California Department of Public Health (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your local Public Health Department (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your City/County Mayor or Supervisors (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
FDA (agency that approves the vaccines) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biden White House COVID Team (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anthony Fauci (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Family Doctor (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q86 For each of the following, please indicate whether this represents your views.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neutral (3)	Somewhat Agree (4)	Strongly Agree (5)
I want my Federal government to penalize people who do not engage in social distancing measures (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am upset at the thought that my Federal government would force people to stay home against their will (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It makes me angry that the Federal government would tell me where I can go and what I can do, even with the threat of COVID-19 infection and spread (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q87 How much do you believe the following to be true:

	Not true at all (1)	Somewhat true (2)	Neutral (3)	Somewhat true (4)	Very true (5)
The vaccine contains a microchip capable of tracking people. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 was started in a lab as a bioweapon from China. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hydroxychloroquine is not an effective treatment for COVID-19 (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increases in cases are the result of increased testing, not increased threat. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Herd immunity will protect us if we let the virus spread through the population. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The COVID-19 vaccine is unsafe as it was made too quickly. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The long-term side effects of the vaccine are different to those of other vaccines. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q88 For each of the following, please indicate whether this represents your views.

	Strongly Disagree (1)	Somewhat Disagree (2)	Neutral (3)	Somewhat Agree (4)	Strongly Agree (5)
I think it is a good idea for the Federal government to give individual citizens money during these difficult times to increase spending and keep businesses going (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think a Federal government stimulus package during the COVID-19 spread is a good idea (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I distrust the information I receive about the COVID-19 from my Federal government (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the case of a future pandemic, social distancing and isolation measures should be put in place earlier than they have been in this COVID-19 pandemic (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q89 Prior to the COVID-19 epidemic (before February 1, 2020), how often did you use each of the following products?

	Never (1)	Less than once a month (2)	A couple of times a month (3)	At least once a week (4)	Nearly every day (5)
Cigarettes (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (for example, e-cigarettes and Juul) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (for example, chewing tobacco) (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q90 How often do you currently use each of the following products?

	Never (1)	Less than once a month (2)	A couple of times a month (3)	At least once a week (4)	Nearly every day (5)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (for example, e- cigarettes and Juul) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (for example, chewing tobacco) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q220 Have you smoked or used each of the following in the past 30 days?

	No (1)	Yes (2)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>
Vaping products (for example, e-cigarettes and Juul) (6)	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (for example, chewing tobacco) (7)	<input type="radio"/>	<input type="radio"/>
Hookah (8)	<input type="radio"/>	<input type="radio"/>
Alcohol (9)	<input type="radio"/>	<input type="radio"/>
Marijuana (10)	<input type="radio"/>	<input type="radio"/>
Cigars (11)	<input type="radio"/>	<input type="radio"/>
Cigarillos (12)	<input type="radio"/>	<input type="radio"/>

Q91 Have you used each of the following 100 times or more in your life?

	No (1)	Yes (2)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>
Vaping products (2)	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (3)	<input type="radio"/>	<input type="radio"/>
Hookah (6)	<input type="radio"/>	<input type="radio"/>
Alcohol (4)	<input type="radio"/>	<input type="radio"/>
Marijuana (5)	<input type="radio"/>	<input type="radio"/>
Cigars (7)	<input type="radio"/>	<input type="radio"/>
Cigarillos (8)	<input type="radio"/>	<input type="radio"/>

Q92 For each of the following products: If you were to use it regularly, how much do you think it would increase your risk of developing cancer because of your using it?

	0=Not at all (1)	1 (2)	2 (3)	3 (4)	4=Extremely (5)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q93 For each of the following products: If you were to use it regularly, how much do you think it would increase your risk of getting COVID-19?

	0=Not at all (1)	1 (2)	2 (3)	3 (4)	4= Extremely (5)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q94 For each of the following products: If you were to use it regularly, how much do you think it would increase your risk of serious health outcomes if you got COVID-19?

	0=Not at all (1)	1 (2)	2 (3)	3 (4)	4=Extremely (5)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q96 Before the COVID-19 epidemic started (February 1st, 2020), what was your overall desire to quit using the cigarettes or tobacco products?

- Not using (1)
 - No desire to quit (2)
 - Slight desire (3)
 - Moderate desire (4)
 - Strong desire (5)
-

Q97 Since **January 1, 2022**, what is your overall desire to quit using cigarettes or tobacco products:

- Not using (1)
- No desire to quit (2)
- Slight desire (3)
- Moderate desire (4)
- Strong desire (5)

Q98 Before the COVID-19 epidemic started (February 1st, 2020), how often did you purchase cigarettes and tobacco products from:

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Market or convenience store (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquor store (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tobacco shop (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vape store (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Person in your community (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online (e.g., Amazon, Halo Cigs) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah lounge (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q99 Since **January 1, 2022**, how often have you purchased cigarettes and tobacco products from:

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Market or convenience store (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquor store(5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tobacco shop (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vape store (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Person in your community (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online (e.g., Amazon, Halo Cigs) (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah lounge (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q233 How much time would it take for you to get the cigarettes, cigars, or cigarillos from this source or these sources?

- Within 1 hour (1)
- Same day (2)
- 1 to 2 days (3)
- 3 or 4 days (4)
- 5 to 10 days (5)

Q234 If flavored cigarettes, cigars, and cigarillos were no longer sold, which of the following would you most likely do?

- Switch to non-flavored cigarettes, cigars, or cigarillos (1)
- Switch to e-cigs (2)
- Switch to another tobacco product such as smokeless tobacco (3)
- Quit using any nicotine products (4)
- None of the above (5)
- Don't know (6)

Q100 Before the COVID-19 epidemic started (February 1st, 2020), what was your overall desire to quit using vaping products or a hookah?

- Not using (1)
 - No desire to quit (2)
 - Slight desire (3)
 - Moderate desire (4)
 - Strong desire (5)
-

Q101 Before the COVID-19 epidemic started (February 1st, 2020), how often did you use the following flavors?

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Tobacco (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Menthol or mint (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caramel, vanilla, chocolate, cream (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coffee or tea (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcoholic drinks (e.g., mojitos, daiquiris) (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Candy (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other flavors, please specify: _____ (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q102 Since **January 1, 2022**, how often have you used the following flavors?

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Tobacco (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Menthol or mint (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caramel, vanilla, chocolate, cream (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coffee or tea (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcoholic drinks (e.g., mojitos, daiquiris) (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Candy (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify: _____ (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q103 Since **January 1, 2022**, what is your overall desire to quit using vaping products or a hookah?

- Not using (1)
- No desire to quit (2)
- Slight desire (3)
- Moderate desire (4)
- Strong desire (5)
-

Q104 Before the COVID-19 epidemic started (February 1st, 2020), how often did you purchase vaping or hookah products from:

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Market or convenience store (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquor store (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tobacco shop (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vape store (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Person in your community (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online (e.g., Amazon, Halo Cigs) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah lounge (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q105 Since **January 1, 2022**, how often have you purchased vaping or hookah products from:

	Never (1)	Once in a while (2)	Sometimes (3)	Often (4)	Very often (5)
Market or convenience store (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquor store (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tobacco shop (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vape store (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Person in your community (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online (e.g., Amazon, Halo Cigs) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah lounge (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q252 How often do you use these listed e-liquid nicotine levels (i.e., amount of nicotine per milliliter)?

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Most Often (5)
No nicotine (0mg) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ultra Light (6mg) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Light (12mg) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Full Flavored (16mg) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bold (24mg) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q221 How addictive do you think cigarettes are?

- Not at all addictive/one can quit at any time/no withdrawals or cravings (1)
- Moderately addictive/one would experience some withdrawals or craving when trying to quit (2)
- Highly addictive/one would experience strong withdrawals and cravings when trying to quit (3)

Q222 What do you think are the long-term health risks for smoking cigarettes?

- No or minimal long-term health risks (1)
- Some chance (20%) of getting serious illness in the future (2)
- Moderate chance (60%) of getting serious illness in the future (3)
- High chance (90%) of getting serious illness in the future (4)

Q223 How addictive do you think vaping products are?

- Not at all addictive/one can quit at any time/no withdrawals or cravings (1)
- Moderately addictive/one would experience some withdrawals or craving when trying to quit (2)
- Highly addictive/one would experience strong withdrawals and cravings when trying to quit (3)

Q224 What do you think are the long-term health risks for using vaping products?

- No or minimal long-term health risks (1)
- Some chance (20%) of getting serious illness in the future (2)
- Moderate chance (60%) of getting serious illness in the future (3)
- High chance (90%) of getting serious illness in the future (4)

Q225 What do you think are the long-term health risks for using marijuana?

- Not at all addictive/one can quit at any time/no withdrawals or cravings (1)
- Moderately addictive/one would experience some withdrawals or craving when trying to quit (2)
- Highly addictive/one would experience strong withdrawals and cravings when trying to quit (3)

Q226 Please rate your overall desire to quit using the following sometime in the future:

	Not using (1)	No desire to quit (2)	Slight desire (3)	Moderate desire (4)	Strong desire (5)
Cigarettes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smokeless tobacco (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookah (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q227 If you were to use a vaping product today...

Which flavor would you most likely vape?

- Tobacco (1)
 - Menthol or mint (2)
 - Fruit flavors (3)
 - Candy flavors (4)
 - Other, please specify: (5)
-

Q228 If you were to use a vaping product today...

Where would you most likely get the vaping product from?

- Local smoke shop (1)
- Market, convenience store, or liquor store (2)
- On-line source (3)
- Someone in your community (4)

Q229 If you were to use a vaping product today...

How much time would it take for you to get a vaping product from this source?

- Within 1 hour (1)
- Same day (2)
- 1 to 2 days (3)
- 3 or 4 days (4)
- 5 to 10 days (5)

Q230 If you were to use a vaping product today...

What do you think are the long-term health risks for vaping?

- No or minimal long term health risks (1)
- Some chance (20%) of getting serious illness in the future (2)
- Moderate chance (60%) of getting serious illness in the future (3)
- High chance (90%) of getting serious illness in the future (4)

Q231 If you were to use a vaping product today...

Are you vaping as a way to stop smoking or to cut down on how much you smoke?

- No, I don't smoke cigarettes (1)
- No, I vape and smoke cigarettes (2)
- Yes, I have stopped smoking cigarettes and now just vape (3)
- Yes, I am vaping as a way to reduce how much I smoke cigarettes (4)

Q232 If you were to use a vaping product today...

If flavored vaping products were no longer sold at all, which of the following would you most likely do?

- Switch to non-flavored vaping products (1)
- Switch to cigarettes (2)
- Switch to another tobacco product such as smokeless tobacco, cigars, cigarillos, or hookah (3)
- Quit using any nicotine products (4)
- None of the above (5)
- Don't know (6)

Q106 Has a doctor ever told you that you have or have had:	No (1)	Yes (2)
High blood pressure (1)	<input type="radio"/>	<input type="radio"/>
A heart attack (coronary) (2)	<input type="radio"/>	<input type="radio"/>
Heart disease of any type (3)	<input type="radio"/>	<input type="radio"/>
High cholesterol (4)	<input type="radio"/>	<input type="radio"/>
Cancer (5)	<input type="radio"/>	<input type="radio"/>
Diabetes (6)	<input type="radio"/>	<input type="radio"/>
Asthma (7)	<input type="radio"/>	<input type="radio"/>
Obesity (17)	<input type="radio"/>	<input type="radio"/>
Emphysema or Chronic Obstructive Pulmonary Disease (8)	<input type="radio"/>	<input type="radio"/>
Stroke (9)	<input type="radio"/>	<input type="radio"/>
Ulcer (10)	<input type="radio"/>	<input type="radio"/>
Gallstones or gallbladder problems (11)	<input type="radio"/>	<input type="radio"/>
Yellow jaundice, hepatitis, or any liver trouble (12)	<input type="radio"/>	<input type="radio"/>
Thyroid disease (13)	<input type="radio"/>	<input type="radio"/>

Arthritis or rheumatism (14)	<input type="radio"/>	<input type="radio"/>
Eczema (15)	<input type="radio"/>	<input type="radio"/>
An autoimmune disease or immunodeficiency (16)	<input type="radio"/>	<input type="radio"/>

Q107 Since **January 22, 2022**, how often have you had trouble sleeping because you...

	No problems (1)	Less than once a week (2)	Once or twice a week (3)	Three or more times a week (4)
Cannot get to sleep within 30 minutes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wake up in the middle of the night or early morning (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q108 Before **February 1, 2021**, would you say that your health was

- Excellent (1)
- Very good (2)
- Good (3)
- Fair (4)
- Poor (5)

Q109 Since January 1, 2021, would you say your current health is

- Excellent (1)
- Very good (2)
- Good (3)
- Fair (4)
- Poor (5)

Q110 To help people say how good or bad a health state is, we have included a scale on which the **best state you can imagine is marked 100 and the worst state you can imagine is marked 0.**

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by adjusting the slider below whichever point on the scale indicates how good or bad your health state is right now.

0 10 20 30 40 50 60 70 80 90 100

Your own health state right now ()	
------------------------------------	--------------------------------------------------------------------------------------

Q111 We'd like to ask you about your health right now. Please indicate which statements best describe your own current health state. For each question, choose the statement that best describes your health state **right now.**

Q112 Mobility

- I have no problems in walking around (1)
- I have some problems in walking around (2)
- I am confined to bed (3)

Q113 Personal Care

- I have no problems with personal care (1)
- I have some problems washing or dressing myself (2)
- I am unable to wash or dress myself (3)

Q114 Usual Activities

- I have no problems with performing my usual activities (1)
- I have some problems with performing my usual activities (2)
- I have unable to perform my usual activities (3)

Q115 Pain/Discomfort

- I have no pain or discomfort (1)
- I have moderate pain or discomfort (2)
- I have extreme pain or discomfort (3)

Q116 Anxiety/Depression

- I am not anxious or depressed (1)
- I am moderately anxious or depressed (2)
- I am extremely anxious or depressed (3)

Q117 Now we would like you to imagine that you contracted COVID-19 but had MILD symptoms. **By mild symptoms we mean:**

- Slight fever lasting a few days
- Dry cough lasting a few days
- Tiredness lasting a few days

How good or bad do you think your health would be if you were to get these MILD symptoms from COVID-19?

Worst health possible Best health possible

0 10 20 30 40 50 60 70 80 90 100



Q118 Now we would like you to imagine that you contracted COVID-19 and you have moderate symptoms:

- High fever lasting two weeks
- Dry cough lasting two weeks
- Tiredness lasting two weeks
- Sore throat lasting two weeks
- Loss of taste or smell lasting two weeks
- Difficulty breathing or shortness of breath lasting two weeks
- Chest pain or pressure lasting two weeks
- Increased chance that you will have to go to the hospital

How good or bad do you think your health would be if you were to get these moderate symptoms from COVID-19?

Worst health possible Best health possible

0 10 20 30 40 50 60 70 80 90 100

Your own health if you had
MODERATE symptoms from COVID-
19 ()



Q119 How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Always (5)

Q120 How confident are you filling out medical forms by yourself?

- Not at all confident (1)
- A little bit confident (2)
- Somewhat confident (3)
- Quite a bit confident (4)
- Very much confident (5)

Q121 How often do you feel confused when you read descriptions of medications or medical procedures?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Always (5)

Q122 How confident are you that you can help others understand instructions or other medical information from a doctor or pharmacy?

- Not at all confident (1)
- A little bit confident (2)
- Somewhat confident (3)
- Quite a bit confident (4)
- Very much confident (5)

Q123 What is your age in years?

▼ 18 (1) ... 90 or over (73)

Q124 What is your gender?

- Male (1)
- Female (2)
- Non-binary (3)
- Don't want to share (4)

Q125 What is your sexual orientation?

- Straight (1)
- Gay/Lesbian (2)
- Bisexual (3)
- Other (4) _____

Q126 What best describes your highest level of education?

- Less than 9th grade (1)
- 9th to 12th grade, no diploma (2)
- High school graduate or GED (3)
- Some college or vocational school (4)
- 2-year college degree (5)
- 4-year college degree (6)
- Professional or graduate degree (7)
- Doctoral (MD, DO, PhD, JD) (8)

Q127 Are you a student? If so, full-time or part-time?

- Yes, I am a full-time student (1)
- Yes, I am a part-time student (2)
- No, I am not a student (3)

Q128 Are you of Hispanic, Latino, or of Spanish origin?

- No, not of Hispanic, Latino, or of Spanish origin (1)
- Yes, Mexican, Mexican American, Chicano (2)
- Yes, Puerto Rican (3)
- Yes, Cuban (4)
- Yes, other (5) _____

Q129 What is your race and ethnicity? (Check all that apply)

- White (1)
- Black or African American (2)
- American Indian or Alaska Native (3)
- Asian (4)
- Native Hawaiian or Pacific Islander (5)
- Mixed (please specify) (6)
-
- Other (please specify) (7)
-

Q130 Think of this ladder as representing where people stand in the United States. At the top of the ladder are the people who are the best off - those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off - who have the least money, least education, and the least respected jobs or no job. The higher up you are on this ladder, the closer you are to the people at the very top;

the lower you are, the closer you are to the people at the very bottom. Please use the slider to indicate your rating. We recognize that this question asks for sensitive information and that it might have an impact. But we hope you will consider answering it to help us better understand disparate impacts of the COVID-19 pandemic on the members of our communities.

Q132 Where would you place yourself, right now, on this ladder?

1 2 3 4 5 6 7 8 9 10

Your position on the ladder ()	
--------------------------------	------------------------------------------------------------------------------------

Q133 How would you cover a \$400 expense in an emergency?

- Pay in full (e.g., using cash, savings, or a credit card paid in full with next statement) (1)
- Pay off over time (e.g., borrow money, put on credit and pay off over time) (2)
- I would not be able to cover this expense (3)

Q134 What was your household's total income (before taxes) in 2020?

- \$5,000 or less (1)
- \$5,001 thru \$10,000 (2)
- \$10,001 thru \$15,000 (3)
- \$15,001 thru \$20,000 (4)
- \$20,001 thru \$30,000 (5)
- \$30,001 thru \$40,000 (6)
- \$40,001 thru \$50,000 (7)
- \$50,001 thru \$60,000 (8)
- \$60,001 thru \$70,000 (9)
- \$70,001 thru \$80,000 (10)
- \$80,001 thru \$90,000 (11)
- \$90,001 thru \$100,000 (12)
- \$100,001 thru \$135,000 (13)

- Greater than \$135,000 (14)

Q135 Is your house, apartment, or mobile home:

- Owned by you or someone in this household with a mortgage or loan (Include home equity loans) (1)
- Owned by your or someone in this household free and clear (without a mortgage or loan) (2)
- Rented (3)
- Occupied without payment of rent (4)

Q136 Of the major political parties listed below, which party do you most identify with?

- Democratic Party (1)
- Republican Party (2)
- Libertarian Party (3)
- Green Party (4)
- Constitution Party (5)
- Other Party (6)
- Don't know (7)
- I don't support any party (8)

Q137 How do you rate your political views?

Extremely
conservative

Neutral

Extremely
Liberal

1 2 3 4 5 6 7

Political views ()



Q138 To what level do you consider yourself to be religious or spiritual?

- Not religious/spiritual (1)
- Slightly religious/spiritual (2)
- Moderately religious/spiritual (3)
- Very religious/spiritual (4)
- Don't know (5)

Q139

	Never (1)	Rarely (2)	Occasionally (3)	Often (4)	Very often (5)
How often do you think about religious issues? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you take part in religious services? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you pray? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you experience situations in which you have the feeling that God or something divine intervenes in your life? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q140

	Not at all (1)	Not very much (2)	Moderately (3)	Quite a bit (4)	Very much so (5)
To what extent do you believe that God or something divine exists? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q141 What is your present religion, if any?

- Protestant (1)
 - Roman Catholic (2)
 - Mormon (3)
 - Orthodox such as Greek or Russian (4)
 - Jewish (5)
 - Muslim (6)
 - Buddhist (7)
 - Hindu (8)
 - Atheist (9)
 - Agnostic (10)
 - Nothing in particular (11)
 - Something else (12)
-

Q142 Is there anything else you would like us to know? Please type it here

UNIVERSITY OF CALIFORNIA, MERCED
CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Title of the Study: Exploring Preferences of Cannabis Use as a Pain Treatment

INVESTIGATORS:

Rudiel Fabian, MSPH
School of Social Science, Humanities and Arts
University of California, Merced
209-769-3427

WHY IS THIS STUDY BEING DONE?

You are being asked to participate in a research study designed to help us understand the factors that you consider when deciding to use (or willing to use) medical marijuana for pain management. We hope to understand what factors you feel are important when making the decision to whether or not use medical marijuana for pain control.

WHAT WILL HAPPEN IF I TAKE PART IN THIS STUDY AND HOW MANY PEOPLE WILL PARTICIPATE?

If you decide to volunteer, you will be asked a few questions about your experiences and preferences for using medical marijuana products. There are also questions about your demographic background such as your age and gender. You do not have to answer any questions that you prefer not to answer. About 10-15 community members will participate in this interview.

WHAT RISKS CAN I EXPECT FROM BEING IN THIS STUDY?

There are no risks of physical discomfort from your participation. Responding to questions about cannabis products could cause feelings of discomfort or distress, but these feelings are likely to be temporary and similar to normal feelings experienced in the course of daily life. You do not have to answer any questions that you prefer not to answer.

HOW LONG WILL THE INTERVIEW TAKE?

The interview should take between 45 to 60 minutes to complete.

ARE THERE BENEFITS FOR BEING PART IN THIS STUDY?

There are no direct benefits by taking part in this study. However, there are likely indirect benefits from identifying and documenting the important preferences that people consider when using medical cannabis. The new knowledge gained from this study may inform public policies and help people in the future.

WILL MY INFORMATION BE KEPT PRIVATE?

Your responses during this interview will remain anonymous. We will not keep a record of your name with your responses. You do not need to share any information that would reveal your identity. All information will be kept strictly confidential.

WILL I BE COMPENSATED FOR BEING IN THIS STUDY?

You will be provided with a \$30 gift card in appreciation of the time required to complete the interview.

WHAT ARE THE COSTS OF TAKING PART IN THIS STUDY?

There is no cost to you beyond the time and effort required to complete the interview.

CAN I STOP BEING IN THIS STUDY?

Yes, you can refuse to participate in this study. You may change your mind about being in the study and quit after the interview has started. There are no consequences if you decide to refuse participation or withdraw from the study.

QUESTIONS?

If you have any questions about this research project, please contact Rudiel Fabian who will answer them at 209-769-3427 or rfabian2@ucmerced.edu.

For questions about your rights while taking part in this study call the Office of Research at (209) 383-8655 or write to the Office of Research, 5200 North Lake Rd, UC Merced, Merced, CA 95343. The Office of Research will inform the Institutional Review Board which is a group of people who review the research to protect your rights. If you have any complaints or concerns about this study, you may address them to Ramesh Balasubramaniam, Chair of the IRB at (209) 383-8655, irbchair@ucmerced.edu.

CONSENT

Please check the first box below if you have decided to volunteer as a participant after having read and understood the information provided above. You will be given a copy of this form to keep. If you do not want to participate, please check the second box—thank you for your consideration.

- I agree to participate in this survey.
- I do not agree to participate in this survey.

Please Print Your Name Here: _____

Preferences for Pain Treatments

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

UNIVERSITY OF CALIFORNIA, MERCED CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Title of the Study: Exploring Preferences of Pain Treatments for Pain Management

INVESTIGATORS:

Rudiel Fabian, MSPH
Paul Brown, Ph.D.
School of Social Science, Humanities and Arts
University of California, Merced
209-769-3427

WHAT IS THE PURPOSE OF THIS RESEARCH STUDY?

You are being asked to participate in a research study designed to help us understand the factors that you consider when dealing with physical pain. We hope to understand what factors you feel are important when making the decision to whether or not to use any pain treatments.

WHAT WILL HAPPEN IF I TAKE PART AND HOW MANY PEOPLE WILL PARTICIPATE?

If you decide to volunteer, you will be asked to complete an anonymous online survey questionnaire about your experiences and preferences for pain treatment products. There are also questions about your demographic background such as your age and gender. You do not have to answer any questions that you prefer not to answer. About 300 community members will participate in this study.

HOW LONG WILL THE SURVEY TAKE?

The survey should take 20 to 25 minutes to complete.

WILL MY INFORMATION BE KEPT PRIVATE?

Your responses during this research will remain completely anonymous. We will not keep a record of your name with your responses.

WILL I BE COMPENSATED?

You will be compensated upon completion by your panel provider.

WHAT ARE THE COSTS?

There is no cost to you except for the time and effort required to complete the survey.

WHAT ARE THE RISKS?

There are no risks of physical discomfort from your participation. Responding to questions about pain treatment products could cause feelings of discomfort or distress, but these feelings are likely to be temporary and similar to normal feelings experienced in the course of daily life. You do not have to answer any questions that you prefer not to answer.

ARE THERE BENEFITS?

There are no direct benefits to taking part in this study. However, the new knowledge gained from this survey may inform public policies and help people in the future.

CAN I STOP BEING IN THIS STUDY?

Yes, you can refuse to participate in this study. You can also change your mind about completing the survey and quit after you have started the survey.

QUESTIONS?

If you have any questions about this research project please contact Rudiel Fabian at (209-769-3427). For questions about your rights while participating in this study, please call the Office of Research at (209) 383-8655 or write to the Office of Research, 5200 North Lake Rd, UC Merced, Merced, CA 95343. The Office of Research will inform the Institutional Review Board, a group of people who review the research to protect your rights. If you have any complaints or concerns about this study, you may address them to Ramesh Balasubramaniam, Chair of the IRB at 209-228-2314, irbchair@ucmerced.edu.

CONSENT

Please check the first box below if you have decided to volunteer as a research participant after having read and understood the information provided above. If you do not want to participate, please check the second box—thank you for your consideration.

Consent_1 Do you agree to participate in the research study?

- I agree to participate in this survey. (1)
- I do not agree to participate in this survey. (2)

Quality

We care about the quality of our survey data and hope to receive the most accurate measures of your opinions, so it is important to us that you thoughtfully provide your best answer to each question in the survey.

Do you commit to providing your thoughtful and honest answers to the questions in this survey?

- I will provide my best answers (1)
- I will not provide my best answers (2)
- I can't promise either way (3)

ZipCode What is the Zip Code of the home or residence where you currently live?

DCE_Inst

Part 1. Features and Options

Thank you for agreeing to participate in this survey. We are interested in learning about your views and experience when dealing with physical pain and what you do to manage the pain. We are interested in your views regardless of whether you have experienced ongoing pain at some time or not. We will be asking about your preference for taking treatments to manage your pain and are interested in your views even if you have never used any pain treatments.

We are going to ask a series of questions about **over-the-counter (OTC)** pain treatments, **medical cannabis**, and **opioids** to control chronic or ongoing pain. We understand that there are many over-the-counter pain treatment products available, as well as different types of medical cannabis products and opioids. Our intent is not to

comment on the merits of using any of these products but rather just to understand more about your experience, views, and under what circumstances you would be willing to use them.

In this survey, we will be asking you to imagine that you are experiencing ongoing pain and are considering whether to take pain treatments or not. Our conversations with people who have experienced ongoing or chronic pain suggest that their decision is influenced by a number of factors, such as the amount of pain that they are in and how effective a treatment is in getting rid of the pain. But it also depends on the cost and the perceived addictiveness of the treatments.

For this survey, we would like you to consider the following 7 features:

- | | |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Type of pain treatment | The type of treatment to control the pain. |
| 2. Amount of pain experience before pain treatment | The level of pain (mild, moderate, severe) experienced before taking any treatment. |
| 3. Amount of pain experience after pain treatment | The level of pain (none, mild, moderate) experienced after the treatment. |
| 4. Access/ease of getting pain treatments | How easy it is to get the treatment. |
| 5. Side effects | Any unintended side effects from the treatment. |
| 6. Addictiveness | The addictiveness of the treatment, meaning the ease at which you can quit when you want to without withdrawal effects or strong cravings. |
| 7. Cost | How much you have to pay for the treatment. |

DCE_Ins2 Instructions

You will see a series of comparisons in this part of the survey. Each comparison shows a choice between options. Each option is made up of different combinations of the 7 features you just read about. You should assume that the options do not differ in any other

ways besides those described in the features. Please think about each of the features individually. **These combinations of features are imaginary.** We are asking you about these imaginary options to help us learn about what features or groups of features are most important to you.

With each comparison, you will be asked to consider the options and pick which one seems like it would be the best option for you. Remember, **there are no right or wrong answers.** We just want to know what option you prefer.

Q194

Practice Comparison: Imagine you are shopping for a used car.

To give you an example of the type of questions we are interested in, we want to start with the example of **buying a car.**

There are a number of factors that people consider when deciding which car to buy, including:

- Color
- Maker of the car
- Number of miles on the car
- Number of doors
- Model year
- Cost of the car

Feature	Examples of Options
1. Color	<ul style="list-style-type: none"> • Red • Blue • White
2. Maker of the car	<ul style="list-style-type: none"> • Ford • Nissan • Toyota
3. Number of miles on the car	<ul style="list-style-type: none"> • 39,539 • 55,539 • 125,539
4. Number of doors	<ul style="list-style-type: none"> • 2 • 4
5. Model year of car	<ul style="list-style-type: none"> • 1998 • 2002 • 2007
6. Cost of car	<ul style="list-style-type: none"> • \$3982

	<ul style="list-style-type: none"> • \$7200 • \$9488
--	------------------------------------------------------------------------------

When choosing between three cars, the cars may differ on these factors, and so people need to decide which one they prefer.

SampleQ

For instance, consider the two options shown below:

Feature	Car 1	Car 2
Color	Red	Blue
Make	Ford	Honda
Miles	155,539	239,987
Number of Doors	4	2
Model Year	2015	2009
Cost	\$7,200	\$3,982
	Prefer Car 1	Prefer Car 2

SampleA

Given these options, which would you prefer:

- Car 1: A Red Ford that has 155,539 miles on it, has 4 doors, was made in 2015, and costs \$7,200?

Or

- Car 2: A Blue Honda that has 239,987 miles on it, 2 doors, was made in 2009, and costs \$3,982?

Note that when you choose the car, there is no right or wrong answers....you are choosing the car that is best for you given the information you have.

SampleQ2

Now imagine that you are choosing between three different pain treatments. So, we would like you to answer some similar questions about pain treatments. In each of the examples that follow, we will ask you to choose between **over-the-counter (OTC) treatments, medical cannabis, and prescribed opioid** alternatives. You will also be given the option of choosing **none of the treatment options**.

As described above, the choices will vary according to the options for each feature of pain experienced. The 7 features shown above will have the following options:

Feature 1. Type of pain treatment

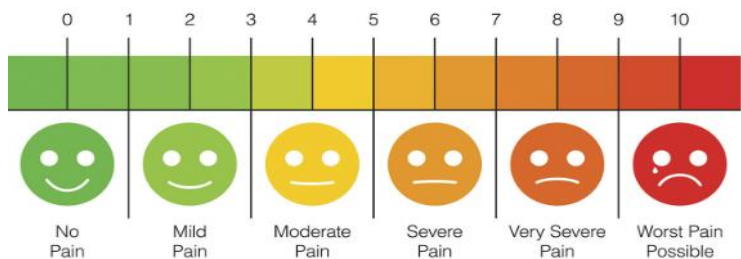
We are interested to know what type of pain treatment you would most likely use under different scenarios:

- Over the counter treatment (Advil, Aspirin, Ibuprofen or Tylenol)
- Cannabis (Medical grade)
- Opioid (Oxycontin)
- None

Feature 2. Amount (scale) of pain experience before treatment

We are interested in all levels of pain:

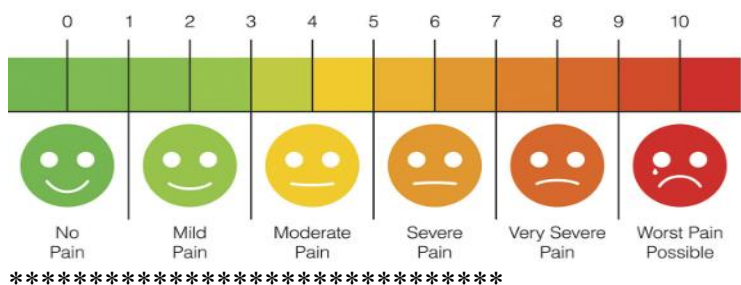
- Mild (1 to 3 out of 10 on the pain scale)
- Moderate (4 to 7 out of 10 on the pain scale)
- Severe (8 to 10 out of 10 on the pain scale)



Feature 3. Amount (scale) of pain experience after treatment

Assuming that the pain treatment does provide relief, we are interested in the amount of pain experience after taking the treatment:

- No pain (0 out of 10 on the pain scale)
- Mild (1 to 3 out of 10 on the pain scale)
- Moderate (4 to 7 out of 10 on the pain scale)



Feature 4 . Access/ease of getting pain treatments

We would like you to consider three options:

- **Easy to access** – You can easily get access to the treatment.
- **Moderately difficult to access** – You would be required to go to a pharmacy store and consult with the pharmacists first.
- **Hard to access** – You would be required to get a doctor’s prescription.

Feature 5. Likelihood of experiencing side effects

The unintended consequences of taking pain treatments that we want you to consider are:

- Drowsiness
- Constipation
- Nausea
- Vomiting
- Dizziness
- Fatigue.

The options will vary in the **probability** or **likelihood** that you will experience these side effects:

- Not at all or minimal (0 % chance)
- Small probability of getting these side effects (20% chance)

- Moderate probability of getting these side effects (60% chance)
- High probability of getting these side effects (90% chance)

Feature 6. Addictiveness

While there are a lot of factors that go into how addictive a pain treatment could be, we are interested in understanding how important of a consideration this is for you. We would like you to consider three alternatives:

- Not at all addictive/able to quit at any time/no withdrawals or cravings
- Moderately addictive/would experience some withdraws or cravings when trying to quit
- Highly addictive/would be very difficult to quit/strong withdrawals and cravings

Feature 7. Cost

We know that the cost is an important factor to consider and can vary depending upon many other factors, including whether you are given the pain treatment by someone else, the type of pain treatment, where you buy the pain treatment, and how much your health insurance will require you to pay.

For the purpose of these questions, we would like you to consider the amount you would have to pay, out of pocket, for the treatments and assume that you will take the treatment 3-times a day. We would like you to consider five different costs:

- No cost (free)
- \$ 2 per treatment/\$6 per day
- \$ 5 per treatment/\$15 per day
- \$ 15 per treatment/\$45 per day
- \$ 25 per treatment/\$75 per day

SampleQ3 We are going to ask you to make 16 choices of either using over-the-counter (OTC) treatment, medical cannabis, or prescribed opioids under different scenarios. For instance, the first choice might look like:

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	NONE
Amount of pain before pain treatment	High	High	High
Amount of pain after pain treatment	None	Low	High
Access/ease of getting pain treatments	Easy	Moderate	No access
Side effects	Moderate (60% chance)	No at all (0% chance)	None
Addictiveness	Highly addictive	Moderately addictive	Not addictive
Cost	\$15.00 per treatment	\$5.00 per treatment	\$0

Prefer Option 1	Prefer Option 2	Prefer Option 3

Q274 You will be asked which option you would prefer:

Option 1 – Using cannabis, having a high amount of pain before but no pain afterwards, having it be easy to access, having a moderate (60%) chance of side effects, having it be highly addictive, and costing \$15 per treatment.

OR

Option 2 – Using an opioid, having a high amount of pain before and a low amount of pain afterwards, having it be moderately difficult to access, having a no chance (0%) of side effects, having it be moderately addictive, and costing \$5 per treatment.

And if you don't like either of these options, then you could choose option 3:

Option 3 – Not using any pain treatment, having a high amount of pain before and a high amount of pain afterwards, not have to access it, having a no chance (0%) of side effects, having no chance of it being addictive, and not costing anything.

After making your choice, you will be shown a new set of three options and asked to make another choice. The options will differ in the specifics, but option 3 will always be a 'no treatment' option.

SampleQ4 Again, there are no right or wrong answers...chose the alternative that is best for you.

Ready to begin?

DCE Version 1

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	High	High	High
Mount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	No cost (free)	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0
	Prefer Option 1	Prefer Option 2	Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Moderate	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

DCE Version 2

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
----------------	-----------------	-----------------	-----------------

Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
---------	-----------------	-----------------	-----------------

Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Hard to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Hard to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

DCE Version 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Hard to access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	Mild	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate

Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate

Access/ease of getting pain treatments	Hard to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Moderate	High

Access/ease of getting pain treatments	Hard to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild

Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Easy access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	No cost (free)	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

DCE Version 4

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
	Prefer Option 1	Prefer Option 2	Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdraws and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None

Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Hard to access	Hard to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

DCE Version 5

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	None	High
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	No cost (free)	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild

Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	None	High

Access/ease of getting pain treatments	Hard to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access

Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access

Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None

Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	None	High
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None

Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None

Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None

Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive

	or cravings when trying to quit		
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive

Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive

Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
	Prefer Option 1	Prefer Option 2	Prefer Option 3

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Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$2.00 per treatment/\$6.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$2.00 per treatment/\$6.00 per day	\$2.00 per treatment/\$6.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Hard to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive

Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Mild	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive

Cost	\$25.00 per treatment/\$75.00 per day	No cost (free)	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive

Cost	No cost (free)	\$5.00 per treatment/\$15.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive

Cost	\$2.00 per treatment/\$6.00 per day	\$15.00 per treatment/\$45.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive

Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive

Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0
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Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

	Prefer Option 1	Prefer Option 2	Prefer Option 3
Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0
	Prefer Option 1	Prefer Option 2	Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Moderate	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Mild	High
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

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Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
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Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0
	Prefer Option 1	Prefer Option 2	Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Mild	Mild	Mild

Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Hard to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Easy access	Hard to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Hard to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	Moderate	None	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	None	Moderate	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate

Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

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Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	None	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Moderate probability of getting side effects (60% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	No cost (free)	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	None	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	Opioid	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Easy access	No access
Side effects	Small probability of getting side effects (20% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$2.00 per treatment/\$6.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Mild	Moderate	High
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Moderate probability of getting side effects (60% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	No cost (free)	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None

Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	None	Mild	High
Access/ease of getting pain treatments	Moderately difficult to access	Easy access	No access
Side effects	Not at all or minimal (0% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$15.00 per treatment/\$45.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None

Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	None	Mild	Moderate
Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not addictive
Cost	\$2.00 per treatment/\$6.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Opioid	Cannabis	None

Amount of pain <u>before</u>	Mild	Mild	Mild
Amount of pain <u>after</u>	None	None	Mild
Access/ease of getting pain treatments	Moderately difficult to access	Hard to access	No access
Side effects	High probability of getting side effects (90% chance)	Not at all or minimal (0% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$25.00 per treatment/\$75.00 per day	\$5.00 per treatment/\$15.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Cannabis	None
Amount of pain <u>before</u>	High	High	High

Amount of pain <u>after</u>	Moderate	Moderate	High
Access/ease of getting pain treatments	Hard to access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	Small probability of getting side effects (20% chance)	None
Addictiveness	Not at all addictive/able to quit at any time/no withdrawals or cravings	Highly addictive/would be very difficult to quit/strong withdrawals and cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$15.00 per treatment/\$45.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	OTC	Opioid	None
Amount of pain <u>before</u>	High	High	High
Amount of pain <u>after</u>	Moderate	None	High

Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Small probability of getting side effects (20% chance)	High probability of getting side effects (90% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Feature	Option 1	Option 2	Option 3
Type of pain treatment	Cannabis	OTC	None
Amount of pain <u>before</u>	Moderate	Moderate	Moderate
Amount of pain <u>after</u>	Mild	None	Moderate

Access/ease of getting pain treatments	Easy access	Moderately difficult to access	No access
Side effects	Not at all or minimal (0% chance)	Moderate probability of getting side effects (60% chance)	None
Addictiveness	Moderately addictive/would experience some withdraws or cravings when trying to quit	Not at all addictive/able to quit at any time/no withdrawals or cravings	Not addictive
Cost	\$5.00 per treatment/\$15.00 per day	\$25.00 per treatment/\$75.00 per day	\$0

Prefer Option 1

Prefer Option 2

Prefer Option 3

Part 2: Preference of Pain Treatments

Q189 Thank you for answering those questions.

We would like to know more about your willingness to use the pain treatment products:

Over-the-counter medications (OTC) Medical cannabis, or

Opioids Please answer all the questions to the best of your ability. Remember, there are no right or wrong answers.

PrefMild If you were experiencing **mild pain**, which could be annoying but doesn't really interfere with your daily living activities (e.g., muscle sourness, joint pain, or headache), how effective do you think each treatment would be in reducing your pain?

	Not at all effective (does not reduce mild pain) (1)	Extremely effective (reduce pain from mild to no pain) (2)
OTC (PrefMild_OTC)	<input type="radio"/>	<input type="radio"/>
Cannabis (PrefMild_Cann)	<input type="radio"/>	<input type="radio"/>
Opioids (PrefMild_Opi)	<input type="radio"/>	<input type="radio"/>

PrefMod If you were experiencing **moderate pain**, which is a bit uncomfortable, and interferes with your daily living activities, it can be ignored for a period of time, but it is still distracting (e.g., back pain), how effective do you think each treatment would be in reducing your pain?

	Not at all effective (does not reduce moderate pain) (1)	Somewhat effective (reduces pain from moderate to mild) (2)	Extremely effective (reduces pain from moderate to no pain) (3)
OTC (PrefMod_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (PrefMod_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (PrefMod_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PrefSev If you were experiencing **severe pain**, which dominates your senses and significantly limits your ability to perform your daily activities (e.g., surgery, burn, or broken bone), how effective do you think each treatment would be in reducing your pain?

	Not at all effective (does not reduce severe pain) (1)	Somewhat effective (reduces pain from severe to moderate) (2)	Effective (reduces pain from severe to mild) (3)	Extremely effective (reduces pain from severe to no pain) (4)
OTC (PrefSev_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (PrefSev_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (PrefSev_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Acces How easy do you think it would be for you to access or get a hold of each of these treatments for pain?

	Very difficult (1)	Difficult (2)	Neutral (3)	Easy (4)	Very easy (5)
OTC (Acces_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (Acces_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (Acces_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sideff What do you think would be your chance of getting negative side effects (e.g., nausea, constipation, dizziness) from each of the following?

	Not at all or minimal (0% chance) (1)	Small probability of getting these side effects (20% chance) (2)	Moderate probability of getting these side effects (60% chance) (3)	High probability of getting these side effects (90% chance) (4)
OTC (Sideff_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (Sideff_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (Sideff_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Addic How addictive do you think each of the following treatment options are?

	Not at all addictive (1)	Low addictiveness (2)	Moderately addictive (3)	Highly addictive (4)
OTC (Addic_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (Addic_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (Addic_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Cost How much you think it would cost to get each of the following types of treatments.

	\$2 per treatment/\$6 per day (1)	\$5 per treatment/\$15 per day (2)	\$15 per treatment/\$45 per day (3)	\$25 or more per treatment/\$75 per day (4)
OTC (Cost_OTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis (Cost_Cann)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opioids (Cost_Opi)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 3: Your Experience with Chronic Pain

Q275 The following questions are based on your personal experience dealing with chronic pain (e.g., arthritis, osteoporosis, back pain, neck pain, migraines, pain due to different types of cancer) and what type of treatment do you take to relieve the pain. Chronic pain means that the pain has been present (most or every day that lasts for 3 months or more). Now, we want you to think about that time when you experienced chronic pain.

PainChro Have you ever experienced chronic pain in your life?

Yes (2)

No (1)

PainLevel At that time when you were experiencing pain, what number best describes that pain, on average?

0No pain (0)

1 (1)

2 (2)

3 (3)

4 (4)

5 (5)

6 (6)

7 (7)

8 (8)

9 (9)

10Worst pain ever (10)

PainEnjoy During that time, what number best describes how that pain interfered with your enjoyment of life?

- 0 Did not interfere (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 Completely interfered (10)

PainGenAct During that time, what number best describes how that pain interfered with your general activities?

- 0 Did not interfere (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)

- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 Completely interfered (10)

PainTreatmt During that time of pain, what type of pain treatment did you take to relieve the pain?

- Over the counter medication (1)
- Medical cannabis (2)
- Opioids (3)
- None (4)

Part 4: Previous Experience with Marijuana and Smoking

Q214 Now, we would like to know about your experience with marijuana, vaping and tobacco products.

SmokingCurrent How often do you currently smoke or use each of the following products?

	Never (1)	Less than once a month (2)	A couple of times a month (3)	At least once a week (4)	Nearly every day (5)
Cigarettes (SmokingCurrent_Cig)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigars (SmokingCurrent_Cigar)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cigarillos (SmokingCurrent_Cigarri)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hookahs (SmokingCurrent_Hook)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vaping products (SmokingCurrent_Vape)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana (SmokingCurrent_Mari)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Times30 Have you smoked or used each of the following in the past 30 days?

	No (1)	Yes (2)
Cigarettes (Times30_Cig)	<input type="radio"/>	<input type="radio"/>
Cigars (Times30_Cigar)	<input type="radio"/>	<input type="radio"/>
Cigarillos (Times30_Cigarri)	<input type="radio"/>	<input type="radio"/>
Hookahs (Times30_Hook)	<input type="radio"/>	<input type="radio"/>
Vaping products (Times30_Vape)	<input type="radio"/>	<input type="radio"/>
Marijuana (Times30_Mari)	<input type="radio"/>	<input type="radio"/>

Times100 Have you smoked or used each of the following 100 times or more in your life?

	No (1)	Yes (2)
Cigarettes (Times100_Cig)	<input type="radio"/>	<input type="radio"/>
Cigars (Times100_Cigar)	<input type="radio"/>	<input type="radio"/>
Cigarillos (Times100_Cigarri)	<input type="radio"/>	<input type="radio"/>
Hookahs (Times100_Hook)	<input type="radio"/>	<input type="radio"/>
Vaping products (Times100_Vape)	<input type="radio"/>	<input type="radio"/>
Marijuana (Times100_Mari)	<input type="radio"/>	<input type="radio"/>

CountyAllow Based on what you know about the policies in your county:

	No (1)	Yes (2)	Don't know/ Need more information (3)
Does your county allow the sale of all vaping products? (CountyAllow_1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your county allow the sale of flavored vaping products other than mint or menthol flavors? (CountyAllow_2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your county allow the sale of marijuana for recreational purposes? (CountyAllow_3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your county allow the sale of marijuana for medical purposes? (CountyAllow_4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your county allow the commercial growing of marijuana? (CountyAllow_5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CountyBanSmok Based on what you know about vaping, hookah use and tobacco, do you feel your county should ban:

	No (1)	Yes (2)	Don't know/ Need more information (3)
Sale of all vaping products? (CountyBanSmok_1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of flavored vaping products other than mint or menthol flavors? (CountyBanSmok_2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of mint or menthol flavored vaping products? (CountyBanSmok_3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of all hookah products? (CountyBanSmok_4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of flavored hookah products other than mint or menthol flavors? (CountyBanSmok_5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of mint or menthol flavored hookah products? (CountyBanSmok_6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of flavored tobacco products other than mint or menthol flavors? (CountyBanSmok_7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of mint or menthol flavored tobacco products? (CountyBanSmok_8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CountyBanMari Based on what you know about marijuana, do you feel your county should ban:

	No (1)	Yes (2)	Don't know/ Need more information (3)
Personal use of all marijuana products for recreational purposes? (CountyBanMari_1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal use of all marijuana products for medical purposes? (CountyBanMari_2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of all marijuana products for recreational purposes? (CountyBanMari_3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale of all marijuana products for medical purposes? (CountyBanMari_4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial growing of marijuana? (CountyBanMari_5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal growing (less than 6 plants) of marijuana? (CountyBanMari_6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 5: Your Opinions

Now we are interested in your opinion on the following questions. **For each question, please check the box that best matches your views.**

SuprtMedRec How much do you disagree or agree with the following statements?

	Strongly disagree (1)	Slightly disagree (2)	Undecided (3)	Slightly agree (4)	Strongly agree (5)
Cannabis for medical purpose should be legal. (SuprtMedRec_1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannabis for recreational purpose should be legal. (SuprtMedRec_2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

UsedRec Have you used cannabis for non-medical purposes (e.g., social/recreational use) before?

- 1-2 times in 3 months (1)
- 1-3 times/month (2)
- 1-4 times/week (3)
- 5-7 times/week (4)
- Never (5)
- Other (6)

UsedRecTime If you have used, how long have you been using/used recreational cannabis for?

UsedRecMeth If you have used, what is your preferred method of using recreational cannabis?

- Ingested/edible (1)
- Inhaled/smoked (2)
- Patch/Roll on/topical (3)
- Other (4)

UsedMed Have you used cannabis for medical purposes before?

- 1-2 times in 3 months (1)
- 1-3 times/month (2)
- 1-4 times/week (3)
- 5-7 times/week (4)
- Never (5)
- Other (6)

UsedMedCond If you have used, please select the medical condition it was used for. (Check all that may apply).

- Appetite stimulation, weight gain (1)
 - Sleep/relaxation (2)
 - Nausea/vomiting (3)
 - Pain management (4)
 - Anxiety/depression/post-traumatic stress (5)
 - Seizures (6)
 - Cure cancer (7)
 - Other (8)
-

UsedMedTime If you have used, how long have you been using/used medical cannabis for?

UsedMedMeth If you have used, what form of cannabis did you use?

- Ingested/edible (1)
- Inhaled/smoked (2)
- Patch/Roll on/topical (3)
- Other (4)

UsedMedAffc If you have used, how did medical cannabis affect your condition/symptoms?

- Gives me great relief (1)
- Gives me a little relief (2)
- Made no difference (3)
- I feel a little worse (4)
- I feel a lot worse (5)

MedBeliev I believe that medical cannabis can be useful for medical reasons.

- Completely Disagree (1)
- Slightly Disagree (2)
- Undecided (3)
- Slightly Agree (4)
- Completely Agree (5)

MedBelievCond If you agree, please select for what purpose you believe it can be useful. (Check all that may apply).

- Appetite stimulation, weight gain (1)
- Sleep/relaxation (2)
- Nausea/Vomiting (3)
- Pain management (4)

- Anxiety/Depression/Post-traumatic Stress (5)
- Seizures (6)
- Cure cancer (7)
- Other (8)

MedDisbel If you disagree or undecided, please select the reason as to why that is.
(Check all that may apply).

- Concerned about being addicted to cannabis (1)
- Concerned about side effects (2)
- Not enough evidence of its medical benefits (3)
- Negative social impression (4)
- Cannabis is not covered by insurance and can be costly (5)
- Other (6)

MedConcr How concern are you about the safety and side effects of medical cannabis?

- Very much unconcerned (1)
- Slightly unconcerned (2)
- Neither concerned nor unconcerned (3)
- Slightly concerned (4)
- Very much concerned (5)

MedWhyconcr If you answered at least slightly concerned, please select what you are concerned about. (Check all that may apply).

- Addiction to cannabis use (1)
- Side effects (e.g., bronchitis, low blood pressure, palpitations, anxiety, depression, confusion, memory loss, dry mouth, etc.). (2)
- Reaction with other medication including chemotherapy, pain medications, etc. (3)
- Other (4)

PrefMedOpi I prefer to be prescribed medical cannabis rather than opioid pain medicines (e.g., morphine, dilaudid, oxycodone, hydrocodone, tramadol, codeine, other opiates/narcotic pain treatment).

- Completely Disagree (1)
- Slightly Disagree (2)
- Undecided (3)
- Slightly Agree (4)
- Completely Agree (5)

PrefMedWhyopi If you slightly agree or completely agree, why do you prefer medical cannabis over other pain medications? (Check all that may apply).

- Fear of addiction from narcotics (1)
- Believe cannabis has less side effects and withdrawal effects (2)
- Believe cannabis works better (3)
- Cannabis is more natural than narcotics (4)
- Cannabis is easier to get than narcotics (5)
- Cannabis is cheaper than narcotics (6)
- Negative social impression of using narcotics (7)
- Other (8)

PrefMedWhynotopi If you disagree or are undecided, why do you not prefer medical cannabis over other pain medications? (Check all that may apply).

- Concerned about being addicted to cannabis (1)
- Concerned about side effects (2)
- Not enough evidence of its medical benefits (3)
- Negative social impression (4)
- Cannabis is not covered by insurance and can be costly (5)
- Other (6)

PrefMedAnx I prefer to be prescribed medical cannabis rather than medicines for anxiety (e.g., Xanax, Valium, Ativan, Klonopin, etc.).

- Completely Disagree (1)
- Slightly Disagree (2)
- Undecided (3)
- Slightly Agree (4)
- Completely Agree (5)

PrefMedWhyanx If you completely agree or slightly agree, why do you prefer medical cannabis over medicines for anxiety? (Check all that may apply).

- Fear of addiction from medicines for anxiety (1)
- Believe cannabis has less side effects and withdrawal effects (2)
- Believe cannabis works better (3)
- Cannabis is more natural and organic than medicines for anxiety (4)
- Cannabis is easier to get than medicines for anxiety (5)
- Cannabis is cheaper than medicines for anxiety (6)
- Negative social impression of using medicines for anxiety (7)
- Other (8)

PrefMedWhynotanx If you disagree or are undecided, why do you not prefer medical cannabis over medicines for anxiety? (Check all that may apply).

- Concerned about being addicted to cannabis (1)
- Concerned about side effects (2)
- Not enough evidence of its medical benefits (3)
- Negative social impression (4)
- Cannabis is not covered by insurance and can be costly (5)
- Other (6)

PrefMedDep I prefer to be prescribed medical cannabis rather than medicines for depression (e.g., Zoloft, Prozac, Lexapro, Celexa, etc.).

- Completely Disagree (1)
- Slightly Disagree (2)
- Undecided (3)
- Slightly Agree (4)
- Completely Agree (5)

PrefMedWhydep If you completely agree or slightly agree, why do you prefer medical cannabis over medicines for depression? (Check all that may apply).

- Fear of addiction from medicines for depression (1)
- Believe cannabis has less side effects and withdrawal effects (2)
- Believe cannabis works better (3)
- Cannabis is more natural and organic than medicines for depression (4)
- Cannabis is easier to get than medicines for depression (5)
- Cannabis is cheaper than medicines for depression (6)
- Negative social impression of using medicines for depression (7)
- Other (8)

PrefMedWhynotdep If you disagree or are undecided, why do you not prefer medical cannabis over medicines for depression? (Check all that may apply).

- Concerned about being addicted to cannabis (1)
- Concerned about side effects (2)
- Not enough evidence of its medical benefits (3)
- Negative social impression (4)
- Cannabis is not covered by insurance and can be costly (5)
- Other (6)

MediaRef How often have you seen the media (e.g., TV, news, magazine, social media, medical websites, etc.) reference medical cannabis use?

- Less than once per month or never (1)
- Once per month (2)
- Once per week (3)
- 3-5 days per week (4)
- Daily (5)

MediaInflu The media (e.g., TV, news, magazine, social media, medical websites, etc.) has influence how I think of medical cannabis use?

- Not at all (1)
- Very little (2)
- Not sure (3)
- Somewhat (4)
- Very much (5)

MediaHowInflu If you answered very much or somewhat, how did the media influence your view of medical cannabis? (Check all that may apply).

- It made me think that it has use for medical purposes (1)
- It made me think that it has no use of medical purposes (2)
- Mixed, it depends on what it is used for (3)
- Other (4)

Part 6 : Demographics

Gender What is your gender?

- Male (0)
 - Female (1)
 - Other, please specify: (2)
-

County What County do you live in?

Age What is your age?

Race Pick **ONE** option that best describes you:

- None-Hispanic White/Caucasian (0)
- Black/African American (1)
- Asian/Pacific Islander (2)
- American Indian/Alaskan Native (3)
- Hispanic/Latino/Latina (4)
- Other, please specify (5)

Marital What is your current marital status?

- Single (0)
- Married/Engaged (1)
- Divorced/Separated/Widowed (2)
- Common law/living with a partner (3)
- Steady relationship (>3 months) (4)
- Casual relationship (5)

Edu What best describes your highest level of education?

- Less than 9th grade (0)
- 9th to 12th grade, no diploma (1)
- High school graduate or GED (2)
- Some college or vocational school (3)
- 2-year college degree (4)
- 4-year college degree (5)
- Professional or graduate degree (6)
- Doctoral (MD,DO,PhD,JD) (7)

Employment What is your current employment status?

- Self-employed (0)
- Full-time (1)
- Part-time (2)
- Unemployed (3)
- Retired (4)
- Other (5)

Income What is the approximate total income of your household?

- Less than \$10,000 per year (0)
- \$10,001 to \$30,000 (1)
- \$30,001 to \$60,000 (2)
- \$60,001 to \$90,000 (3)
- Greater than \$90,001 (4)
- Don't know (5)

Poliview On a scale of 1 (1=extremely conservative) to 7 (7=extremely liberal) how do you rate your political views?

	1	2	3	4	5	6	7
	Extremely Conservative			Neutral			Extremely Liberal
Political views ()							

Poliparty Of the major political parties listed below, which party do you *most* identify with:

- Democratic Party (0)
 - Republican Party (1)
 - Libertarian Party (2)
 - Green Party (3)
 - Constitution Party (4)
 - Other party, please specify (5)
-
- Don't know (6)
 - I don't support any party (7)

12mo_vote In the past 12 months, did you vote in local or state elections, such as for mayor, school board, or state officials?

Yes (1)

No (0)

Vote If you answered “yes” to above question, please check all of the parties of the candidates you voted for:

Democratic Party (0)

Republican Party (1)

Libertarian Party (2)

Green Party (3)

Constitution Party (4)

Other party (5)

Don't know (6)

I don't support any party (7)