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Walking the Green Mile

The History, Status Quo and the Impact of Legalization
of Recreational Cannabis on the Economy

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<p>In 2018, there were 11 US states that have legalized recreational marijuana, as well as two nations. Cannabis legalization is a current and discussed topic globally today, since the old prohibition-based cannabis policies have not achieved the desired outcome in some of the nations where the policies have been implemented. This had led to the outcome, in which a few US states and a few nations have begun to question their cannabis policies and considering new solutions to better adapt their cannabis policies to better serve their nations/states' economies.</p> <p>Canada is the first G7 nation to legalize recreational marijuana. Additionally, the US states such as Colorado and Washington have legalized recreational marijuana in accordance to state law. Such policy changes arise the question: how does the legalization of recreational marijuana affect the economy? Legalization of recreational marijuana has so far in Colorado and Washington state as well as in Canada, increased employment, increased tax revenue and in Colorado and Washington states, decreased cannabis related arrests.</p> <p>Recreational cannabis remains illegal in Finland, even though consumption of cannabis has been increasing throughout the years, despite Finland's prohibition-based policy approach in regards of cannabis. According to THL, nearly a quarter of the population of Finland has consumed cannabis at least once during their lifetime. However, less than 20 % of the population in Finland supports the legalization of recreational marijuana. Additionally, it is estimated that Finland would receive more than 20 million euros in TAX revenue if recreational cannabis was legalized. The illegal black market of cannabis in Finland is estimated to be worth between 16 – 74 million euros. Finland should take note of the success Canada and the US states have had after legalization of recreational marijuana, since the evidence does seem to support that the liberal cannabis policy seems to have more benefits than the conservative prohibition-based cannabis policy approach. However, other EU countries might have to legalize marijuana with successful results until Finland might consider such liberal policies seriously.</p>	
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1 Introduction and Research Question

Marijuana and hashish are the common names to a psychoactive drug that comes from the flowers of the cannabis plant (Standford 2016). Marijuana is used in some parts of the world strictly for medicinal purposes. However, there are US states, countries and cities, in which the use of marijuana for recreational¹ purposes is legal. Notably, in recent years, cannabis has stirred a lot of conversation in the media as well as in different governments globally. For decades, the use of cannabis for recreational or medicinal purposes has been illegal. However, recently, in some regions, there has been a shift towards a more pro cannabis perception in regards of consuming cannabis either for medicinal and/or recreational purposes, even though cannabis is still considered a psychoactive drug. (Speights 2018)

In 2018, Canada became the second country after Uruguay to have both recreational² and medicinal use of cannabis legalized. Colorado and Washington states became the first states in the US to have both recreational and medicinal use of cannabis legalized in 2012. In 2018, there were 11 states in the US, in which both recreational and medicinal use and retail of cannabis was legal. Additionally, in the US, there are 33 states in total, which have legalized the use of medicinal cannabis. The legalization of cannabis is a trending topic globally, and one of the arguments for the legalization of cannabis is the impact it has on the economy and crime (Robinson 2018). Additionally, in the US, a research done by Columbia University Mailman's School of Public Health concluded that the use of cannabis as a recreational drug has been on a rise in all American adult groups after 2007 (Columbia University Mailman School of Public Health 2018). A similar trend is visible in Canada. In 1990, there were 296 800 daily cannabis users in Canada. However, in 2017, the amount has increased to 695 600

¹ Recreational marijuana, usually refers to the consumption of cannabis products, in the purpose to intentionally alter the state of consciousness in the attempts to possibly achieve feelings of happiness, and creativity. The consumption methods of marijuana for recreational purposes may not necessary differ from the consumption of medicinal marijuana, however if an individual is consuming marijuana for pure enjoyment and not primarily for health reasons or benefits, it is then classified as consumption of recreational cannabis (Weedmaps n.d). Additionally, medicinal marijuana usually contains less THC than recreational marijuana that is purchased from a government licensed dispensary (Docmj 2017).

² When a country or state is referred to have legalized recreational marijuana, it usually refers to the legalization of consumption, production, transportation, retail sales and other factors in the supply chain of marijuana and other cannabis products from production until to the end of the supply chain, which in most cases, is retail sales for consumers for recreational consumption.

daily users (Armstrong 2018). A similar trend is visible in Finland as well, since the use of cannabis as a recreational drug is on the rise in Finland. (THL 2019)

The reason why this is important is because, just as Canada and many states in the US have noticed, the use of cannabis is on the rise, regardless of cannabis being illegal in many countries and US states. Many countries and US states have re-evaluated their cannabis laws and procedures in order to adapt to the current status quo³ related to cannabis consumption. As of December 2019, currently there are 11 states in the US, where the retail and use of recreational marijuana is legal (Wu & Silva 2018). However exactly 10 years ago (2009), the retail sales, production and the consumption of marijuana was still illegal in all of the US states, as well as in Uruguay and Canada. (Speights 2018)

The aim of this research is to give its reader an understanding on the impact legalization of recreational marijuana has had on the economy in the countries and US states that have (at the moment of writing this thesis in 2020), legalized recreational marijuana. The research question thus is: **How does the legalization of recreational marijuana affect the economy?** In order to answer the main research question, a series of sub questions and topics will function as guidelines to the investigation:

- What is cannabis, marijuana and hashish? What are the effects of the use of this psychoactive drug and why is it illegal?
- Why are the retail sales, production and usage of cannabis products illegal? What is the history of the laws and policies concerning cannabis globally?
- How does the legalization of recreational marijuana affect the economy in regards of tax revenue, employment, crime and black market of cannabis?
- What is the current situation with cannabis usage, laws and opinions in Finland? What is the history of cannabis policies and usage and what might be the future of cannabis laws and attitudes in Finland?

³ Status quo is a Latin phrase that refers to the existing state of affairs (Merriam-Webster).

2 Literature Review

There is a lot of literature on the topic, even though cannabis is still considered somewhat of a taboo and controversial subject. Many of the literature that is visible, are university researches as well as statistical reports done and published by states in order to be transparent and track the impact legalization of recreational marijuana has had on the economy. Additionally, since cannabis legalization is a trendy controversial topic, there are a great number of articles and journals published by different major news channels. A common theme on the literature discovered is that most researches use Colorado and Washington as case studies in regards of what type of an impact legalization of recreational marijuana has had to the state, since they were the first US states to fully legalize recreational marijuana. Moreover, there seems to be a common tone in the conclusions between the researches concerning the sort of impact the legalization of recreational marijuana has had on the economy.

Nagisa Alan Isa published a research thesis in 2017 titled "*Legalization of Recreational Marijuana and its Impact on Economic Activities*" for the Graduate School of Arts and Sciences of Georgetown University. She concludes that there have been more benefits to the economy after the legalization of marijuana due to increased tax revenues, lower crime rates, as well as the allocation of the tax-revenues gained from the marijuana industry. However, she did admit that the long-term effects of legalization are still not clear, due to it being recently legalized. Controversially, David G. Evans, Executive Director, Drug Free Projects Coalition, 2013, published in the Journal of Global Drug Policy and Practice, in his research titled "*The Economic Impacts of Marijuana legalization*", in which Mr. Evans had a different conclusion regarding the legalization of recreational marijuana. The author came to a conclusion, in which he sees that the economic benefits from legalization do not outweigh the costs, thus it would not be beneficial for the economy. One of Evans main arguments is that legalization of recreational marijuana increases marijuana use by 75% - 289%, thus it will increase crimes such as driving under the influence of a substance (marijuana), leading to an increase in healthcare, criminal justice and overall social costs in the society. However, the research was published in 2013, a year after Colorado and Washington legalized marijuana, therefore there weren't many studies conducted on the matter during the time.

One of the most well educated and informed sources in substance usage in Finland is Pekka Hakkarainen. Pekka Hakkarainen is the department manager in the Finnish Institute for Health and Welfare (Terveyden ja hyvinvoinnin laitos THL), as well as a research professor concentrating on substance usage in Finland. Pekka Hakkarainen, Jussi Perälä and Heini Kainulainen have written a book in 2006 about the usage of cannabis in Finland. Moreover, Mrs. Kainulainen and Mr. Hakkarainen published another book on the same subject on 2017. Their research was sponsored by the public sector, such as the National Health Institute. The literature produced by THL and Hakkarainen and his colleagues focuses more on the social aspect, as well as the more statistical information about the number of users and the different kind of users of cannabis in Finland, which they have collected by surveys from the public. Many of the findings concerning the statistics on cannabis usage in Finland that is used in this research will be from the Finnish Institute for Health and Welfare. In an interview for MTV- uutiset in 2018 (a Finnish news channel/website), Pekka Hakkarainen stated that the current policies concerning cannabis seem to prevent cannabis consumers from seeking help due to the taboos and stigmas that surround anything related to cannabis, as well as possible punishment cannabis users may face. He proposed law and regulation changes, since even though cannabis is illegal, consumption has been increasing steadily for years (Mtv-uutiset 2018). Additionally, Mr. Hakkarainen and his colleagues conclude that there isn't any data regarding how much cannabis is truly in the black-market; however, they estimate that only 5 -10% of the illegal cannabis in Finland is confiscated. These statistics give leeway to estimations of how much money is involved in the black-market of the Finnish cannabis industry. (Hakkarainen, Kainulainen & Perälä 2006: 583)

2.1 Limitations

Most of the hard-evidenced based research about the impact legalization of marijuana has had on the economy, is done within the last decade. One of the main reasons for this is that the reliability of research regarding the impact legalization of recreational marijuana has had on the economy is hard to measure until there is an actual country or a state that can be studied and measured. Therefore, the long-term impact on the economy is hard to precisely predict and estimate. Additionally, since it is an extensive subject, and there are at least 10 states in the U.S that have legalized recreational marijuana, there is a lot of statistics and research done on the impact. However due to

the space constraints of this research, only 2 states will be examined, in addition with one G7 country. A lot of the literature available uses Colorado and Washington states as examples, since these two states were the first in the US to legalize recreational marijuana. However, even though there are currently in 2020, at least 10 US states⁴ and two countries that have recreational marijuana legalized, it is still a new phenomenon, therefore, the long term affects to the economy are hard to study. (Matthews 2019)

3 Research Method

As previously already mentioned, the legalization of cannabis/marijuana is fairly a new phenomenon. Recreational marijuana was first legalized in 2012 by two states in the US (according to the individual state laws). In 2013, Uruguay was the first nation to legalize recreational marijuana (Jordan 2018). Moreover in 2018, Canada was the second country to do so as well, and therefore there is a limited amount of long-term research on the topic in regards on how legalization of recreational marijuana had an impact to the nation's economy as a whole. Regardless, for this thesis, I will use mostly qualitative research of secondary data, such as previous researches done concerning in the economic effects of legalization of cannabis in different nations and states. Additionally, I will use case-studies, journals, studies, articles, websites and pre-usual of pertinent academic research publications and statistical data found on the subject to gain a broad perspective in the matter. The focus will be on the history of the cannabis policies as well as the economic benefits and draw-backs regarding the legalization of cannabis to the economy. The data gathered will be analyzed and synthesized so that the reader will have an understanding of the history of cannabis policies and how the economy has been affected after the legalization of recreational cannabis. Moreover, eventually I will reflect the current status quo of cannabis usage and policies in Finland, concluding with Finland's possible direction. Additionally, an email interview exchange has been conducted with Tuija Hietaniemi, a senior researcher for the Finnish National

⁴ Even though some US states have legalized recreational and medicinal production, sales and distribution of marijuana, cannabis is still scheduled as a class 1 substance just like heroin according to the US federal law. Federal law is applicable to the whole nation of the United States of America, therefore federal law is applicable to all of the 50 states in the US. Therefore, according to federal law, cannabis is illegal all over the US, even though it may be considered legal in accordance with the state law. Thus, within a state that has legalized recreational marijuana, legal marijuana businesses may face in some cases major repercussions, punishment and penalties because of the federal law policies in regard of cannabis (Lopez 2014; Lopez 2018; Daunt 2014).

Bureau of Investigation (Keskusrikospoliisi) to understand more about the illegal cannabis market in Finland. The information received from Mrs. Hietaniemi as well as the information gathered from different sources related to the illegal cannabis market in Finland will provide enough statistics to complete estimation calculations of the overall size and cash flow of the illegal cannabis industry in Finland. As for this research, Colorado and Washington states as well as Canada will be in the spotlight for analysis. The US states have a lot of transparent research available due to the states being pioneers on the matter in regards of the effect of marijuana legalization has had on the economy. The state amendments/initiatives for the legalization for recreational marijuana were passed both in Washington state and Colorado state in 2012 (Speights 2018). A lot of the research available in regards of how the economy and society have been impacted by the legalization of recreational marijuana, use Colorado and Washington state as study cases. Additionally, Canada will be analyzed as well due to the reason that Canada is the first G7 country to legalize recreational marijuana in 2018, thus there is a year of research available on the subject. As for the reliability of the three different example economies are to Finland, a few factors will be examined. Canada, Colorado state and Washington state can be argued to be decent comparison examples when comparing their policy outcomes to Finland's, since the GDP per capita⁵ are somewhat close to Finland's (see Table 1). Although, the US states of Colorado and Washington have a much higher Gini coefficient⁶ than of Finland. Canadas Gini coefficient is relatively close to Finland's (see Table 1). In terms of geographical size and population, Colorado State is the closest to Finland. Colorado state is 269,837 km² and Finland is 338,145 km² which means Finland is about 1.25 times bigger geographically (Mapfight.com). According to World Population Review

⁵ GDP per capita is a way to measure a countries prosperity by dividing the nations, states or countries GDP by the population. It gives a reflection on how well individuals in the nation contribute to the overall GDP as well as how much it is estimated that the average person is earning in the country. By calculating GDP and GDP per capita can countries prosperity and economic growth be estimated. (Chapellow 2019)

⁶ Gini coefficient, also known as the Gini index is a way to measure economic inequality. The coefficient ranges from 0 to 1, in which 0 represents perfect equality of wealth among the population and 1 represents perfect inequality of wealth among the population (Chapellow 2020). Thus if a country has a high GDP per capita, it might not mean that the majority of people are producing the amount revealed to the GDP. However the Gini coefficient in addition to the GDP per capita and the nations/states overall GDP statistics, gives an understanding on how much economic growth, how much it is estimated individuals are contributing to the GDP as well as how divided is the wealth of the country among the population. (Chapellow 2020; Chapellow 2019)

(2019) Colorado has a population of 5.7 million and Finland has a population of 5.5 million.

Table 1. GDP per capita and Gini coefficient of Finland, Canada, Washington state and Colorado state. (Ceicdata n.da; Ceicdata n.db; Opendatanetwork n.d; Oecd n.d; Duffin 2019)

Country	GDP Per Capita 2018	Gini Coefficient 2018
Finland	\$50 170 (ceicdata, n.da)	0.27 (oecd, n.d)
Canada	\$46 437 (ceicdata, n.db)	0.31 (oecd, n.d)
Washington state (US)	\$67 901 (opendatanetwork n.d)	0.46 (Duffin, 2019)
Colorado state (US)	\$59 885 (opendatanetwork n.d)	0.46 (Duffin, 2019)

4 Cannabis, Hashish, Marijuana, Hemp and CBD oils

Often there is confusion and misconception of the terms used in regards of cannabis. For the purpose of this research, the different parts of the cannabis plant will be broken down to decrease confusion of the terms used and give clarity for the reader about the different cannabis parts and “products” that can be used for medicinal or recreational purposes.

4.1.1 Marijuana

Marijuana is the plant material that is derived from the cannabis plant, for example from the dried leaves, flowers, seeds and stems. Common street names in English language are pot, weed, Mary Jane, reefer and marijuana. The material (marijuana) from the cannabis plant is consumed regularly by smoking joints as well as through a water pipe. Additionally, marijuana can be infused into food and/or drinks which are then called edibles. Moreover, marijuana contains THC (delta-9-tetrahydrocannabinol), which is one of the main reasons’ marijuana is consumed for recreational purposes,

since it has mind-altering properties and interacts with cannabinoid receptors in the brain, causing sometimes feelings of happiness and euphoria. Marijuana is estimated to have THC levels that vary from 10-20%. (Lautieri, 2019)



Image 1. Marijuana. The grey and green “balls” are the marijuana buds that grow on the cannabis plant. (Lautieri 2019)

4.1.2 Hashish

Hashish, which is also known as hash for short, is extrapolated from the “kief” or the dried resin from the cannabis plant that is collected and made into a brown past. It is then pressed into blocks, which is then later smoked in pipes, vaporized and inhaled or mixed with tobacco or marijuana in joints. Just like marijuana, hashish can be used for cooking as well. Hashish is said to have higher levels of THC levels. However, THC levels have been climbing in marijuana in recent years. Hashish is estimated to have THC levels that vary from 20 - 60%. Therefore, it will take less hashish than marijuana to achieve the desired psychoactive “high” feeling. (Lautieri 2019)



Image 2. Hashish. The brown paste blocks in the picture is condensed resin from cannabis plant which is called hashish. The photo also includes the leaf of a cannabis plant. (Lautieri, 2019)

4.1.3 Hemp

Hemp is considered to be cannabis plants that have less than 0.3% of THC, whilst cannabis plants that have more than 0.3% of THC are classified as marijuana plants. The terms marijuana and hemp cause a lot of misconception and confusion. Essentially, they are the same plant. However, hemp is grown for industrial purposes such as for textiles, paper, foods, building material and body care. Therefore, the growing of hemp is legal in many parts of the world, whereas growing marijuana is deemed illegal in many countries and US states. (Cadena 2018)

4.1.4 CBD

CBD stands for cannabidiol. It can be derived from both marijuana and hemp cannabis plants. It is the second and, in some cases, the most active ingredient of the cannabis plant. It is usually derived from the hemp plant, since many countries and states do not allow the cultivation of marijuana plants. (Grinspoon 2018). The CBD component is considered to be an essential for medical marijuana. The World Health Organization (2017, p. 5) report on CBD states that: "To date, there is no evidence of recreational use of CBD or any public health related problems associated with the use of pure CBD".

5 The UN

To understand the impact legalization of recreational marijuana has had on the countries and states that have legalized it, it is important to understand why cannabis was criminalized in the first place across the world. The United Nations is a major influencer in the history of Cannabis policies. Most countries in the world, share a similar history in regards of cannabis legislations and policies due to the UN. There was different legislation among nations before 1961 concerning cannabis. It was in 1961, when the United Nations created the Single Convention of Narcotic Drugs, that required all UN member states/nations to apply the convention legislations to their laws, which states that “the production, manufacture, export, import, distribution of, trade in, use and possession of drugs...”⁷ should be limited exclusively for medicinal and scientific purposes (Bewley-Taylor, Blickman, Jelsma 2014: 4). One of those drugs was cannabis, which is listed as a Schedule I substance. Schedule I substances are considered to be highly addictive and pose a serious risk of abuse. In addition to cannabis, some of the other Schedule I drugs are cocaine, heroin and opium (UN 1961; Bewley-Taylor, Blickman, Jelsma, 2014: 4). Cannabis is also categorized as a Schedule IV substances just like heroin, thus considered to have harmful characteristics, and not a significant amount of medicinal or therapeutic importance. (Bewley-Taylor, Blickman, Jelsma 2014: 4)

The idea of the Single Convention of Narcotic Drugs treaty by the UN was an initiative of the US. In 1937, the US passed the Marihuana Tax Act of 1937, which banned marijuana in the entire US⁷. During that time period (1960s) the US had a hard line on drugs and wanted to impose such values to the rest of the world. The treaty created pressure on countries in Asia, Latin America and in Africa, in which cultivation and traditional use of some of the substances such as coca leaf, opium poppy and cannabis was concentrated at the time. Later on, in 1971, the UN published another treaty, the Convention on Psychotropic Substances. The aim of this treaty was the

⁷ Marijuana, was not always illegal in the US. Its medicinal benefits were documented already in the 1830s. Americans and Europeans have been able to purchase marijuana from pharmacies and doctors' offices in the 19th century. However, attitudes towards cannabis changed among Americans later on, partly motivate by the 1910 Mexican Revolution, that lead to Mexican immigration to the US, which created prejudice and xenophobia among the US citizens towards the Mexican immigrants, their culture and their choice of substance intoxication. From 1931 to 1961, 29 states had outlawed marijuana. Moreover, in 1937, The Marihuana Tax of 1937 banned marijuana all over the US, even though the American Medical Association objected to the new policy. (Little 2018)

diversification of drug use. The pressure for the second treaty came from large pharmaceutical industries in Europe and the US, which feared that their products would be brought under the same strict controls as those established in the 1961 Single Convention of Narcotic Drugs treaty. Additionally, in 1971, the US president Richard Nixon declared a “war on drugs” in which production and consumption of illegal drugs was “*public enemy number one*” for the US. The aim was to decrease the supply and demand of drugs such as cocaine, cannabis and heroin, that were becoming more popular and in demand in the US. The 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances was introduced, making it the third international drug control treaty currently in force (Transnational Institute 2015: 5). The aim of the 1988 treaty was to include measures against drug trafficking through international cooperation, for example through the extradition of drug traffickers (European Monitoring Center for Drugs and Drug Addiction n.d: 12). Additionally, many of the member state toughened their drug laws because of the 1988 treaty. However, it should be noted that the treaties do not require member countries to penalize possession for personal use. By encouraging strict rules among the UN member countries, the aim was to decrease illegal substance supply and demand globally. (Transnational Institute 2015: 8)

6 War on Drugs

In 1998, during the United Nations General Assembly Special Session, the UN members set goals such as “...eliminating or reducing significantly the illicit cultivation of the coca bush, the cannabis plant and the opium poppy by the year 2008” as well as “...eliminating or reducing significantly the illicit manufacture, marketing and trafficking of psychotropic substances, including synthetic drugs, and the diversion of precursors...” (United Nations, 1998). The war on drugs concentrates on eradicating illegal consumption and supply of drugs by prohibition of illegal drugs, such as imposing criminal sanctions and penalties to illegal drug consumers and suppliers, in addition to criminalizing all behavior from purchasing to possession of illicit drugs. In a nutshell, the war on drugs concentrates to eradicate the supply of drugs with the idea that “no drugs equals to no problems” (Kurzgesagt – In a Nutshell, 2016). This approach has been a failure to decrease drug consumption in the US and Europe. The approach ignores fundamental economics such as supply and demand as well as the balloon effect (Kurzgesagt – In a Nutshell, 2016).

The balloon effect is an important factor to keep in mind when discussing drug policies. In the 1960s, there was a witnessed growth in the consumption of psychoactive drugs in the US and Europe, which sparked the development of large marijuana plantings in Mexico and Jamaica. The US government began eradication programs in regards of cannabis cultivation in Mexico, which led to new illegal cannabis plantations in Colombia, which would be smuggled illegally to the US from there. Later on, the growth of US domestic marijuana, in addition with the Colombian government's eradication campaigns towards illegal cannabis in Colombia, led to the smugglers to focus on cocaine as their next source of income. Even though there were attacks by different governments on the supply side of the illegal cannabis industry, the demand for cannabis has remained the same. (Laffiteau, 2010: 5)

Dr. Ernest Drucker wrote a book about Drug Prohibition that was published in 1999. He argued that during the past 25 years prior to the book, the pursued drug policy based on prohibition and tough criminal sanctions on the use and sale of illicit drugs by the US has actually made the problem worse. He points out that drug related deaths have been increasing in the US quite steadily from 1976 – 1995. Additionally, he argues due to prohibition, drugs are cheaper, more powerful and more available than ever before (1999) in the US. (Ernest 1999). When examining marijuana, the potency has been steadily increasing during the years. In 1995, the average amount of THC in cannabis confiscated by the US Drug Enforcement Administration (DEA) was approximately 4%, however in 2014, it was 12%. Additionally, the CBD percentage seems to have been declining during the decade from 0.5% to 0.2%⁸. (ElShohly, Mehmedic, Foster, Gon, Botany, Chandra, Church, 2016)

In 2001, Portugal took a radical step in regards with its drug policy. Portugal during the 1980s – 2000s was facing a serious heroin epidemic. It was estimated that 1% of the population was addicted to heroin as well as Portugal had the highest rate of HIV infections in the EU. To fight the epidemic, Portugal was the first country to decriminalize the consumption of all drugs. In 2017, Portugal became the first country to abolish criminal penalties for consumption and possession of all drugs. Currently drug induced-deaths have plummeted to five times lower than the EU average. Among 15 – 24-year old's, drug use has overall declined, which is the biggest risk age to start drug use.

⁸ It is argued the more CBD is in cannabis compared to THC, the less "high" you will get from consuming cannabis. (ElShohly, Mehmedic, Foster, Gon, Botany, Chandra, Church, 2016)

Additionally, HIV infections are in many cases associated with heroin use, however new HIV infections in Portugal due to new drug policies dropped from 104.2 new cases per million in 2000 to 4.2 cases in a million in 2015 (Bajekal 2018). Such statistics might suggest that the prohibition-based policies might not be as effective as it is believed.

Attitudes have started to change in regards of cannabis in the US and the EU. In 1969, less than 25% of the US population according to gallop surveys and general social surveys supported legalization of recreational cannabis. However, in 2010, more than 50% of Americans supported legalization of recreational cannabis (Felson, Adamczyk, Thomas 2019: 13). According to a (2002: 27) report by the European Monitoring Center for Drugs and Drug Addiction, the amount of cannabis seizures by local law enforcements in different EU countries as well as in Norway has been steadily increasing from around 50 000 cases in 1985 to 300 000 cases in 2000. The rise in seizures indicated that cannabis consumption has been increasing steadily in the EU. Additionally, the report revealed that some EU countries have started to question current cannabis policies in regards with prohibition such as reducing penalties for personal use or possession of cannabis. (European Monitoring Centre for Drugs and Drug Addiction, 2002 :31) It is argued that several factors have contributed to the attitude shift in the US towards cannabis legalization. Increased access to the internet has given individuals a chance to research the benefits and risks of cannabis consumption themselves. Additionally, medias framing cannabis for medicinal use has caused cannabis to be viewed differently to other illicit drugs such as heroin and cocaine. (Felson, Adamczyk, Thomas 2019 :24)

One of the arguments against legalization of recreational cannabis is that if it is legal, more people will use it. A study done by Robert J. MacCoun (2011) from Goldman School of Public Policy and UC Berkeley School of Law, University of California, Berkeley CA USA, covered a topic concerning the drug policy of the Netherlands⁹, and how the US should take note of it. It was titled as “What can we learn from the Dutch cannabis coffeeshop system?” which was published in Society for the Study of Addiction book. Robert J MacCouns conclusion was that marijuana didn’t serve as a

⁹ “ In 1976, the Netherlands adopted a formal written policy of non-enforcement for violation involving possession or sale of up to 30g of cannabis ” (MacCoun, 2011)

gateway drug, as well as (at least in Europe), the Dutch people smoke as much as their other European neighboring countrymen, even though it is almost legal.

7 How Marijuana Legalization Impacted Different Economies

7.1 Colorado

In 2012, Colorado state voters in the US, passed the Amendment 64 in Colorado State, which in a nutshell, legalized recreational cannabis in Colorado State. (Speights 2018). The sale of marijuana from government licensed stores to adults who are at least 21 years old, began in January 2014 (Healy 2014). The Amendment 64 conducted by the Colorado Centre on Law and Policy, estimated that the Amendment 64 would result in “60 million total in combined savings and additional revenue for Colorado’s Budget, with potential for this number to double after 2017”. (Stiffler, 2012: 1)

7.1.1 Tax Revenue

As Figure 1 indicates (see below), the tax revenue from the total marijuana taxes, licenses and fees in the state of Colorado has been increasing almost monthly from the time retail sales began. The tax revenue has gone from \$3,519,756 in February 2014, to more than \$20 000 000 in October 2018 (+468%). One can also compare the overall all monthly tax revenue from the total Marijuana taxes, licenses and fees in the state of Colorado before the legalization in 2012, which was \$0 to December 2018, which was \$21,622,509. (Colorado Department of Revenue 2019a)

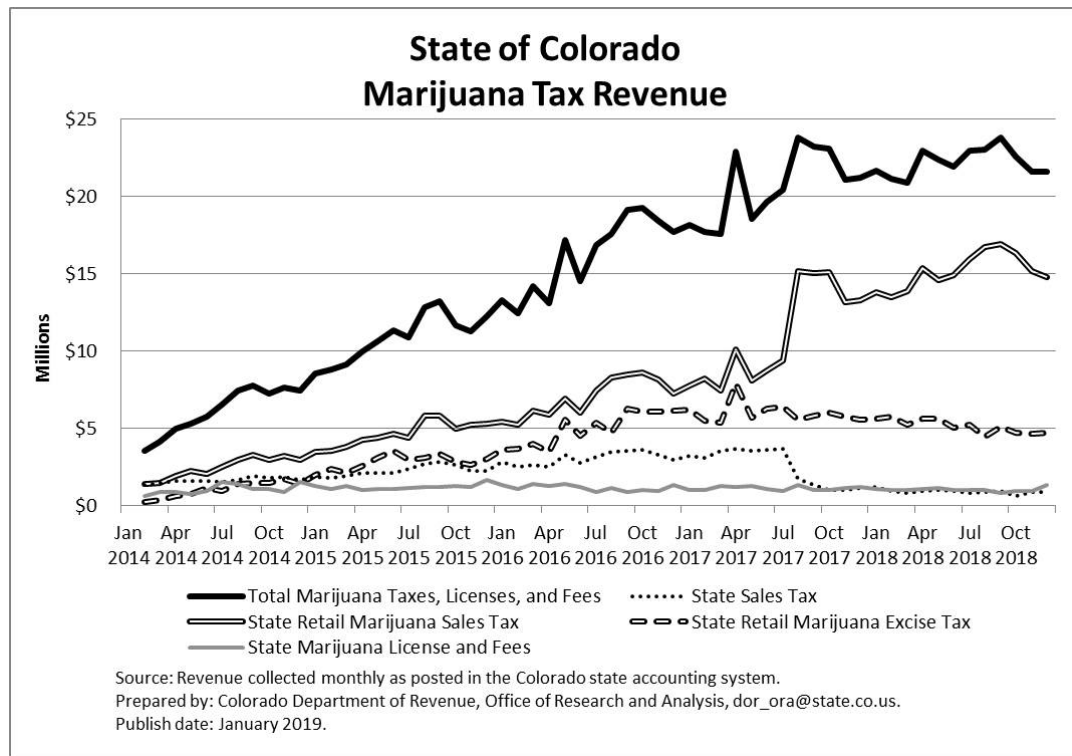


Figure 1. Colorado state marijuana tax revenue. The data in the table indicates the monthly tax revenue the state of Colorado receives from marijuana industry. Although the sales of medical marijuana began prior to 2014, the Department of Revenue did not report tax collection data until February of 2014, after retail marijuana sales began. (Colorado Department of Revenue, 2019a)

When looking at Colorado's yearly tax revenue income report from the marijuana industry which consists of government collected marijuana taxes, licenses and fees from the industry (see Table 2 below), the revenue has grown from \$67 594 323 in 2014 to \$266 529 637 in 2018 (+294%) in Colorado.

Table 2. Yearly report of the marijuana taxes, licenses and fee revenue in Colorado State. (Colorado Department of Revenue, 2019a)

Calendar Year	Total Revenue	Total to Date
2014	\$67,594,323	\$67,597,323
2015	\$130,411,173	\$198,005,496
2016	\$193,604,810	\$391,610,306
2017	\$247,368,473	\$638,978,779
2018	\$266,529,637	\$905,508,416

Updated January 2019

Calendar year is defined as January 1 - December 31

Colorado government is very transparent with its use of marijuana industry revenues. In fiscal year (FY) 2016-2017, \$40 million went to the Public-School Capital Construction Assistance Fund (PSCCAF) and \$31.6 million went to the Public-School Fund (Colorado Department of Revenue 2019b). In the fiscal year of 2017, marijuana taxes make up about 1.52% of all tax revenue in Colorado. (Reed 2018: 152)

7.1.2 Employment

It can be argued that legalization of recreational marijuana in Colorado had a positive impact in the employment rate. Although there is not an official account of those working in the industry, the state of Colorado does hold information about individuals who hold a license to work directly in the industry, since to be able to work close or in the marijuana industry, one must possess a license issued by the state which is called the MED Employee License. This does not however mean that license holders work in the industry. It simply means that they have acquired the license from state officials, thus have the right to work in the industry. As of January 1st, 2020, there were 40 168 individual license owners in the Marijuana industry (Colorado Department of Revenue 2020). These calculations do not include the indirect employment, which supports the direct industry (license holders), such as security guards, construction, consulting, legal and advisory services as well as other business services. In March 2018 there were 38 000 licenses issued, of which it was estimated that 17,821 were full-time equivalent

staff. As of February 2018, the marijuana industry made up 0.7% of total employment in the state (these calculations are based on the direct relationship to the industry, also known as the license holders). (Alison, Chapman 2018)

7.1.3 Crime and Black Market

Although there has been an increase in tax revenue in the state of Colorado, in which some of the income from the marijuana industry has been allocated to education use such as building new schools and funding public-schools, the crime rate in Colorado has been increasing on average more than in other states in the US, according to CNN (2018). In 2016, Colorado's crime rate was up 5% compared with 2013, while the national trend in the US was decreasing. There was a 12.5% increase in violent crime, while at the same time the national increase in the US was less than 5%. However, Colorado's governor John Hickenlooper, as well as the Denver Police Commander James Henning do not believe the two are related due to lack of empirical proper evidence suggesting that legalization of marijuana and violent crime are linked. (CNN 2018)

According to the data analysis report released by The Colorado Division of Criminal Justice (2018), the findings suggest that legalizing marijuana does not appear to have caused the increasing crime rate in Colorado. Property crime has had the biggest increase in the crime rate. However violent crime has had a 20% increase between 2012 and 2017. Drug related arrests have decreased slightly between 2012 and 2017. The total number of marijuana arrests decreased by 56% between 2012 and 2017 from 12 709 arrests in 2012, to 6153 arrests in 2017. Marijuana possessions arrests (which make up most of the marijuana arrests) decreased by 59%. However, marijuana arrest for illegal production increased by 51%. Marijuana sales arrests decreased by 17%. Altogether, it can be concluded that marijuana arrests in general have decreased. However, information whether the legalization of marijuana has a direct effect on the increasing violent crime rates is hard to prove or disprove (Reed 2018). However, an empirical research-based study done by multiple authors (Lu, Willits, Stohr, Makin, Snyder, Lovrich, Meize, Stanton, Wu, Hemmes 2019) concluded that there were no significant correlations between legalization of recreational marijuana and increase in violent crime in Colorado State. Nevertheless, the study did conclude that there was a

correlation in the legalization of recreational marijuana and an immediate increase in property crime.

7.2 Washington

In 2012, Washington state voters passed the Initiative 502 in a state general ballot, thus legalizing recreational cannabis in Washington state. (Speights 2018) The sale of marijuana from government licensed stores to adults who are at least 21 years old, began in July 2014 (Johnson 2014). Some of the supporters, such as the US presidential candidate (in 2012) and former New Mexico state Governor Gary Johnson said: "We should regulate and tax it [marijuana] like alcohol and tobacco, instead of propping up black market." Additionally, Mr. Johnson added "We have better use for our police, courts, and jails." (Martin 2012)

7.2.1 Tax Revenue

Washington state received a total of \$319 million in legal marijuana income and license fees in the fiscal year of 2017. Additionally, the amount had grown by \$130 million prior to earlier fiscal year of 2016. Washington state has a transparent allocation of marijuana revenue published. Around half of the intake of the fiscal years 2015, 2016 and 2017 went to the Basic Health Plan Trust Account that is described as providing necessary health care services to working people and others whom lack coverage. Of the state collected marijuana revenue of the fiscal year of 2017, \$96,6 million (30%) went to general fund, \$145,7 million (45,7%) into basic health funds, \$6 million (1,9%) went into cities and counties, \$35,1 million (11%) went into education and prevention, \$1 million (3%) went into research of cannabis use and effects and then \$15,1 million (4,7%) went into health care authority funding such as community health centers. (Washington State Liquor and Cannabis Board 2017: 17)

In 2018, Washington state collected \$367.4 million in legal cannabis income and license fees in fiscal year 2018 (Washington State Liquor and Cannabis Board 2018: 15). Marijuana revenues surpassed the liquor revenues by \$150 million. In 2018 fiscal year, the cannabis revenues collected by the state went into; \$198,9 million (54,1%) to the general fund, \$117,4 million (31,8%) to fund health care services, \$15 million (4,1%) to cities and counties, \$36,2 million (9,9%) to education and prevention, such

as substance abuse programs and mental health services as well as prevention of cannabis use by the youth, \$1,1 million (0,3 %) to research on cannabis effects and use and \$20,8 million (5,6%) to Building Bridges programs such as Health Care funding for community health centers. (Washington State Liquor and Cannabis Board 2018: 16-17)

7.2.2 Employment

Just like in Colorado, Washington state issues licenses that must be obtained in order to work in the marijuana industry. There are four types of license that are issued. They are according to Washington State Liquor and Cannabis Board (n.d) as follows:

- **Producer licenses** that allow to the production of marijuana,
- **Processor licenses** that allow the processing of marijuana,
- **Retailer licenses** that permit the sale of marijuana to a person's twenty-one years of age or older, and lastly the
- **Transportation licenses** that allow the transportation of marijuana.
- **Marijuana Research license** that allows to produce, process and possess marijuana for the limited research purposes according to the Washington State Legislature.

According to the report issued by the Washington State Institute for Public Policy (2017), calculating how many licenses were issued, they can get an estimation on how many people are employed by the marijuana industry. As of April 2017, there were 1703 businesses that had received at least one of the licenses above. However not all of the business that received a license were active. Businesses that were considered to be active, are required to report wage information to Washington employment security department (ESD) under the unemployment insurance (UI) program. However, there are a few exceptions¹⁰. The total amount of active businesses is considered to be is 693 in the 4th quarter (October – December) of 2016, additionally they employed 10,894 people.

¹⁰ *"The exceptions that are not required to report UI to the ESD are small-farm operators with quarterly payroll of less than \$20,000 and fewer than ten employees do not report their spouses, children under 18, or student workers; business owners do not report themselves; and sole proprietors do not report themselves, their spouses, or their unmarried children under 18. In addition, certain types of employees may not be eligible for unemployment benefits, and therefore may not be reported"* (The Washington State Institute for Public Policy, 2017: 5)

The average hourly salary of the 10,894 employees in the 4th quarter of 2016 is \$16.45, and the median hourly salary was \$13.44. The total amount of wages paid during the same period is \$53,250,844. In 2013, the total amount of annual wages that were paid to the employees was \$5,710,525 and in 2016, it was \$179,641,977. It can be concluded that the cannabis industry in Washington State is growing, resulting in more businesses, which creates more employment. (Washington State Institute for Public Policy 2017)

7.2.3 Crime and Black Market

Just as with other states and countries that legalized recreational cannabis, crime was expected to decrease due to the new public policy in Washington State, especially the crimes related to cannabis. In 2012, the filings for low-level marijuana offenses was 5531 filings, however after the Initiative 502 came into effect, in 2013, filings for low-level marijuana offenses was only 120 filings (ACLU Washington 2014). In regards of the youth, a survey conducted by Washington State Healthy Youth Survey in 2012 and in 2018, indicates that marijuana consumption among 6th, 8th, 10th and 12th graders has remained almost the same in 2012 and in 2018 (Washington State Healthy Youth Survey 2012; Washington State Healthy Youth 2018). Although, there have been reports, that conclude that crime rate has increased due to legalization of recreational marijuana. Controversially, other reports and research have found no correlation with increased crime and legalization of recreational marijuana. The Northwest High Intensity Drug Trafficking Area (2018) reported that driving under influence (DUI) has increased with marijuana legalization. The amount of THC that can be detected in a driver's blood test cannot go above 5 nanograms. In 2011, there were 1036 cases of DUI of THC and in 2016 there were 2,848 cases, thus in the specified time period the DUI case amounts have nearly doubled. However, it seems that the amount of violent crime (violent crime includes crimes such as; murder, manslaughter, aggravated assault, rape and robbery) amount has not had an immediate effect due to the legalization of recreational cannabis according to a study focusing on cannabis effects on crime in Colorado and Washington State (Lu, Willits, Stohr, Makin, Snyder, Lovrich, Meize, Stanton, Wu, Hemmes 2019). Violent crime has actually been decreasing steadily from 2010 until 2015 considering recreational marijuana was legalized in 2012, and the sale began in 2014 (Santons 2016). However violent crime has increased in Washington in 2016 compared to 2015 (Green 2017). Notably, the amount of violent crime in Washington State has been below the US average from 1990 until 2019

(Americas Health Rankings, 2019). Moreover, as in Colorado, the legalization of recreational marijuana seems to have an immediate effect in property crime in Washington State as well, since there was an increase in property crime after the legalization of marijuana. However, a recent study by Lu, Willits, Stohr, Makin, Snyder, Lovrich, Meize, Stanton, Wu & Hemmes (2019) used an interrupted time series analysis approach to compare pre and post legalization of recreational cannabis had in the state of Colorado and Washington, obtaining data from different crime rates from the FBI to see if there was any correlation. According to the study, the immediate spike in property crime was short lived. Thus, it is still too early to conclude did the legalization of recreational marijuana have long term effects on violent and property crime. It can be argued, that the legalization of marijuana does not seem to increase crime. Moreover, the same study did conclude that legalization of marijuana does seem to have a correlation to decreased burglary rates. (Lu, Willits, Stohr, Makin, Snyder, Lovrich, Meize, Stanton, Wu, Hemmes 2019)

7.3 Canada

Canada became the first G7 country to fully legalize the recreational use of cannabis in the world. Canadian Prime Minister Justin Trudeau announced on 20th of June 2018 that recreational cannabis would become legal in Canada as of 17th of October (Goodhart, Ashworth 2019). Trudeau's Liberal Party explained arguments for the new policy as: "Canada's current system of marijuana prohibition does not work. It does not prevent young people from using marijuana, and too many Canadians end up with criminal records for possessing small amounts of the drug" (Hughes, 2015). Additionally, the party adds "To ensure that we keep marijuana out of the hands of children, and the profits out of the hands of criminals, we will legalize, regulate and restrict the access to marijuana". (Hughes 2015)

From mid-May to mid-June 2019, an estimated 4.9 million (16%) of Canadians aged 15 and older reported using cannabis in the previous months. When the same study was done over a year ago (second quarter of 2018) before legalization in October 2018, the results were the same (16%). However, the use of cannabis among Canadians aged 65 and older had increased from 3% to 5% over this period. (Statistics Canada, 2019b)

7.3.1 Tax Revenue and Employment

Within the first five and a half months after the legalization of recreational use of cannabis, the Canadian government has earned \$186 million from excises and general taxes on goods and services directly related to the sale of cannabis. Just like alcohol and tobacco, cannabis is subject both to general taxes (5-15%) on goods and services as well as excise taxes (\$1 per gram, or 10% of pre-tax transaction) (Statistics Canada 2019a). Concerning the impact legalization of recreational marijuana had on employment, according to Statistics Canada (2019d), in the fiscal year of 2017/2018, the cannabis industry employed 2630 people.

7.3.2 Crime and Black Market

The amount spent by Canadians in 2017 on domestically produced cannabis is estimated by Statistics of Canada (2018) to be around \$6.22 billion. This can be broken down to both legal and illegal cannabis. Since in 2017, only medicinal cannabis was legal. The value sold for medicinal use (legal) of cannabis was \$0.51 billion (8.2%). Therefore, the value sold for non-medical use (illegal) was \$5.71 billion (91.8%). A number of private institutions have made estimations of the future size of legal cannabis market (Statistics of Canada 2018). For example, Deloitte made an estimate, that in 2019 the total market for Cannabis would be as much as \$7.17 billion in sales, of which \$4.34 billion (60,5%) will be from legal recreational market. Medicinal cannabis is anticipated to generate an additional \$0.77 billion to \$1.79 billion (10-25%) in sales, with the illegal market being \$0.51 - \$1.04 billion (7.1-14.5%) (Deloitte, 2018: 2, 5). However, according to Statistics Canada (2019c), during the first half of 2019 (1st of January until 31st of June) 54.4% of the Cannabis users got their Cannabis from legal sources (including medicinal cannabis), and 47.3% still got their cannabis from illegal sources.

It should be noted, that the estimates of the legal market were not as high as anticipated. One of the reasons why consumers still bought cannabis from illegal sources is that in some provinces, there weren't enough licensed cannabis stores to supply the demand. Additionally, taxes have made legal cannabis more expensive than cannabis from illegal sources which is another factor when consumers are making cannabis purchase choices (Johnson, Thompson, Gillies 2019). Moreover, giving licenses by the state to private cannabis retailers has been slow, additionally there

seems to be a bottleneck in the supply chain of cannabis to the retailers. This has resulted in cannabis products being constantly out of stock in licensed retail stores, which in return close earlier during the day or the week than they are meant to, causing cannabis consumers to turn to the black market to satisfy their demand. (The Guardian 2019) Additionally, more data on the amount of cannabis related arrest post legalization is needed to obtain a better understanding of how much specifically cannabis related arrests have increased or decreased.

8 Cannabis in Finland

Recreational consumption, production and the sale of cannabis is illegal in Finland. However, the recreational consumption of cannabis is increasing in Finland according to the Finnish National Institute of Health and Welfare (THL 2018). The findings reveal that;

- 700 000 people (every 5th person) in Finland has tried marijuana at least once.
- There are 200 000 yearly users, 60 000 monthly users and 6000-8000 daily users.
- Consumption of alcohol and cigarettes is slowly decreasing.
- Consumption of marijuana is increasing. In 2004 it was estimated that there were 106 200 yearly marijuana users (Hakkarainen, Kainulainen, Perälä 2006). However, as previously mentioned, in 2018 there were 200 000 yearly users.

As Figure 2 indicates, in 2014, 40% of people born between 1985-1994 have tried marijuana at least once in their lifetime. Within 4 years, there was an increase from 25% to 40%. (THL 2018)

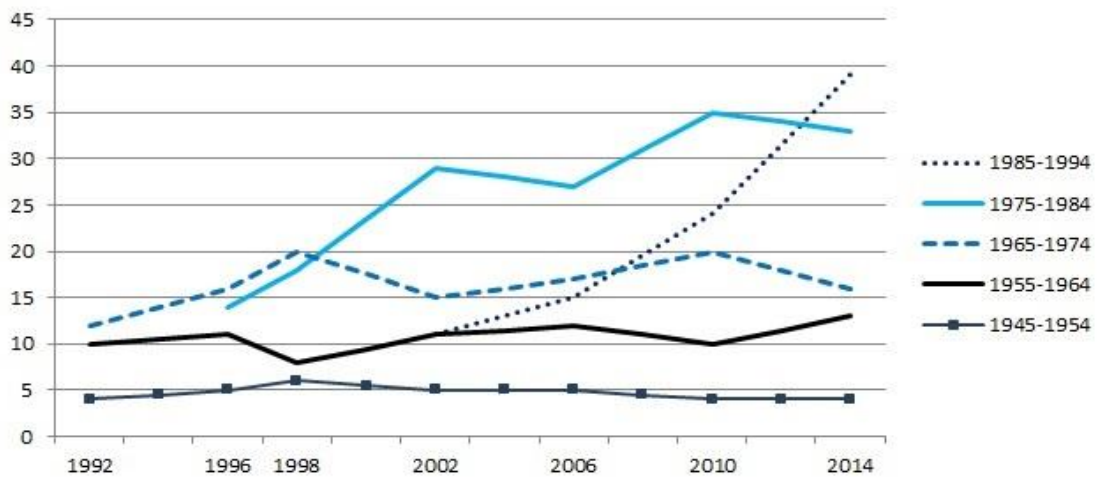


Figure 2. Have consumed cannabis at least once in their life. The x-axis represents years, and the Y-axis represents the percentage of the population. (THL 2018)

However according to the newest report by THL (2019), it is estimated that almost every 4th person in Finland has used cannabis as a recreational drug during their lifetime (See Figure 3). Additionally, the report reveals that 42% of the population does not think that the usage of cannabis for recreational purposes should be punishable, as well as $\frac{3}{4}$ of the population is for the medicinal usage of cannabis.

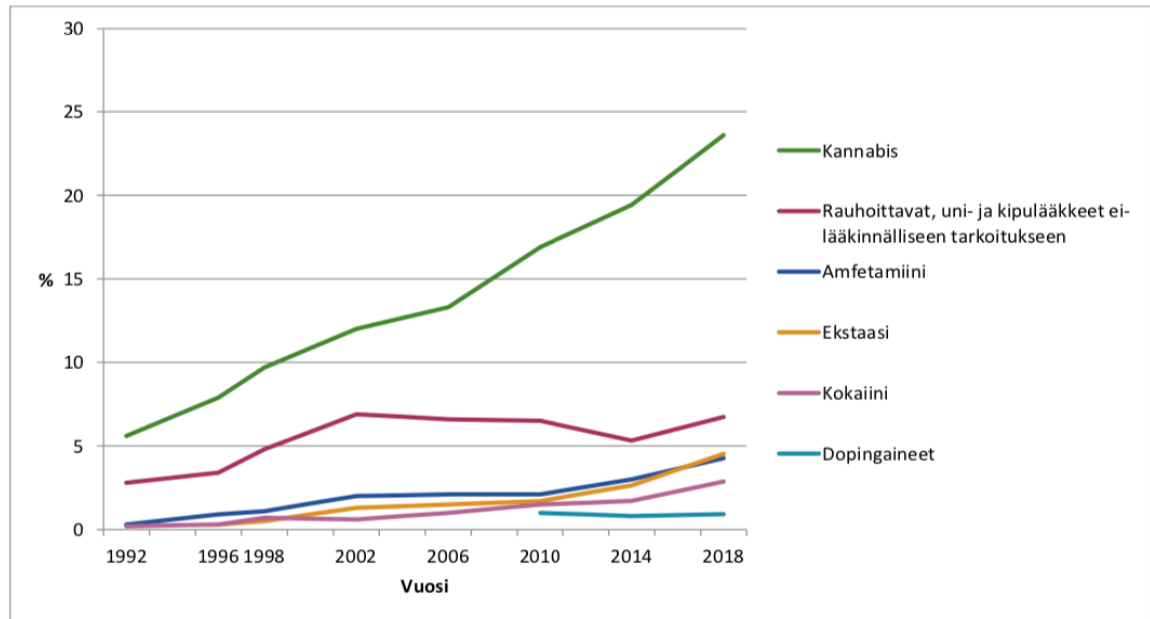


Figure 3. The usage of recreational cannabis and other drugs in Finland from the ages of 15 – 69 during the years 1992-2018. The lines resemble different drugs as follows: The green line represents cannabis, the dark purple line represents tranquilizers and pain pharmaceuticals, the dark blue line represents amphetamine, the yellow line represents ecstasy, the light purple line represents cocaine and the light blue line represents doping. (THL 2019)

If Finland would re-evaluate the laws concerning cannabis consumption, the arguments for legalization would argue for the benefits that would occur to the economy from the legalization of recreational cannabis, such as; creating a new tax revenue for the government, increasing employment by a new work industry as well as decreasing cash flow to criminal organizations that currently control the illegal cannabis industry. According to statistics provided by Tuija Hietaniemi, a drug specialist in the Finnish National Bureau of Investigation (Keskusrikospoliisi), the current black-market price for a gram of marijuana is between 15-20 euros. Additionally, according to Mrs. Hietaniemi, there isn't any available research (yet) about how much income is generated by cannabis in the black market of in Finland, and how much potential tax revenue is lost.

Table 3. The black-market price for marijuana and hashish in Finland. The table shows how much a gram and a kilogram of marijuana and hashish is valued to cost in Finland in 2014 & in 2019. Statistics were provided by the Tuija Hietaniemi from the Finnish National Bureau of Investigation.

	2014	2019
Marijuana/gram, euro	15-20	15-25
Marijuana/kilogram, euro	8900-15000	4000-10000
Hashish/gram, euro	10-15	15-20
Hashish /kilogram, euro	3500-8000	5000

8.1.1 Cannabis Black Economy in Finland

How much money is revolving in the cannabis black market in Finland? There isn't any statistical evidence on the exact amount, since the black economy mostly works on cash payments that are not traceable. However, the law enforcement authorities estimate that the amount of cannabis seized reflects around 5 – 10% of the total amount of cannabis in the market. (Hakkarainen, Kainulainen, Perälä, 2006)

Table 4. Confiscated drug amounts by the Finnish National Bureau of Investigation from 2014 - 2018. The table represents the amount of illegal substances confiscated by the Finnish law enforcements such as the customs and the National Bureau of Investigation. The first line reflects marijuana and hashish. (National Bureau of Investigation 2019)

Huumaus- ja dopingainerikoksissa todetut aineet					
Lähde: laboratoriotietoihin perustuvat tilastot / KRP ja Tulli					
Todetut aineet	2014	2015	2016	2017	2018
Hasis ja marihuana/kg	52 + 313	63 + 208	78 + 253,5	693 + 322	54,5 + 344
Kannabiskasvit/kpl	21 800	23 000	18 900	15 200	13 100
Amfetamiini ja metamfetamiini/kg	yht. 298	yht. 300	134 + 57,5	203 + 56	193 + 9,6
MDPV/kg	0,25	0,08	0,009	0	0
Ekstaasi/kpl	131 700	23 660	127 680	66 420	219 350
LSD/kpl	1 610	3 940	14 770	5 670	6 750
Lakka ja gamma/l	40 + 0,44	95,5 + 0,98	150 + 0,56	160 + 1	164,5 + 0,9
Alfa-PVP/kg	4	3,5	2	3	0,72
Heroini/kg	0,09	0,42	0,3	0,36	0,08
Kokaiini/kg	6,3	9,2	18,5	7,3	10
Subutex®/buprenorfiiniit/kpl	25 150	42 950	73 670	24 510	63 130
Muut huumelääkevalmisteet (pl. Subutex®/buprenorfiiniit)/kpl	24 600	30 700	102 500	661 580*	141 380
Khat/kg	3 060	1 040	815	2 300	711

A calculation can be conducted of the confiscated cannabis amounts done by the National Bureau of Investigation (2019) (see Table 4), to get an estimation of how large the marijuana and hashish black market is. Additionally, we can use the estimation of the market price of cannabis and hashish, which is given by the drug specialist Tuija Hietaniemi in the Finnish National Bureau of Investigation (see Table 3), we can get an estimated value of the black market. By conducting calculations using the confiscated amounts of cannabis and hashish to represent 5 – 10% of the overall size of the market, then calculating the market price of the amount of cannabis in the market, we have a value estimate of the entire black market of cannabis in Finland.

Table 5. Total market size amount (kg) calculation of Hashish and Marijuana if confiscated amount by the Finnish National Bureau of Investigation is assumed to represent 10% (a) or 5% (b) of the entire market.

	Confiscated amount in 2019	Calculation	Total Estimated Market Amount Size
Marijuana (a)	344 kg (10% of the overall market)	$344 * 10$	3440 kg
Hashish (a)	54,5 kg (10% of the overall market)	$54,5 * 10$	545 kg
Marijuana (b)	344 kg (5% of the overall market)	$344 * 20$	6880 kg
Hashish (b)	54,5 kg (5% of the overall market)	$54,5 * 20$	1090 kg

Therefore, it can be assumed that, according to estimations, the amount of marijuana in the Finnish marijuana market could be 3440 kg and hashish is 545 kg if the confiscated amount represents 10% of the illegal cannabis market. However, the report done by Hakkarainen, Kainulainen, Perälä (2006) estimated that the confiscated amount might reflect 5 – 10%, then if the confiscated amount is assumed to represent

5%, the estimated amount of illegal marijuana in the black market is 6880 kg and 1090 kg of illegal hashish (see Table 5). To get an estimation of how much these amounts are worth in the market, we can use Table 3 statistics provided by the National Bureau of Investigation in Finland, on how much a kilogram of the specific substance is sold in the black market, multiplied by the total estimated market size. If a kg of marijuana is estimated to have a value between 4000 – 10 000, we can calculate the estimated size of the marijuana market in 2019 by using the given estimated confiscated amounts * the price of marijuana per kilogram, in order to get an estimated overall size of the market (see Table 6). Moreover, the same principle can be applied to hashish, to get an estimation of how much is the estimated illegal hashish market valued (see Table 7).

Table 6. The estimated value of the market size of marijuana if the confiscated amount by the Finnish National Bureau of Investigation is assumed to represent 10% (a) or 5% (b) of the entire market. The table represents a simple calculation in which the minimum and the maximum estimates of the 1kg price of marijuana is used to calculate the estimated overall value of the marijuana market.

	Estimated overall market size	1 kg / 4 000 or 10 000 €	Calculation	Estimated value of the market size
Marijuana (a)	3440 kg	4 000 (lowest price estimate)	$3440 * 4\ 000$	13 760 000 €
Marijuana (a)	3440 kg	10 000 (highest price estimate)	$3440 * 10\ 000$	34 400 000 €
Marijuana (b)	6880 kg	4 000 (lowest price estimate)	$6880 * 4\ 000$	27 526 880 €
Marijuana (b)	6880 kg	10 000 (highest price estimate)	$6880 * 10\ 000$	68 800 000

Table 7. The estimated value of the market size of hashish if the confiscated amount of cannabis by the Finnish National Bureau of Investigation is assumed to represent 10% (a) or 5% (b) of the overall market. The table represents a simple calculation in which the minimum and the maximum value estimates of the 1kg price of marijuana is used to calculate the estimated overall value of the hashish market.

	Estimated overall market size	1 kg / 5 000 €	Calculation	Estimated value of the market size
Hashish (a)	545 kg	5 000	545 * 5 000	2 725 000 €
Hashish (b)	1090 kg	5 000	1090 * 5 000	5 450 000 €

When the marijuana market value results (see Table 6) and hashish market value results (see table 7) are combined, then we can have an estimation of the total value of the entire cannabis market in Finland (see Table 8 & 9). The entire marijuana market if the confiscated amount of marijuana reflects 10% of the market, is estimated to be € 1 376 000 - € 3 440 000 and that hashish market if the confiscated amount of hashish reflects 10% of the market is estimated to have a value of € 2 720 000, thus when we combine the two, the results will reflect the entire cannabis market value as a whole. From the calculations conducted such as in Table 8, when assuming that the confiscated amount of cannabis by the National Bureau of Investigation represents 10% of the illegal market, it can be estimated that the Finnish cannabis black market can be valued from 16 485 000 € - 37 125 000 €. However, if the confiscated amount by the Finnish National Bureau of Investigation represents only 5% of the marijuana and hashish market, and then when the value of the entire marijuana and hashish market is combined (see table 9), the Finnish cannabis market can be estimated to be valued between 32 976 880 € - 74 250 000 €. Moreover, there was a Cannabis Price Index study done by ABCD agency (2018), in which they estimated how much tax revenue cities and countries would receive if cannabis was legal. The study estimated that if Finland taxed 1 gram of marijuana the same way tobacco is taxed, then Finland would receive 27 million dollars which is around 24 million euros. However, these estimates seem possible, if the cannabis industry in Finland is valued somewhere

between 16 000 000 – 23 000 000 €, since the sales and good tax in tobacco products is 52% of the product price without tax. However, if the cannabis industry has a value of the highest estimations, such as 74 250 000 €, then the tax revenues would likely be triple the estimations of the ABCD agency.

Table 8. The estimated total value of the cannabis market if the confiscated amount by the Finnish National Bureau of Investigation represents 10% of the entire market. By combining the value of the hashish market separately with both the minimum and maximum estimates of the value of the marijuana market, can the overall value of the entire illegal cannabis market be estimated.

Marijuana	Hashish	Calculation	Total value of the Cannabis Market
13 760 000 €	2 725 000 €	13 760 000 + 2 725 000	16 485 000 €
34 400 000 €	2 725 000 €	34 400 000 + 2 725 000	37 125 000 €

Table 9. The estimated total value of the cannabis market if the confiscated amount by the Finnish National Bureau of Investigation represents 5% of the entire market. By combining the value of the hashish market separately with both the minimum and maximum estimates of the value of the marijuana market, can the overall value of the entire illegal cannabis market be estimated.

Marijuana	Hashish	Calculation	Total value of the Cannabis Market
27 526 880 €	5 450 000 €	27 526 880 + 5 450 000	32 976 880 €
68 800 000 €	5 450 000 €	68 800 000 + 5 450 000	74 250 000 €

8.1.2 Opinions

Although there is a growing consumption of illegal marijuana in Finland, especially among the youth, less than 20% of the population supports the legalization of recreational use of marijuana, according to a survey which had 3485 respondents (Hakkarainen, Karjalainen 2017). Notably, according to a survey, in the US state of Colorado, 61% of the population favored legalization of recreational consumption of marijuana prior to legalization in Colorado State in 2012 (Rassmusen 2012). Additionally, the US State of Washington, where the cannabis policy changed after a public vote in 2012, in which 55.7% of the voters were in favor of the legalization of recreational marijuana and 44.3% of the voters were against the legalization of recreational marijuana (Washington Secretary of State 2012). Moreover, countries such as Canada and Uruguay, where the majority of the population supported the legalization of marijuana, led to the discussions and eventual policy changes in the countries. Finland does not hold such strong support for the legalization and decriminalization of marijuana as of yet (see Figure 4). However more than 42% of the respondents support the depenalization of marijuana (not punishing for the usage of marijuana). Key arguments for marijuana being illegal is that it is seen as being unhealthy, a gateway drug, being a strong drug, as well as that legalization would lead to increased consumption especially among the youth (Hakkarainen, Karjalainen 2017). However, a citizens' initiative that was made in 1.5.2019 in Finland, with the agenda to make the recreational use of cannabis as well as the growing of 4 cannabis plants for personal use, a non-punishable act according to the proposed new law, gathered more than 50 000 names (which is the minimum requirement of names to be collected within 6 months for the citizens initiative to proceed to parliament). Therefore, the Finnish parliament will have to take the citizens' initiative into discussion in parliament and vote on the policy changes in the government whether or not the law regarding cannabis usage should be changed. (Hakkarainen 2019)

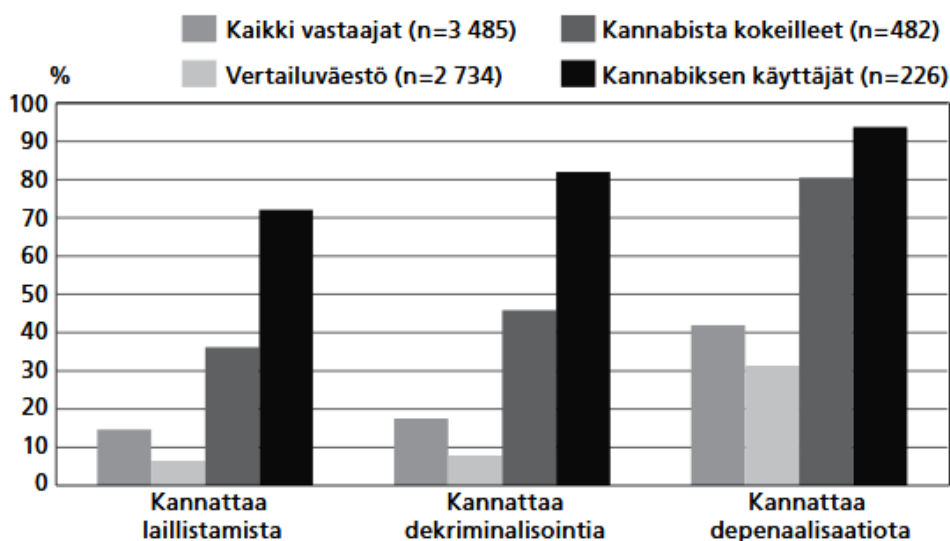


Figure 4. Opinions on cannabis usage in Finland. The figure reflects the opinions of the legalization, decriminalization and depenalization of cannabis. The bars on the right reflect opinions on depenalization, the four bars in the middle reflect opinions on decriminalization and the four bars on the left reflect legalization. Black color represents marijuana users, dark grey represents people who have tried marijuana, 3rd lightest grey reflects mean of all answers and lightest grey represents people who have not tried marijuana. (Hakkarainen, Karjalainen 2017)

Despite the fact that a majority of the population in Finland does not support the legalization of recreational marijuana, 300 people in Finland have a prescription for medicinal cannabis. Medicinal cannabis is legal in Finland, although very restricted (Kaleva, 2017). Doctors may prescribe Sativex to patients who suffer from Multiple Sclerosis (MS) disease to relieve pain in case prescribed pharmaceutical opioids fail (Yle, 2017). Sativex is an oral mucosal spray that contains the chemical compound Tetrahydrocannabinol (THC) and Cannabidiol (CBD) in a ratio of 1:1. As earlier mentioned, THC is the chemical compound known to create the “high” feeling when using marijuana. However, CBD is known to create a calming as well as a more relaxed feeling which is argued to counter the THC effect. (Royal Queen Seed, 2017) However, some people have reported to get a similar “high” feeling from using Sativex as they would from smoking cannabis. (MSSociety n.d)

8.1.3 History

An important factor to keep in mind with the status quo of cannabis laws in Finland is the history behind the law policies. According to an Yle documentary (Kaihovaara,

Leppälä, Kalavainen, Grönroos, Väisänen, Rantala, Strenros, Vilén n.d) about the drug history of Finland, titled “*Kannabis*”, the history of cannabis in Finland is briefly explained. In 1961, The Single Convention on Narcotic Drugs treaty was formed by the UN which encouraged UN members to prohibit cannabis globally. A new drug law regarding cannabis came to effect in Finland in 1966. Before 1960, Cannabis could be purchased from some of the Finnish pharmacies without doctor’s prescription. Before 1960s, the recreational use of Cannabis was not illegal. Moreover, there is evidence that suggest that people would buy cannabis from pharmacies and would use it recreationally by smoking “joints”. In December 1967, there was a section in the Finnish magazine *Suomen Kuvalehti*, in which a person called Liimatainen compared cannabis and alcohol consumption by saying (See appendix a for the original text):

If a young man can sell 10 grams of marijuana, which won't hurt him severely, he will get fined and jailed. This is of course right, since marijuana is a dangerous substance. However, the ministry, which is supposedly responsible for the sobriety and wellbeing of the country, allows the sale of incredibly cheap alcohol, which like rat poison kills its habitual consumer. What kind of constitutional state is this? (Henriksson 2014) (Author's translation)

The writer of this section was later revealed as Urho Kalevi Kekkonen, the former president of Finland. Former President Urho Kekkonen is not supporting the usage of cannabis. However, he is questioning the laws and policies of the government in regards of substance usage, indicating that alcohol might not be any better or healthier option of a substance than cannabis. (Kaihovaara, Leppälä, Kalavainen, Grönroos, Väisänen, Rantala, Strenros, Vilén n.d)

During the early 1970s in Finland, it was estimated that there were 30 000 – 40 000 people who had at least consumed cannabis either for medicinal or recreational purposes (Kuokkanen 2016). The population of Finland in 1970 was around 4,6 million (Tilastokeskus). 30 000 - 40 000 is roughly about 0,7 – 0,9% of 4,6 million. Thus 0,7 – 0,9% of the population in Finland had consumed cannabis at some point in their life in 1970. That is less than a tenth of the population. In 1971, a proposal to change the policies concerning drugs and substance use was discussed in the Finnish parliament. The Grand Committee of the parliament (Suuri valiokunta) voted on the new drug policies, in which the possession of cannabis would not be criminalized thus it would be decriminalized. The votes for and against the new policy were even 20 - 20, which

resulted that the fate of the policy change would be determined by a method of randomness (in Finnish it was called “*arpa*”) which would lack pattern of predictability of the result. It was by this method of randomness that determined the drug policies which the decriminalization of cannabis policies was finally determined after the vote, which resulted that it was not be changed, thus the production, sales and consumption of cannabis would remain illegal and punishable. In December of 1971, the topic was once again brought up in parliament. However, the supporters of the policy change lost the vote by 92 – 80. The new drug law policies came to effect in 1972. (Kuokkanen 2016)

9 Conclusion

When looking at the cannabis policies in the US and in Europe, it is good to keep in mind the key reasons why these policies were made as well as what has been consequence of such policies. After 50 years of cannabis policies that are based on prohibition in most of the US states as well as in most of the European countries, the question arises that have the policies achieved what they were meant to? When looking from the viewpoint of whether the consumption of cannabis decreased where it is illegal, evidence does suggest the opposite. 50 years seems like a long enough period to analyze and determine whether a policy was successful or not, thus whether there should be changes in the policies or not. What seems evident is that some US state and some country leaders are of the opinion that the prohibition-based cannabis policies have not resulted in the outcome that they were expected to produce, thus the policies should be re-valued and possibly changed.

Legalization of recreational marijuana seems to have increased tax revenues in the State of Colorado and Washington as well as in Canada. The retail sales are constantly increasing in all three geographies, concordantly the tax revenue has been increasing from the cannabis industry. Additionally, in a nutshell, the legalization of recreational marijuana has created and increased employment in Canada, as well as Washington State and Colorado State in the US.

In terms of whether legalization of marijuana has decreased the crime rate substantially, the evidence indicates that legalization of cannabis has had a minor impact in the overall crime rate. Violent crime and property crime in Colorado and

Washington state have been on the rise, although research indicates that the legalization of recreational marijuana did not have a significant impact on the matter. Moreover, what is evident is that in Washington and Colorado states, the marijuana consumers are purchasing cannabis from legal sources, which could suggest that amount of cash flow in the black market of cannabis industry has been decreasing. Additionally, marijuana related arrests have decreased in the US states of Colorado and Washington. Although it must be concluded that this research is highlighting a little of the history of cannabis policies as well as the impact legalization had on the economy in terms of employment, taxing and crime & black market. Public Health effects were discussed briefly.

When comparing Finland's situation with public opinions in terms of supporting legalization, the opinions to support legalization in the latest poll (2018) are far behind (less than 20%) of Colorado's and Washington states poll results in 2012, which was more than 50% in both states. Nevertheless, there is clear evidence that the usage of marijuana is increasing in Finland among the youth, which will result in the increase of cash flow in the black market. Moreover, it seems that the amount of people consuming cannabis has been increasing in Finland. This would possibly lead to the conclusion that more pro cannabis attitudes would increase, as it was evident in 2019 when for the first time, the citizen initiative to decriminalize cannabis got more than 50 000 signatures within 6 months.

Since similar trends and behaviors can be noticed between fellow western countries. Luxemburg announced in 2019 that within two years, recreational cannabis will be legal in the country. The Health Minister Etienne Schneider argues that the health reasons are the biggest driver for the change. He says that young people are already getting weed from the black market, in which the safety and quality of the cannabis is unknown. Additionally, he adds, "This drug policy we had over the last 50 years did not work..." (Deuthsch, 2019). After Luxemburg legalizes recreational cannabis as the first EU country to do so, it is possibly that the drug policy change will encourage other EU countries to do so, as it did in the US when Colorado and Washington State first legalized recreational marijuana. According to the experience of Canada, Colorado State and Washington State have had after the legalization of recreational marijuana/cannabis, there is reason to believe that there are benefits to the economy in

regards of increased tax revenue, increased employment and at least in the case of Colorado and Washington states, decreased cannabis related crime.

Finland, however, does not seem to be a very liberal country when it comes to cannabis discussions. Only one party in the parliament supports the decriminalization and the legalization of cannabis (Gråsten 2019). Therefore, it is likely, that other European countries must decriminalize and legalize cannabis before such policy changes might happen in Finland. However, when looking at the estimated annual value of the black market, it is clear that there are significant tax revenues to be made, since the black market of cannabis in Finland seems to have (currently) an annual value varying between 16 – 70 million euros. Finland should take note of the success Canada and the US states have had after legalization of recreational marijuana, since evidence does seem to support that the liberal cannabis policy seems to have more benefits than the conservative prohibition-based cannabis policy approach. Additionally, evidence does seem to support that legalization does not significantly increase consumption in the population. Possibly, further research could be conducted in which where the failure of alcohol prohibition is compared to the failure of cannabis prohibition in Finland. The research might highlight the flaws in prohibition-based substance policies and the benefits of alternative liberal substance policy approaches.

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Appendix 1. President Kekkonen Comparing Cannabis and Alcohol

"Jos nuorukainen myy 10 grammaa marijuanaa, joka ei tee kissankipeää sen polttajalle, hän saa sakkoa tai vankeutta. Se on tietenkin oikein, sillä marijuana on vaarallinen nautintoaine. Mutta ministeriö, jonka tulee vastata maan raittiusoloista, sallii naurettavaan hintaan myydä sellaista alkoholia, joka kuin rotanmyrkky tappaa sen vakituisen nauttijan.

Mikä oikeusvaltio tämä on?"

Source: (Henriksson 2014)