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Legalisation of Cannabis in Finland

Analysis of the Economic, Societal and Fiscal Impacts

Metropolia University of Applied Sciences
Bachelor of Business Administration
International Business and Logistics

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| <p>This thesis will dive into the economic, societal and fiscal impact of the legalisation of Cannabis in the Nordic country of Finland. By looking into other countries with similar economic, environmental, and societal aspects that have already gone through the process of legalisation, such as Canada, Thailand, and Uruguay. We can identify the trends that occurred after the legalisation process as well as the different structures implemented in order to regulate the negative effects of cannabis legalisation. Furthermore, by uncovering Finland's current economic position we can determine whether it would be logical and profitable to proceed with the legalisation of Cannabis. First and foremost, a proper non-stigmatized understanding of what Cannabis is and how it can be used must be established in order to have an effective and unbiased judgement of the natural substance referred to as Cannabis. Furthermore, tax frameworks will be considered as it is a part of the process of legalisation, as well as different regulations in order to control and effectively regulate the impact legalisation has on society. The results of this research paper have found that the legalisation of Cannabis provides a substantial potential benefit for Finland as it would open up a whole new industry as well as economically the tax revenue gained from this new industry would be used to tackle the limited negative impact that legalisation would have on society as well as potential help tackle other societal challenges Finland faces such as overconsumption of alcohol.</p> | |
| Keywords | |

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1 Introduction

1.1 Background and context of cannabis legalisation

Cannabis, Weed, Reefer, Hashish, and many more are all words used to describe the same flower known by its scientific name *Cannabis Sativa*. In short, Cannabis is a generic term referring to all aspects of the plant, especially its products and how they are used (Small, 2016). The controversy surrounding this naturally growing plant is no hidden secret. Due to its infamous reputation and long history of the war on drugs, the line between facts and myths regarding this plant has been blurred. Throughout this study, I aim to identify and clarify the aspects that justify this resource and how we can properly utilize it to improve the Finnish economy while taking into consideration its impact on society. By comparing its impact on other countries over the past couple of years prior to its legalisation as well as the years following its legalisation, we can effectively remove the stigma and look at the facts from a more objective perspective.

When looking at Finland in particular we can see that Cannabis is nothing new to Finnish society as at one point in time (between the 18th- 19th century) it was Finland's main crop. Finland's roots with the Cannabaceae family run deep and all the way back to 4000 BC, as proven by pollen samples that were found in Sakinlampi in 1994 (Laitinen, *No date*). Although, one cannot solely use pollen analysis to build a comprehensive picture of hemp's early history in Finland, it can however be used as a first indicator as it is a sign of human influence on nature. So, too, is the discovery of seeds in several southwest regions of Finland dating back to 1100-1500AD through Palaeoecological and macro-fossil research. This evidence further supports the cultivation of the plant as Hemp was used for trade, albeit as a fibre rather than the seeds. The cultivation of the plant increased throughout the centuries, leading to the production of soap, textiles, lamp oil and even paper used for money and exceptionally thin cigarette papers. The cultivation of hemp peaked between the 18th and 19th centuries until the late 19th to early 20th centuries, with increased foreign trade, people turned to imported goods over domestic ones. The rate of cultivation fluctuated throughout

the first half of the 20th century due to war, which restricted the import of goods. Nevertheless, it did not take much time after the war for imports to grow. By the 1960s, Hemp was not grown anymore aside from certain private farms. Between 1971 and 1972, a vote was held within parliament to abolish and criminalize the personal use of Cannabis, with 92 votes for the motion and 80 against, 53% for and 47% against. This close vote is an indication that a large percentage of the population did not agree with this motion. As Nixon's war on drugs started in June 1971, just prior to the vote, it can be deduced that it had a significant impact on the vote. Since then, although it is illegal for the cultivation and personal use of the cannabis plant, it is still produced, used and traded on the black market.

1.2 Research title and objectives

The aim of this research is to provide an understanding on the economic impact of the legalisation of Cannabis on the Finnish economy by looking at those economies that have already legalised recreational Cannabis, while taking into consideration the societal impact it has. In other words, the research title is: **Legalisation of Cannabis in Finland: Analysis of the Economic, Societal and Fiscal Impacts**. By dissecting the research title into multiple sections, we can determine a string of subtopics/sub-questions acting as guidelines to understand the full scope of the topic and its findings. The sub-topics in question include:

- Defining Cannabis in its different forms
- Dismantling the stigma surrounding Cannabis
- Identifying the societal, economic and environmental impact of legalising recreational Cannabis around the world
- Forecasting the monetization of the legal cannabis industry in Finland

1.3 Significance of the study

As the global discussion surrounding the legalisation of Cannabis continues to evolve, Finland is falling behind. This research brings to light the opportunity Finland has to no longer be a follower and instead be a playmaker in the industry. Finland has traditionally been known as a country that has a tendency to cautiously follow its neighbours when making decisions. By diving into the potential economic and societal benefits of legalising Cannabis, this study will uncover the possible outcomes, including increased tax revenue, job creation and various opportunities for related industries; resulting in increased consumer spending as well as a higher economic output, measured as GDP, brought by this potential Billion Euro Industry. This is important particularly today because the implementation of legalisation has already begun in many countries, leading some to refer to this time period as “the era of cannabis legalisation”.

2 Literature Review

The legalisation of Cannabis has always been an interesting topic of discussion and debate worldwide, especially with the recent progression of major countries in the past couple of years. The study of legalising Cannabis has never been so easy due to the growing amount of data provided in recent years. With the large amount of stigma that has surrounded this topic, countries and policy makers have been extremely thorough to make sure everything is documented and processed in the correct manner in order to avoid any potential discrepancies or false data. Similar to those policies, this section aims to be thorough in order to provide a clear overview of key findings and trends from existing research of the subject.

2.1 Overview of Global Trends in cannabis Legalisation

In the past decade, there has been a significant notable shift in attitude and policies towards legalising marijuana all over the world. Major countries such as Canada, Thailand and several European nations have taken positive steps towards various

forms of legalisation, including medicinal and recreational use. Although the specific opinions towards minor decisions such as the Tetrahydrocannabinol (THC) percentage of the form of consumption may vary, the common theme in most of the literature is the potential source of revenue for governments and individual dispensaries, as well as using it as a means to regulate and, exceptionally, even cripple the underground market.

A research study by Caulkins et al (2015) was conducted in the United States and has shown that legalising marijuana can lead to significant tax revenue generation by using states such as Colorado and Washington as examples of the substantial increase in tax revenue caused by legalisation. These findings are only the tip of the iceberg as we dive deeper and increase our scope by looking into bigger economies and countries such as Canada and Thailand.

2.1.1 Economic Impacts on countries that legalised Cannabis

By widening the scope of this research to countries that have legalised marijuana we can look into more recent studies that have yielded predominant insights into the economic effects of this policy change. Deloitte (2016) conducted a study in Canada that estimated that the legal cannabis market could contribute billions of dollars annually to the national economy, in turn creating jobs and opportunities for entrepreneurs. These economic opportunities also provided a societal benefit to the “entrepreneurs” operating illegally in the industry by allowing them to exploit their knowledge and expertise and decrease their risk by operating within the law.

Furthermore, the other industries that benefited from the legalisation of the marijuana industry include but are not limited to cultivation, retail, ancillary services such as security and legal consulting, as shown by Anderson, Hansen & Rees, 2023. Although their study was conducted in Oregon, one of the first U.S. states to legalise recreational marijuana, its significance is still valid as Oregon’s economic climate is similar to Finland’s. This supports and demonstrates the potential for job creation, especially as job growth is a pressing concern in Finland.

2.1.2 Societal Effects and Public Health Considerations

While the economic benefits of legalising Cannabis are evident, it is important to note the societal and potential public health implications caused by the policy change. By looking into global studies such as (Hall & Lynskey, 2016) and the Rand Corporation's research (Caulkings et al., 2015), we can look deeper into the societal effects that cannabis legalisation has had on the countries in question, including how legalisation has affected the legal system, the police force, and individual consumers in their everyday lives, including specifically those struggling with alcoholism.

3 Research Method

Because this has been a controversial topic of discussion ever since the Nixon-instigated War on Drugs, research has been limited until relatively recently. However, due to the progression of legalisation in various countries over the last decade, the destigmatisation around this topic has sparked a new interest, leading to new research being conducted mainly in the already legalised countries. Throughout this paper, research in countries such as Thailand, Canada, Australia and the USA as well as any countries within the EU, will be used in order to establish preliminary conclusions that facilitate further study of Finland's prospects.

When considering health benefits, "Political Economy of Cannabis in Thailand" by Mano Laohavanich (2022) is used as a base article for consideration, as medical marijuana has been legalised there since 2018, followed by the decriminalization of recreational marijuana in 2022. Laohavanich has a background as a Buddhist monk, and he notes that Cannabis has always been part of Eastern medicine, specifically Thai traditional medicine. Nevertheless, the article discusses that Kanja can be dangerous if not administered correctly (like many other medicines) and how the dangers can be reduced.

In 2009, Kenneth W. Clements, from the University of Western Australia, and Xueyan Zhao, from Monash University, published a book entitled "*Economics and Marijuana: Consumption, pricing and Legalisation* (Clements and Zhao, 2009). This book, as well as a prior research paper (Clements and Zhao 2005), forms the

foundation of our understanding of the Cannabis situation in Australia. Even though it was only in 2016 that Australia passed the landmark legislation, to support the roll out of medical Cannabis Narcotic Drugs Amendment Act 2016 (Decorte, Lenton & Wilkins,2021); Clements and Zhao's research played a key part in the decision to enact the amendment. Kenneth and Xueyan focus mainly on the economic aspects of legalisation such as tax revenue, reduced law enforcement costs, economic growth and social equity. This is fundamental, as in the successful case of legalisation, a method of taxing and utilizing the tax gained to subsidise ways to battle the negative side effects of marijuana legalisation will have to be calculated.

Furthermore, as the Finnish economy is the main focus of this research, the work of Pekka Hakkarainen & Heini Kainulainen featured in the book "Retreat or Entrenchment? Drug Policies in the Nordic Countries at a Crossroads" (Tham 2021) is especially significant. The book itself not only covers Finland but also other similar neighbouring countries such as Sweden, Norway, and Denmark. Specifically, Hakkarainen and Kainulainen (2021) shed light on the evolving discourse surrounding drug policies in Nordic countries, as well as revealing relevant insights regarding potential economic and societal benefits of legalising marijuana in Finland.

Since the book was published in 2021, it has some of the most relevant context when referring to the current status of drug policies in Nordic countries. I consider this work to be different from the previously mentioned international works as its approach prioritizes demand-side interventions, such as treatment for drug users, while also acknowledging some relevant factors, such as the rising drug-related deaths and evolving public attitude, particularly from the newer generation of adults. In my research, this excerpt can be utilized to provide context of the current state of drug policy in Finland and the Nordics, by taking into consideration the historical influences, societal attitudes, as well as the influence of welfare state ideology.

Overall, the aforementioned sources of research offer valuable insights into the complex interplay of both the social and economic factors in influencing drug policy in Finland as legalisation would not only lead to physical and mental health benefits

but the significant tax revenue generated from this new sector can be implemented to manage the negative effects people might encounter in the case of substance abuse. The creation of this new sector will also create new jobs across various sectors including but not limited to: cultivation, processing, distribution and retail. Additionally, there would be a reduction of criminal activities and corresponding increase in legal business activity.

4 Cannabis in its different forms

4.1 Defining Cannabis

Cannabis is known by many different names, but it is important to use the correct terms when referring to specific forms of Cannabis. The most conventional form of Cannabis is the "flower/bud". Although the term "flower" might not be correct, it is the most commonly used term when describing this form of Cannabis, as stated in the book "Cannabis- A Complete Guide" (Small 2016). The Bud is made up of a collection of tiny leaves rich in cannabinoids. Small goes on to describe how the fragrant bud is harvested from the female cannabis plant, which produces a high concentration of 2 main cannabinoids known as the psychoactive compound (Tetrahydrocannabinol) THC and the non-psychoactive compound (cannabidiol) CBD.

4.2 The Cannabis Flower

In order to release and consume the active compounds, the bud has to be heated and often inhaled through the respiratory system, leading to effective absorption into the bloodstream. The near instantaneous effects caused by this are often described as euphoric and therapeutic relief which is why it is easy for individuals uneducated on the topic to abuse the substance. Unlike other substances, overconsumption of Cannabis does not lead to a deadly overdose. This form of Cannabis has a high variety of methods of consumption as in the cannabis culture the bud can be ritualistically rolled as a joint or packed into a bowl. These traditional methods of consumption have evolved over time and inspired the creation of new

technologies such as the vaporizers, where in an attempt to reduce the harmful carcinogens inhaled, the vape does not burn the bud but using convection/conduction only heats it to the point where the active compounds are released. This method also preserves the flavour and potency of the flower, while decreasing the amount of bud that is wasted to minimum. This method is growing in popularity among health-conscious consumers.

As this is the most basic form of Cannabis it has acted as a foundation in which it was built on in order to create the other forms of Cannabis such as hash, oil and even edibles. An important aspect to note is that the psychoactive compounds (THC) produced from the plant have increased in concentration by 20% over the years (Small, 2016). Although this means that the herb has gotten more potent and more effective, the dangers and risks that accompany the increase in THC have gone unchecked and will continue to go unchecked until legalisation is approved and the policies are put into place to keep this plant safe for consumption before it gets out of hand. This is where government intervention is important because although on average the THC % in Amsterdam is 15%, certain strains can be found that are as high as 30%-40%, similar to Canada's market. In 2018, the Canadian government-imposed regulations stating that a dispensary cannot sell any dry herb with THC levels over 30%.

4.3 Hash and its cultivation

Hash is the short name given for "Hashish". Hashish is a psychoactive drug prepared from the resin or the resin glands of the female Cannabis plant (Clarke 1998). A common misconception is that hash is made from grinding dry cannabis flowers and compressing the powder into solid pieces. This misconception is usually made by uninformed observers attempting to describe or replicate the process of creating hash from cannabis flower. The true method of creating hash involves isolating and concentrating the THC containing resin from the cannabis plant to create a new much more potent product called hash/hashish. The result of this product is vastly different than the crude product marijuana.

The appeal of producing hash was very wide in the past, as the quality of the cannabis flower was very low compared to today. Hash has many well-suited

qualities for international trade such as being relatively dense, compact and easily transportable. The fact that hash is not easily damaged by water gave it enormous potential to be stored and used for trade compared to the cannabis flower. It's high potency, storability and transportability gave it a higher value per unit of weight or volume compared to the previously mentioned cannabis flower. Conversion of Cannabis to hash requires two main phases, The first being resin collection and the second being resin preparation.

Both parts are non-chemical methods for collecting cannabis resin to manufacture Hash, the resin glands containing THC can be rubbed off living plants by hand or they can be collected by sieving after the plant has been harvested and dried. The rubbing method was undoubtedly the first method of production as it required no tools besides the fingers and palms of the hand. Due to how labour intensive this method is, once the sieving method was discovered it widely impacted the production of hash as it was used to mass produce and greatly impacted the efficiency of production. Some say that the discovery of sieving techniques changed the world of hashish almost as much as the introduction of tobacco smoking. In addition to increasing production, the sieving techniques produced a product that can be stored much longer than the hand rubbing method.

4.4 Cannabis oil

Cannabis oil is a concentrated extract derived from the cannabis plant, identified by its viscous texture and pain-relieving properties. Cannabis oil is common among those who are incapable of smoking but still intend to medicate with the use of Cannabis. Cannabis oil can be either be ingested or absorbed by the skin depending on how it was prepared. Its abilities include but are not limited to, alleviating symptoms of chronic illnesses, including pain, nausea and inflammation. In some cases, it is even claimed to cure cancer, although since research on this topic has been limited, there is a lack of clinical evidence to support this claim. In addition, the oil contains terpenes and aromatic compounds that may contribute to its therapeutic benefits by working synergistically with cannabinoids.

Cannabis oil is commonly prepared at home, often using household items or simple equipment. The most common solvent used to extract cannabis oil is using olive

oil, as the choice of solvent has a significant impact of the safety and potency of the final product. Different solvents that can be used include ethanol and petroleum-based chemicals but the use of olive oil is considered the safest extraction solvent as it is non-toxic and preserves the oils full spectrum of compounds. In an experiment conducted by Romano and Hazekamp (2013), 5 different solvents were tested and the results found can be seen below:

Table 1: Detailed description of the five different protocols used for preparation of Cannabis oils.

| Preparation step | 1) NAPHTHA | 2) PETROLEUM ETHER | 3) ETHANOL | 4) OLIVE OIL I | 5) OLIVE OIL II |
|--|---|---|---|--|---|
| CANNABIS (g) | 5g | 5g | 5g | 5g | 10g |
| SOLVENT (mL) | Naphtha (200 mL) | Petroleum ether (200 mL) | Ethanol (200 mL) | Olive oil (20 mL) + water (70 mL) | Olive oil (100 mL) |
| EXTRACTION/ FILTRATION | Extraction #1: 5 g cannabis + 100 mL naphtha, agitate 20 min. (a) • Filtration with filter paper • Extraction #2: Same cannabis + 100 mL naphtha, agitate 20 min. (a) • Filtration with filter paper • Combine extracts | Extraction #1: 5 g cannabis + 100 mL petr. ether, agitate 20 min. (a) • Filtration with filter paper • Extraction #2: Same cannabis + 100 mL petr. ether, agitate 20 min. (a) • Filtration with filter paper • Combine extracts | Extraction #1: 5 g cannabis + 100 mL ethanol, agitate 20 min. (a) • Filtration with filter paper • Extraction #2: Same cannabis + 100 mL ethanol, agitate 20 min. (a) • Filtration with filter paper • Combine extracts | 5g cannabis + 20 mL olive oil + 50 mL water. Heat in water bath ~98°C for 60 min. • Before filtration, let it stand to cool off. • Filtrate by pressing (b) • Rinse the plant material with 20 mL of hot water • Filtrate by pressing (b) • Combine extracts | 10 g cannabis + 100 mL olive oil. Heat in water bath ~98°C for 120 min. • Before filtration, let it stand to cool off. • Filtrate by pressing (b) |
| EXTRACT CLEAN-UP | N/A | N/A | (optional): Filter extract over a column filled with activated charcoal | N/A | N/A |
| EVAPORATION/ SEPARATION | Evaporate solvent in water bath ~98°C under stream of nitrogen gas | Evaporate solvent in water bath ~98°C under stream of nitrogen gas | Evaporate solvent in water bath ~98°C under stream of nitrogen gas | Let the solution stand to separate water and oil. Put it in the freezer (~20°C) overnight | N/A |
| RECONSTITUTION | Reconstitute residue with EtOH to 100 mL | Reconstitute residue with EtOH to 100 mL | Reconstitute residue with EtOH to 100 mL | Collect upper layer (oil) by pouring it off the frozen water layer | Collect the oil |
| EXTRACT CONCENTRATION (cannabis/solvent) | 5 g/100 mL | 5 g/100 mL | 5 g/100 mL | 5 g/20 mL | 10 g/100 mL |
| DILUTION FACTOR FOR ANALYSIS | 20x | 20x | 20x | 100x | 40x |
| FINAL CONCENTRATION (cannabis/solvent) | 2.5 mg/mL | 2.5 mg/mL | 2.5 mg/mL | 2.5 mg/mL | 2.5 mg/mL |

a): agitate by using a shaking platform @ 120 rpm
 b): separate oil from plant material by using a French coffee press

Figure A: Results from the experiment testing 5 different solvents (Romano and Hazekamp 2013).

The findings from this experiment revealed that although olive oil is the safest solvent to use, it requires a higher dose due to its inability to evaporate and thereby concentrate the extract. A key finding in this article is that quality control is a concern regarding the residual solvents, which can pose health risks if not properly removed.

4.5 Edibles

Cannabis edibles can refer to either food or drink products that are infused with cannabinoids. Similar to cannabis oil, these edible products are very appealing to those who enjoy the therapeutic benefits of Cannabis without drawbacks of processing it through the respiratory system. An additional benefit that accompanies this method of consumption is the longer-lasting effects compared to inhaled Cannabis. This is due to the cannabinoids that are metabolized in the liver into more potent compounds, when processed through the liver the initial effects felt are usually delayed. The appeal of edibles lies in their versatility and accessibility as they are often indistinguishable from regular food products, this would be a challenge for policy makers as similar to countries where legal production already exists the packaging on the edibles requires a large "18+" warning label on them. Policy makers must address this issue as well as place a strict regulation on maximum concentration of the edible to avoid overconsumption.

The versatility of edibles, sparks innovation as they can be made into almost any form of food or drinks, such as baked goods, candy or even drinks. This would spark a whole new subsector in the food and drink industry where high end restaurants would provide a cannabis infused options as well as new entertainment venues would open such as bars/ lounges where they serve only Cannabis infused products rather than alcohol. Ideally, these venues would be responsible for providing a safe environment for consumption as well as a safe and accurate production of these unique food and drink products to avoid overconsumption and regulate the correct amount of consumption.

Overall, one would expect Cannabis to be at the least treated the same way alcohol is, as Cannabis is safer in production and consumption when compared to alcohol. Undeniably, the existence of edibles does pose complex challenges for policy makers but this just supports how these policies should be carefully thought out and thoroughly regulated rather than just ignored and the responsibility of production and consumption is left solely to the individual consumer. As the popularity of edibles continues to grow, policymakers must adapt to ensure that these products are safely integrated into the legal cannabis market.

4.6 Industrial Hemp

Industrial hemp is defined as an agricultural commodity, distinct from marijuana, as it contains less than 0.3% THC, the psychoactive compound in marijuana (Johnson, 2019). This definition of industrial hemp only refers to the THC content and not CBD, meaning that Cannabis that is high in CBD but low in THC can technically be considered to be industrial hemp. Industrial hemp has one of the most diverse real-world applications as it can be used in countless products varying from textiles, foods, cosmetics and various other products all the way to biofuels.

Hemp properties are easily identifiable when referring to the fibre. Hemp fibre is well known for being among the strongest natural fibres due to its high tensile strength. This makes it suitable for textiles, ropes and composite material. The long length and low density of the fibres contributes to the durability and flexibility of the fibre making them ideal for the production of bioplastic and construction material also referred to as hempcrete. Hempcrete also utilizes the thermal insulation properties of the hemp fibres as its thermal conductivity is low thus its thermal insulation is considered to be good. Further use of hemp in construction can be seen when considering hemp-based composites as they provide good acoustic insulation, making it suitable for construction as well as automotive interiors. However, when identifying hemp-based products, purely from the use of the naked eye, such as textiles, it is easy to identify them based off the natural colour as hemp fibres range from light beige to brown (assuming they have not been bleached).

Cultivation of hemp can be evidently traced back to at least the iron age as pollen analyses from lake sediments, such as those from lake huhdasjarvi, indicate the presence of ancient hemp cultivation. (Hamppumaa, n.d.). However, certain signs indicate that cultivation could be dated back to 4800BC. The cultivation of Cannabis was prohibited in 1966, as part of the country's broader efforts to regulate narcotics (NAPR, n.d.). Subsequently, in 1970, a legislation was passed banning growth and sale of Cannabis (VanDolah, Bauer and Mauck, 2019).

5 What policies to implement

5.1 Cannabis compared to Tobacco and Alcohol

When looking at the current global policies and how Cannabis is viewed around the world, most countries treat Cannabis as a more dangerous substance than alcohol or tobacco. Although it is true that Cannabis has psychoactive properties, it should be treated at least the same way as alcohol or tobacco and not worse due to the fact that the human body cannot overdose or die from Cannabis. Over consumption of alcohol can lead to alcohol poisoning and/or liver failure, these deadly side effects have cost numerous people their lives, whereas not a single case of death due to the over consumption of only Cannabis. Furthermore, alcohol and tobacco are widely recognised as highly addictive substances due to their significant impact on the brain's reward pathways. Tobacco's primary active ingredient is nicotine, it rapidly stimulates the release of dopamine, reinforcing habitual use and leading to physical and psychological addiction (Benowitz, 2010). Similarly, the use of alcohol alters neurotransmitter systems, particularly gamma-aminobutyric acid and glutamate, this creates an intense craving and leads to withdrawal symptoms that further support its addictiveness (Koob & Volkow, 2010). Whereas, Cannabis is generally associated with dependency rather than addiction. However, chronic use of Cannabis can result in Cannabis use Disorder (CUD), its effects are considered less severe than those of alcohol or tobacco, which is why Cannabis should be perceived as better or at least on the same level as alcohol or tobacco as CUD can be treated through behavioural therapies such as cognitive behavioural therapy (CBT) and motivational enhancement therapy (MET). Pharmacological treatments are still under research but are not widely established, which is another reason why the perspective of Cannabis has to be changed in order to be able to be effectively researched and understood rather than just restricting use without fully understanding it. Once legalised the amount of research surrounding the topic will increase and global understanding on the topic will increase in Finland as it did in other countries that have implemented legalisation of Cannabis. Dependency of Cannabis often manifests through psychological reliance rather than physical withdrawal symptoms, with a lower risk of long-term compulsive behaviour (Volkow et al, 2014). This is an important distinction between addiction and dependency as it highlights the differing

pharmacological effects of these substances and underlines the need for nuanced public health approaches to substance use and regulation.

5.2 Production and Sale

5.2.1 Licensing and Educating

Production of Cannabis has to be highly regulated as it does carry with it risks, but overall, the risks of producing Cannabis are nothing compared to those of producing other substances such as alcohol or tobacco. When considering what policies to implement, it is important to first look at other countries that have done it and use their efforts as a guideline on where to start and what to consider, while tweaking certain details to match the Finnish society. The best country to use as an example that has legalised the use of Cannabis for both medicinal and recreational use in Canada, as they both share a lot in common, to name a few; both countries are high-income countries with advanced economies, known for their high standard of living and robust infrastructure shown by their high ranking on the human development index (HDI). Both nations have small populations relative to their economic output, making them highly reliant on international trade, not to mention that both countries are investing heavily in technology and innovation. Canada's Cannabis act (S.C.2018, c.16) is Canada's federal legislation that provides a framework for controlling the production, distribution, sale and possession of Cannabis across the country. Supporting this act, is the cannabis regulations (SOR/2018-144) detailing the specific rules and standards that federal license holders involved in the production, distribution, sale, importation, and exportation of Cannabis must follow. This is high important as these regulations cover various aspects including licensing requirements, security measures, product standards, packaging & labelling and record keeping obligations. "The Cannabis Act creates a legal framework for controlling the production, distribution, sale, and possession of Cannabis in Canada. It aims to keep Cannabis out of the hands of youth, prevent profits from going to criminals, and protect public health and safety by allowing adults to access legal Cannabis." (Canadian Department of Justice, 2018). It should be that so anyone involved in the production or transportation of any and all Cannabis products must be licensed by the

government, as it is important to be educated on the risks that accompany the production and use of Cannabis.

5.2.2 Production Practices

Similar to Canada, licensed Cannabis producers must be required to maintain comprehensive records of their cultivation activities to ensure compliance with the law and regulations created to protect and ensure safe and legal production of Cannabis. When cultivating Cannabis there should be detailed documentation of the cultivation methods used, including planting, growing conditions, pest control measures as well as harvesting procedures. Since Finland would focus mainly on indoor cultivation, it would have to regulate the type of energy used to cultivate the cannabis farms, it could be stated in the regulations that all cannabis cultivation would have to use renewable energy. This would support Finland's sustainability initiatives as well as ensure that the law as well as good production practices were followed throughout all phases of the production.

5.2.3 Inventory Management

The next important area that must be highly documented is the inventory. Accurate records of cannabis plant count as well as the weight and movements throughout the cultivation facility. This includes but is not limited to the seeds or clones used as well as the disposition of harvested Cannabis. Any accidents that occur such as fires, water damage, dead plants or the disposal of the plants must be recorded in order to keep accurate management of the inventory. Plant identification numbers should be implemented in order to be able to track all cannabis products sold and origin. For example, if a defective batch somehow managed to be sold, the package sold should be able to be tracked to a plant number in order to identify where and when the defection occurred. All plant identification numbers must be reported constantly to the government in order to be able to be identified and linked back to the distributors and growers involved in the process.

5.2.4 Quality assurance

The fourth area to be documented is the testing results for contaminants and the levels in order to get an accurate understanding of the potency of the Cannabis plant in order to ensure product safety. This also includes any corrective actions taken in response to the quality issues including disposal of the plants.

5.2.5 Security measures

The next sector to be heavily documented is the security measures taken in order to assure and prevent any theft and ensure the integrity of the cultivation site such as security protocols, access control, surveillance systems and incident reports. In addition, a chain of custody should be documented to be able to identify which license holders had a hand in the cultivation or transportation, the plants should only be given from license holder to license holder and signed so that once a cannabis plant has come into the hands of a license holder, he/she would take responsibility for the plant until it is given to the next license holder.

Another aspect to cover is personal growers, certified growers who are cultivating Cannabis for personal use must take all responsibility for the plants they cultivate and must also be able to show the same documentation required for industrial growers. However, the number of plants that a personal grower tends to must be capped and limited in order to maintain reasonable supervision and quality control. Personal growers should limit access to the growing site to only licensed growers and they should not be able to gift or sell their cultivated plants to the public without a certified selling license, unless it is to another licensed grower or licensed distributor.

Cannabis distributors must also be licensed in order to assure that the laws and regulations are followed. Any cannabis acquired by the distributor must be from a licensed grower as well as any handling of the product must be from a licensed grower or distributor in order to prevent the mishandling of the product. If in the case of a licensed grower or distributor failing to abide by these laws and regulations, they will receive a maximum of 2 warnings and the third being their

license revoked and repercussions would take place such as the inability to regain the license for a limited amount of time.

Licensed growers and distributors must all be aware of the packing and labelling laws regarding cannabis products as every product containing Cannabis must have first of all the plant number in which it came from as well as the thc contents of the product as well as a clear big sign that states the age restrictions of cannabis products. Any product that fails to meet these requirements can be confiscated and the distributor and/or grower responsible for it will be subject to a fine and repercussion depending on the number of previous offences.

Furthermore, in the restaurant and bar industry if a venue decides to serve food or drink products containing THC, the venue must have a licensed individual who is responsible to make sure that the laws and regulations are followed, including the packaging and labelling laws. This includes stating the THC percentage on the menu as well as the age requirements. Failure to do so would make the venue as well as the licensed individual be subject to a fine or a license suspension as well as other consequences depending on the severity of the violation.

5.3 Age Restrictions

Although Canada's age limit for buying Cannabis depends on the province in which you purchase it from, the legal age is either 18,19 or 21 since the age regulations are managed at the local level. However, when it comes to Finland, I would offer an alternative approach when it comes to the age requirements. Although it is hard to identify when the human brain fully matures as the human brain is extremely complex and it varies from case to case, an article published by npr.org entitled "Brain Maturity Extends Well Beyond Teen Years" (Sack 2010) suggests that most people don't reach full brain maturity till the age of 25. Other studies conducted by the National Institute of Mental Health (NIMH) also support that the brain finishes developing and maturing in the mid to late 20's. In order to decrease and avoid any possible negative side effects caused by Cannabis used on the brain, an age requirement of 25 years should be implemented as the brain has a higher chance of being fully developed by then. This means that anyone under the age of 25 should not be able to gain legal access to the substance. This age requirement

should apply to anyone planning on purchasing and consuming as well as anyone planning to obtain a legal growing or distribution license.

5.4 Taxation framework

The last policy to consider when discussing the production of Cannabis is taxation, according to Canada's laws and regulations, Cannabis products are subject to multiple layers of taxation, including federal excise duties, additional provincial or territorial duties and general sales taxes. The federal excise duty is either a flat rate duty based on the product type and quantity. For example (in Canadian dollars):

-\$0.25 per gram of dried cannabis flower.

-\$0.075 per gram of cannabis trim.

-\$0.25 per cannabis seed.

Or an ad valorem rate of 2.5% of the sales price of the cannabis product. Whichever is higher of these 2 options is applied. In addition to the federal excise duty, provinces and territories may impose their own additional duties on cannabis products. This varies by region. This is added to the federal excise duty to determine the total excise tax applicable. (Mancell, 2018). Furthermore, a general sales tax is applied which also varies across provinces and territories; A Goods and services tax (GST) at 5% is applied federally where as some region apply a Harmonized Sales Tax (HST), which combines GST with provincial sales taxes, others apply a separate Provincial sales tax (PST) or Quebec Sales Tax (QST). This multilayer taxation makes it a little complicated for people to understand, but consider a gram of dried Cannabis from Ontario as an example with a base price of \$5 (all prices in this example are in Canadian Dollars):

-Federal excise Duty: \$0.25(flat rate per gram)

-Provincial Duty: \$0.20 (3.9% of Base price)

-Subtotal= Base price + Federal excise duty + provincial duty

-Subtotal= \$5 + \$0.25 +\$0.20

-Subtotal=\$5.45

-HST= 13% of the subtotal = \$0.71

-The Final retail price: \$5.45 + \$0.71= \$6.16

This multilayered taxation structure ensures that both the federal; as we; as the provincial/territorial governments collect revenue from the sale of cannabis products, contributing to public funds and supporting regulatory frameworks. To be able to make an accurate analysis on how much to tax for the cultivation of Cannabis first we must understand the costs that are required to grow Cannabis. The costs of cultivating Cannabis vary as the yield that 1 plant produces varies drastically depending on various factors, but to keep it simple we will only discuss indoor growing as Finland's weather conditions make it difficult to cultivate outdoors, and since the cost of equipment also varies depending on size and number of plants, we will only consider the costs after acquiring the initial set up costs. A study was conducted by the Rand Corporation in 2010 in California, USA, to determine the estimated cost of production of legalised Cannabis. The study concluded that the using a 5' x 5' hydroponic growing set up and producing 4 harvests per year, yielding about 10.5 pounds annually at the cost of \$57 USD per pound (not accounting for the price of the initial set up). Given that there are 16 ounces in a pound, and approximately 28.35 grams in an ounce, this equated to about 448 grams per pound. Therefore, the cost per gram would be approximately \$0.13 USD, this is equal to 0.12 euros.

Currently in Finland, a gram of dried Cannabis on the black market is approximately 15- 20 euros per gram, if we use the cost based off the research study we can calculate the mark up percentage. Using the formula:

Mark up= ((selling price -cost price)/ (cost price)) x 100

20 euros:

Mark up= ((20- 0.12)/ (0.12)) x 100= (19.88/0.12) x 100= 165.66 x 100= 16566.66%

15 euros:

Mark up= ((15- 0.12)/ (0.12)) x 100= (14.88/0.12) x 100= 124 x100= 12400%

With either price, it is evident that those selling Cannabis on the black market are making a large profit from it and since none of it is getting taxed, this supports the reason why legalisation should take place. In the case of legalisation, the government can tax cannabis products the same way they tax tobacco products and still make a large contribution towards public funds in order to battle the few negative externalities caused by cannabis consumption. Furthermore, legalisation would have a huge impact on the black market as illegal distributors would have to

choose between drastically lowering their prices or just becoming legal distributors as the price of Cannabis would be determined based off the market and the legal competition rather than the illegal distributors running the black market. Illegally cultivating Cannabis would no longer be worth it as the small profit they would make would not be worth the prison sentence they would receive if caught. Small interviews that I have conducted with various local anonymous illegal distributors has resulted in all of them stating that if Cannabis was to be legalised, they would all convert to legal distribution once I proposed these findings to them. Although all of the distributors I interviewed would like to cultivate legally, we do have to assume that a small part of distributors who do produce more than just Cannabis would continue their illegal activities.

5.5 Consumption and Safe Consumption Zones

As mentioned previously, once legalisation is approved for those aged 25 and above, regulations for consumptions would have to be put in place, such as safe consumption zones. Those who are licensed to cultivate and distribute should also be educated on the effects of consumption as well as how to handle those who have consumed as well as those who have over consumed Cannabis, this will allow them to be qualified to create safe consumption zones that are licensed by the appropriate authorities in order to allow provide a safe space for consumers to be able to freely indulge in the positive properties that Cannabis provides. The same way bars provide a safe consumption zone for alcohol; this will open a whole new economic sector for Finland. Consumers should be aware that they are still responsible for their actions the same way they would be if they were under the influence of alcohol. In turn, this would also decrease the number of people who abuse alcohol as a previous study conducted in Colorado, USA, entitled "Recreational cannabis legalisation and alcohol purchasing; a difference-in-differences analysis" (Calvert & Erickson 2021), confirmed that the legalisation of Cannabis has a direct correlation with a decrease in alcohol expenditure by 13% following the legalisation of recreational Cannabis. Furthermore, people's individual households should be considered safe consumption zones as those individuals would be held responsible for anything that occurred in their household, the same way they would if under the influence of alcohol.

This in mind, public consumption in certain areas should be prohibited, for example use in the presence of a minor or consumption within the confines of a school should also be seen as an illegal activity. If a parent or a guardian has a child in their care and they are caught in violation of this act, then it should be treated the same as if they were under the influence of alcohol, and the child should be taken into protective care as this is seen as a major violation of not just the cannabis act but should also be considered child endangerment. Furthermore, operating heavy machinery or driving any sort of motorized vehicle under the influence of Cannabis should be considered a violation and the person caught in violation would be subject to punishment and consequences as deemed right by a judge in court.

New innovations have been designed by various companies to detect cannabis use as recent as 30 minutes before the test. This is a major move towards regulating Cannabis as it previously was not possible to test for recent cannabis usage, these new innovations offer fast and efficient tests as easy to use as an alcohol breathalyser and as accurate as 96%. Here are a few that the Finnish government should use in order to properly regulate cannabis consumption:

1. Hound labs:

Hound labs have produced a Breathalyzer “for the era of cannabis legalisation”, designed as an instrument to be used to return results in minutes as it uses breath testing in order to detect active THC in the individual's system. The hound cannabis breathalyser- on demand will detect THC in breath for approximately two to three hours after consumption. So far, this technology is already in production and in use by various states in the USA by law enforcement and industries such as construction and transportation. (Hound Labs, n.d.)

2. Cannabix technologies

Cannabix technologies has its THC breathalyser's, similar to hound labs, in the final stages of development and testing and are currently working on supplying them for Canadian law enforcement.

3. Dräger

Dräger's Dräger Drug Test 5000 is in production and widely used for testing not just Cannabis but various substances including THC. This device is already in production and in use by multiple countries such as the USA, Canada, Germany, Australia, France and the Netherlands. Since this device is already in use in Europe and has already been approved by the European union, it would be the most ideal to use in Finland once legalisation has taken place. Dräger is an international leader in the fields of medical and safety technology, since 1889. (Dräger, n.d.)

Overall, these trusted companies have spent time and money on research in order to help regulate and improve safety when it comes to consumption of Cannabis as they also have noticed that "the era of cannabis legalisation" is upon us.

6 The potential impact of cannabis legalisation

6.1 Economic impact

Cannabis legalisation has had a significant impact on the economies of the countries that have legalised it as it is a multibillion-dollar industry, solely from an economical perspective it seems counterproductive not to benefit from it. When considering the Finnish economy and the price of Cannabis in Finland it would make an astronomical impact on the economy as those who are purchasing Cannabis from the black market are inadvertently taking money away from the economy by injecting into the black market. The economic potential of the cannabis industry in Finland is so large and vast that the money made from this multi-billion dollar industry would be able to effectively tackle the societal challenges it faces while also tackling the problems that are caused by other substances such as alcohol and tobacco, since Finland is known to have a higher burden when analysing alcohol attributed disease as proven by a study comparing four Nordic countries (Finland, Denmark, Sweden and Norway) between 1990 and 2013. This study found that Finland was exhibiting higher premature mortality rates from alcohol use disorders and related conditions. (Agardh et al., 2016). Sticking to an economic perspective of legalising Cannabis in Finland we can determine that opening up a new sector is highly necessary as the unemployment rate in Finland increased from 6.9% in July 2023 to 7.9% in July 2024 (Statistics Finland, 2024).

Legalising Cannabis will not only affect the new industry it will create but all various other industries such as law enforcement, the food and drink industry and even the government as it will require a large number of people to effectively regulate and oversee this new sector in the Finnish economy.

6.2 Societal impact

The impact of the legalisation of Cannabis on a societal is multifaceted as on one side it can provide people with a healthier alternative to alcohol as well as easy access to various organic health benefits rather than the synthetic chemical alternatives we currently use, for example the opioid epidemic that took place. Legalisation has fostered public health benefits in various countries by enabling regulation, quality control and safe access to Cannabis, reducing the risks associated with the black market. Not to mention shifting the focus of law enforcement to more hardened and violent offenses reducing arrests for nonviolent cannabis related offenses, and alleviating the strain on the judicial systems, which disproportionately impacted marginalized communities. When considering the negative impact of Cannabis on a societal level such as cannabis use among young people and impaired driving these challenges are also faced among alcohol and tobacco use but they still remain legal due to the government's ability to regulate their consumption. The world has progressed and innovation has evolved to the point where we can regulate and test for Cannabis just as easily as we do towards alcohol. Societal attitudes toward Cannabis have evolved, reflecting a broader trend toward harm reduction and the destigmatization of its use. Since Cannabis is still currently operating unregulated in the black market and is borderline decriminalized in the eyes of law enforcement as it does not cause violent tendencies, societally it would be best to legalise it and regulate it than let it continue to operate unregulated these evident as numerous countries have already begun to do so.

6.3 Environmental impact

Since Finland has a cold climate, indoor cultivation of Cannabis would have to be favoured for most of the year leading to increased energy consumption for the

artificial lighting, heating and ventilation systems. This could increase the carbon footprint if it was done in any other country, however Finland is known for its prioritization of renewable energy sources giving it the advantage over other countries as it could encourage the development and use of sustainable practices such as energy efficient technologies and organic farming methods. In addition, regulation could limit the environmental harm that is already currently being caused by illegal grow operations, which often involve the use of unregulated pesticides and fertilizers that can damage and pollute the soil and water.

7 Cannabis in different countries

Countries like Morocco and India who have a long history of Cannabis production have had a huge impact on their economy once it was introduced. This history of unregulated and untaxed sale of Cannabis meant that sales could not be tracked. This is a sign that governments have been missing out on an industry that has been growing and thriving for hundreds of years, even today. However, progress has been made as an example of this is; On March 11, 2021, Morocco has passed the legislation to allow regulated production and export of Cannabis for medicinal and industrial purposes. This shift reflects a growing awareness of the economic potential of Cannabis as a formal sector that can contribute to national revenue. (Rammouz and Boujraf, 2022). Nevertheless, this section will look into the impact of legalisation in Uruguay, Canada and Thailand.

7.1 Uruguay

In December 2013, Uruguay created history by becoming the first country to legalise recreational Cannabis. This pioneering move has had a notable economic impact on the country of Uruguay. Approximately 6 years after the sale of Cannabis was implemented, pharmacies sold 10.7 million grams of Cannabis during this time period. Since the sale of Cannabis only began in 2017, it averages an approximate 2 million grams of Cannabis per year. Cannabis control is regulated as there are only 61,509 registered individuals who are eligible to access pharmacies for cannabis purchasing and only 3 companies cultivating Cannabis. However, 37 pharmacies are working as distributors across 10 departments throughout the

country. (Sabaghi, 2023). The regulations implemented state that buyers must be at least 18 years of age as well as must be registered with Instituto de Regulation y Control del Cannabis (IRCCA). Furthermore, only residents of Uruguay are able to purchase Cannabis legally, as well as a maximum of up to 40 grams of Cannabis per month from licensed pharmacies. (Uruguay XXI, 2023)

7.1.1 Uruguay's GDP

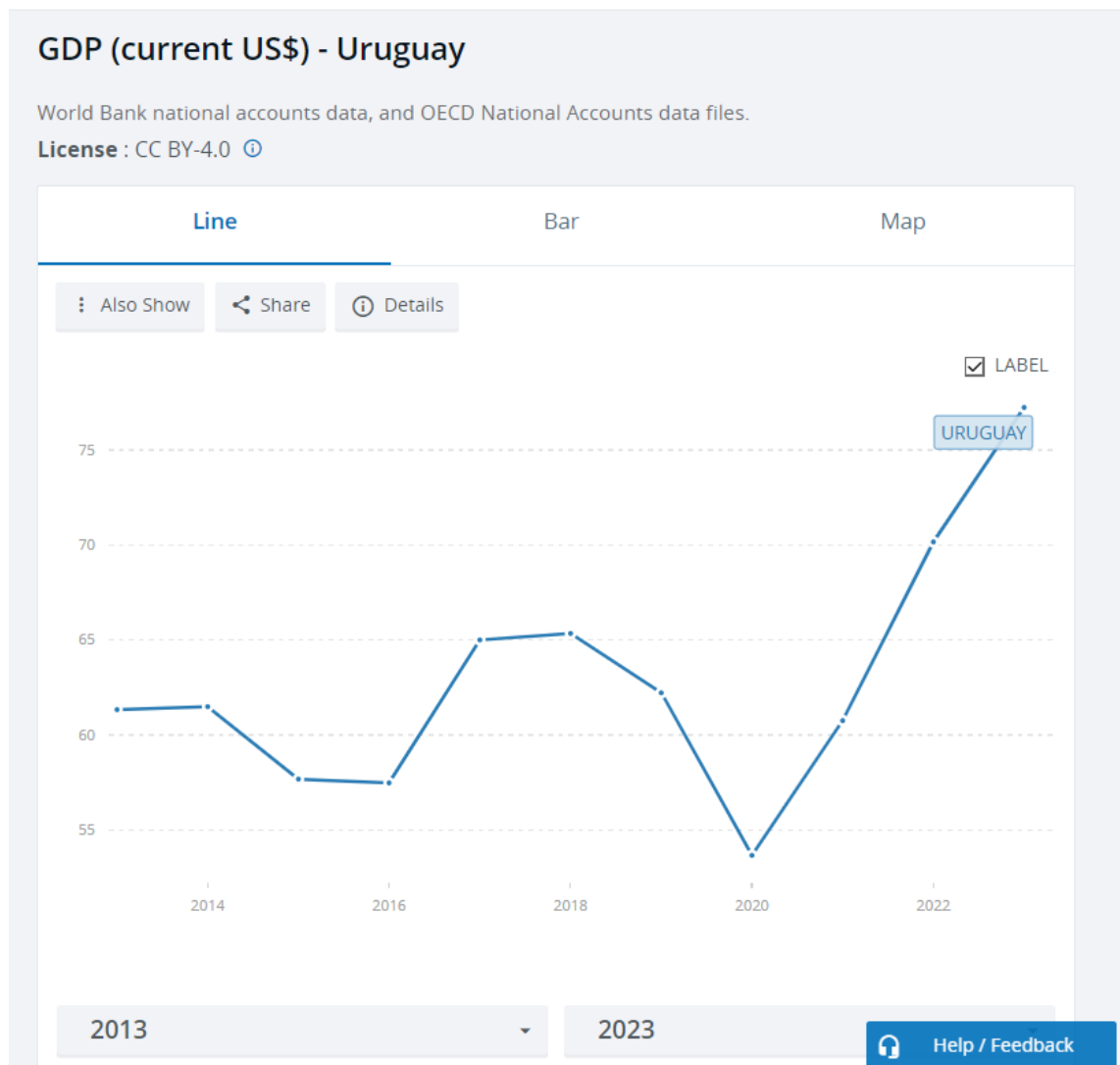


Figure B: Uruguay's GDP in USD provided from the world bank

Based off the information provided by the world bank, figure B, we can see that prior to the start of the sale of Cannabis in 2017, Uruguay's GDP was decreasing until the sale of Cannabis began and stabilized the GDP towards a positive incline

as shown in the figure above. In 2016, prior to the sale of Cannabis, Uruguay reported a GDP of 57.48 billion USD and an increase of 13% to 65.01 billion USD in 2017. This increase could be linked to the start of legal distribution of Cannabis as the legal sale of Cannabis began on the 19th of July 2017. Furthermore, Uruguay's GDP continued to thrive, reaching a temporary high of 65.34 billion USD in 2018 followed by a drop possibly due to the covid 19 pandemic. This evidence supports that once the sale of Cannabis began in 2017, the country's economy started to thrive. However, from 2018 to 2020, the GDP took a large dip due to the COVID 19 pandemic as it reached a low of 53.67 billion USD, regardless, the country's GDP recovered surprisingly well and continued to grow to an all-time high of 77.24Billion USD and continues to thrive according to the latest information.

7.1.2 Uruguay's Unemployment

When looking at employment, we can see based off figure C that the unemployment rate prior to the sale of legalisation steadily increased from 2013 to 2014 it only increased slightly as the unemployment rate was 6.4% in 2013 and 6.5 % in 2014, conveying a small 0.1% increase. However, from 2014 to 2015 it increased by 1% and from 2015 to 2016 it increased by 0.3%, slowing down the increase in unemployment. This drastic increase in unemployment could be due to the fact that it took 4 years for production and distribution to begin, this delay was mainly due to the fact that a whole new system had to be created in order to effectively regulate the distribution as well as select trusted sources to start cultivation. Nevertheless, once the sale of Cannabis started, unemployment only increased by 0.1% from 7.8% to 7.9% from 2016 to 2017 this slowing down in the rise of unemployment could be linked to the start of sale of legal Cannabis. This shows that the impact that the cannabis market has on unemployment is notable, but in the case of a country already struggling with high unemployment, it just decreases the rate at which unemployment is rising. Something important to mention is that Uruguay only allowed 3 legal producers as well as distribution is only allowed in pharmacies rather than dispensaries like Canada, this would have an effect on how big of an impact legalisation of Cannabis would have on the unemployment rate as it limits the number of producers and distributors.

Unemployment, total (% of total labor force) (national estimate) - Uruguay

International Labour Organization. "Labour Force Statistics database (LFS)" ILOSTAT. Accessed January 07, 2025. ilostat ilo.org/data.


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Figure C: Uruguay's unemployment percentage of the total labour force (national estimate) provided from the World Bank.

7.2 Canada

On October 17th, 2018, Canada became the second country in the world, after Uruguay, to legalise the use of recreational Cannabis nationwide. According to the government of Canada's website; this legislative move was driven by economic objectives in order to undermine the black market, generate tax revenue, create employment opportunities as well as reduce law enforcement costs. Furthermore, the decision to legalise recreational Cannabis was also conducted to ensure consumer safety through strict regulation on production, distribution, sale and

possession of Cannabis across the country as mentioned before. The law that took place is referred to as the Cannabis Act (Bill C- 45). Canadians aged 18 or 19, depending on the province or territory, were permitted possession up to 30 grams of dried Cannabis or its equivalent in non-dried form. The legislation also allows adults to grow up to four plants per household for personal use (Government of Canada, 2018). Provinces and territories were granted the right to set their own regulations such as age requirements and taxation structures (Health Canada, 2018).

7.2.1 Canada's GDP

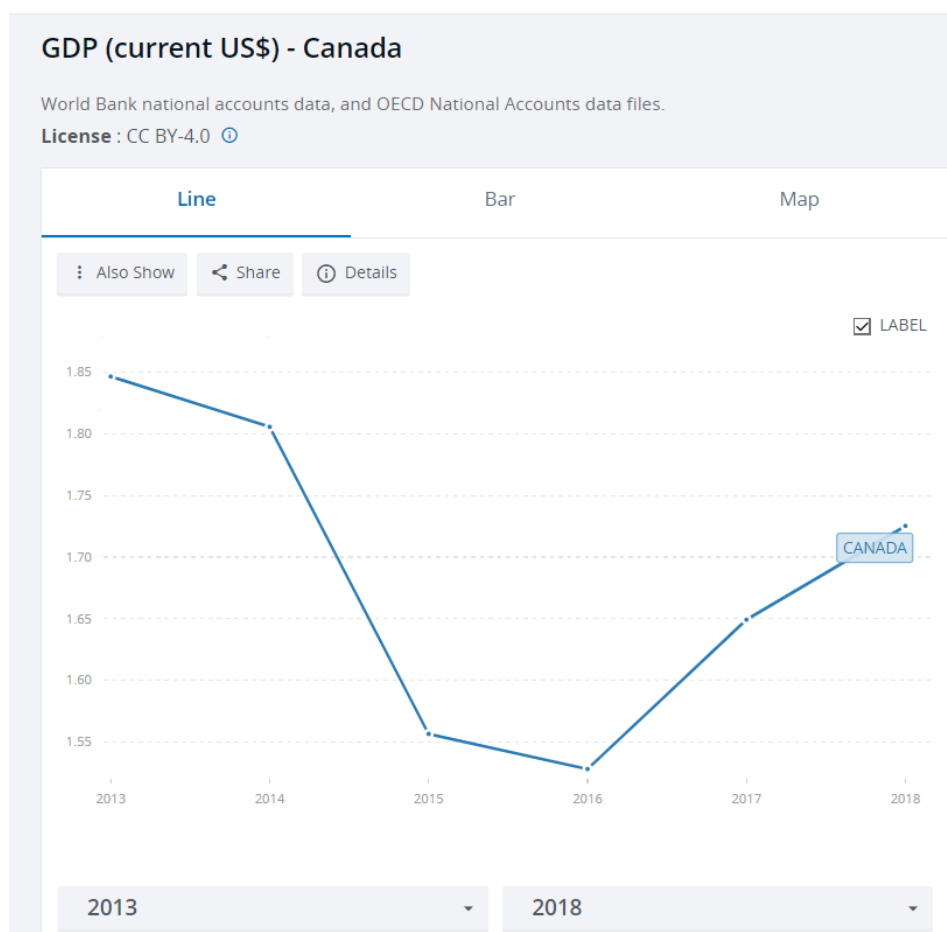


Figure D: Canada's GDP prior to legalisation in USD provided by the World Bank.

According to the World Bank, in 2013, Canada reported a GDP of what was estimated to be 1.85 trillion USD, followed by a decrease of approximately 2.2% to 1.81 trillion CAD in 2014, followed by an even larger decrease of 13.8% to 1.56

trillion USD in 2015, this was followed by a 1.9% decrease to 1.53 trillion USD in 2016. In 2017 The Canadian economy started to recover and changed the direction in which their GDP was going as shown by their increased GDP of 1.65 trillion USD which is an increase of 7.8% from the previous year. This increase was followed by a smaller increase in 2018 of 4.8%, equivalent to 1.73 trillion USD. All this can be seen from Figure D.

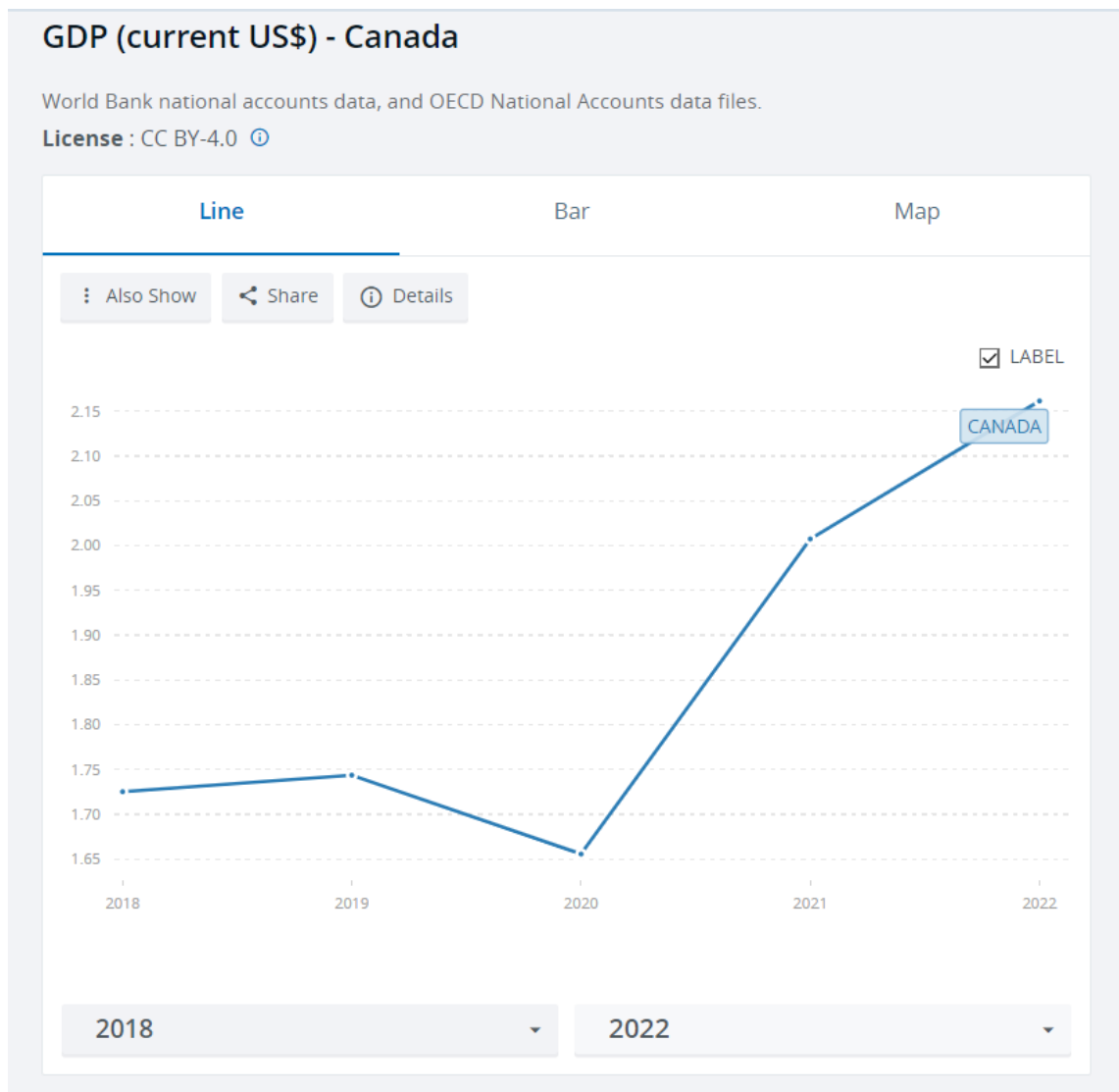


Figure F: Canada's GDP in USD post legalisation provided by the World Bank.

When looking at post legalisation, we can see Canadas GDP increase from 1.73 trillion in 2018 to 1,74 trillion in 2019, indicating a 0.58% increase in GDP while 2020 resulted in a 4.4% decrease as the GDP was 1.66 trillion. This could be due to the COVID-19 pandemic that occurred in January 2020, restrictions were put in

place. Despite this, Canada conveyed a major increase of 21.08% to 2.01 trillion USD in 2021 and continued to grow by 7.46% to 2.16 trillion in 2022. These numbers can be seen above in figure F. This shows that the country recovered very quickly despite the global emergency.

7.2.2 Canada's unemployment rate

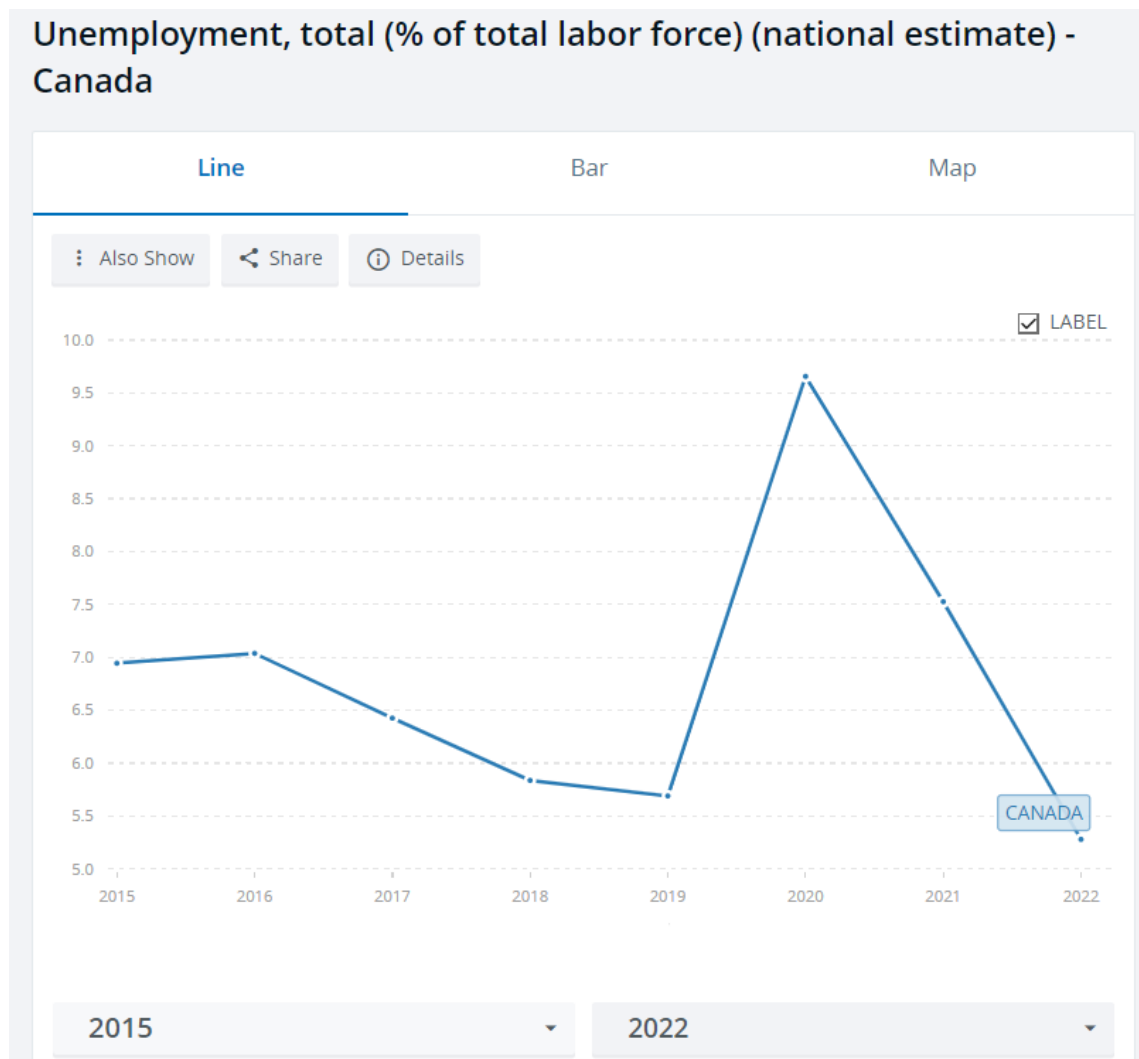


Figure G: Canada's unemployment percentage of the total labour force, a national estimate provided by the World Bank.

The unemployment rate in Canada was analysed based off data taken from the world bank, which can be seen in figure G, had determined that in 2015 the unemployment rate was 6.945 and increased to 7.038 (1.3% increase) in 2016. This was followed by a major decrease of 8.7% in 2017 as the unemployment rate

was 6.426 and continued to decrease by 9.16% as the unemployment rate was 5.837 in 2018. This decrease could be due to the legalisation of Cannabis as it was implemented in 2018. Unemployment continued to decrease post legalisation as in 2019 the unemployment rate was 5.69 signifying a 2.52% decrease. This was followed by a major increase in unemployment as in 2020 the unemployment rate was 9.657, this shows a major increase in unemployment as it creased by a drastic 69.7%, which broke records as this has not been seen since the great depression. This can be linked to the COVID-19 pandemic, as a large part of the population lost their jobs. Surprisingly, the unemployment rate managed to decrease to 7.527 (21.6% decrease) in 2021 following the pandemic and continued to decrease to 5.28 (29.9% decrease) in 2022 reverting back to a lower level than it was before the COVID-19 pandemic. Although the COVID-19 Pandemic had a major impact on unemployment it can still be seen that the legalisation of Cannabis had a major impact on unemployment as between 2019 and 2018 there was a major decrease of 9.16%.

7.3 Thailand

On June 9th 2018, the Thai National Legislative assembly approved a law allowing the use of Cannabis for medical purposes under strict regulations. The law was designed to allow access to those suffering from specific medical conditions such as chronic pain, epilepsy and cancer. In 2022, Thailand took a significant step by decriminalizing Cannabis by removing it from the list of narcotics. This allowed the cultivation of cannabis plants for personal use and paved the path for further research and development of cannabis-related products, including oils and creams.

7.3.1 Thailand's GDP

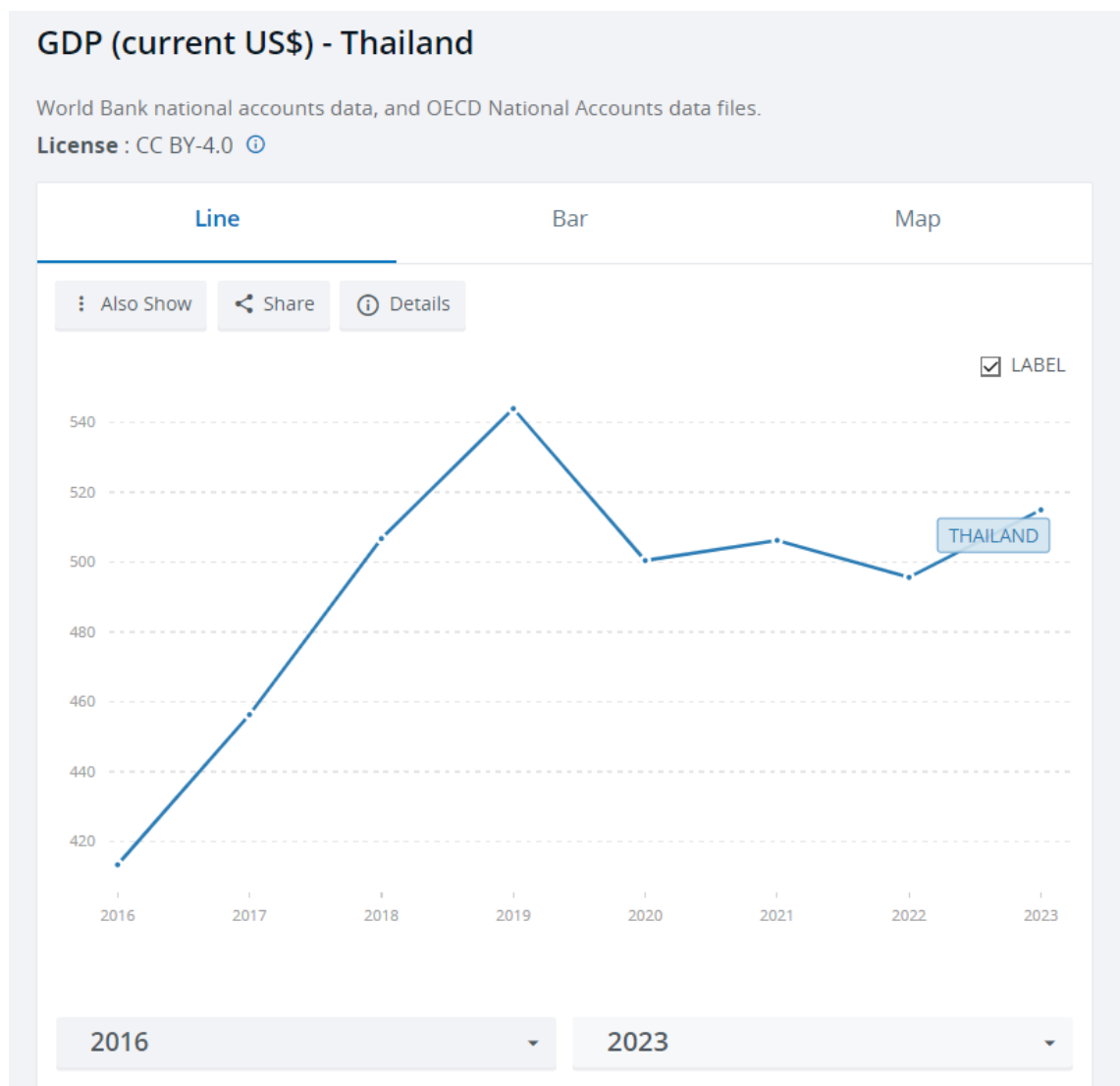


Figure H: Thailand's GDP in USD provided by the World Bank.

Thailand's GDP was already on the rise prior to the legalisation of medicinal Cannabis as in 2016 it was 413.37 billion USD and increased to 456.36 billion USD (10.4% increase) in 2017. The country's GDP continued to increase to 506.75 Billion USD (11.04% increase) in 2018, this slight increase could be due to the legalisation of medicinal Cannabis as it was legalised in mid-2018. Furthermore, the GDP continued to grow to 543.98 billion USD (7.35% increase) in 2019, this shows that the country continued to thrive with its drastic increases, however in 2020 when the COVID-19 Pandemic took place the country's GDP took a dive to 500.46 billion USD (8% decrease), which is no surprise as almost every other country suffered. However, Thailand's economy managed to recover as the

GDP increased to 506.26 billion USD (1.16% increase) in 2021. Despite this the economy's GDP took a turn to the worst and decreased to 495.65 billion USD (2.1% decrease) in 2022, it's important to note that the decriminalization of Cannabis took place in June 2022. Following the decriminalization of Cannabis, the GDP increased by 3.9% to 514.97 billion USD in 2023, which is higher than it was in both 2020 and 2021. This fluctuation shows clear indication that the Cannabis industry had an impact on the country's economy as it increased both during the legalisation of medicinal Cannabis as well as the year following the decriminalization of recreational Cannabis. These numbers are displayed in the figure H above.

7.3.2 Thailand's Unemployment

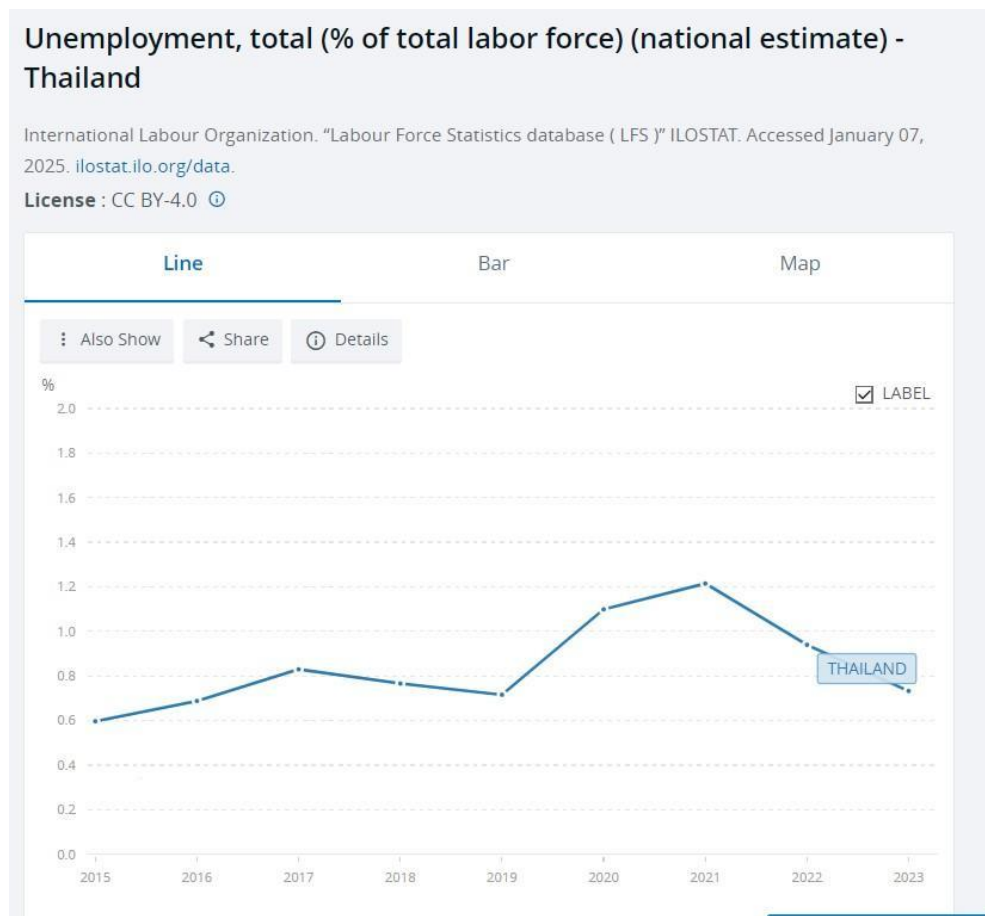


Figure I: Thailand's unemployment percentage of the total labour force, a national estimate provided by the World Bank.

Since the legalisation of medicinal Cannabis was in 2018, according to the world bank information, that can be seen from figure 7, the unemployment rate of Thailand 3 years prior indicates the path in which unemployment was rising without the Cannabis industry. The unemployment rate increased from 0.6 to 0.8 in the span of 2 years (from 2015-2017), prior to the legalisation of Cannabis. However, once medicinal Cannabis was legalised in June of 2018 it showed an immediate decrease in unemployment that continued to decrease until 2019. The decrease in unemployment between 2017-2019 was approximately from 0.8% to 0.7%. The decrease stopped most likely due to the COVID 19 pandemic that occurred in January 2020 and continued until all restrictions were lifted in October 1st 2022. Thailand's decision to decriminalize the use of recreational Cannabis was most likely driven by drawbacks it experienced from the COVID 19 pandemic as shown by the rising unemployment rate. Nevertheless, once decriminalized the unemployment rate started the drop once again from a high of 1.2% (2021) to 0.9% (2022) and continued to drop to 0.7% (2023) reaching a low it has not seen since before the pandemic. Based off the data, unemployment is expected to continue to decrease as the decriminalization has reopened tourism and it can be seen by the GDP that the economy is recovering well.

8 The Expected impact on cannabis legalisation on Finland

In order to predict how Finland would be impacted by the legalisation of Cannabis, first we must analyse the important aspects of the economy such as the country's GDP and unemployment rate. According to stat.fi, as of 2024, Finland's population is 5.6 million people. When considering the size of population, Uruguay would be a good country to compare Finland to as it has only 3.4 million people. (Worldometers, 2024.) Since Finland is a country with a cold climate for most of the year, the method of cultivation used would most likely have to be indoors. Currently, as of January 2025, Uruguay has no specific excise tax on Cannabis as it's trying to keep prices competitive with the black market. However, a corporate income tax (IRAE) is applied at a rate of 25% for producers as well as businesses may be liable for the net worth tax (IP) at 1.5% (Asghar, 2024). A similar structure

could be applied for Finland with an additional VAT applied on consumers as the price of Cannabis in Finland is approximately 20 euros per gram. This would be viable as the cost of production is low, and this tax proposal would still keep prices competitive with the black market.

8.1 Finland's GDP



Figure J: Finland's GDP in USD as provided by the World Bank.

Figure J shows Finland's GDP from 2020 to the most current data available, 2023. This Figure supports the statement that Finland handled the COVID 19 pandemic extremely well as the economies GDP took a substantial rise in 2020. This can be seen as in 2020 Finland's GDP was reported to be 270 billion USD, followed by a 9% increase to 294.22 billion USD in 2021. This recovery from the COVID-19

pandemic was followed by a drop of 4.75% as the GDP reported was 280.24 billion USD in 2022. However, Finland's GDP continued to fluctuate as the following year (2023) was reported to be 295.53 billion USD, a 5.46% increase in the country's GDP, an all-time high. This fluctuation in the country's GDP could indicate a decrease in the upcoming years as the GDP would continue to fluctuate and has not yet shown signs of stabilising. Based on this information, opening a new industry in Finland would be beneficial as it would help stabilize the economy's GDP by increasing spending. If we take into account that once Uruguay's started the legal sale of Cannabis it saw a 13% increase in GDP from 2016 to 2017, as well as Canada saw a 0.58% increase from 2018 to 2019, Thailand saw an increase of 11.04% from 2017 to 2018; this indicates that if Finland was to legalise Cannabis, it would definitely see an increase in GDP, the increase would be approximately 8.2% as that was the average increase between the 3 nations.

8.2 Finland's unemployment rate

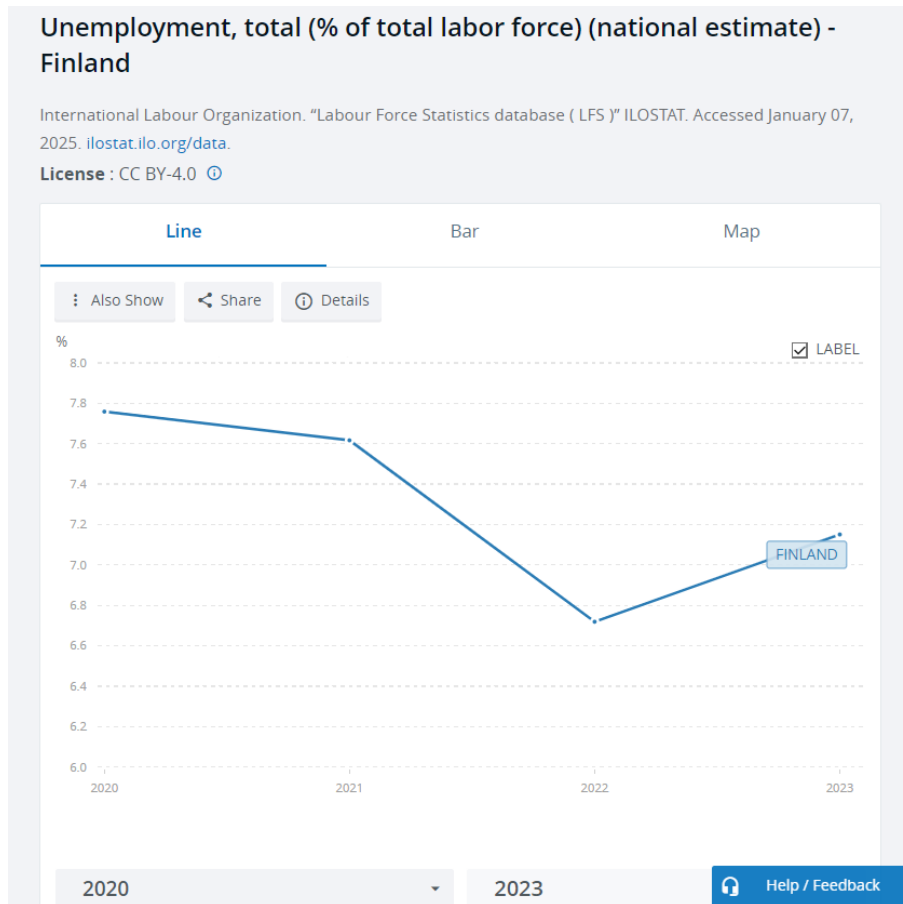


Figure K: Finland's unemployment percentage of the total labour force, a national estimate provided by the World Bank

Finland's relatively high unemployment rate has shown a decrease from the covid pandemic as Finland was one of the best countries to handle the pandemic. This is shown as from the decrease from 7.8% to 7.6% from 2020- 2021, it continued to decrease from 2021 to 2022 from 7.6% to 6.7%. However, 2023 caused a shift as unemployment was on the rise again from 6.7% to 7.2%. Following the other countries statistics, Uruguay saw a decrease in unemployment by 0.1% after the law passed, as well as Canada saw a decrease in unemployment by 0.15%, whereas Thailand saw a decrease of 0.3% in unemployment. Based off this information I would expect unemployment to decrease by an approximate 0.2% in Finland, if legalisation of Cannabis would occur.

9 Conclusion

In conclusion, the legalisation of Cannabis presents a significant economic and societal opportunity for Finland. Gaining insights from countries such as Uruguay, Canada, and Thailand, which have already gone through the process of legalisation, it was evident that the cannabis industry can generate substantial tax revenue for the government, which they can use to help face any challenges that legalisation could present as well as help decrease the growing number of alcoholism that the country is currently experiencing. Furthermore, the creation of a new market will provide employment opportunities that will decrease the growing unemployment rate as well as substantially decrease the sale of illegal and unregulated Cannabis. Since Finland has a long history and cultural ties with hemp cultivation, it would further support the feasibility of developing a structured and regulated cannabis industry.

Economically, shifting the cannabis market from the unregulated black market to a regulated legal industry could stabilize Finland's GDP as all the other countries who have done have seen a substantial increase in their GDP in the years following their legalisation, even though some of the countries implemented right before the COVID 19 pandemic occurred. The taxation model suggested and used by Canada and Uruguay demonstrates how governments can effectively regulate pricing and safe cultivating methods, while keeping the legal market competitive against illicit trade. Furthermore, Finland's unique position and commitment to renewable energy could position the country as a leader in sustainable cannabis production.

Societally, legalisation could reduce strain on law enforcements as it would free the law enforcement agencies up to handle more serious crimes such as violent crimes or shift their focus towards serious narcotics that cause definitive harm and consequences on society. The implementation of new innovations such as the drug breathalysers would support keeping a safer society as well as improve regulation when it comes to intoxicated drivers. By implementing a minimum age limit of 25 years, it would minimize any negative effects associated with use on a non-fully

developed brain. Strict policies regarding licensing, age restrictions, and quality control would ensure consumer safety and prevent potential misuse among the population.

Ultimately, while potential challenges remain, the potential advantages of the legalisation of Cannabis in Finland, outweigh the drawbacks as they can easily be managed as well as the tax revenue gained would not only support the drawbacks from cannabis consumption but also the drawbacks seen from other substances such as alcohol consumption and other potential drugs used. A well-regulated cannabis industry is the key to boosting the nation's economy as well as promoting public health and aligning Finland with the progressive global shift towards cannabis legalisation. By learning from the successes and challenges faced by other nations, Finland can a responsible framework that maximizes the benefits of cannabis legalisation while mitigating the potential associated risks that they could face. This provides Finland with the opportunity to create the best framework to date that other countries who choose to follow in its steps can learn from.

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