

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor Thesis

**Legalization and Economic Impact of the
Recreational Cannabis in Canada**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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BACHELOR THESIS ASSIGNMENT

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Economics and Management

Thesis title

Legalization and Economic Impact of the Recreational Cannabis in Canada

Objectives of thesis

The main objective of the bachelor thesis is to determine and analyze whether the legalization of recreational cannabis has a positive or negative impact on the economy based on Canada example. Find, analyze and evaluate the main trend in the development of the retail industry, consumers behaviours, norms and processes, which have occurred in Canada between years 2018 and 2021.

Methodology

In the thesis will be used methods as: regression analysis, analysis of the time series (base-year and chain indexes), econometric forecasting modelling etc.

The thesis will be based on methods used with working with secondary quantitative data provided by the different sources.

The proposed extent of the thesis

40 – 60 pages

Keywords

Cannabis, Recreational Cannabis, Canada, Econometric Model

Recommended information sources

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Declaration

I declare that I have worked on my bachelor thesis titled "Legalization and Economic Impact of the Recreational Cannabis in Canada" by myself, and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights.

In Prague on 15.03.2022

Andrey Oblovatskiy

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Legalization and Economic Impact of the Recreational Cannabis in Canada

Abstract

Cannabis is well known for Humanity in contemporary history and almost from the dawn of history. But it always has been a topic for discussion or controversy. One of the modern trends in western civilization is to legalize cannabis for medical purposes, but it's arguable if the government should also legalize recreational usage of cannabis. But what if it is necessary to protect the population from the "healthy" point of view and benefit the economy? What if it is a good step for society as many people will avoid a prison sentence for "young mistakes" and therefore not integrate into the criminal world? The author aims to investigate this topic in Canada's example. Canada legalized recreational usage of cannabis in October 2018. What started an exciting and unique case, which none of the western countries has faced before. How will it affect society? What will happen to the economy? Also, it is necessary to understand the customers' behaviour, whose preferences and habits determine the industry's future development. Using the linear and multiple linear regression analysis, the author investigated legalization's impact on criminality and GDP as one of the leading social and economic factors, respectively. Also, using the time-series analysis author had found out the state of the cannabis retail market and its development level. What leads to fulfilling the thesis' aim.

Keywords: Cannabis, Linear Regression, Multiple Linear Regression, Canada, Criminality Level, Taxes, CSI, Chain Index, Econometric Model

Legalizace a ekonomický dopad rekreačního konopí v Kanadě

Abstrakt

Konopí je lidstvu dobře známé z novodobé historie a téměř od úsvitu dějin. Vždy však bylo předmětem diskusí či kontroverzí. Jedním z moderních trendů západní civilizace je legalizace konopí pro lékařské účely, ale je sporné, zda by vláda měla legalizovat také rekreační užívání konopí. Co když je to ale nutné pro ochranu obyvatelstva ze "zdravotního" hlediska a ve prospěch ekonomiky? A co když je to dobrý krok pro společnost, protože mnoho lidí se vyhne trestu odnětí svobody za "mladické chyby", a tudíž se nezařadí do kriminálního světa? Autor si klade za cíl prozkoumat toto téma na příkladu Kanady. Kanada legalizovala rekreační užívání konopí v říjnu 2018. Což odstartovalo vzrušující a jedinečný případ, s nímž se dosud žádná ze západních zemí nesetkala. Jak to ovlivní společnost? Co se stane s ekonomikou? Také je třeba porozumět chování zákazníků, jejichž preference a zvyky určují budoucí vývoj odvětví. Pomocí lineární a vícenásobné lineární regresní analýzy autor zkoumal dopad legalizace na kriminalitu a HDP jako jeden z hlavních sociálních a ekonomických faktorů. Rovněž pomocí analýzy časových řad autor zjistil stav maloobchodního trhu s konopím a úroveň jeho rozvoje. Co vede k naplnění cíle práce.

Klíčová slova: Konopí, lineární regrese, vícenásobná lineární regrese, Kanada, úroveň kriminality, daně, CSI, řetězový index, ekonometrický model

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List of abbreviations

CCS – Canadian Cannabis survey

THC – Tetrahydrocannabinol

StatCan – Statistics Canada

1 Introduction

Cannabis is well known for Humanity in contemporary history and almost from the dawn of history. But it always has been a topic for discussion or controversy.

One of the modern trends in western civilization is to legalize cannabis for medical purposes, but it's arguable if the government should also legalize recreational usage of cannabis. But what if it is necessary to protect the population from the "healthy" point of view and benefit the economy? What if it is a good step for society as many people will avoid a prison sentence for "young mistakes" and therefore not integrate into the criminal world? The author aims to investigate this topic in Canada's example.

2 Objectives and Methodology

2.1 Objectives

The main objective of the bachelor thesis is to *determine and analyze* whether the legalization of recreational cannabis has a *positive* or *negative* impact on the economy based on Canada's example. In addition, find, research and evaluate the primary trend in the development of the retail industry, consumers' behaviours, norms and processes, which have occurred in Canada between 2018 and 2021.

2.2 Methodology

As far as the thesis is concerned with the Canadian recreational cannabis market, such methods will be used: *regression analysis, time series analysis (base-year and chain indexes), and econometric modelling*. Finally, based on the results of the three methods above, results will be evaluated.

The thesis will be based on methods used with working with secondary quantitative data provided by the different sources.

2.2.1 Regression analysis

Regression analysis is used to describe the relationship between the dependent variable and independent variable(s) to understand better factors that affect the behaviour of the studied phenomenon. (Allen, 2001)

In this thesis linear regression model will be used, which is usually represented by the general formula:

$$Y_i = \beta_0 + \beta_1 X_i + \dots + \varepsilon_i$$

Where:

- Y_i is a dependent variable;
- β_0 is a constant or also called intercept;
- β_n is a slope coefficient;
- X_n is an independent variable or variables;
- ε_i is a random error.

A closer look at a given linear regression model will be provided in the Practical Part of this thesis.

The Gretl software will simulate the model using the OLS (ordinary least squares) method. Of course, OLS is a Best Linear Unbiased Estimator, meaning that it will provide minimal variance and narrower sampling. But it has its limitations. For example, there is a possibility of heteroscedasticity in the dataset, which would reduce the quality of the model etc. Therefore, the author will use the "robust standard error" function to minimize the effect of possible heteroscedasticity.

2.2.2 Analysis of the time series.

Analysis of the time series must be performed to achieve several points, which will allow obtaining a better understanding of the changes in the market behaviour, seasonal factors, consumption, and revenue in general. In this thesis, monthly time series will be used, starting from **October 2018**, when recreational cannabis was legalized in Canada, until the end of 2020.

The base year (a month in case of this thesis statistics) will be used to observe month-to-month changes and the evolution of Canada's recreational cannabis market compared to starting month. Therefore, the base will be **10.2018**.

Chain-index will provide an overview of month-to-month changes, and it will help track the development of the market monthly.

2.2.3 Econometric Modelling

Econometric modelling is an application of statistical and mathematical models to predict the future state of the economy based on past data. (Hinton, 2014)

As one of the main instruments for econometric tools, regression analysis will test the hypothesis of the recreational cannabis market effect on the GDP.

2.2.4 Economic Factors

The author of this thesis has chosen the economic factors that legalization of cannabis might affect:

- Unemployment rate;
- Canada's real GDP;

- Cannabis excise tax revenues of Canada;

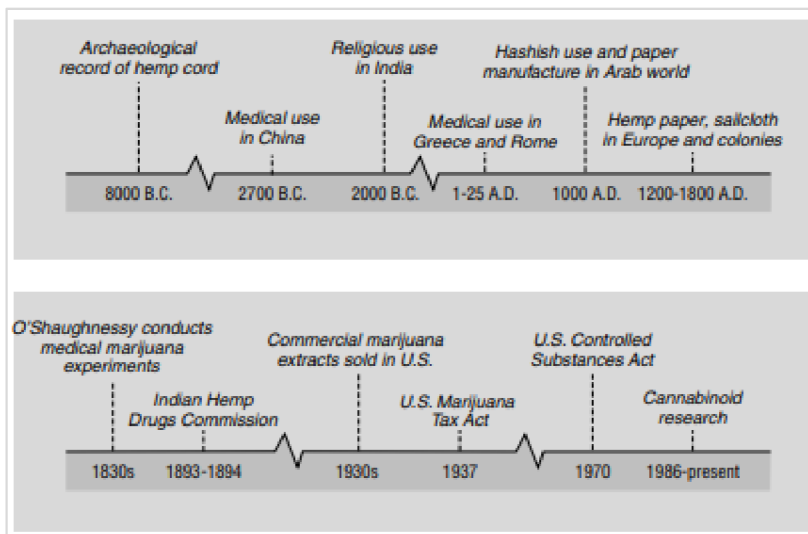
Also, emphasis should be made on the laws and policies because cannabis is still a very regulated substance. The study of those policies will be made at the Literature review.

3 Literature Review

3.1 A Few Words about Cannabis

Cannabis sativa is known under many names' "marijuana", "cannabis", "ganja", "hemp", and more information as "weed", "pot" (it's how it is usually called in Canada, even in official data) (Hajizadeh, 2016). It is an annual flowering plant originally from Eastern Asia. Now it's commonly cultivated worldwide. Humankind used cannabis from the dawn of time for medical or industrial purposes. Cannabis was an important source of industrial fibre, seed oil, food, recreation, and religious meanings. It was widely used for medical purposes in the Northern regions of Asia in the 28th century BCE as buds or its derivatives like hashish (Mack & Joy, 2001). There is a closer look at usage history in Figure 1.

Figure 1 History of Cannabis use. Source

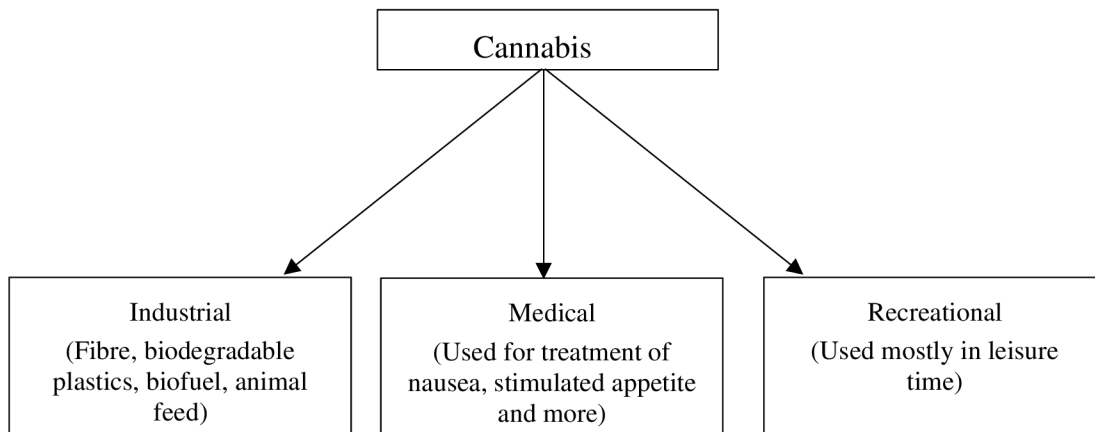


Source: (Mack & Joy, 2001)

3.1.1 Types of Usage

There are three main ways how humankind uses cannabis:

Figure 2 Cannabis Types



Source: Author

They are critical (Recreational is still arguable), primarily industrial. It has been a valuable source of fibre, oil, animal feed for a long time. Hemp is one of the fastest-growing weeds, easy to cultivate, and the entire life cycle can be completed within 70-110 days. However, the plant needs a lot of sunlight and warmth, making it unsuitable for cultivation in the colder regions only by creating those conditions (Mack & Joy, 2001).

As far as this thesis is concerned with recreational cannabis author will exclude industrial hemp from the data sets.

3.1.2 Medical versus Recreational

It is necessary to determine the difference between Medical and Recreational usage.

A licensed doctor prescribes medical cannabis to a patient only for medical reasons to treat or decrease symptoms of a health condition (Ray & Ksir, 1996). It can treat various symptoms and sicknesses like AIDs, cancer, nausea, loss of appetite, anxiety, and depression (Giano, Becnel, & Williams, 2020).

Recreational cannabis is plainer; it obtains pleasure or satisfaction in leisure time (Lal & Shekher, 2020).

However, medical cannabis is only a tiny and separated part of the total consumption of cannabis. Furthermore, it is produced and sold by the same producers and dispensaries, so the author will not add it to the dataset.

3.1.3 Legalisation in Canada

Legalizing every substance, which refers to the "**Controlled Drugs and Substances Act**" (S.C. 1996, c. 19), is not easy. First attempts to decriminalize at least possession of cannabis were performed in Canada already in 1972. At that time, possession of a small amount of it would be penalized as up to a six-month sentence and 1000\$ fine if it's a first-time offence. But those attempts were rejected by the government. Finally, in 2001, *Medical Marihuana Access Regulations* were released, allowing a person with HIV/AIDS to use cannabis in their treatment (Hathaway, 2009).

Canada is a unique country on that matter. Usually, countries, as a first thing, *decriminalize* cannabis (as it is in some U.S. states, Australia, Czech Republic), which means possession up to a certain amount of dried cannabis, is penalized only by fines and not considered a criminal offence (Hathaway, 2009). But the Government of Canada decided to skip that part and move directly towards total legalization.

In October 2018, recreational cannabis became legal in Canada after Act **S.C 2018, c.16** ("**An Act respect cannabis and amend the Controlled Drugs and Substances Act, the Criminal Code and other Acts**") was released. This Act provides legal access to recreational cannabis under specific rules, norms, rights and responsibilities for every individual and organization who may be found using or possessing cannabis for different purposes. The main idea is to prevent young citizens (from this Act – young people older than 12 but younger than 18) from accessing cannabis to protect public health and public safety by creating access to quality and safe cannabis from authorized producers and distributors. However, this Act simultaneously enhances criminal penalties for possessing, producing, and selling illicit cannabis. On the other hand, the Act also is prepared to reduce the load on the criminal justice system concerning cannabis. For example, possession of the authorized cannabis with a trackable history of up to **30 g is no more considered a criminal or any other kind of offence** (Government of Canada, 2018a).

It was a necessary step for Canada as nearly 25% of the adult population reported recent use of cannabis in the year 2018 (StatCan, 2018). Protection of public health will be

achieved by transferring the public from the illegal market, which is probably worth 7\$ billion with unknown sources of cannabis (Webster, 2019), to a well-controlled and monitored legal market. Also, the Canadian government provided an exclusive tax strategy to achieve a minimal price increase for legal cannabis, compared to the illicit (Wadsworth, Driezen, & Hammond, 2021). However, it is crucial to understand that such a well-developed "black" market with dealers, "dispensaries", and even online stores will not disappear immediately. It is seen in the statistics provided by the Canadian Cannabis Survey (then only "CSS") in 2021, 21% of Cannabis users "always", "mostly", or "sometimes" buy at the illicit market (9%, 10% and 11% respectively) (StatCan, 2021).

3.1.4 Norms and License for the Producers

Act S.C 2018, c.16 does not create a strict condition to obtain a license for the whole country, but it leaves the possibility to every state to have its own set of rules and requirements. But still, the last word to issue or renew the license is under the jurisdiction of the Minister. The Act is more concerned about the norms for legal cannabis—packaging, labelling, and promotion standardize all of it (Government of Canada, 2018a).

As the Act focuses on protecting young people, there are rigorous conditions. For example, packaging cannot have any colourful appearance, animal or character (either life or fictional), recreation images, glamour, etc. Furthermore, the Act emphasizes that everything that could be taken as an "appeal to young persons" is strictly prohibited. The example provided by the Government of Canada is shown below (Government of Canada, 2018a).

Figure 3 Package Example



Source: (Government of Canada, 2018b)

Regarding labelling, it is strictly prohibited to sell cannabis without a label.

Promotion cannot be performed as "*literary, dramatic, musical, cinematographic, scientific, educational or artistic work, production or performance that uses or depicts cannabis*" (Government of Canada, 2018a).

Promotion is only allowed when:

- Addressed person by name;
- In places where young persons are not permitted to be;
- On telecommunications when preconditions are made to restrict the young persons' access. And still advertising person is responsible for the content (Government of Canada, 2018b).

The Act does not provide rules for obtaining a license to sell and produce recreational cannabis. Still, it determines a few federal prohibitions, some interesting points, which can be considered as protectionist:

- Issuance can create a risk to public health or safety;

- False or misleading information in the application;
- The applicant violated the Controlled *Drugs and Substances Act* in the past ten years (which excludes the possibility of sentenced illicit market dealers gaining access to the legal market);
- An applicant is a young person;
- An individual who is not a resident of Canada (what creates problems to enter the Canadian market by foreigners);
- The company was incorporated outside Canada (Government of Canada, 2018a).

3.1.5 Development of the Retail Industry

Suppose it comes to the retail industry, so that's the part built almost from the zero point. But according to the Mahamad and Hammond study, which was conducted in 2018 shortly after cannabis legalization, it carried out 997 dispensaries available across big Canadian cities. Also, this study refers to the illegal dispensaries and outlets which have occurred in Canada during federal prohibition. Unfortunately, the precise number is not available as formal statistics do not exist. Instead, information is provided based on the informal environmental scans (Mahamad & Hammond, 2019). This means these illicit dispensaries could be a basis for legal stores. Of course, one of the "pioneers" on that matter was Vancouver city, so it can be considered the starting point for developing the retail industry in Canada. In 2015, in controversy over the federal prohibition of recreational cannabis selling, Vancouver aimed to somehow "solve" the illegal dispensaries problem. So, the town council issued a new Act, which allows and regulates norms and conditions for the "Pot-stores" (Morrow, 2015).

It is pretty similar to the future Federal Act, as it concerns youth health in the same way, so the essential points are:

- Dispensaries cannot be open within 300 meters of a school, community centre, or competitor "pot-shop";
- The license fee of 30,000 CAD (but for dispensaries of medical cannabis fee was dropped to the 1000 CAD afterwards); (Morrow, 2015)

The next big step, of course, is legalization on the federal level. Unfortunately, there is a lack of statistics for the starting period for the number of legal dispensaries, but

according to the StatCan, that number grew very fast (March 2019: **217**; July 2019: **407**. Almost 100% growth for the four-month) (StatCan, 2019b). So now, the number of licensed dispensaries will exceed **2000** (StatCan, 2022c).

Also, the retail sales results for the first year of the legalization are astonishing: 907 833 000 CAD, which makes **24 CAD** per capita (37,589,262 population) for the first year (StatCan, 2019b). The author will provide a more profound overview of the sales in the Practical Part.

At the end of the year 2021, only December sales reached **353 650 000 CAD**, which means that the Canadian government succeeded in creating qualified and fair law conditions for the development of the cannabis retail industry (StatCan, 2022c)

According to Paul Webster, the retail industry of cannabis will grow not only because of the classic "dried cannabis" but also thanks to "edible cannabis". Edible cannabis is simply cannabis, which is served in food, e.g. cookies, marmalade bears with THC (tetrahydrocannabinol, active substance) (Goltz & Bogdanov, 2016) and so on, which is quite concerning by many authorities presented in his article (Webster, 2019). Edible cannabis already has 20% of total cannabis sales in the Canadian market (StatCan, 2022b). The main reason is probable health damage, as products with edible cannabis are more concentrated. It raises contradictions between government, which has to react to this new "mainstream" in the industry and itself. Edible cannabis can bring new customers who don't smoke, as smoke is more harmful to their health than a cookie. But also, these restrictions are aimed to save children, as "gummy bears" might be attractive to them (Webster, 2019). So, it is necessary to study what Canadian consumers prefer as the primary source of cannabis. Respondents, which have taken part in CCS, were asked what type of products containing THC they prefer. This would be presented more deeply in the **Consumer behaviour** section.

The retail industry in Canada is not fully developed yet. However, the Canadian government decided to act and "drive" this industry during the grow. Like many other industries, it requires close cooperation of the producers, government, customers, scientists, and experts to create and develop the sector, leaving every party satisfied. New regulations are coming, and at this point, the author can predict that edible cannabis will be somehow regulated as the first thing. But on the other hand, such rapid development of the industry shows excellent promises. It opens a giant environment for all of the parties mentioned above

to evolve, investigate, and create a better environment for the society. It also shows that smokers and producers were delighted to leave the "shadow" economy and work as legalized entities, as possessing and selling became legalized.

3.1.6 Consumer behaviour and social impact of legalization.

As it comes to the consumer behaviour of cannabis smokers in Canada, CCS should be studied more closely.

Canadian Cannabis Survey is a unique survey organized by the Canadian government to obtain qualitative data regarding the habits and behaviour of cannabis smokers among Canadian citizens throughout the country. The author will study CSS from the year 2018 till the year 2021 to find critical behaviours of smokers.

According to the methodology shown in the CCS, respondents were chosen from the list of random numbers. Those who passed the first step were asked to fill out the online survey sent by e-mail.

- CCS 2018 N = 12822 respondents, approximately 3395 reported cannabis use past 12 month (StatCan, 2018).
- CCS 2019 N \approx 12000 respondents, approximately 3968 reported cannabis use past 12 months (StatCan, 2019).
- CCS 2020 N = 10822 respondents, approximately 1100 reported cannabis use past 12 months (StatCan, 2020).
- CCS 2021 N = 10736 respondents, approximately 3900 reported cannabis use past 12 months (StatCan, 2021).

Results are weighted by sex and province.

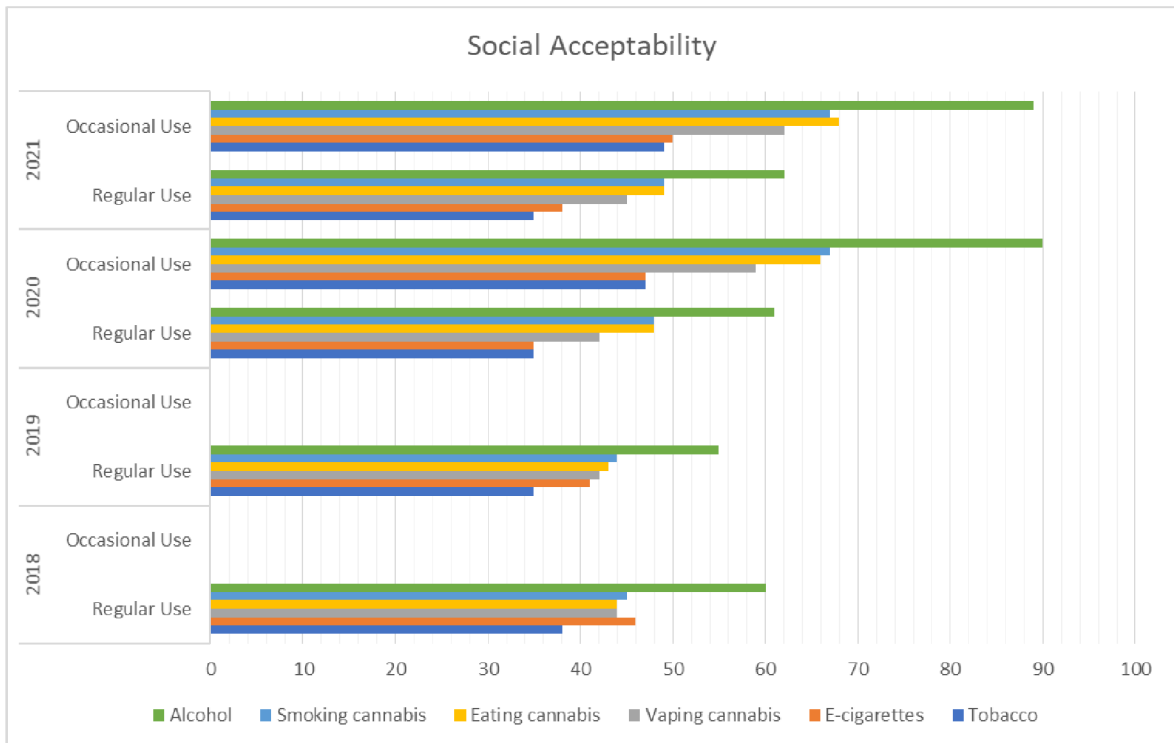
The first key point of developing consumer behaviour is **Social Acceptability**. In the table below, respondents were asked about their attitude to regular or occasional usage (however, in the CCS 2018 and 2019, respondents were asked only about regular) of different types of "leisure" substances, like tobacco, alcohol, and three types of cannabis intake. So first, it's social acceptability (in the table, it's presented in the percentage).

Table 1 Social Acceptability

	Social acceptability							
	2018		2019		2020		2021	
	Regular Use	Occasional Use	Regular Use	Occasional Use	Regular Use	Occasional Use	Regular Use	Occasional Use
Tobacco	38		35		35	47	35	49
E-cigarettes	46		41		35	47	38	50
Vaping cannabis	44		42		42	59	45	62
Eating cannabis	44		43		48	66	49	68
Smoking cannabis	45		44		48	67	49	67
Alcohol	60		55		61	90	62	89

Source: StatCan CCS 2018-2021, table of own creation

Graph 1 Social Acceptability



Source: StatCan 2018-2021, Graph of own creation

The main exciting thing presented in the table is that social acceptability of the cannabis intake is higher than tobacco; Canadian consumers are more likely to smoke cannabis instead of cigarette or e-cigarette. Moreover, there is a slight increase in social acceptability for the regular use of cannabis between 2018 and 2021. This means society becomes more open-minded towards previously restricted substances. But the absolute leader of the acceptability is alcohol in every CCS undertaken by the Canadian government, even if it is regular use.

The following key indicator for consumer behaviour is the **source of obtaining** cannabis. Respondents who had used cannabis last twelve months were asked about the

origin of buying. Unfortunately, as CCS kept evolving from year to year, some of the sources mentioned in the newest versions are missing in the initial CSS 2018 (StatCan, 2018):

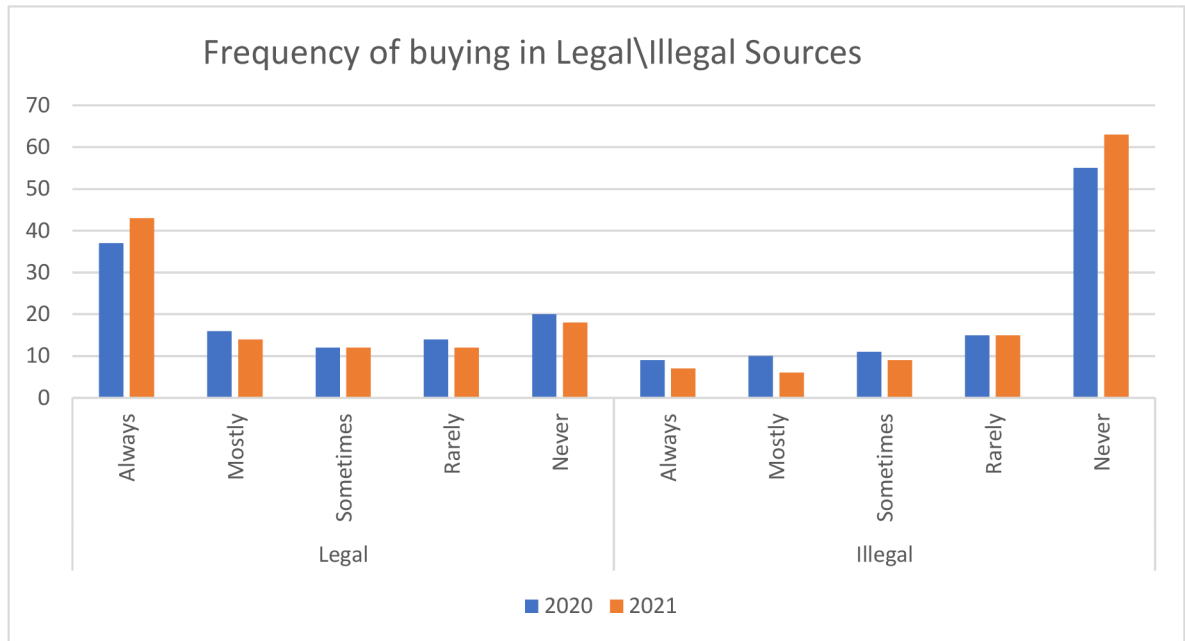
Table 2 Source of Obtaining

Source of Obtaining				
	2018	2019	2020	2021
Legal store	15	24	41	53
Friend	34	22	16	11
Legal online store	6	13	13	11
Shared around a group of friend	13	10	7	7
Growing	7	6	7	8
Family member	~	5	4	3
Illegal store	~	7	3	2
Illegal online source	11	4	3	2
Dealer	7	6	3	2
Acquaintance	7	3	3	1

Source: StatCan 2018-2021, table of own creation

The main point in the table which is presented above is people after legalization went off "traditional" or illegal sources, such as "Friend", "Group of the friends", "Dealer", "Illegal online stores" or "Acquaintance". Every one of which has fallen significantly. Half of the respondents buy in the legal storefronts (StatCan, 2021). Of course, it is the achievement of legalization. Consumers are more likely to buy in legal stores than illegal. Even though, as has been mentioned before, consumers still sometimes visit illicit sources. Also, as legalization allowed growing own cannabis, there is a tendency not significantly to increase the percentage of growers. But this table concerns only the "main" source of obtaining, which the respondents chose. In controversion to that, it is crucial to investigate if the customers still rarely or sometimes visit illicit sources. However, a study in this field took place CCS only in 2020-2021, but it should be enough to understand the tendency (StatCan, 2021).

Graph 2 Frequency of buying



Source: StatCan 2018-2021, graph of own creation

As seen on the graph, there is the same tendency: consumers tend to buy in the legal retail market more from year to year. However, nearly 17% of consumers in 2021 have never visited the legal market. But the number of consumers that have never bought from an illegal source is still growing (StatCan, 2021). Still, this graph represents the same trend, but also it shows that if it were more convenient for the customer, they would buy at the illegal source mostly, sometimes, or rarely.

Another critical parameter that should be studied is the frequency of cannabis use. Again, data is shown in percentage.

Table 3 Frequency of cannabis use

	Frequency of cannabis use.						
	Less than 1 day per month	1 day per month	2-3 days per month	1-2 days per week	3-4 days per week	5-6 days per week	Daily
2018	35	6	14	10	10	6	19
2019	35	9	11	12	9	6	18
2020	35	7	12	13	9	6	18
2021	33	7	14	11	9	7	19

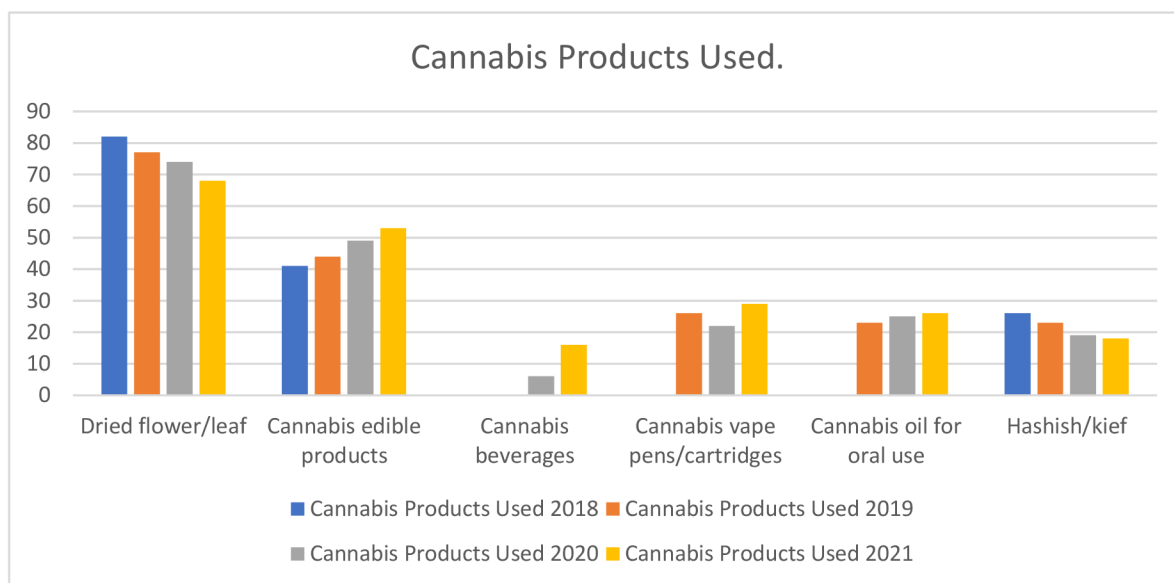
Source: StatCan 2018-2021, table of own creation

Legalization didn't significantly change the frequency of use for cannabis smokers. As seen in the table, one-third of the respondents smoke less than once per month. The second biggest group is "daily". So, at this point, we can assume that legalization didn't affect the

frequency of usage if it has not changed significantly within three years after legalization than it has been on this level even before (StatCan, 2021).

Looking back to what has been mentioned before, It is crucial to understand what types of products containing THC Canadian consumers prefer. There are a lot of them, and there were even before legalization. Legalization just opened new fields for the industry to grow and evolve.

Graph 3 Cannabis products used



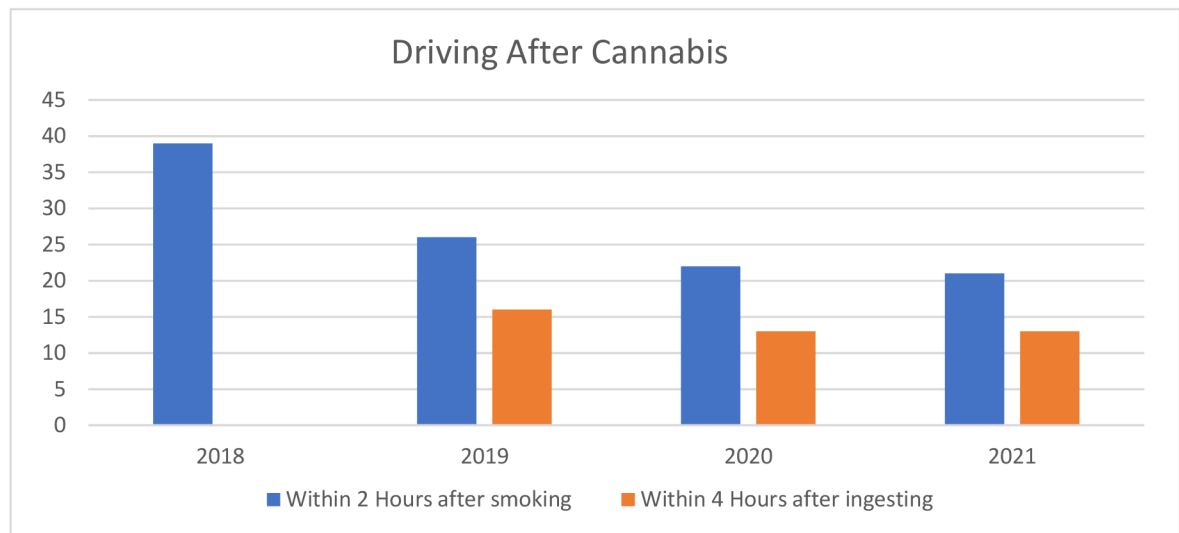
Source: StatCan 2018-2021, graph of own creation

Some categories were added in the CCs in 2019-2021, like Cannabis beverages, vape pens/cartridges, oil for oral use. Cannabis beverages are one of the newest trends in the industry. Also, the sum of the per cent exceeded 100% for one year because respondents could choose more than one option. In the graph, it is seen that after legalization in the year 2018 (StatCan, 2018), Canadian customers tend to leave from classical "dried flower/leaf" or "hashish/kief" use to something more contemporary and extraordinary (StatCan, 2021). It has occurred only as a result of legalization. Cannabis edibles grow from year to year, not significantly, but it is still a sustainable growing tendency. What confirms mentioned above concerning new restrictions and controlling of cannabis edibles. What at this point looks very logical.

Cannabis is a psychoactive substance, and its legalization can have different significant impacts on society and even society's security. For example, they were driving under or after cannabis intoxication. As it is with alcohol, a highly regulated substance,

cannabis should not be taken before operating a vehicle. One of the critical factors the author has studied is the respondent's responsibility. Respondents of CCS were asked if they drive a car after cannabis intake (smoking or ingesting, as it needs a different time to become sober) (StatCan, 2021).

Graph 4 Driving After Cannabis



Source: StatCan 2018-2021, graph of own creation

Unfortunately, CCS for the 2018 year didn't consider ingesting cannabis, so it is missing in the graph. Starting from 2018, the percentage of people driving vehicles and being "high" decreases. It could relate to the various reasons, e.g., police controls, new policies on that matter, etc. (StatCan, 2021).

Also, Russel Callaghan's study, which took place in Ontario and Alberta (both Canada), found that the legalization of cannabis didn't significantly increase injuries in traffic accidents, either by youth drivers or adult. Therefore, the author can assume that there isn't a significant increase in traffic accidents for those requiring medical intervention (Callaghan, Russell, & Heiden, 2021).

Also, it is necessary to investigate the criminality level. Therefore, the author will study the following:

- Crime Severity Index in Canada in 2000-2020 (StatCan, 2021a).
- Rate of drug-related offences in the same years (StatCan, 2021b).

All of the data presented in the "Rate of drug-related offences" are cases per 100,000 residents. If the rate of drug-related offences is more or less clear, then Crime Severity Index

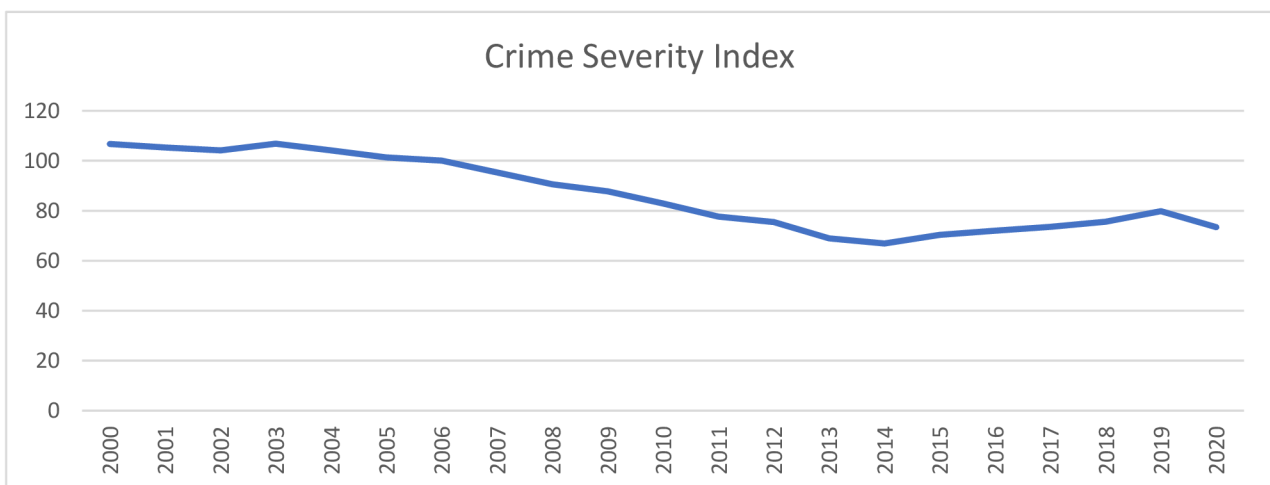
requires additional explanation. According to StatCan, Crime Severity indexes include all criminal activities weighted by seriousness. Weight is derived from each court sentence. Then more serious crimes have a higher impact on the index than non-serious. In addition, all of the Criminal code offences reported by the police are included in the index (StatCan, 2021a).

Table 4 CSI

Year	Index
2000	106,73
2001	105,3
2002	104,14
2003	106,84
2004	104,11
2005	101,33
2006	100
2007	95,28
2008	90,57
2009	87,77
2010	82,94
2011	77,61
2012	75,51
2013	68,92
2014	66,9
2015	70,39
2016	72,01
2017	73,6
2018	75,61
2019	79,77
2020	73,44

Source: StatCan (StatCan, 2021a), table of own creation

Graph 5 CSI



Source: (StatCan, 2021a), graph of own creation

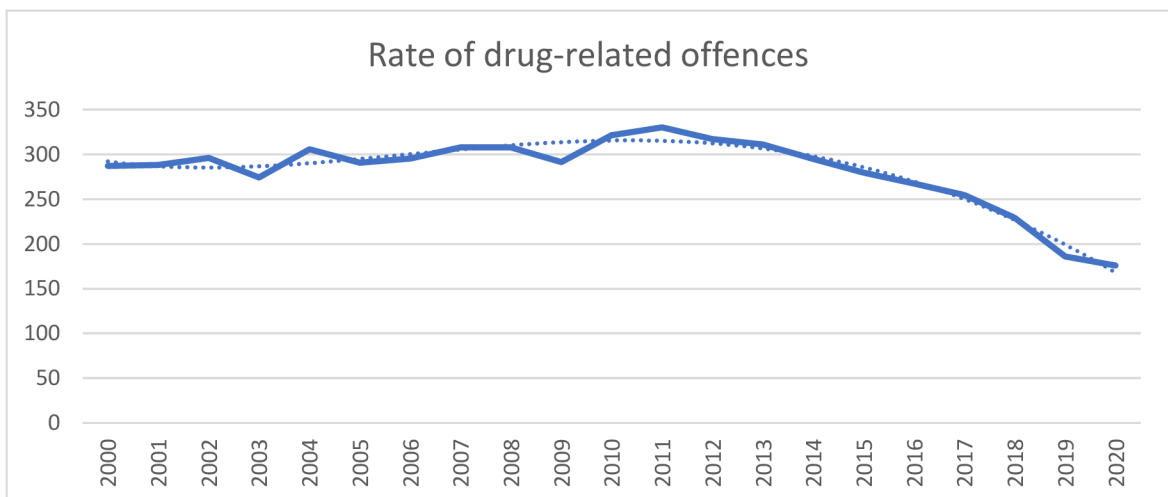
In the graph, there is a sustainable trend in decreasing of general criminality level since the year 2000. As the level of CSI was around 100 at the start of the new millennium, in the year 2020, it was **73**. In 2015 there was a minimum of **70.39**, but it started to grow back past years. But is there any connection between CSI and drug-related offences? Graph and data set of the drug-related crimes are presented below:

Table 5 Rate of drug-related offences

Year	Rate
2000	287,04
2001	288,19
2002	295,92
2003	274,31
2004	305,66
2005	290,47
2006	295,28
2007	307,74
2008	307,62
2009	291,31
2010	321,19
2011	330,07
2012	317,14
2013	310,95
2014	294,94
2015	279,6
2016	267,28
2017	254,44
2018	229,13
2019	186,07
2020	175,84

Source: (StatCan, 2021b), table of own creation

Graph 6 Rate of drug-related offences



Source: StatCan (StatCan, 2021b), graph of own creation

As seen in the graph and the data set, there is also a decreasing tendency in drug-related offences since 2011, where it was at its maximal value (**330.07**) in the data set (StatCan, 2021b). Compared to the year 2017 (one year before legalization) value of the year 2020 decreased by approximately 80 cases per 100,000 residents. So, it can be assumed that 1\3 of the drug-related crimes were connected to the possession or use of cannabis. However, these graphs (CSI and drug-related offences) were compared (with a focus on the years 2017-2020), these parts on both charts are opposite. Drug-related crimes are going down, but CSI is going up. So, it can be assumed that the Government of Canada doesn't concern drug-related offences as serious crimes (as drug-related offences are included in the CSI) or there is a severe increase in violent crimes. Therefore, drug-related offences don't play a significant role in the general criminal environment in the country. But on the other hand, there is a considerable increase of people (nearly 1\3) who would avoid a sentence for the possession and use of cannabis and therefore would not be an aspect of the criminal world. A more detailed overview will be provided in the practical part to determine the CSI's dependence on drug-related offences.

3.1.7 Taxes

The final part of the literature review must be the study of taxation legislation of the cannabis industry.

There is a highly complex structure implemented on the taxation of cannabis. As the first thing, it depends on the aim of the consumption. Numbers and percentages differ from recreational use and medical. According to Marian Shanahan, some medical drugs (with special accreditation) don't have taxes (Shanahan & Cyrenne, 2021). But the author will focus only on the taxation of recreational cannabis. The Canadian government implemented either a flat or a percentage tax, depending on the product type. Also, it is necessary to mention that tax policies vary depending on the province as the Canadian government decided to decentralize regulation and tax collecting. According to the Priyashni Goundar, Government applied 0.0025 CAD per milligram of the total THC in the products with edible cannabis. Also, in all provinces, except Manitoba, secondary flat-rate additional duty is calculated as 0.0075 CAD per milligram. But there are four selected Provinces like Alberta, Nunavut, Ontario, and Saskatchewan, which apply flat-rate additional duties as 16.8%, 19.3%, 3.9% and 6.45%. For the other types of products, there is classical *ad valorem* duty applied (dried cannabis, cannabis plants, cartridges etc.). Consumers pay from 5% to 15%

of taxes at the moment of purchase, depending on the province. Also, the distribution of collected taxes has a unique structure: they are shared between province and federal budgets (75% and 25%, respectively). But national earnings are capped at 100 million CAD annually, excessed money will be returned to the province's budgets (Goundar, Macaulay, & Szafron, 2021).

Like tobacco, alcohol, fuel, cannabis is also obliged to excise taxes. It is calculated relatively easy. Excise tax is either 1 CAD per gram or 10% of the pre-tax value of the product (Government of Canada, 2019). Excise taxes are going exclusively into the federal budget. According to the StatCan, from Q4 2020 until Q4 2021, only on the excise tax, the Canadian government has collected **740 000 000** CAD (StatCan, 2022e).

3.2 Hypotheses formulation

The thesis aims to investigate both social and economic impact: there will be two hypotheses that the author will try to confirm or reject.

The main social factor will be the chosen *criminality level*, as increasing or decreasing in this parameter can bring social disturbance or vice versa.

For the economic factor will be studied *real GDP*.

- **Hypothesis for social impact:** The legalization of cannabis has decreased the general criminality level in Canada.
- **Hypothesis for economic impact:** The legalization of cannabis positively impacted the real GDP level.

3.3 Data Entries

To fulfil the aim of this thesis and test the hypothesis, the author will identify key parameters included in the regression. First, to understand the impact of occurred legalized industry of cannabis on the economy. Many possible parameters might have had a place in the regression, but the author will focus on the main one.

For the aim of this thesis author consider these data as relevant to achieve purpose and study phenomenon:

- Real GDP (will be used as a dependent, other as an independent) (StatCan, 2022a);
- Price of Cannabis per gram (Average) in Canadian Dollars (StatCan, 2022b);
- Retail sales in mil. CAD monthly (StatCan, 2022c);
- Unemployment rate (StatCan, 2022d);
- Excise Taxes on cannabis (StatCan, 2022e).

A decrease or increase in the real GDP will help understand how much the cannabis industry affects the economic situation of Canada.

Price of the cannabis directly affects the customer's willingness to buy the product, and the lower the price, the more consumers are willing to spend their money.

Retail sales show how big the industry is and how much it generates for the economy.

Unemployment is one of the leading social and economic factors, which has an enormous effect.

Taxes also are one the most significant part of the GDP and, also, it affects real GDP. According to the NBER study, an increase of 1% of tax rate can lead to a real GDP decrease approx. 2-3% (Romer & Romer, 2010).

As the author mentioned before, studied period will be from October 2018 until December 2021.

All the provided data are transferred into millions (so to obtain the original value, it must be multiplied by 1,000,000).

Table 6 Data Entries

Data entries					
	GDP	Sales of the Cannabis	Average price	Unemployment	Taxes
Oct-18	1968,29	41,47	0,00001040	1,1582	6
Nov-18	1964,63	53,73	0,00001102	1,1421	8
Dec-18	1964,46	57,34	0,00001117	1,1462	9
Jan-19	1965,81	54,88	0,00001066	1,1819	8
Feb-19	1962,07	51,66	0,00001071	1,1871	7
Mar-19	1974,46	60,94	0,00001096	1,1696	9
Apr-19	1981,67	74,85	0,00001111	1,1582	5
May-19	1987,07	85,81	0,00001118	1,0781	7
Jun-19	1991,23	91,46	0,00001126	1,1083	9
Jul-19	1991,53	107,36	0,00001123	1,1635	10
Aug-19	1990,83	125,95	0,00001118	1,1764	11
Sep-19	1993,72	122,93	0,00001098	1,1275	12
Oct-19	1996,8	128,98	0,00001115	1,1523	11,7
Nov-19	1996,71	135,31	0,00001099	1,2122	11,3
Dec-19	2002,3	147,89	0,00001081	1,1662	11
Jan-20	2004,92	154,08	0,00001069	1,1344	14,3
Feb-20	2009,78	151,93	0,00001058	1,1576	17,7
Mar-20	1861,25	181,18	0,00001040	1,5559	21
Apr-20	1658,39	178,43	0,00001052	2,4229	21,3
May-20	1733,39	186,35	0,00001067	2,5525	21,7
Jun-20	1833,54	201,11	0,00001035	2,4125	22
Jul-20	1881,32	232,69	0,00001004	2,1728	22,7
Aug-20	1899,03	251,66	0,00000982	2,0580	23,3
Sep-20	1916,77	257,03	0,00000978	1,8710	24
Oct-20	1928,24	270,01	0,00000971	1,8602	24,3
Nov-20	1941,3	261,44	0,00000965	1,7706	24,7
Dec-20	1941,07	298,44	0,00000970	1,8050	25
Jan-21	1950,87	279,50	0,00000976	1,8880	29,3
Feb-21	1954,13	262,04	0,00000963	1,6843	33,7
Mar-21	1977,38	298,27	0,00000950	1,5222	38
Apr-21	1955,37	306,30	0,00000934	1,6257	38,3
May-21	1944,11	313,19	0,00000929	1,6102	38,7
Jun-21	1961,79	319,16	0,00000921	1,5436	39
Jul-21	1969,68	339,3	0,00000904	1,5165	39,7
Aug-21	1982,48	353,96	0,00000890	1,4553	40,3
Sep-21	1987,95	354,42	0,00000878	1,4389	41
Oct-21	2003,87	364,15	0,00000867	1,3957	41,3
Nov-21	2016,15	353,65	0,00000863	1,2622	41,7

Source: StatCan 2018-2021, table of own creation

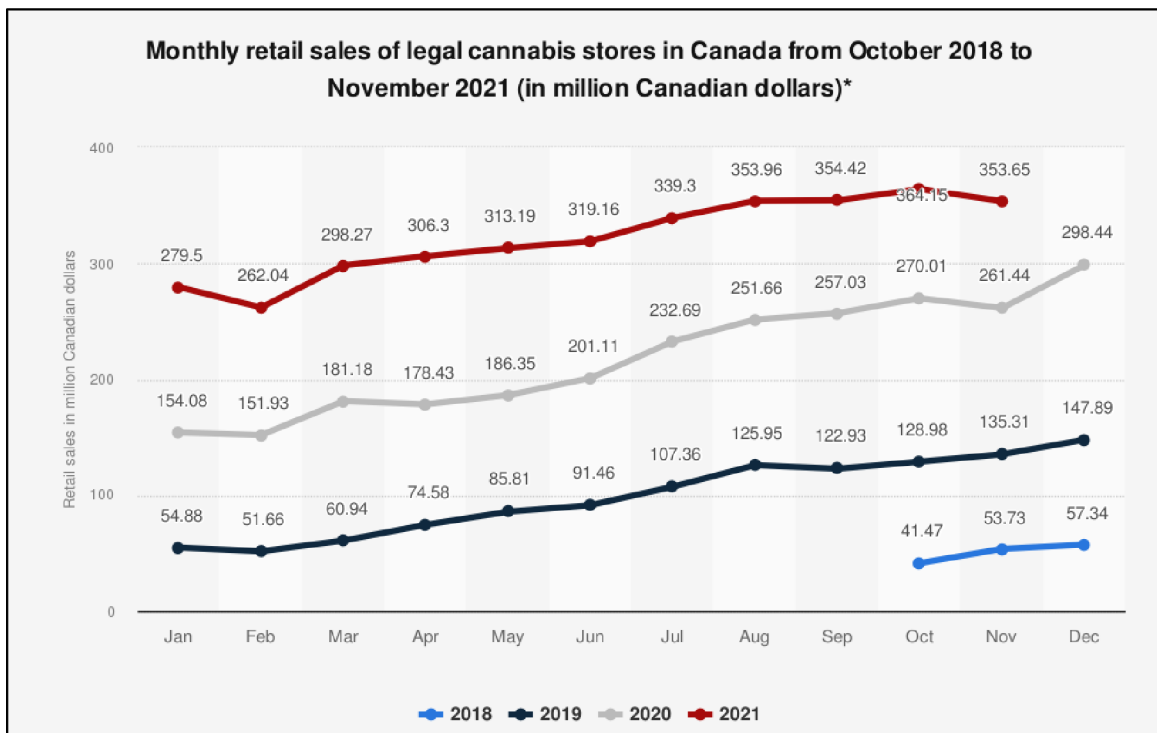
4 Results

4.1 Analysis of consumer behaviour data and social factors

4.1.1 Sales of the legal cannabis

Firstly, the author will analyze the retail market sales deeper. It's necessary to investigate how much the whole market has grown since its beginning. As already have been said that the industry is multiplying and showing a lot of promises. Below is a graph showing the monthly sales of cannabis in a million CAD.

Graph 7 Monthly retail sales



Source: (StatCan, 2022c)

As seen on the graphs, retail sales of non-medical cannabis show a stable growing tendency. But to obtain more precise information, time-series analysis should be applied. The author has transferred all the values presented in the graph into the table to investigate further.

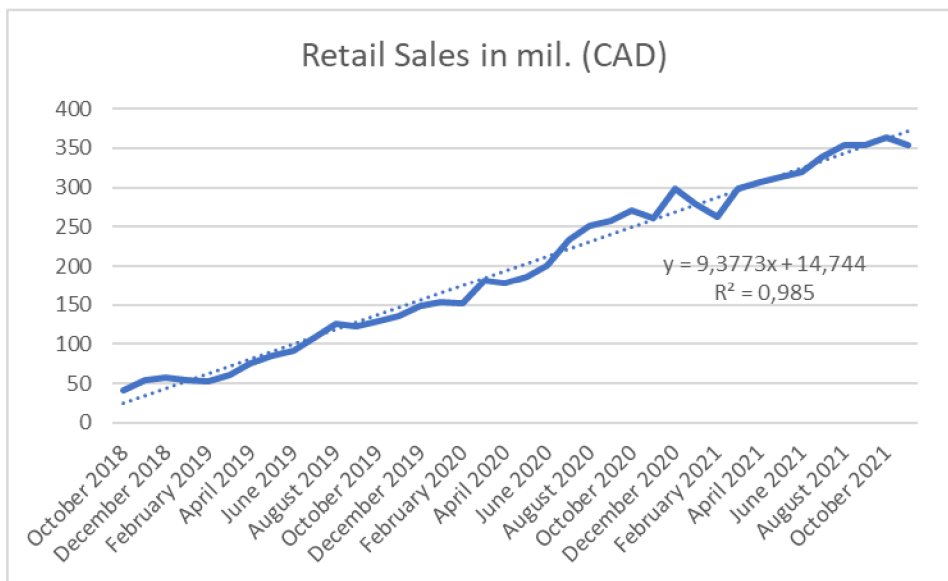
Table 7 Monthly retail sales

Period	Retail Sales in million (CAD)	Year-base index (Oct. 2018)	Chain Index
October 2018	41,47	1	...
November 2018	53,73	1,30	1,30
December 2018	57,34	1,38	1,07
January 2019	54,88	1,32	0,96
February 2019	51,66	1,25	0,94
March 2019	60,94	1,47	1,18
April 2019	74,85	1,80	1,23
May 2019	85,81	2,07	1,15
June 2019	91,46	2,21	1,07
July 2019	107,36	2,59	1,17
August 2019	125,95	3,04	1,17
September 2019	122,93	2,96	0,98
October 2019	128,98	3,11	1,05
November 2019	135,31	3,26	1,05
December 2019	147,89	3,57	1,09
January 2020	154,08	3,72	1,04
February 2020	151,93	3,66	0,99
March 2020	181,18	4,37	1,19
April 2020	178,43	4,30	0,98
May 2020	186,35	4,49	1,04
June 2020	201,11	4,85	1,08
July 2020	232,69	5,61	1,16
August 2020	251,66	6,07	1,08
September 2020	257,03	6,20	1,02
October 2020	270,01	6,51	1,05
November 2020	261,44	6,30	0,97
December 2020	298,44	7,20	1,14
January 2021	279,5	6,74	0,94
February 2021	262,04	6,32	0,94
March 2021	298,27	7,19	1,14
April 2021	306,3	7,39	1,03
May 2021	313,19	7,55	1,02
June 2021	319,16	7,70	1,02
July 2021	339,3	8,18	1,06
August 2021	353,96	8,54	1,04
September 2021	354,42	8,55	1,00
October 2021	364,15	8,78	1,03
November 2021	353,65	8,53	0,97

Source: (StatCan, 2022c), table of own creation

Year-based analysis of this time series showed growth of the cannabis retail market almost nine times (**8,53**) within three years. Moreover, the chain Index showed 28 positive observations out of 38, which means the market was growing nearly every month (only ten months with a non-significant decrease with the most considerable reduction of 6% and lowest 2%). Also, the cannabis industry wasn't affected by the COVID-19 pandemic, as the industry's growth keeps going up (the pandemic started in March 2020).

Graph 8 Retail sales in mil.



Source: (StatCan, 2022c), graph of own creation

Also, if another type of graph for a given time series is used, it is possible to find a trendline for retail sales growth. As it is seen on the picture, equation of the trendline:

$$Y = 9,3773x + 14,744;$$

$$R^2 = 0,985;$$

The approximate slope of the trendline is 9,3773.

R^2 with 98,5% shows excellent results as it fits almost every observation.

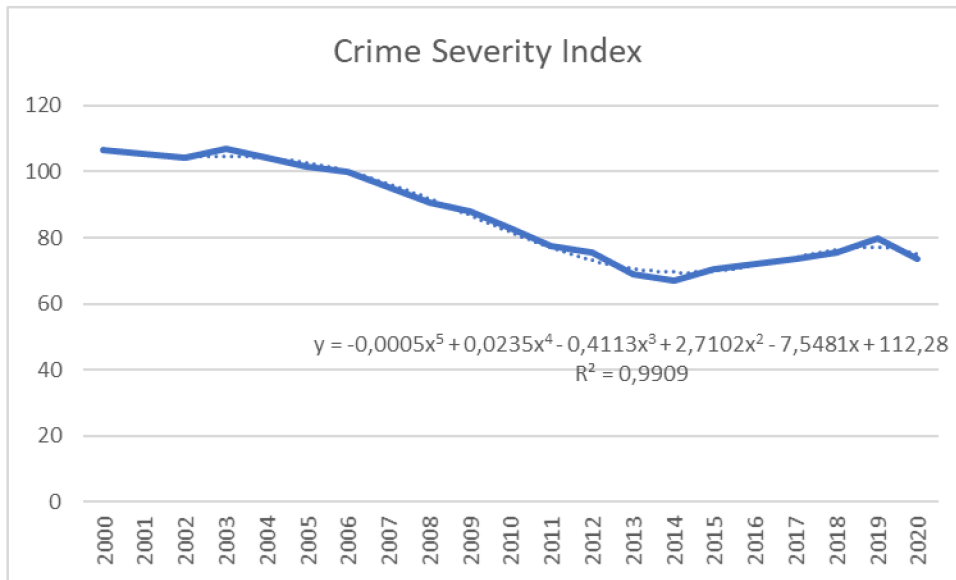
What leads the author to the conclusion on that matter: the Canadian retail cannabis market achieved significant growth for a short development time (3 years) under strict but fair conditions of government regulation. It also survived and may even be benefited from the pandemic.

4.1.2 Criminality dependence

Secondly, taking back to the criminality point, the author finds it necessary to investigate the dependence of the CSI on drug-related offences. Did or does it have a significant impact on the whole criminality level? That should be investigated. As in this case, only two variables will be applied simple linear regression.

First, the author will apply trend lines on the graphs, which were already presented before (CSI graph and drug-related offences). Therefore, it would be easier to understand future trends in the whole criminality level or drug-related crimes.

Graph 9 CSI with the trendline



Source: (StatCan, 2021a), graph of own creation

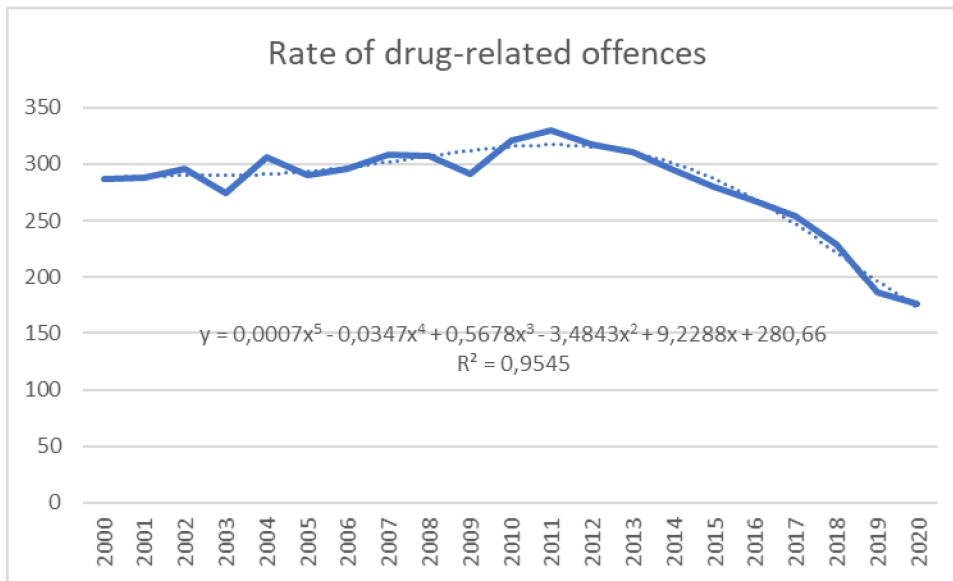
The author has applied a polynomial trendline to find the best fit. As the dataset had a lot of ups and downs, this type of trendline was chosen. The final equation is:

$$Y = -0.0005x^5 + 0.00235x^4 - 0.4113x^3 + 2.7102x^2 - 7.5481x + 112.28$$

$$R^2 = 0.9909$$

R squared showed an excellent result as it fitted almost every observation.

Graph 10 Rate of drug-related offences with the trendline



Source: (StatCan, 2021b), graph of own creation

In the case of drug-related offences, the author has chosen the same type of trendline as the dataset has even more significant ups and downs in the presented dataset. Final equation:

$$Y = 0.0007x^5 - 0.0347x^4 + 0.5678x^3 - 3.4843x^2 + 9.2288x + 280.66$$

$$R^2 = 0.9545$$

Also, R^2 shows a great result, but not as good as in the case of CSI.

As trends are seen, the author will proceed to the model itself. The model will be made using the "Gretl" software. Also, it is necessary to use the "Crime Rate" data per 100,000 residents. So, it will exclude weighting and provide better results for the model.

Additional dataset for the model:

Table 8 Crime rate per 100,000

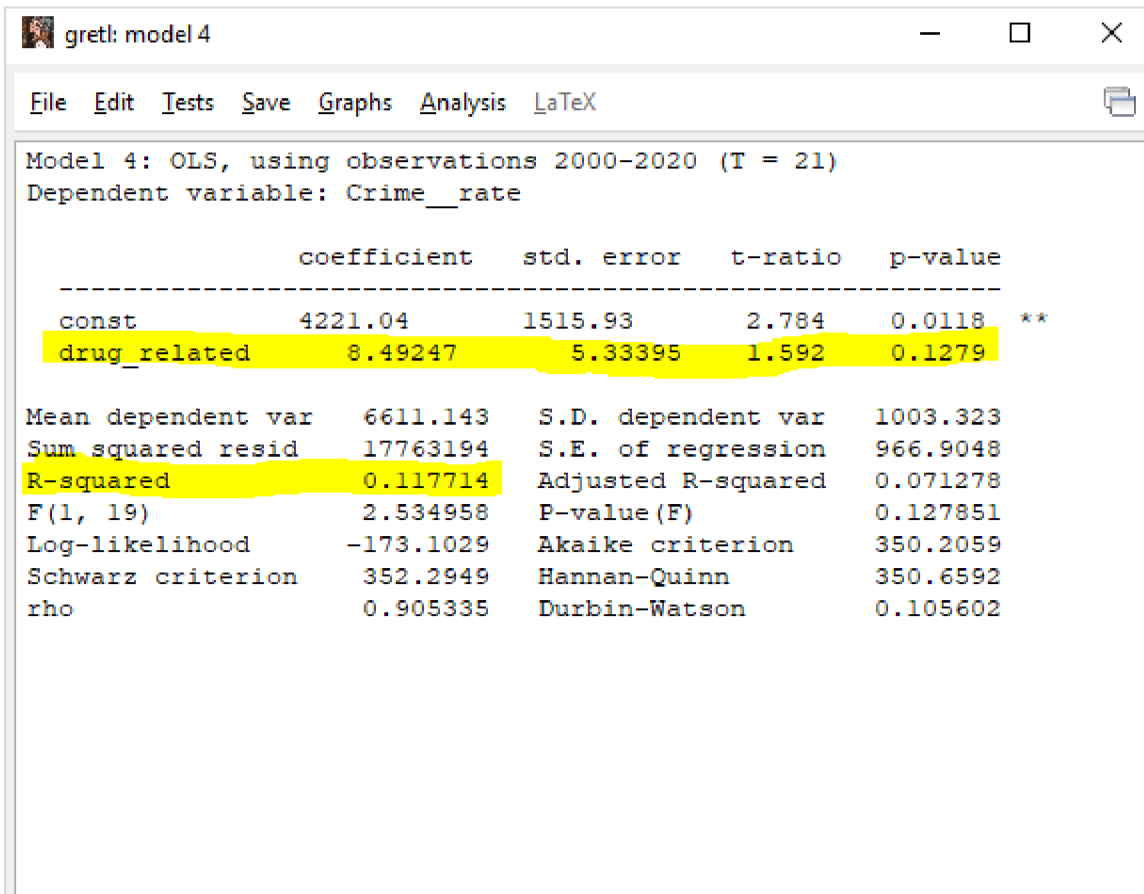
Crime Rate	
Rate per 100000	
2000	7897
2001	7880
2002	7812
2003	8047
2004	7907
2005	7617
2006	7542
2007	7216
2008	6940
2009	6753
2010	6481
2011	6111
2012	5956
2013	5518
2014	5358
2015	5512
2016	5565
2017	5629
2018	5743
2019	5874
2020	5476

Source: (Moreau, 2021), table of own creation

Modelling was done using the "OLS" with robust standard error to erase - heteroscedasticity.

The dependent variable is the Crime rate per 100,000 residents, and the independent is Drug-related offences per 100,000. Period for 2000-2020.

Figure 4 Gretl model for criminality



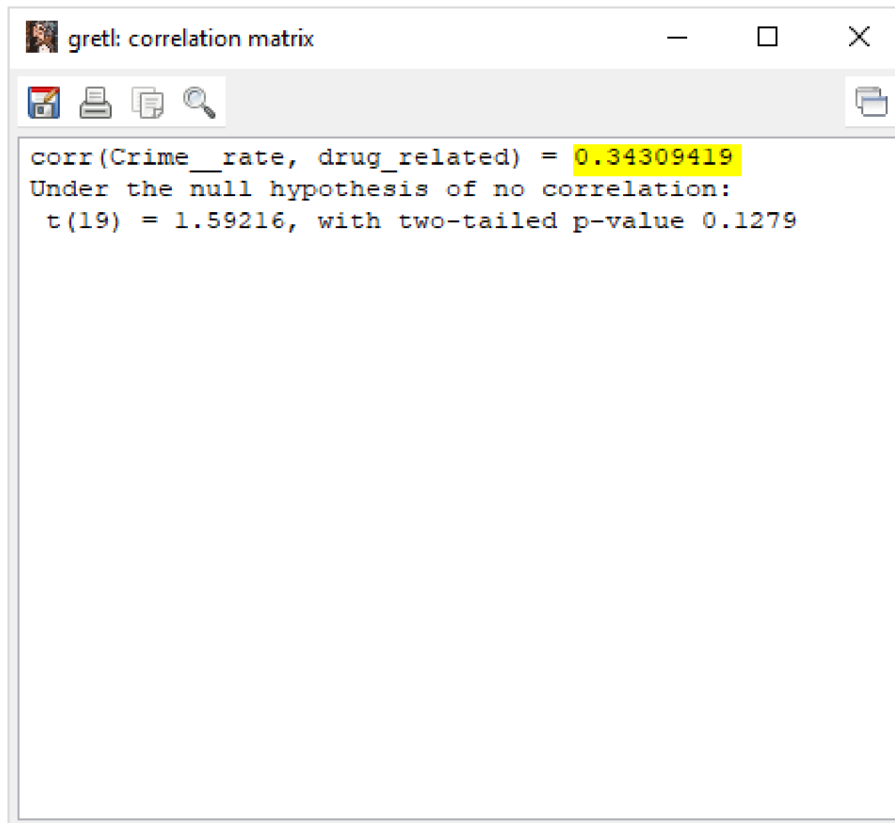
Source: StatCan, figure of own creation

The equation proposed by the modelling software:

$$\text{Crime Rate} = 8,49247 (\text{Drug-related}) + 4221.04 + \varepsilon$$

As seen in the picture, Drug-related offences are not statistically significant even at the 10% confidence. R^2 also shows us that there is a slight correlation between those variables. At this point, the author can assume drug-related offences had a minimal impact on the whole criminality level in Canada. Violent Crimes are dominating.

Figure 5 Correlation for criminality rates



```
gretl: correlation matrix
corr(Crime__rate, drug_related) = 0.34309419
Under the null hypothesis of no correlation:
t(19) = 1.59216, with two-tailed p-value 0.1279
```

Source: StatCan, figure of own creation

Also, using the correlation tool in the Gretl software, the author could find a value of *R* (*Pearson's correlation coefficient*): approx. 0.34, which confirms the assumption about a slight correlation. Value is close to zero, but technically there is a positive correlation.

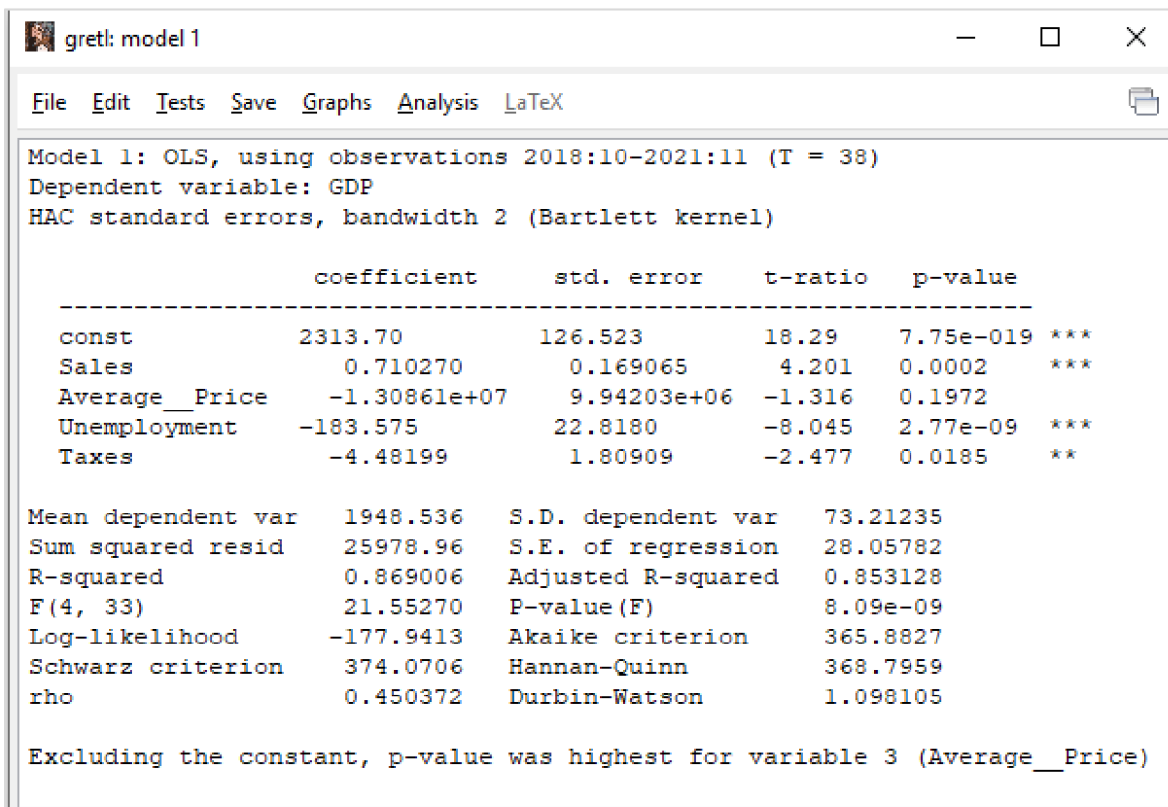
4.2 Analysis of the Legalization Impact on Canadian GDP.

It is necessary to understand did legalization affect the economy of Canada? The author has already studied different phenomena, which showed signs of increasing or decreasing various aspects of Canadian society or economy. But how does it affect GDP? GDP is one of the leading indicators of the state of the economy. In the Data Entries section, the author showed the main variables, which would be included in the model.

Also, this model will help the author either accept or reject the hypothesis.

The Gretl software will simulate the model using the "OLS" method with robust standard error to exclude heteroscedasticity.

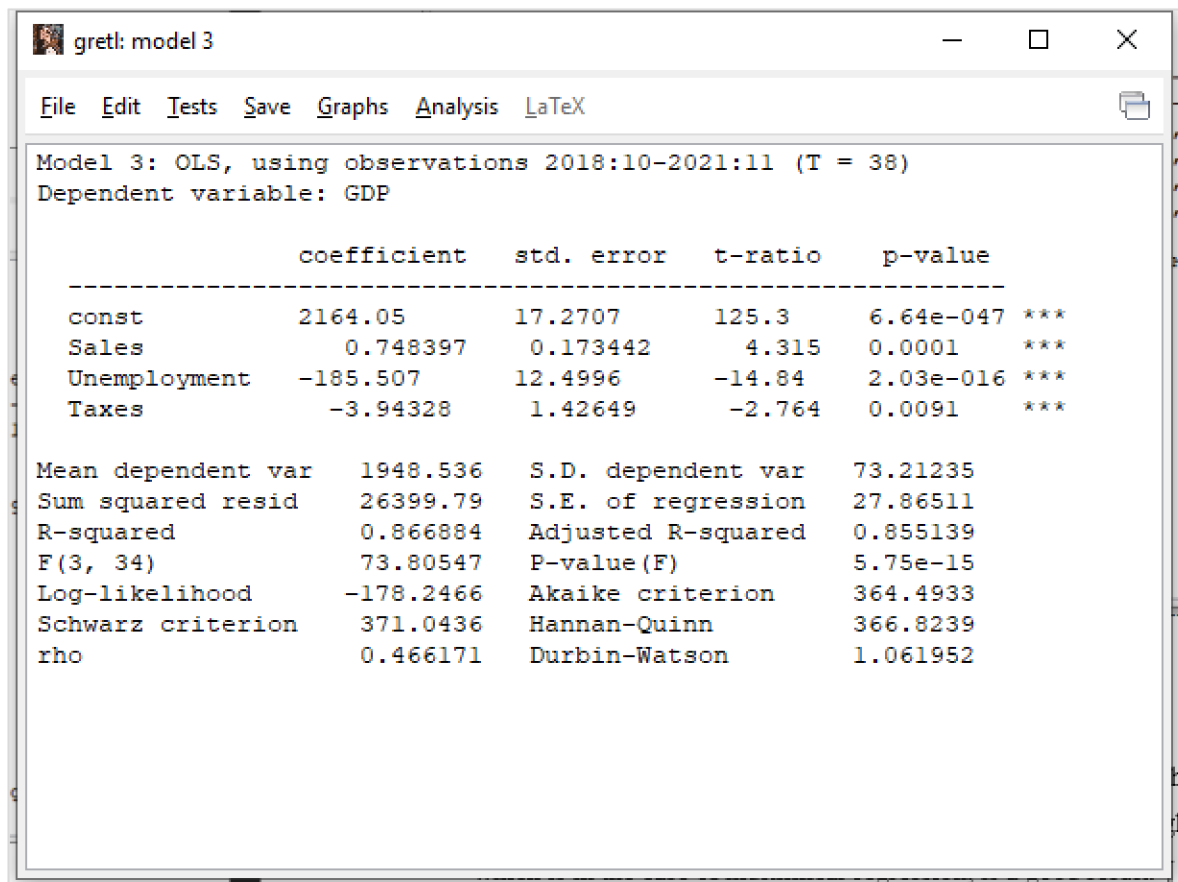
Figure 6 GDP first model



Source: StatCan, figure of own creation

As seen in the picture, all the variables included in the model are statistically significant, excluding average price, which isn't substantial even with 10% confidence. That's why the author considering this outcome, will exclude the average price from the final model, as it has no impact on the GDP.

Figure 7 GDP second model



Source: StatCan, figure of own creation

In the case of the adjusted model, it is seen that all of the variables are significant, even with a 1% confidence level. Also, R^2 has a high value (~87%), which is in the case of multiple linear regression, is a good result.

The equation for the model:

$$GDP = 2164.05 + 0.748397 \text{ Sales} - 185.507 \text{ Unemployment} - 3.94328 \text{ Taxes} + \varepsilon$$

At this point, it is seen that GDP has a positive relationship with Sales, but not that strong. For every million dollars paid in the retail industry GDP of Canada gets approx. 750,000\$. Considering that the market is growing very fast and sales are growing, it increases the GDP.

Unemployment has a higher impact on the GDP, an increase for one unit of unemployment leads to a 185 CAD loss in the GDP.

Lastly, taxes have a negative relationship with the GDP. For example, an increase in 1 unit of tariffs leads to a decrease in the GDP, not significant, but still a decline.

Figure 8 Graphs of actual and fitted GDP



Source: Author

Also, it would be good to look at graphs of observed and calculated values (green and red lines, respectively). The picture shows that the equation obtained by the multiple linear regression can explain actual values.

5 Discussion

5.1 Theoretical Part

5.1.1 Legalization

It is necessary to discuss legalization itself briefly, as seen, after a study of the **S.C 2018, c.16** conducted by the author. The government of Canada performed a lot of work to create a good and fair environment for the consumers and producers. On the other hand, they seriously took possible dangers, which legalization might lead to. Penalties for different drugs producing and selling illicit cannabis became more serious (Government of Canada, 2018a). Also, the government made some precautions to protect the youth from the influence of the newly legalized cannabis industry (Government of Canada, 2018a). It is a necessary step to protect national health. Also, this precaution will keep the cannabis out of the children's attention and prevent the youth from starting too soon. The government also implemented the same approach for marketing as it is for tobacco - challenging conditions, which nihilate marketing for the cannabis at all. But the author has found out that the cannabis retail industry has a strong growing tendency even under strict limitations.

It is crucial to understand that these regulations are not at their end state—for example, edible cannabis, which awaits new conditions for producers, as was mentioned by Paul Webster (Webster, 2019). Moreover, studies in the thesis confirm the growing popularity of edible cannabis. So, the author finds those concerns reasonable.

5.1.2 Consumer Behaviour and social factors

All the studies provided by the author aimed to find out the main trends, which has occurred in Canada after recreational cannabis legalization. Firstly, the author found out that legalization had no impact on the consumption of cannabis. The frequency of usage had no significant changes during the first years of legalization. What rejects one of the concerns made by Hajizadeh, which was awaiting possible growth of the “cannabis uptake” (Hajizadeh, 2016). On the other hand, social acceptability has grown so far that consumers are more "welcoming" to cannabis than classic tobacco. It opens a place for a discussion: as 90% of the respondents of CSS (both groups smokers and non-smokers) finds cannabis smoke harmful as well as tobacco smoke (StatCan, 2021).

Secondly, there is a tendency to leave from classical types of intake for the new one—edible cannabis, "e-cannabis", and so on. Consumers tend to experiment on that matter. It is only possible in the case of legalized industry, which can work on evolving standard types and offer something new for the customers.

Thirdly, cannabis is also an addictable substance, which requires a lot of control from the government's side and personal responsibility from the consumers. What does it mean? In the first place is buying from a legal source; as mentioned in part 2.3.3, possessing cannabis without a label is still illicit activity, which will be penalized. Overall, as seen in the table "Source of obtaining", consumers rapidly preferred legal sources over illegal, as it became straightforward to enter the shop and buy some "weed", and there is no possibility of getting into jail for that. In the second place, it is driving under the influence of cannabis. Many respondents would operate under the intoxication of cannabis, but this number has a negative tendency as it goes lower through the years of legalization (StatCan, 2021). It might be caused by many different factors simultaneously. For example, "cannabis" driving starts to draw much attention from scientific or law enforcement. Still, it is an excellent sign of developing "social responsibility". On the other hand, a study that had been already referred to confirms that there is no significant increase in traffic accidents with injuries, so cannabis might be less harmful than driving under the alcohol influence (Callaghan, Russell, & Heiden, 2021). Studies provided in the thesis can create an assumption: the absence of that significant increase in traffic injuries could be a developing social responsibility of cannabis users.

5.1.3 Criminality

Also, it is one of the main aspects affecting the social situation in Canada. The author has conducted the research, which led to the significant finding. One of the main reasons to legalize cannabis was reducing the load on the jurisdictional system (courts, etc.) (Government of Canada, 2018a). Did it help? The author can assume that it helped. As seen on the CSI Graph, the index has grown during the legalization. This means the number of violent crimes is increasing in Canada. So, excluding cannabis from restricted substances allowed the government to resist this tendency somehow. As control over cannabis were transferred to the other jurisdictions. Also, it confirms the linear regression analysis provided by the author. Before and after legalization, drug-related offences had a low impact on the whole criminality level. What allows the author to *reject the hypothesis*. After legalization,

it has even decreased as the police are only concerned with the "hard" drugs. Also, it should be mentioned that the study graph of the drug-related crimes showed a significant decrease over the years of decriminalization. It is a good sign, as people would not be sentenced for possession and consumption of cannabis and avoid the possibility of adaptation to the criminal world.

5.2 Sales Study

It was necessary to conduct some basic statistical research to find out the primary trend regarding the sales of cannabis. It was found that the sale of cannabis had a high positive direction. Compared to the real GDP graph (which has dramatically fallen) (Figure 8), sales were not affected by the COVID-19 but even continued to grow. But on the other hand, it confirms the small coefficient presented in the regression, that correlation at this moment is relatively low.

5.3 Is GDP affected or not?

One of the author's primary analyses was concerned about the economic impact of the legalization on the GDP. To fulfil the objective of the thesis and test the hypothesis, it was necessary to conduct such research. Regression has shown that cannabis has an impact on the GDP. The direct correlation between sales and GDP is not that strong, but considering the high negative impact of the unemployment rate on the GDP, it affects both sides. Sales directly bring money in GDP, but the significant effect is creating new workplaces. There is a lack of data on that matter in "Statistics Canada", but the approximate number of dispensaries and licensed producers shows that there are many opened vacancies for people with different educational levels. The thesis study confirms the assumption made by Hajizadeh, who is also awaiting decreasing in unemployment for "manipulative" workers (growing and packaging) (Hajizadeh, 2016).

Therefore hypothesis about GDP increased can be accepted.

6 Conclusion

One of the thesis objectives was to find and evaluate the main economic and social trends of the legalization of recreational cannabis. Therefore, the literature review provided in the thesis is focused on the norms, acts, and regulations to get a better legislative understanding. Also, throughout the literature review, main questionnaires (CCS) of Canada were studied. These surveys helped to identify and evaluate main trends in the consumer's behaviour, so the results of the evaluation are as follows:

- Consumers are retreating from the illegal sources to the legal stores or growing for themselves;
- Consumers are interested in the alternative types of intake;
- Frequency of use was not affected by the legalization;
- Canadian society is ready to "replace" tobacco with cannabis.

Another objective of the thesis was to find and evaluate the impact of legalization on economic and social aspects. Studies conducted by the author lead to results as follows.

One of the main factors in the social aspect is criminality. As cannabis was part of the "**Controlled Drugs and Substances Act** ", it has always been a part of drug-related offences, and it still is somehow. However, the calculation showed that drug-related crimes have *almost no impact* on the general criminality level in Canada. So, legalization on this matter had nearly no effect. Therefore, the "social" hypothesis set in the "Literature Review" section is rejected.

Regarding the economic impact, the author has studied the industry's influence on the real GDP of Canada. It was found that the volume of the sales of cannabis has a negligible impact on the real GDP, but still, it is a *positive impact*. The creating new working places caused a *significant effect*. In this case, the calculation showed that creating a new industry positively impacts the economic environment. The hypothesis is accepted.

To summarise everything mentioned in the "Conclusion" section, the author can say that cannabis has a more positive economic impact than social. Also, as society was prepared for the legalization, the government was chasing mainly economic reasons to legalize cannabis. It is hard to predict a precise way of development for such a controversial industry. Nevertheless, it is an exciting topic that requires a follow-up. And maybe one day more

countries will follow Canada using its example, as it has a point from an economic perspective.

7 References

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