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Chair

Mr. Ben Lobb

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● (0850)

[*English*]

The Chair (Mr. Ben Lobb (Huron—Bruce, CPC)): We'll get our meeting started.

We have three witnesses here this morning for our study. What we'll do this morning is we'll have our witnesses here in Ottawa present first, and then Dr. Kevin Sabet will present third. I think everything is set. There are some handouts for the third presentation, and I think we have to print off a few of the English versions, so we will have those done before it's time for the doctor's presentation.

There's one other little housekeeping item before we get started.

Everybody has been waiting with bated breath to hear about when the main estimates will be presented. It looks as if it will be May 15. We've been able to get the minister to appear for the first hour, and of course as is typical, the staff will fill in for the second hour. Put that in your calendars, and we'll send that out. If there is any further discussion, we can have it at a later time.

Mr. Wilks.

Mr. David Wilks (Kootenay—Columbia, CPC): Just for clarification, is the meeting on May 15 going to be here, or do you know that yet?

The Chair: I'm almost certain—and the clerk can confirm—that the next three meetings will be at Promenade, and not 1 Wellington. We will try to do our best.

We'll carry right along here. We'll start off with the University of Ottawa, and Dr. Andra Smith.

Go ahead, please, for 10 minutes.

Dr. Andra Smith (Associate Professor, University of Ottawa): Thank you very much for inviting me today. I believe this is a very important endeavour, and I'm happy to be a part of it. I am an associate professor in the school of psychology at the University of Ottawa. I'm a neuro-imager and a neuroscientist.

One avenue of research that I have pursued is how drugs of abuse impact the brain, specifically in youth, during executive functioning. The research I'll be discussing today was funded by the Ontario Research and Development Challenge Fund, ORDCF, and the National Institute on Drug Abuse, NIDA.

This research was performed on a sample of the Ottawa Prenatal Prospective Study participants. OPPS is a study that was started by Dr. Peter Fried at Carleton University in the seventies. It was designed to investigate the impact of prenatal marijuana exposure on children.

There are so many variables that are at play when determining the impact of marijuana on the brain that it's really important to have pre-marijuana measures of the participants. This is what really makes the OPPS population unique in the world, as these participants have been followed and tested every two to three years from the time they were born until they're teenagers and young adults.

There are three other longitudinal studies in the world—in New Zealand, in Pittsburgh, and in Europe—but the OPPS is local, it's Canadian, and it does offer a wealth of information on its participants. Approximately 4,000 lifestyle variables have been collected, including both prenatal drug exposure to marijuana, nicotine, and alcohol, as well as teenage use. The longitudinal nature of the study is really what makes the empirical results so powerful.

As the study went on, Dr. Fried was detecting subtle effects in top-down processing in participants that were exposed prenatally to marijuana and also in those who were starting to use marijuana themselves. He wanted to know more though, so he asked me to perform functional magnetic resonance imaging, fMRI, on them. What is functional MRI? It's a brain imaging technique that allows us to use a regular clinical MRI scanner, but it examines the brain as it works. You're measuring and quantifying blood flow as a person is doing a cognitive task in the scanner.

One of the advantages of fMRI is that it has a level of sensitivity that can uncover differences in brain activity that you wouldn't normally see in just a regular standardized neuropsychological assessment. The tasks that I administer are executive functioning tasks. Executive functioning is an umbrella term for several cognitive processes that consist of decision-making, planning, organizing behaviour, setting a goal and achieving that goal, while inhibiting inappropriate responses and not getting distracted.

We used fMRI during four executive functioning tasks, including working memory, impulsivity, and sustained attention in the OPPS participants when they were between 18 and 21 years of age. We explored both the long-term impact of the prenatal exposure as well as the teenage use of marijuana on brain activity.

To touch briefly on the prenatal exposure findings, one of the most surprising results was that even after 17 years, even more in some of the participants, we were able to detect significant long-term impacts of that prenatal marijuana exposure on the patterns of activity in the brain during executive functioning. We were able to say this confidently because we could control for so many variables due to the longitudinal nature of the OPPS. The more prenatal marijuana the participants were exposed to, the most significant the differences in blood flow.

This is a critical finding given what seems to be the public perception that marijuana has no substantial health risks. It came to my attention recently that some pregnant women are using marijuana for their morning sickness. I was quite surprised at this. Using marijuana for morning sickness may have its short-term positive effects for the mother, but really, the long-term consequences for the child surely outweigh those immediate ones.

I think this is fairly intuitive. We do have empirical evidence, though, and it's mounting, for the adverse effects of marijuana in pregnancy for both the mother and the child.

In addition to the prenatal effects, what I really want to focus on today is the investigation into the teen use of marijuana and its impact on brain activity, brain functioning, during executive functioning.

Where we found our biggest significant results was in response inhibition, or impulsivity. This was a cognitive domain where we detected the most significant effects. Response inhibition allows for successful adaptation to the environment: recognizing unexpected situations, making plans, changing behaviour accordingly. Again, we're comparing our young adults, 18 to 21, from the OPPS, who smoked marijuana regularly. We're looking at them and comparing their brain activity with the brain activity of those who had never smoked marijuana regularly. Regular use was defined as more than one joint per week, and the average consumption was about eleven and a half joints per week.

Despite similar performance among our groups on our response inhibition task, there was a significant difference in brain activity during the task, depending on how much marijuana was smoked. The more marijuana that was smoked, the more brain activity there was, and the more brain regions were recruited to perform the task. These results were most robustly observed in the prefrontal cortex, and this was the same outcome for all the four tasks that we performed. We did working memory and sustained attention, also. More marijuana exposure was related to more widespread brain activity. You might think increased activity is a good thing, but that's not the case. Increased neural activity is actually interpreted as having to work harder, having to engage more brain resources to respond accurately.

This type of demand on the brain is a sign of a required or a necessary compensation. Over time and/or with challenges to that circuitry involved, the brain can't compensate any further. It gets fatigued and it falters. If put into more real-life situations, the marijuana smokers may not be able to adapt or compensate as they can with the easy tasks that we give them to do, and then problems with cognitive efficiency can arise. This is particularly problematic at this time of brain development when the prefrontal cortex is undergoing fine-tuning and optimization for future success. The prefrontal cortex is like the CEO or the band leader of executive functioning. It's really what distinguishes humans from other animals and allows for higher order cognitive functioning that we really rely on for success in the world, whether it's in relationships or in academics, or in professional life.

Our brains are not fully developed until well into adulthood. The development of the brain is actually in high gear during these teenage years. They are key phases of neuronal development that occur before the brain is fully ready to deal with the challenges of the adult world, and these take place specifically in the prefrontal cortex. These include a pruning, whereby neurons that are not being used efficiently get removed, and at the same time, those neurons that are efficient in their communication with other neurons get more shielding, more myelination, and this allows for further efficiency and productivity. This is a time when the brain is being customized, and only with these steps completed are our brains really maximized for success.

Marijuana hijacks this development. When the prefrontal cortex is not fully developed, it is more vulnerable to the neurotoxic effects of marijuana than in adulthood. This is why the age of onset of marijuana use is so critical. These developmental stages are essential, but marijuana exposure gets in the way. Without the cognitive input from a well-developed prefrontal cortex, a teen has to rely on other brain regions for cognition. The limbic system and the more posterior brain regions that are not as evolutionarily developed are what must be relied upon to make decisions and provide judgment. What this means is that our emotional brain is running the show rather than enlisting the help of the thinking brain, or the prefrontal cortex.

Executive functioning is required. To be prosperous in the world without a well-developed prefrontal cortex—something that can happen when it gets hijacked by marijuana—it will be a struggle, and this struggle can be avoided by focusing on brain health.

● (0855)

It's really important, I think, to get these results to the teens and to the parents. My work is published in scientific journals, and who reads those?

We need to educate and inform people that marijuana is not as innocuous as it's being deemed to be, for youth in particular, and that the adolescent developing brain is very vulnerable to the adverse effects of marijuana.

I don't think we can allow the misconceptions of the impact of marijuana on youth to continue. We really do need to have an increased awareness of the neurophysiological effects of marijuana on youth, and I think that's really crucial.

● (0900)

The Chair: From the Canadian Centre on Substance Abuse, we have Mr. Perron and Ms. Porath-Waller.

Mr. Michel Perron (Chief Executive Officer, Canadian Centre on Substance Abuse): Good morning, Mr. Chair, and members of the committee.

As indicated, my name is Michel Perron. I am the chief executive officer of the Canadian Centre on Substance Abuse, CCSA. I'm also joined by Dr. Amy Porath-Waller, senior research and policy analyst. Her primary research focus is on the health effects of cannabis.

To assist members with this important study on its harms, I'll be speaking about some issues related to cannabis, which could also interchangeably be referred to as marijuana. Specifically, I will touch on rates of use in Canada and awareness, health risks associated with use based on the latest research, and what we at CCSA can propose as a way forward.

In terms of rates of use, one in ten Canadians reported using cannabis in 2012, making it the most commonly used illicit substance. In terms of chronic use, we know that over a quarter of Canadians, youth and adults, who reported using cannabis in the past three months are daily users.

Canada's youth are the highest users of cannabis when compared to students in other developed countries. Although overall rates of use have been declining since 2008, youth still use cannabis at rates that are about 2.5 times higher than that of adults.

[*Translation*]

It's clear that young people use cannabis, but this vulnerable group mistakenly believes that it's a benign substance. When I use “vulnerable” here, I'm referring to their stage of brain development, as Dr. Smith just mentioned.

[*English*]

It should also be stated that cannabis is not a homogenous substance. It can, and does, have varying levels of THC, the psychoactive ingredient, and at levels quite different from what we've seen, even just recent years ago.

We also know that the earlier someone starts to use, the more likely they are to use more frequently, and increase their risk of dependence.

In order to get a better idea of what youth think about cannabis, CCSA conducted research with young Canadians across the country. I have copies of this report available for you today.

The results show that Canadian youth are very confused about cannabis. In the study, some said cannabis helps to improve their focus at school and that the drug can even prevent or cure cancer. Youth were also uncertain as to whether cannabis improves or impairs driving performance, and felt that smoking and driving was not as dangerous as drinking and driving. Moreover, youth often talked about how cannabis is natural, so they don't really think of it as a drug.

I'd like to now turn your attention to research that has been conducted on the health risks of cannabis use.

It's important to remember that some of this research is quite conclusive, as we heard from Dr. Smith just now. Other areas show mixed results, and in some areas the research is just very much beginning.

I'll organize my remarks around these three areas: the acute, or immediate, harms; short-term harms; and long-term harms.

In terms of acute harms, immediately upon using cannabis, research is clear that there are negative impacts on cognitive functioning. Specifically, it impairs concentration and decision-making, reaction time, memory, and executive functioning. All of these abilities are required to safely operate a vehicle or to pay attention in school, or go to work. There's also consistent evidence that cannabis use impacts the ability to drive safely and increases the risk of collision, and that this risk significantly increases when cannabis is combined with alcohol.

In terms of short-term harms, they can affect a person up to a month after using. Research consistently shows that cognitive deficits, which were referred to earlier, that are present during the acute phase can persist after that time. This means a negative impact on a person's ability to think, learn, and remember. Emerging research indicates that heavy chronic use may also lower a person's IQ.

In addition, there is consistent evidence that frequent use of cannabis is associated with an increased risk of experiencing mental health issues, such as psychotic episodes or schizophrenia. That risk increases when an individual has a family history of the disorder. Evidence is more mixed with respect to linkages between cannabis use, depression, and anxiety.

● (0905)

[*Translation*]

Marijuana can also be harmful to health and respiratory functions. Its smoke contains toxic substances similar to those in tobacco smoke, which means that inhaling this smoke can expose the lungs and airways to respiratory problems.

[*English*]

Cannabis smoke is also unfiltered, and users take larger, deeper puffs, thereby keeping the smoke in the lungs longer.

I should note, however, that the long-term effects of smoking cannabis on respiratory health, such as lung cancer, are less clear, and there is a need for additional research on this subject.

I know that the committee is also interested in the addictive properties of cannabis. Clinical research indicates that cannabis can lead to dependence. Studies have shown that cannabis triggers the brain's reward centre in both animals and humans. Clinical studies on heavy users, defined as weekly, also demonstrated withdrawal symptoms when use was discontinued, including around anxiety, physical tension, and disturbed sleep patterns.

According to recent data from the 2012 Canadian community health survey, over 5% of young Canadians age 15 to 24 met the criteria for cannabis abuse or dependence. This represents about a quarter of a million young Canadians. That is a significant number which I think we need to pause and consider as we go forward. For adults age 25 to 64, this number was less than 1%.

I will turn now to the effects on the developing brain.

To reinforce some of the messages we've heard, it's clear that as a society we should be concerned about whether and how much our young people are using cannabis. Adolescence is a time of rapid development that helps set the stage for later success in life. Conversely, it can also set the stage for experiencing challenges in adulthood. There is growing evidence that early and frequent use of cannabis can alter structural aspects of the developing brain, including those areas of the brain that are responsible for memory, decision-making, executive functioning, and motor coordination.

To repeat, those who use most often are at greater risk than adults. This can have significant consequences on a young person's life trajectory when their main role in life when they're young is to learn and grow.

[*Translation*]

Available data show that everything we can do to prevent, reduce or delay drug consumption will help reduce the harm to individuals and society, as well as reduce health care expenses.

[*English*]

In terms of a way forward, it's clear that cannabis is not a benign substance. The early or more frequent the use, the greater the potential for both acute and long-term harm. This points to the need for a comprehensive, multi-faceted approach to raise public awareness of the health effects of cannabis in order to reduce its use.

In this regard, through our health promotion and drug prevention strategy for Canada's youth, CCSA is working with partners to promote evidence-informed practices and advance knowledge about substance abuse prevention, including the prevention of cannabis use.

We have already done a great deal of work in this regard with the development of Canadian standards for substance abuse prevention for schools, families, and communities. We know that prevention works, but not just any kind of prevention. The standards help those who work in the field deliver quality services.

We're also working with a scientific advisory committee to clarify what we know and what we don't know about the effects of cannabis use on the developing brain. As well, we are looking at how to build resilience in youth in partnership with the sport and recreation communities.

Sound evidence-based prevention programs and awareness-building initiatives are key components of a continuum of services and support that include health promotion, early intervention, and treatment. I would caution the committee that these should not be taken in isolation. Substance abuse is a problem too complex to be addressed by any one approach or by any one group, and it's very much a concerted, collective approach around these areas that would make some true success and achieve a collective impact.

Mr. Chair, the topic of cannabis and its place in Canadian society will certainly occupy the public discourse for the near future. Perhaps that's an opportunity for us to correct some of the misunderstandings around the substance. It is, however, a complex issue with far-reaching implications on our collective health and safety, and it impacts our future when our young people are experimenting with a substance that affects their development. We've spent a lot of time trying to ensure that our youth are best equipped at school and in their jobs to be successful members of society in a knowledge-based economy to have a productive nation. This is clearly an issue that impacts that ability in the long-term way forward.

[*Translation*]

Like you, the CCSA is committed to reducing and preventing the harms associated with cannabis by carefully studying the evidence and by conducting additional research, as needed.

We welcome an ongoing dialogue similar to the discussion we're having today.

[*English*]

I would like to thank the committee for its interest in this issue of vital importance to the health of Canadians.

I would be happy to take any questions.

Thank you.

The Chair: Thank you very much.

Our final presentation this morning will be a video conference from Dr. Kevin Sabet, of Smart Approaches to Marijuana. Go ahead, sir, for 10 minutes, or thereabouts.

● (0910)

Dr. Kevin Sabet (Executive Director, Smart Approaches to Marijuana): Thank you, Mr. Chair, and members of the committee, for inviting me to speak in front of you today, with the wonders of modern technology. I very much appreciate it.

I'm here wearing a few different hats. I am the co-founder, along with Congressman Patrick Kennedy, of Smart Approaches to Marijuana. As many of you know, we recently helped launch the Canadian affiliate of that organization, with Dr. Harold Kalant, the professor who I think was in front of you last week. We look forward to continued dialogue with the Canadian government. I also am an assistant professor at the University of Florida, college of medicine, department of psychiatry.

I left some visuals and slides with members of the committee today. I won't follow them verbatim during my testimony, but I think they serve as good reference points, especially since I wasn't able to join you in person.

I'm honoured to serve here, in front of the committee, with both Dr. Smith and Mr. Perron, who have both shown extraordinary leadership on this. CCSA especially has been a wonderful international partner and representative of Canada to many NGO fora around the world, and I appreciate their continued work. I appreciate Dr. Smith's work on the neuroscience side.

I think what we just heard should be taken into a broader context. I would say that the biggest challenge facing both Canada and the United States right now on this issue is that there is a huge divide between the scientific understanding of the harms of cannabis and the public's misunderstanding. So, if there could be something the committee might want to focus on, it would be to try to bridge that divide.

As you can see, I wrote a book called *Reefer Sanity: Seven Great Myths About Marijuana* that covers much of this. I've been in this field for almost 20 years, and recently served as the senior adviser in the Obama administration for drug policy. After I left my post, I wrote and reflected on my experiences and also on the science of cannabis. That's what my book is about.

Really, the first myth I present to you is this idea that many people believe, which is that marijuana is harmless and non-addictive. Clearly, from what we've just heard, and again what the science says, that's not the case.

To put it in context, we know that one out of every six 16-year-olds who ever try marijuana even once will at some point become addicted to the drug in their life. Clearly, marijuana addiction does not manifest itself the way heroin or cocaine addiction does, but it certainly isn't something that is benign.

As we heard from Dr. Smith, the adolescent brain is essentially under construction up until age 28 or 30. It's clearly a bigger risk when kids start, or when you start earlier in life. That makes sense, if you think about, say, when you want to learn a second language or how to ride bike or swim, you learn those things when you're younger. Your brain can pick those things up, which is a good thing. Unfortunately, on the drug side, it's a bad thing. It means that early use and exposure to substances has the ability to interfere with normal brain processing.

The next slide, slide 5, the one with the bubbles, on the dependence on or abuse of specific illicit drugs.... This is obviously U.S. data, but I think it's important to look at the fact that marijuana is the number one reason kids are in treatment today, more than alcohol and all drugs combined. Also, it's the number two reason for adults, after alcohol.

Slides 6 and 7 are on potency. Although slide 7 comes from American data, the data from Canada is very similar. In speaking to Dr. Kalant and looking at this before coming to you today, we know that 30 or 40 years ago, marijuana potency was hovering between 1% and 2%. Today, the average is between 10% and 11%. Of course, in certain regions, especially on the west coast of Canada and the east coast, we know that indoor-grown marijuana can produce upwards of 30% THC. That is a very different level from someone who might have tried cannabis even 10 or 20 years ago. I think this is part of the reason there is such a divide. Parents today, many of whom might have tried cannabis, tried it when the potency was much weaker so their understanding and experience of it is very different from that of kids today.

Mr. Perron spoke about mental illness. I won't dwell on that, other than to say that this is an area of research we're focusing on, given the increase in mental illness in both our countries. Harmful effects on the lungs, I think, was also stated.

● (0915)

Turning to slide 11, and Dr. Smith briefly referred to this when she talked about New Zealand, when we look at the IQ issues, I think that is really something we would want to focus on. One of the most robust studies ever conducted on people using cannabis over a 30-plus-year lifespan—these are longitudinal studies—essentially found that people who had used cannabis heavily as adolescents, even if they had stopped in adulthood, by age 38 had a significant risk for a six-to-eight point reduction in IQ. That was even after controlling for alcohol and other substances. Clearly, more research needs to be done, but when we start looking at school dropout rates, when we start looking at vulnerable populations, clearly six to eight points is significant, especially for those vulnerable populations who are already having a difficult time at school for various reasons.

Slides 12 and 13 I'm not going to dwell on too long, this idea of whether marijuana is medicine. I think it's important to talk about this here, especially in the Canadian context. We do know that cannabis has medical properties. We know that cannabis has over 500 components. We're learning about all of them every day, but we know that we don't need to smoke or eat crude cannabis to get those medical properties. Similarly, we don't smoke opium to derive the benefits of morphine. There needs to be a very clear distinction between crude cannabis that's smoked by young people, and the components of cannabis that might be used for something like neuropathic pain relief or multiple sclerosis relief.

Slide 14—and I commend Canada for moving so quickly on this, much quicker than its neighbour to the south—looks at cannabis-derived medicines that do not have potential for abuse and really are not being diverted to kids. One of those medicines, nabiximols—Sativex is the trade name—is in the process of being studied in the U.S. but is essentially already approved in Canada. It's administered via an oral mouth spray for spasticity due to multiple sclerosis and also neuropathic cancer pain.

What's interesting about that is that it's a liquid extract, so it's the whole plant, but it's mainly comprised of THC and CBD. CBD is important because it does not get you high. CBD is a component of marijuana, like THC, but because it binds to receptors differently—there's actually controversy about that—it does not get you high, it does not produce psychoactivity. The same manufacturers are also looking at other drugs that could be used for epilepsy, like Epidiolex.

This is an ever-evolving area, as slide 15 talks about. Every week there seems to be studies coming out. A couple of recent studies in the last week are interesting for the committee to note, I think.

One is a peer-reviewed research finding that people who had used cannabis and then went on to cocaine had a much greater severity of their cocaine dependence than those who never tried cannabis and jumped straight to cocaine. Now, we have to figure out why that's the case, and this is early research, but it's very interesting when we want to look at the link between cannabis and other drugs.

I'll skip the second bullet.

The third bullet essentially is a research finding from two weeks ago that made a lot of headlines. It found that casual users of cannabis, not heavy users, had structural changes in their brain that had really only previously been documented in animal studies. It was a small sample of about 20 people, but it was interesting to look at the parts of the brain that were affected, even among casual users. This is the first time research has found this in human studies versus animal studies. This is clearly an area we need to keep an eye on.

I'm going to skip a couple of the other slides.

I'll go to slide 17. With the couple of minutes remaining that I hope I have—and I know we're looking only at health harms here—we do need to look at the role of marketing and normalization in exacerbating health harms. We've known from the history of tobacco in both of our countries about, really, the history of 100 years of deceit and misinformation by an industry whose goal was to increase addiction.

● (0920)

Remember, industries only want to increase addiction. That's how they increase their profit. What I worry about—well, I'm witnessing what's going on in the United States, the elephant in the room being Colorado and Washington—is this idea of big corporations popping up.

I'll just leave some visuals with you. I won't go into a lot of detail here.

Essentially we are in the midst of creating the next tobacco industry of our time here in the U.S. as we move down this path of legalization. For example, in slide 19 you can see the edibles that are used, the sodas. It's important for a committee who's looking at health harms to understand that actually a lot of kids are not just smoking a joint in terms of that's the way they're getting marijuana. They are eating it in different forms. They are drinking it in different forms. They are vaporizing it, and using m-cigarettes. I think the huge unexplored topic on this issue is the role of vapours, vaporization, e-cigarettes, and what we call m-cigarettes right now. We already know that Philip Morris International has its hand in creating the most efficient marijuana vaporizer. It can also be used for tobacco, so you can basically hide both of them.

Slide 21 I think you also need to look at. This is the issue of butane hash oil extraction. This is the idea that you can get close to 100% THC by combusting marijuana through a butane process and inhaling it. If you were to tell somebody 10 years ago that they could get 100% THC, you would be laughed out of any scientific room or conference. It didn't exist: you can't have that much THC in a marijuana joint. But now, due to modern technology, you certainly can have concentrates approaching 100%.

This is a huge public health concern that I would urge the committee to look at. We've now seen mass commercialization through Groupon, and really the intersection of Wall Street and marijuana.

With that, I'll stop talking about commercialization.

The final point I want to make is that if you look at Colorado and look at the developments, as a lot of people are, it's important to understand that Colorado has had de facto legalization for about five or six years through the purveyance of medical stores that have essentially sold marijuana to anybody, really, who reported any kind of pain at all. Research is now just coming out. I've left you with some peer-reviewed sources. I won't dwell on all of the issues and problems that have been looked at—I don't have the time—but essentially it has not looked good in Colorado in the last five years since they really went down this path of legalization.

There's clearly a lot more to talk about, but I will stop there and yield the floor back to the committee.

Thank you for having me.

The Chair: Thank you very much to all our guests. Those were great presentations.

First up is the NDP. Mr. Morin and Ms. Laverdière will start the questions.

Dr. Sabet, I can assure you that these two are Canadiens fans, Habs fans, and you won't get any questions about the Boston Bruins, okay?

Dr. Kevin Sabet: Don't worry, I'm not a Bruins fan. My wife is from Vancouver.

The Chair: Okay.

You have seven minutes.

[*Translation*]

Ms. Hélène Laverdière (Laurier—Sainte-Marie, NDP): Thank you very much, Mr. Chair.

I thank all of our witnesses for their presentations today.

My first question is for Dr. Smith, who mentioned significant differences a number of times.

For example, prenatal exposure to marijuana would have a significant difference with respect to a child's cognitive abilities. There are also significant differences in brain activity among those who consume it and those who do not.

I'd like you to clarify these significant differences. Is it a 2%, 20%, 40% difference? Could you give me more specific figures?

● (0925)

[*English*]

Dr. Andra Smith: Are you asking for the percentage of women who prenatally were using marijuana?

Ms. Hélène Laverdière: No. You spoke of a significant difference, for example, significant difference in brain activity. What do you mean? You talked about a significant difference. Could you spell it out? Is it a 2% difference, a 20% difference? Could you give us more detail on what you call a significant difference, please?

Dr. Andra Smith: When we do our brain imaging, typically we are doing group comparisons, or we even do a multiple regression, where we're looking at the correlation. When I say "significant", I mean at a probability value of 0.05. With our multiple regression results, we're seeing that with more prenatal exposure or with more teenage use, you get significantly more brain activity.

Ms. Hélène Laverdière: When you say that you see significantly more brain activity, that's where you say you have a probability value of 0.05?

Dr. Andra Smith: Yes.

Ms. Hélène Laverdière: Okay, which is not.... Well, that's noted.

Dr. Andra Smith: It perhaps is a little different in the neuroimaging world. It's hard to really give you an actual per cent.

Ms. Hélène Laverdière: Yes, but I think the probability value speaks for itself. Thank you.

I have a similar question for Dr. Sabet.

[*Translation*]

You talked about a significant risk for a six- to eight-point reduction in IQ. Could you tell us more about that? What do you mean by "significant risk"?

[*English*]

Dr. Kevin Sabet: Sure. I'm more than happy to respond. Thank you, Madam, for the question.

Essentially, this study was looking at over 1,000 people born in the years 1971 and 1972 in the fourth largest city in New Zealand, Dunedin. It was an extraordinary study. I don't want to say that it was unprecedented, but it's a rare study. That you can enrol every single person born in this one large city in two years in a research project that would span their lifetimes is fascinating.

Essentially, researchers check in with them every five to ten years on many different issues and levels, on all sorts of things. This time when they checked in on them.... They had looked at their cannabis use when they were younger through surveys, but they also made sure that this was consistent over time, so it was accurate.

This time, for those people who had used cannabis three to four times a week for three to four years, I believe—and I will get you the exact study to make sure the numbers are correct, as this is off the top of my head—even if those people had stopped using cannabis in early adulthood, by the time they were 38 years old, which was the last time they were checked on, about four years or so ago, it was shown that, controlling for alcohol—even alcohol did not show this—controlling for socio-economic background and for education, there was a significant risk, I believe at the 0.01 level, if you want to get specific about the regression—which is important—of basically six to eight points, depending on a few different factors, whether it was six or eight, but the bottom was six points and the top was eight points in terms of the range, shown of a reduction in IQ that could not be explained by education, parental involvement, alcohol use, and other drug use. In other words, they had controlled for this.

This was such an extraordinary finding that it was understandably challenged by some people. A researcher in Norway challenged them to go back and redo their calculations based on a different formula and using different things. They went back, redid it, and found the exact same results. These are findings that are certainly talked about in scientific spheres still, and there's certainly follow-up to do, but it confirms what we know about school dropouts, what we know about attention span, and what we know about other things related to education.

● (0930)

[*Translation*]

Mr. Dany Morin (Chicoutimi—Le Fjord, NDP): Thank you.

Most of my questions are for Dr. Smith.

My colleague already asked you some questions about the study you did on pregnant women and young children. My questions are about the second study you mentioned on the use of marijuana among young adults.

Was it a longitudinal study?

[*English*]

Dr. Andra Smith: It's a longitudinal study.

[*Translation*]

Mr. Dany Morin: What was the time span?

[*English*]

Dr. Andra Smith: These children were followed up since they were born, every two or three years. Then the study that I did was when they were 18 to 21.

[*Translation*]

Mr. Dany Morin: It was the same study?

[*English*]

The Chair: Thank you. You can pick it up next time.

Mr. Young, you're up for seven minutes, sir.

Mr. Terence Young (Oakville, CPC): Thank you for being here today, everyone.

We've heard that the executive function of the brain is diminished for youth, which affects their decision-making, organizational and planning skills, and goal setting. You said, Dr. Smith, it's particularly at ages 18 to 21. Is that correct?

Dr. Andra Smith: That's the age group that I was studying.

Mr. Terence Young: It reminds me of the movie *Dude, Where's My Car?* I haven't watched the whole movie; I just watched a little bit on TV one night. It's about two guys who get stoned and drunk and can't find their car in the morning. That's, I think, the premise of the entire film, but it sounds like it's based on reality.

You also said the emotional brain runs the show, not the thinking brain. Is that when someone experiences psychosis, or is it just from regular use? What happens when the emotional brain takes over? I'm thinking in relation to violence, or crime, or whatever.

Dr. Andra Smith: The teenage brain is still developing the ability to make good decisions, and the prefrontal cortex is still myelinating. That means it's still optimizing. Even youth who aren't exposed to drugs may have trouble with decision-making because of this lack of development. What is often seen is that the limbic areas are more active than the prefrontal cortex even without the drugs.

Mr. Terence Young: What does that result in, what kind of behaviour?

Dr. Andra Smith: Impulsive behaviour, not looking at the consequences of actions.

Mr. Terence Young: One of the myths of marijuana is that it always makes people placid. Would that be fair to say?

Dr. Andra Smith: It makes people placid?

Mr. Terence Young: Yes. That's a myth. Is that correct?

Dr. Andra Smith: Yes.

Mr. Terence Young: Thank you.

Dr. Smith, do you think legalizing marijuana would reduce the harms and risks to Canada's youth, or increase them?

Dr. Andra Smith: That's not my area of expertise. My opinion would be that legalizing it would increase the use.

Mr. Terence Young: Thank you.

Michel Perron, would legalizing marijuana reduce the harms and risks to Canada's youth, or increase them?

Mr. Michel Perron: Again, if we look at our two legal substances, in terms of prevalence of use alone, alcohol in particular, we would likely increase the use, and therefore, increase the harms that would relate to it.

Mr. Terence Young: Thank you.

What would you suggest is the best way to reduce the health harms of marijuana, Mr. Perron?

Mr. Michel Perron: Back to my remarks, the first point is that no one issue is going to solve it. Second, there is, as Dr. Sabet has pointed out, a massive gap between knowledge, what we know as conclusive scientific evidence that is really unquestionable, and general public opinion. I think that's both among youth and among parents. I think we have a generational impact.

Mr. Terence Young: Would you say reduced access to marijuana would be helpful?

Mr. Michel Perron: Reduced access to marijuana? Certainly, I think better understanding and knowledge of cannabis and its effects on the person, both for the young people and for the parents, is important. Access is a different issue altogether, and how you reduce access to it is another question, I think.

Mr. Terence Young: Okay.

Dr. Sabet, you said that one-sixth of 16-year-olds will become addicted to marijuana while their brain is under construction. Did you say that the brain is under construction until age 30?

● (0935)

Dr. Kevin Sabet: Dr. Smith would be better to say, as she looks at these brains every day. But essentially, it's generally understood that it's between ages 25 and 28—and Dr. Smith, come in here—but my understanding is that in some people, the prefrontal cortex does not fully develop until even age 40. But I think the average understanding would be 25 to 28 years for the development of the brain, yes.

Mr. Terence Young: Thank you.

Are you saying that marijuana use could cause permanent brain damage or deterioration?

Dr. Kevin Sabet: Well, permanent.... We still need to look at the research. What's interesting about the New Zealand study was that, even among adults who had quit using or reduced their use, that IQ reduction was still evident at 38, even though they had started in adolescence. That is definitely a worrying sign.

Mr. Terence Young: Could you please comment, Dr. Sabet? You have a slide here that's fascinating, which was actually news to me, on the connection between marijuana and cancer.

Dr. Kevin Sabet: You're probably referring to the lung issues that I talk about.

What the American Lung Association and others have found is 50% to 70% more carcinogens than tobacco smoke. The link with lung cancer is mixed. Partially it's mixed because it's difficult to do the research when most of those heavy marijuana smokers who are being studied are also smoking tobacco cigarettes. Separating that is very difficult just in terms of the research.

We know that smoking anything is bad for you. Smoking lettuce is not good for you, let alone smoking a plant like cannabis. What I would say is that the cannabis grown in certain regions, especially in B.C. and in other places, is greatly genetically modified. This is stuff that is not the natural cannabis plant that would naturally occur. It is modified and bred selectively so that the THC, the levels of what gets you high, are artificially increased. That cannot be good for you to consume in your lungs.

Mr. Terence Young: It contains an enzyme that converts hydrocarbons into a cancer-causing form. We know it took decades for scientists to finally agree that tobacco causes lung cancer because there is still no clinical evidence, but there are epidemiologic studies. It would take maybe decades more to prove conclusively that marijuana causes lung cancer.

Dr. Kevin Sabet: I certainly agree with you.

Mr. Terence Young: Thank you.

Dr. Smith, what would be the best way to reduce the harms and risks of marijuana to Canada's youth?

Dr. Andra Smith: Educate them so they don't use it. Give them other ways of feeling that dopamine high that they're searching for.

Mr. Terence Young: Thank you.

Dr. Sabet, what does that mean, a 0.01% risk of brain damage from marijuana? What does that mean in real numbers for the number of people who smoke marijuana? What is the real risk to the individual? What number of those who use it might develop permanent brain damage?

Dr. Kevin Sabet: We know that one in eleven adults who tried cannabis will become addicted if they try it later in life, and one in six kids, as I mentioned earlier.

I will say that the research showing one in six for the addiction rate was from the mid- to late-1990s when the cannabis was very different. I would actually argue that we need much more research now on the cannabis that is being consumed now, which oftentimes, in this butane hash oil extraction, is vaporized at high levels, or even has much higher THC in the smoked joint than it did in the 1990s. So, conservatively, it's one in six, but we need to do more research now. In terms of driving and that risk, it doubles your risk of a car crash. We know that from all the research kind of blended together. It obviously depends on the outcome you're looking at.

The Chair: Thank you very much.

Mr. Lamoureux, welcome. You have seven minutes, sir.

Mr. Kevin Lamoureux (Winnipeg North, Lib.): Thank you, Mr. Chair.

I'll start it off by looking at marijuana and the ingredients that can be found in it. Is it safe to say that across the country, depending on where it is you get your marijuana or cannabis from, it's really difficult to tell what the ingredients are?

Very quick comments.

Mr. Michel Perron: I think, if you're suggesting that there is a variety of strengths and contents to cannabis produced illegally, yes.

Mr. Kevin Lamoureux: There are different ingredients like the THC. I've heard of CBD. Are those addictive? Are there other ingredients that could be put into marijuana that some sellers are possibly selling to youth or adults?

● (0940)

Mr. Michel Perron: The cannabis itself obviously has a number of compounds, as has been alluded to earlier, THC being the psychoactive one. CBD is another compound found in cannabis that has a non-psychoactive effect. The question is, can people produce or sell cannabis with other adulterants in it? Yes, of course they can.

In terms of how the potency of THC is presented in any cannabis sample versus CBD ratios, that again is going across the board. As we've seen, there has been a general increase certainly in a lot of street cannabis towards a higher level of THC, which is the psychoactive element, which does then precipitate some of the greater risks and harms we've seen.

Mr. Kevin Lamoureux: Regarding today's marijuana, is it safe to say we have no idea what is actually being purchased, that it's completely random?

Mr. Michel Perron: Again, I think if you were to do an examination of samples seized by police, that would probably be a better assessment as to what exactly is being presented across the country. Typically, for any person arrested with cannabis, it has to be determined that it is cannabis and that's the substance included.

Mr. Kevin Lamoureux: Are there incidents you would be aware where cannabis could have been laced with something more damaging for a person's health and well-being?

Mr. Michel Perron: Certainly there has been anecdotal evidence of reports of that, yes.

Mr. Kevin Lamoureux: Are there addictive ingredients that could be added that would cause people to want more cannabis?

Mr. Michel Perron: Again, this is rather speculative. In terms of what is hypothetical, of course you could add any substance you wish to any drug to make it more addictive or more psychoactive for the user.

Mr. Kevin Lamoureux: Mr. Sabet, I'm wondering if you could provide a comment.

You mentioned that the United States seems to be moving on a path to legalization. That is somewhat what you indicated.

When you look at Colorado and Washington, do they regulate the content of the marijuana?

Dr. Kevin Sabet: Thank you for the question.

They try to regulate the content, but it hasn't gone too well. That's mainly because, first of all, you have commercial interests that want to make sure they can do whatever they want with cannabis. That's why you have all of these edibles. Even when regulated, 15% THC does not make it safer than 15% THC marijuana that is smoked from the street. It really doesn't. The issue is that is what is harmful.

With regard to the edibles, the cookies and candies, the committee should know that there have already been two deaths related to legal marijuana ingestion. That was basically cookies and brownies bought legally at a marijuana store. For one young man, and he had nothing else in his system, after consuming the cookie, he fell off a balcony and died. The second man, who killed his wife while she was on the 911 call, had just had a marijuana edible.

The issue with the edibles is that when you ingest that all at once, it's different from smoking it, where you are taking in the THC more intermittently. You ingest the THC all at once with these edibles, and that's been a really unfortunate side effect of the legalization.

I think the states are trying to “regulate” it. You must also remember that the black market in Colorado is alive and well. You can't sell it to young people, so the black market is making sure it is filling the gap for the young people, who are their biggest customers and cannot buy from the legal stores.

Certainly I don't think it's showing positive outcomes so far.

Mr. Kevin Lamoureux: As the governments in the United States have moved more toward legalization of marijuana, where they've been found lacking is in having strong regulation to ensure that the examples you have just given are prevented.

Is that a fair assessment?

Dr. Kevin Sabet: I'm not sure it is fair, sir. They would argue that their regulation is very strong. They would argue that they went through years...and made sure that what they did was as careful as it could be.

The problem is that when you increase access and availability, when you legalize something, that is sending a signal to young people that the harmfulness has been reduced. Both Canadian and American youth right now, in a legal or illegal context, from looking at celebrities and others who may use and publicly talk about their use, are getting the impression that this is something that is okay and is acceptable.

Let's be clear. Most people who use cannabis are not going to go on to a disorder. I should have said that in the beginning. Most people who use will stop after using it one to five times and will not become addicted. They won't crash their car, etc. The problem is the small proportion of overall users who consume most of the substance. That small proportion grows, I think, under a policy that has legalized and increased its acceptance through some kind of "regulation".

Again, as Mr. Perron said, alcohol and tobacco are good examples. Whatever good intentions they've had with regulation in Colorado, which is the only place they've started, the results so far are not good.

● (0945)

Mr. Kevin Lamoureux: Yes. Now they've also done work in that area in Washington. Are you familiar with that particular program?

Dr. Kevin Sabet: I'm very familiar with it. The State of Washington has not begun selling legally in stores. They're starting to license them now. They've taken longer to do so. It's a bit of a different set-up. We'll see how that works. We can also look at states that have not technically legalized to learn what regulation does. I would say look at California. Look at Colorado before Colorado legalized it. Remember, I said they had a regulated scheme for five years under the guise of medicine, but again, if you had a pulse and backache, you could get marijuana. It wasn't that you had to have cancer or something. Again, those results haven't been good. For Washington, it remains to be seen.

Mr. Kevin Lamoureux: Let's go back to the idea of this small portion—

The Chair: You're over time, sorry, sir.

Mr. Kevin Lamoureux: How quickly time passes.

The Chair: Mr. Lunney, you're up for seven minutes.

Mr. James Lunney (Nanaimo—Alberni, CPC): Thank you very much to our presenters today for stimulating a great discussion.

Dr. Smith, it seems to me that brain development in adolescents ought to be important, certainly to parents and to society. We want people who are cognitively efficient and able to perform important tasks in our society.

Dr. Smith, at what stage is your research now? It started many years ago with Dr. Fried, and you're following up now with 16- to 18-year-olds. Is this research ongoing? What are the next steps in research to help define or better define what's happening in the brain with myelination, with the neural interconnections, and what negative effects might be taking place in that important developmental process?

Dr. Andra Smith: We imaged the OPPS participants when they were 18 to 21. They're now 25 to 30 years old. I would love to be able to re-image and retest them. They have been in the program since they were born and they have gone off to university or to other parts of the country, so it's hard to find them.

Imaging is expensive. There's not a lot of funding out there for this kind of research, so as much as I'd like to, I would need the funding to be able to do that.

Mr. James Lunney: So, you're having a declining subject pool—

Dr. Andra Smith: Subject pool, yes.

Mr. James Lunney: —and, of course, as time goes on, they move and....

Dr. Andra Smith: That's right.

Mr. James Lunney: Obviously, I'm concerned about the harmful effects on mental health.

Dr. Sabet, I think that you mentioned increased risk of mental illness: schizophrenia, psychosis, depression, and anxiety. We are having a lot of incidents today of violence in workplaces: shootings, stabbings. In Nanaimo just last week four people were injured and two died. Those were shootings. There were stabbings in Calgary yesterday. These incidents are happening across the country, and it seems to me many factors may be involved in people cycling into violence with their mental health issues and their inability to resolve conflicts. It may be complicated, but I think we ought to be concerned that drug use is contributing to these things.

From your experience, can you comment further on the contribution of marijuana leading to psychosis and other mental health issues?

Dr. Kevin Sabet: Yes, thank you for the question.

It's an unfortunate side effect that we've seen. The research burst in the mid-1980s after looking at tens of thousands of Swedish conscripts and a very tight study that I cite here. It's one of the most widely cited studies in the marijuana literature, which looked at and found a significant connection of marijuana with mental illness.

The issues that have evolved are, often there's a discussion as to did marijuana cause mental illness or did the mental illness for various reasons precipitate marijuana use for "self-medication"? Self-medication is a lay term. It's not a term used in medical circles but we understand what it means: it's essentially relieving symptoms. The question has been in which direction has it gone? I would say the evidence is in both directions. There's strong evidence that marijuana precipitates mental illness, and strong evidence that mental illness may precipitate marijuana use. That's not as relevant to me as the fact that whatever direction it's coming from, the marijuana use seems to be exacerbating mental illness. I think researchers are having a side debate as to whether it causes it or is connected or comes after,

The issues for policy-makers and for all of you is the fact that we know that today's cannabis is exacerbating what's happening. In the U.S. alone, we have over 400,000 incidents of emergency room mentions for psychosis, panic attacks, psychotic episodes is what we would call them. I think this is something that very few members of the Canadian and American public even know could exist because again, the baby boomer generation, the generation born in the 1940s, 1950s, and 1960s, the parents and grandparents today, had a very different experience with cannabis than kids do today. They didn't have super-strength cannabis. They didn't have B.C. Bud, Quebec Gold, and now they're having it. I think that connection is very strong, and it's something that worries a lot of people.

● (0950)

Mr. James Lunney: I just want to pick up briefly on the effect on the lungs. Obviously, smoking anything is not good for anybody. I, myself, am quite convinced of that. But bronchitis—cough, phlegm production—"itis" refers to inflammation. Inflammation is strongly associated with cancer development. I would think heavy users are going to be putting themselves at risk.

I want to take it away from cancer, because that will divert us. We need more evidence.

In terms of other organs, there's evidence, as I understand it, of decreasing male fertility. Can anybody comment on that? Is anybody aware of that?

Dr. Kevin Sabet: Sure. There is certainly evidence of that. There's evidence of head and neck cancers, as well. There's evidence of... reproductive and endocrine systems; there certainly are connections there that need to be further explored. Those have been identified for long over two decades now.

Mr. James Lunney: The increase in crashes in Colorado: it obviously affects attention. There is compelling evidence. I'd like you to comment on that.

I'm also interested in your comment about the delivery mechanism making a difference, and the incident with the brownies. Can you expand a little bit on what happens when you ingest marijuana that way, going through the stomach as opposed to going through the lungs?

Dr. Kevin Sabet: You're taking in all the THC at once. A lot of these stores say that you should eat only eat a sixth at one time, wait a day, and then eat another sixth. I don't know if they just taste really good, or what, but people do not eat them a sixth at a time. They eat the whole thing usually at one sitting, as you would any other brownie.

The issue is that kids are also getting their hands on these. I don't think any of us could tell the difference between a regular chocolate chip cookie and a chocolate chip cookie that looks normal but it was baked with marijuana butter, which is usually the way they do it. We couldn't tell the difference, and these kids can't tell the difference.

Actually, according to the Rocky Mountain Poison and Drug Center, after legalization and increased access from medical stores, we're seeing increases in kids getting their hands on these edible products and turning up in the ER. A member of our board, Dr. Chris Thurstone, who's a child psychiatrist and doctor in Colorado, is reporting on all of these. There have been dozens of incidents of kids under five going to the ER with cannabis poisoning, which is what they would call it. That would have been unheard of 10 years ago, but again, we're seeing this as it's become increasingly available.

I don't remember your first question.

Mr. James Lunney: That's enough time.

The Chair: Okay, we're done. Thank you.

Mr. Morin.

[*Translation*]

Mr. Dany Morin: I want to continue with the questions I was asking Dr. Smith earlier.

Thank you for the clarification. I thought you were talking about two different studies in your testimony. Now I understand.

In the second part of the study on young adults aged 18 to 21, you noted that 10 young adults were regular users of marijuana and 14 were not. Is that correct?

Were all of those 24 young adults exposed prenatally or neonatally to marijuana?

● (0955)

[*English*]

Dr. Andra Smith: No. We were able to control for that, because we knew what their exposures were. We used statistical measures to control for that. There was actually an equal number of prenatally exposed in each group.

[*Translation*]

Mr. Dany Morin: Interesting. Thank you for your clarification.

I have a question about the control group.

I am pleased to hear that the control group was made up of 14 young adults who were not regular users of marijuana. However, of those young adults, three of them reported consuming marijuana one to four times in the previous year.

Does the fact that those three young adults in the control group smoked marijuana for recreational or social purposes not skew the data?

[*English*]

Dr. Andra Smith: Could you say that last part again?

[*Translation*]

Mr. Dany Morin: Three of the fourteen young adults in the control group admitted that they had smoked marijuana one to four times in the previous year. Could that have skewed the data?

All of the studies today say that there are negative effects to smoking marijuana, even if it's only one to four times a year. These young adults didn't smoke every week, but they still smoked at least once every three months. Do you think that—

[*English*]

Dr. Andra Smith: We did our analysis without those people in the analysis and found the same results.

The other thing is that those participants hadn't smoked anything in the last month, possibly two months, so we're pretty sure those are sound results.

[*Translation*]

Mr. Dany Morin: If I understand correctly, these three young adults who consumed marijuana in the previous year still had results similar to those of the rest of the control group, correct?

[*English*]

Dr. Andra Smith: Yes.

[*Translation*]

Mr. Dany Morin: If I understand correctly, we have a small sample of three out of fourteen young adults. If we compare the three young adults to the others who didn't smoke marijuana in the previous year, we see that smoking marijuana one to four times a year does not have a negative effect, based on the fact that their results were similar to those of the rest of the control group.

[*English*]

Dr. Andra Smith: That's correct.

[*Translation*]

Mr. Dany Morin: That's rather interesting, especially since a number of witnesses and Conservative members are trying to point out that it's harmful to a person's health to smoke marijuana, even if it's just a few times a year.

The study showed that the three young adults who smoke marijuana one to four times a year had the same results as the eleven others with respect to brain activity. I find that very interesting. Thank you.

I was talking about prefrontal activity. There are obviously a number of things that can increase brain activity. I don't know all of the substances, which is why I want to get your opinion.

If a person consumes a large quantity of sugar or caffeine shortly before undergoing an MRI, can it affect brain activity?

[*English*]

Dr. Andra Smith: We did try to control for that. Yes, caffeine can affect the brain activity. Both groups had the same amount of caffeine intake and with the same times from use to imaging, so that was controlled for. I don't know about sugar. I don't know about that.

[*Translation*]

Mr. Dany Morin: Okay. I also saw that—

Is my time up, Mr. Chair?

The Chair: Yes.

Mr. Dany Morin: I'll ask my other questions later.

● (1000)

[*English*]

The Chair: Mr. Lizon.

Mr. Wladyslaw Lizon (Mississauga East—Cooksville, CPC): Thank you to all the witnesses for being here with us this morning.

I have two questions. They are kind of general, and I hope I have enough time to ask them.

In different parts of the world it's customary to smoke naturally grown cannabis or marijuana. In some parts of the world they smoke opium. In other parts, alcohol is a substance people use. Is there a study that would confirm that in comparison to those who didn't use marijuana, the effects on IQ, effects on learning are prevalent? You know what parts of the world people naturally would use marijuana, and not in other parts. Has anybody ever done a study to confirm there is an effect on IQ, on learning, on the achievements of young people?

Dr. Kevin Sabet: If you look at the country regions, you would need to control for multiple different factors within that society, so the study done in New Zealand is the exact study you're talking about. That is where they were able to control for all of the different things, and basically had identical people, half of whom used, half who didn't, and compared those groups when controlling for other things. I think that New Zealand study is really the study you're referring to.

If you were simply to look at a part of the world that has higher cannabis use, let's say Canadian youth versus youth in India or youth in China, you would have to be controlling for so many things it would be almost an impossible research design. You need a much more natural group to look at, where you can control and fix things, and that would have been the New Zealand study.

Mr. Wladyslaw Lizon: Thank you.

There is a lot of suggestion we should educate young people. Education is something that has been done for years on the danger of using alcohol and tobacco. I don't think we have been successful. Therefore, what methods would you suggest should be implemented on educating young people and adults on the danger of using cannabis?

Mr. Michel Perron: If I might, I will lead off the response.

The one thing we'd say is on the alcohol side, we have seen some success if you look at drinking and driving patterns and behaviour there. There has been a significant change in how society responds and engages in that, and there's been a significant decrease. It's similar around tobacco consumption. There's been an important decrease in the consumption of tobacco.

We know what doesn't work, and that is scare tactics and things that really amplify the risk beyond the pale. Young people don't associate that with the reality they see on a regular basis.

We do what works well in terms of prevention messaging. That is to provide them with the facts. Young people are very astute and they want to know what in fact are the impacts.

Young people are concerned about their brain development. I think the opportunity for going forward around prevention is around the brain and talking about how that is their own asset and how it is that the impact of cannabis or alcohol affects that. I think it's about providing real facts in terms of the impact as we've heard today. These are not skewed. This is very generalized conclusive evidence that I think people would take on board and say, “Does this make me any better in what I need to do?” It's also about having societal understanding around the issue that cannabis is not a benign substance. Cannabis is not good for you and cannabis doesn't necessarily help you in terms of scholastic outcome and certainly not as a young person.

That dialogue is not occurring in Canada today. Rather, it's about a much more political discussion around how we should treat cannabis. That tends to confuse a young person. Thinking of the U.S., in Colorado and Washington, all of those schemes there apply to those 21 years of age and over. The vast majority of people who consume cannabis in Canada are under 21. The majority start at around 14 or 15 years. They peak at around 15, and taper off at 24. This is an issue of a young person's consumption.

I think it's about focusing on real facts, about empowering young people to make informed decisions, having the right kind of prevention programs in schools and communities and ensuring that they have the same message, and ensuring that parents can be supported in providing the same kind of messaging as well, because they're not hearing that. In fact, I think they're very much underestimating the risks.

● (1005)

The Chair: Thank you very much.

Mr. Lizon, your time is up.

Mr. Wladyslaw Lizon: Really?

The Chair: Yes, sir.

Mr. Morin, you're up again, sir. You have five minutes.

[*Translation*]

Mr. Dany Morin: I want to continue with Dr. Smith.

Thank you for answering my questions. There's a lot of information I'd like to get about this study.

As part of this study, you ensured that each of these 24 young adults was not using illegal drugs, but were some of them taking medication prescribed by a doctor?

[*English*]

Dr. Andra Smith: No. None of them were using any kind of prescription medication.

[*Translation*]

Mr. Dany Morin: Okay, good, because for some people, the histamine release could have had an effect on the brain.

The Government of Canada launched a medical marijuana program. Do you think the government had the scientific evidence it needed to launch this program a few years ago?

[*English*]

Dr. Andra Smith: Just to clarify, are you asking whether the government, in putting in this program, based it on scientific evidence? Do they have the scientific evidence?

Mr. Dany Morin: When they launched this medical marijuana program, did they have the scientific evidence that would support launching such a government program?

Dr. Andra Smith: That's a tough question.

I'm not sure that the scientific evidence was there at the time. I think we have it now that marijuana is dangerous. Again, I think we really need to separate medical marijuana from the use that is going on in youth. I think they are very different situations.

Mr. Dany Morin: You just said that marijuana use is dangerous, but you did note earlier that the three kids who smoked marijuana, one to four times in previous years, did not show any difference from the other nine kids in the control group.

Can you still say that marijuana use is dangerous, period, or is it high exposure to marijuana?

Dr. Andra Smith: The groups that we had were smoking more than one joint a week. That's what I can say—

Mr. Dany Morin: Yes, I know. And I mostly agree with you that heavy use cannot be good for health, whether we are talking about alcohol or smoking tobacco.

I do wonder, is there some kind of study? As a scientist are you aware of any studies of kids or adults smoking small amounts of marijuana throughout a whole year? I don't know, maybe those four kids have parties with their friends and they smoke only one to four times per year—

Dr. Andra Smith: Let me just interrupt. They had no THC in their urine. Their urine samples were negative. They had no THC in their bodies at all.

Mr. Dany Morin: But they reported smoking it.

Dr. Andra Smith: But it could have been a year before. It could have been within six months. It could have been once.

Mr. Dany Morin: Yes I know. That's the point that I wanted to raise. Is there some scientific study?

I know there are a lot of studies being made of heavy users, but what about those people not smoking more than, I don't know, six joints in the whole year?

Dr. Andra Smith: Right. I think that the recent study that was done by Dr. Breiter, which Dr. Sabet was talking about, was on casual use among university students. They were finding significant differences.

Dr. Kevin Sabet: We're looking at what outcome we are concerned with. Obviously if we're looking at major structural changes in the brain, we wouldn't expect to see that with one in four times use, sir. Then when we're looking at driving, if you've only used once in the past year and you're intoxicated that one time and you get behind the wheel of a car, that's clearly going to have a negative outcome. It just depends on what outcome you're looking for.

We would not have expected Dr. Smith's research to show somebody who had smoked a year or six months ago to show those changes in the brain, because she was looking at people who had it in their urine; current users were those people explored. Clearly we wouldn't have seen among heroin users structural changes in the brain if they had used one to four times in the last year.

● (1010)

Mr. Dany Morin: I don't disagree with you, but at the same time, if we want to compare people smoking marijuana and driving, we could say the same thing about alcohol use.

Dr. Kevin Sabet: Of course you could.

Mr. Dany Morin: We're talking about scientific data. That's all I'm interested in. I know that you bring those examples but we must play fair with all the different substances.

The Chair: Mr. Morin, there's no time for another question; you're over time.

Mr. Dany Morin: Okay, thank you.

The Chair: Mr. Wilks, for five minutes.

Mr. David Wilks: Thank you to the witnesses for being here today.

I will carry on with the topic that my colleague, Mr. Morin, was speaking to with regard to the uses.

In my previous life as a police officer and qualified as an expert with regard to marijuana through the Supreme Court of British Columbia, I'm curious about a couple of things.

I do school talks all the time. I did one last week in my riding. With regard to the use by kids, kids come up with some pretty interesting answers to why they would use marijuana, but they can't come up with any answers as to why they shouldn't use it because of all the myths that come with it: marijuana cures cancer, or if they smoke it once, it's okay because their mom says it's okay.

There are a couple of things that I want to ask Dr. Smith with regard to the frontal lobe of the brain and how marijuana attacks that frontal portion. Are brain cells destroyed? If they are, do they recover, or is there a potential that some of them never recover?

Dr. Andra Smith: There are cannabinoid receptors all through the brain, the prefrontal cortex, the hippocampus, the cerebellum. The cannabis affects the neurotransmitter modulation.

Do they actually destroy neurons? In animal models, they have been shown to. I think what Dr. Sabet was saying about recovery in that New Zealand study, it seems that we don't know exactly. That would suggest that they don't.

Mr. David Wilks: If I could interject, would you agree with regard to what Mr. Morin was saying, that from a scientific perspective, we haven't been investigating marijuana long enough to determine its long-term effects? Truthfully, we've ignored it. We've looked at alcohol for hundreds of years. We've looked at cigarettes for a long time. From the perspective of marijuana, we've done a very poor job of education and it's become this benign type of drug.

Would you agree that we just have not studied it long enough to be able to determine its long-term effects?

Dr. Andra Smith: I think we do have a number of longitudinal studies that suggest there are negative long-term effects. Is there more evidence that has to be gained? Of course. But we do have quite a bit of scientific evidence to suggest that there is long-term impact.

Mr. David Wilks: Thank you.

Dr. Sabet, you talked about vaporizing with regard to e-cigarettes or m-cigarettes. As you're aware, in Canada there is absolutely no regulation with regard to e-cigarettes or any of that type of cigarette, and in fact, with vaporizing you can get a higher potency of THC that can be ingested into your system.

Can you talk a little about that from the perspective of vapour as opposed to what we see as just ingesting from a normal marijuana cigarette?

Dr. Kevin Sabet: A lot of kids, unfortunately, as you mentioned, have many misunderstandings about this. They think that if you don't smoke it and you just eat it or vaporize it, it will be safer. We know from studies on vaporization of various things that it is very difficult to control the heat level, which would mean that you are heating up....

Remember, when marijuana is combusted, when it's heated up, you are not consuming 500 components, but 2,000 components, most of which are unknown in terms of the effect on you. So it is definitely a risk and a gamble.

I think a lot of people think that vaporization is safer. In reality, it seems to be a way to disguise marijuana use, especially at school and with parents and others. We know that the THC concentrates can be much higher, and therefore more dangerous.

● (1015)

Mr. David Wilks: With regard to the levels of THC—

The Chair: Mr. Wilks, you're out of time.

Mr. David Wilks: Thank you.

The Chair: Next up is Mr. Morin.

[*Translation*]

Mr. Dany Morin: Thank you, Mr. Chair.

[*English*]

I'm reading right now the discussion part of the study, and I would like Dr. Smith to comment on it. It says as follows:

> This study examined BOLD fMRI response among regular current marijuana users and nonusers during a Go/No-Go task. Although differences in behavioral performance were non-significant, the two groups differed in their pattern of neural activation....

Can you comment on the reasons that the differences in behaviour performance were non-significant?

Dr. Andra Smith: When we design fMRI tasks, typically we want both groups to be able to perform the tasks so that we're actually looking at activity in the brain related to the type of processing we're interested in. We design the tasks so that they're not necessarily simple, but doable. We want the performance to be similar. That's the strength of fMRI, that they can do the task, they're successful at doing the task, with the same reaction time and the same errors, but their brains are doing something different. They're having to compensate. They're having to use more brain resources to perform the tasks.

This is the challenge, that when you get out into the real world and the tasks are more difficult, that compensation might not be good enough, essentially.

Mr. Dany Morin: Thank you very much.

Later on it says, on page 131, that nicotine use must be considered to affect results even after accounting for it statistically, because a percentage of kids smoke nicotine. Can you comment on the situation and why it must be considered to affect results even after accounting for it statistically?

Dr. Andra Smith: We had to take into account nicotine use and alcohol use because they do impact the brain. We were able to control for a number of substances, a number of variables, in our analysis. We have seen that nicotine use does impact the brain, particularly in high doses.

We're just making the statement that you have to consider all drugs. They interact when they're used at the same time, in the same person. It all has to be taken into account, because it's not a benign drug either.

Mr. Dany Morin: Could you tell the room how you corrected this impact on the statistical analysis?

Dr. Andra Smith: Do you mean something like a Bonferroni correction?

Mr. Dany Morin: Okay, let's not get technical. When we talk about scientific studies, we can get into a lot of details and technical stuff and that is, perhaps, not the best way to discuss more on the broader topic.

Also, when I look at table 3—I don't know if you still remember—the margin of error seems kind of big. Can you comment on the margin of error? Sorry for getting all technical.

● (1020)

Dr. Andra Smith: Table 3...the performance?

Mr. Dany Morin: Yes, the performance data. The margin of error seems kind of big. Do you agree?

Dr. Andra Smith: That's the standard error?

Mr. Dany Morin: Just give me your feeling about the margins of error and how comfortable you are with them.

Dr. Andra Smith: I think that the actual *p*-values speak for themselves. They're not even close to being significantly different, so I think it's reasonable.

Mr. Dany Morin: Thank you very much for your input. I did read your study, so I had a lot of questions. When can we have the luxury of asking one of the scientists to comment?

Dr. Andra Smith: There is another study also—the one on the visuospatial working memory task. I don't know if you've read that as well.

Mr. Dany Morin: I skimmed it, but, yes, I read it.

Are we done?

The Chair: You're right on five minutes again.

Mr. Aspin, sir. Welcome back to the committee. You have five minutes as well.

Mr. Jay Aspin (Nipissing—Timiskaming, CPC): Thanks, Chair.

Welcome, guests. Thank you for your contributions.

First off, I'd like to ask Dr. Smith if her study was peer reviewed and whether it was published in a journal.

Dr. Andra Smith: Yes.

Mr. Jay Aspin: Okay.

I'm just curious.

Dr. Sabet, your SAM study, Smart Approaches to Marijuana, was very intriguing to me, and it taught me a lot about the seven great myths about marijuana.

I have a broad question, and I don't want to put you on the spot. These kinds of phenomena usually happen in the States before they come to Canada. I'd just like to ask, in the case of Colorado and Washington, what happened. Did they not get the memo, or why do you see the advances in those particular states as far as what's happened goes?

Dr. Kevin Sabet: That's a great question.

Really, it goes back to this issue of the divide between public misunderstanding and scientific understanding. When we look at every single medical association in North America that has examined this issue, the Canadian Medical Association, the American Medical Association, the Canadian pediatrics, the American pediatrics, on and on, they would be coming to the same conclusions that Dr. Smith and others have come to about the impact of marijuana on young people as well as greater society.

Unfortunately, the Canadian people and the American people are not getting the memo. They're not getting the memo because they are just filled with so many mixed messages—also from parents. Again, parents need to be taught that the marijuana they smoked in the dorms 30 years ago for a year is very different from the marijuana smoked today by young people for a longer amount of time. I also think mixed messages from various well-known figures can also contribute to that, which is really unfortunate because it sends a message that these are okay.

We also have to remember—and this may be uniquely American—the role of money in politics. For the last 25 to 30 years, over $150 million has been spent by businesses, corporations, and other philanthropists who really stand to gain if marijuana is legalized. The last slide I included, which I didn't talk about but I would urge everyone to read, is the Saturday interview in *The Wall Street Journal* in mid-March. The interview was with a person who wants to be the Philip Morris of pot. He wants to be the billionaire of marijuana, cannabis. When those kinds of interests start getting into play and they start influencing, gathering signatures, and a media campaign and messaging to say that we need to legalize and regulate marijuana, which is the word they use—they don't use the word "legalize"; they say "regulate"—that can really sway public opinion.

In Washington and Colorado, $3 million to $4 million was spent on those campaigns versus almost nothing in opposition. I think it was literally nothing in Washington and something like $500,000 scraped together by preventionists and law enforcement on the anti side. It is not surprising that when you have a $100 million megaphone, you can get messages out there. That's politics 101, and that seems to be what's happening.

There's a promise of new schools. There's a promise of funding. There's a promise of government revenue, and of course, those promises of revenue are futile because already they are collecting way less money than they had projected in the first couple of months in Colorado. As with other similar promises with lottery systems or with alcohol, really the taxes are not paying for the social damage, but it's a great messaging point to say that the taxes will pay for this. I think that was a big swaying point for a lot of people when they voted for this.

● (1025)

Mr. Jay Aspin: I have a quick question for Mr. Perron.

With the targeting of youth and youth receiving mixed messages, and they are indifferent with respect to the harms, what particular programs or initiatives could be effective in altering the perceptions of youth with regard to the harms associated with cannabis use?

Mr. Michel Perron: One is the type of program.

There have been a variety of provincial programs in play across the country for many years, some of which have been very good. Some have been not so good. As a result, our organization, along with a number of partners, developed the national standards for youth drug prevention program so that if you're in Nanaimo or in Estevan and you want a prevention program in your school, the standards will guide you as to what is good evidence-based prevention. We know prevention works, just not any kind.

The standards, first and foremost, are the bedrock against which the investments in this area should be applied. Second, in terms of the kind of messaging for cannabis, that's the messaging we would be bringing forward. I think a concerted effort around cannabis is required—it's overdue—with a particular focus not so much on trying to convince anybody of one position over another; it is about simply providing the facts as we have come to learn as to what is the impact of the use, whether it be acute.... In other words: "I smoke a joint tonight. I'm 16 and I'm a naive new driver. What are the consequences?"

Dr. Porath-Waller can speak to you very clearly as to the impact on fatally injured drivers and road crashes. This is a road safety issue.

Two, longer term, as Dr. Smith has indicated, there is providing straightforward facts for both short-term and long-term effects. It is also to bring into play the broader notion of society, which is moving away from this for-or-against issue on cannabis to what it is we wish for our youth, which everybody subscribes to as being the future of this country, and how we equip them to be best at what they do.

That sometimes gets a little bit murky when we start talking about criminalization issues and the like, but in terms of its impact on health and on the brain, that's indisputable, I would offer.

The Chair: Just before I turn it over to Mr. Young, I have a brief question. Then it will be Ms. Fry after Mr. Young.

This question is for Dr. Sabet.

The Centers for Disease Control and Prevention reports that each year in the United States, it's costing the health care system $156 billion, and $156 billion in loss of productivity. What are the estimations in the United States, moving forward, for the cost of marijuana and cannabis and loss of productivity for this? Is this something that you have numbers for, that you're working on, or what is out there?

Dr. Kevin Sabet: It's very difficult to get those numbers. I think there are studies that are starting. I wouldn't say that they have concluded about what the actual costs alone of, say, a change in cannabis policy is. It depends on a lot of things.

For example, we haven't discussed today, how will cannabis use changes in young people affect alcohol use changes? We know that among young people—heavy users, arrestees, those in treatment—alcohol and marijuana are used concurrently; they are complements. If cannabis use increases because of a certain policy, then what that does to alcohol use, because of the great monetary damage that alcohol has, will greatly affect that overall number. So there's tremendous uncertainty.

We do know there are costs. We can at least lay out the categories that we would look at. You just laid out two of them. Productivity, I would say, is a key one, especially with regard to cannabis, and motivation, which we haven't really talked about today. Health care costs are going to be higher. We have to also look at what Mr. Perron said on road safety and public safety costs. Those numbers haven't really been done; those studies have not been done on the raw numbers...only looking at the categories that they would actually affect.

The Chair: Mr. Young.

Mr. Terence Young: Dr. Sabet, your presentation says that even casual users of marijuana have structural changes to their brain. Could that happen to someone who had smoked marijuana five or six times?

● (1030)

Dr. Kevin Sabet: I think for some of those study participants in that human study that both Dr. Smith and I refer to, that was the case, but there were also people who smoked more than that, who were classified as casual because they were not at the heavy use level.

Mr. Terence Young: What is the risk?

Dr. Kevin Sabet: I don't know what the risk is, off the top of my head, but the animal studies that have been done before have certainly shown casual use changes, and this is the first human study, so it's definitely an area that we're looking at. Remember, on casual use, as Mr. Perron said, if you are using cannabis for the first time at 16, and you're a naive user, and you're getting behind the wheel of a car, or you're eating an edible...or vaporizing something, and you're hanging out on a balcony, whether or not that produces a brain change, which comes up in a month or two, really doesn't mean anything if you crash your car or fall off the balcony as a result of that—

Mr. Terence Young: Of course.

Dr. Kevin Sabet: —which certainly could happen when you are intoxicated.

Mr. Terence Young: A witness with a Ph.D. in pharmacology testified before this committee last week that the regulation of alcohol has been a failure. We heard evidence that the high percentage of our teens, even young teens, even as young as 12 years old, are abusing alcohol and binge drinking—over 50% in some age categories.

Dr. Sabet, would legalizing and regulating marijuana keep it out of the hands of children and teens?

Dr. Kevin Sabet: I don't think so at all, because when we've seen a version of regulation like the medical situation in Colorado, or California, or Washington state, many states have had this sort of regulatory framework over medical.... For example, we've seen great diversion to young people.

One study showed, as I think I put on here, that 74% of Denver area teens reported their marijuana use came from a medical marijuana dispensary at least 50 times, and these were teens in treatment for marijuana addiction. These were heavy users who were getting their marijuana from...and that was supposed to be regulated for cancer patients and HIV patients only. Even in that supposedly tight regulatory regime, kids were getting access. Again, alcohol, tobacco, and prescription drugs are great examples of how easily, when availability flows, when promotion flows, when commercialization, advertising, and normalization flows, so then do the drugs to young people.

Mr. Terence Young: How would you describe legalizing and regulating marijuana thus far in the U.S. experience?

Dr. Kevin Sabet: I think so far, the only place to do it recreationally has been Colorado. I think the results have been extremely troubling, with young people using it, with more attention that police have to now spend on public use, on nuisance crimes, as well as on crashes and poison control calls. Clearly, it has only been three or four months, but when we look at the last three months as well as the last five years since they've had de facto legalization, it has not been something that I think folks would want to replicate.

Mr. Terence Young: Our concern is the addiction and the harm, such as risk of cancer, of psychosis, as well as diminished brain function, decision-making, organization, planning, setting goals, in the 18-year-old to 29-year-old group. That's one of our primary concerns, because these people are at a critical junction in their lives. They're going to college. They're going to university. They're making decisions that will affect the rest of their lives. Some of them are starting careers, buying homes, getting married, and they're being targeted for votes with a policy from the Liberal Party to legalize marijuana, yet they're the ones who will suffer the most. They will also have double the risk of vehicular accidents, and the most dangerous thing of all is that they think it's harmless.

Would you please comment on that, Dr. Sabet?

Dr. Kevin Sabet: Having worked for multiple different parties, I certainly have a non-partisan stance here, but we certainly wouldn't want people of influence, whom we would rightfully look up to, talking about this in such a casual way or glorifying its use. We need to discourage use among young people.

I agree with Mr. Perron that we don't need to overstate the case, because then we're not credible and we don't want to be *Reefer Madness*.

If I were to send one message to the government, it's that we need to realize that we do not have only two choices when it comes to cannabis policy. We don't have to choose between legalization or incarceration and prohibition. There are many other policies in the middle.

We haven't talked at all about physician education on this, because I tell you, if we think parents are uninformed, we should talk to the people in medical schools and physicians on the actual health effects. We need to educate physicians so they can intervene early with young people when the young person goes to see their pediatrician. They can intervene early and ask the right questions about early cannabis use, because if we can stop the progression to addiction and stop it when it's lighter and supposedly in casual use, we will save much more money and heartache than dealing with it down the road when someone has severe addiction and needs full treatment. We need a robust education campaign, not only for parents and young people, but also for physicians and those of influence to be able to change this.

● (1035)

The Chair: Thank you very much.

Ms. Fry, go ahead, please.

Hon. Hedy Fry (Vancouver Centre, Lib.): Thank you very much, Mr. Chair.

I think what we're talking about here is the harms that you have discovered in young people, very young people. We're talking about a particular age group, which I think is really important to note. It's not like if everybody uses marijuana this is going to happen. It's an age group thing we're talking about. I think we need to differentiate between the medicinal properties of marijuana, medical marijuana, and recreational marijuana.

That's something I would like to clarify here, that there are actually benefits of marijuana medically. We know that we have drugs made that will create those benefits. But as I keep saying, we have two legal drugs, tobacco and alcohol, which have, with the exception of the odd glass of red wine that we keep hearing will help to bring down a person's cholesterol, no positive medicinal properties, unless you want to talk about rubbing alcohol.

The bottom line is, and I know that people have discussed this, if you want to utilize the medicinal properties of marijuana, there is a way to do that. We've heard Dr. Sabet talk a little bit about different ways one can use marijuana in an appropriate manner. I have the concern he has about e-cigarettes and these sorts of vaporization, etc., but I think we need to focus on the reason for this particular study which focuses only on the risks and not at all on any benefits.

When we look at the three drugs which you cannot separate, the three drugs that are used recreationally, at least we know one of them has medicinal uses. The big question then is how do you utilize the positive aspects of marijuana? How do you also in terms of the recreational use of marijuana recognize that you have a whole group of young people smoking it, and therefore there might be a need to regulate the age at which they can get it? I think this is what people talk about when they talk about regulating marijuana. It's like you can't buy alcohol...well, you can if you wanted to, but you're not allowed legally to buy alcohol under a certain age. You're not allowed legally to buy cigarettes under a certain age. But what we have seen time and time again is that every time prohibition has been tried, organized crime has stepped in. We only have to look at the 1920s and 1930s in terms of alcohol. We have to see what happened with heroin which used to be a usable drug back in the Victorian era, which then because of trade disputes became an illegal drug.

The question is how you square the circle with a drug that has certain properties that we may want to use them for, but we know there are certain modes of usage that are dangerous and we know there is an age group that we have to cut off, unless of course it's prescribed by a physician for a specific reason. So how do we square that circle? That's basically what I'm trying to say. I'd like us to just take the elephant in the room and put it smack on the table and dissect it and say, “What do we do if we turn to prohibition?“ Then we have no way of controlling the young kids who use it. Just like when we increased the tax on cigarettes and the price increased, we saw this cross-border thing happening and young people were buying them on the black market. Tobacco became a drug that was pushed.

I would like to hear some thoughtful ideas from you about how we utilize a drug that has positive impacts, stop the use below a certain age, and how we find a way of talking about the problem that we're discussing here, the recreational use of it.

Dr. Kevin Sabet: We don't do that by regulating and legalizing. When you look at alcohol and tobacco, the usage levels of alcohol and tobacco are far greater than the usage levels of cannabis. We may think we're regulating it by putting laws on it, but as you sort of said very openly, which is true, kids are getting alcohol today as they are getting cigarettes.

The reason the reduction in cigarettes has been found—which is a great success as Mr. Perron pointed out—is not because the substance is legal; it's because we've had a massive education and de-normalization and stigmatization campaign on smoking. I mean it's hard to find people who smoke who even agree with the fact that they're smoking, who even like the fact that they're smoking. It's been a huge change in our society.

Right now we have the opposite for cannabis. We have all this information about how it must be helpful and that it's not that bad. With regard to medical use, let's not forget, Madam Fry, that most of our illegal drugs also have medicinal properties. Cocaine has medicinal properties. In fact in the U.S., it's used in limited settings for anesthetics and certain surgeries. Clearly opiates have medicinal properties. The number one pain reliever that we know of is morphine, which comes from opium.

Cannabis, as you said and I said earlier, has medicinal properties. The question is how we make sure that we are separating the recreational use, which is what we're mostly talking about today, and the medicinal use, which can delivered in a non-smoked way. As I commended Canada for having Sativex available, I'm not sure why there needs to be a whole thing for smoked cannabis for “medical purposes” if you have the liquid extract that actually delivers the positive benefits without the negative aspects. I'll stop there.

● (1040)

Hon. Hedy Fry: Thank you, Dr. Sabet. I have only a short period of time and Ms. Porath-Waller had put her hand up to answer as well.

Thank you.

Ms. Amy Porath-Waller (Senior Research and Policy Analyst, Canadian Centre on Substance Abuse): Thank you for the question.

I just wanted to provide a point of clarification and I'll let my colleagues jump in. The harmful effects—the risks that we've been talking about with regard to mental health, the cognitive deficits we've been discussing, the increased risk of motor vehicle accidents—aren't just unique to young people. These are effects that have been demonstrated in studies of adults as well as youth.

What the research is suggesting is that these risks are greater for young people because of their developing brains. I just wanted the committee to keep that in mind. It's not just young people who are at risk of cognitive deficits. Adults also show those deficits in attention, memory. Adults are also experiencing respiratory impairments. There's also the risk for cardiovascular impairments with adults, particularly those who are at risk for heart disease.

I just wanted to point that out to the committee.

The Chair: Ms. Fry, we are over time.

Mr. Perron, did you have something to add briefly? Then Mr. Wilks has a brief question.

Mr. Michel Perron: If you'd permit, just very briefly.

I think the question posed by Dr. Fry is quite relevant, actually. There are a number of truisms and policies that we live with in the alcohol world that never seem to translate into the cannabis world. One is the greater the availability, the greater the use, the greater the harm. Public health deals with this in alcohol all the time, and yet we don't seem to want to apply the same to cannabis at times. I think we need to look at the issue of availability and its use, and therefore the harms and certainly whatever scheme allows for that to be more prevalent.

I think the issue of medicinal use and benefits, and its application to recreational use is a bit of a confound. I think simply because a substance has a particular benefit, it doesn't necessarily mean that we wish to promote it or make it available in a legal structure. I think the committee's report on prescription drugs states that quite clearly.

I think there's also an important element to say that alcohol and tobacco are different in the sense that, in a black market, it's much easier to produce cannabis at home than it would be for alcohol or tobacco. That notion of just because we were to regulate it, there would no longer be that black market at home, is perhaps underestimating the ability of this particular product to be manufactured that way.

The Chair: Thank you very much. We are over time.

Mr. Wilks, a brief question and that will conclude our meeting today.

Mr. David Wilks: Thank you very much, Mr. Chair.

Mr. Perron, Dr. Sabet had brought up different ways of looking at how we can deal with the marijuana issue. Can you briefly speak with regard to how CCSA has reacted to the Canadian Association of Chiefs of Police motion with regard to a ticketing regime for small amounts of marijuana found in schedule II subsection 1(8) of the CDSA?

Mr. Michel Perron: Specifically, in terms of the proposal put forward by the Chiefs of Police, CCSA would agree with the fact that we don't need to criminalize simple possession.

I think the issue of ticketing is interesting, in the sense that if we look at some of the successes around drinking and driving, what we saw at the time—and what has resulted in a change in behaviour—is the convergence of a few things: one, a clear regulatory regime; two, clear prevention messaging—don't drink and drive—; and three, societal attitudes.

Currently, we have a law that is not being applied. A law that's not being applied isn't much of a law. The severity of the law is not so important as the certainty with which it will be applied. A ticketing approach, in terms of providing a reasonable infraction and notice to people who are in possession would be certainly consistent with how we treat alcohol.

Today, if people are stopped in a park, and they have an open bottle of alcohol and a joint, the person with the alcohol will get a ticket. Having a consequence for cannabis use is appropriate and we would support that. Also, it has to be teamed with appropriate prevention messaging and clear access to resources for not only parents but youth. Access to treatment is an important element as well. We also need to measure what is, in fact, the import or the effect of any policy shift in this regard.

● (1045)

The Chair: I want to thank all our guests here today for a good discussion.

I'd also like to thank our members for their respectful and courteous manner, and great questions.

The meeting is adjourned.