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# Legalizing marijuana

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In October 2015 Canadians elected a federal government that proposes to legalize marijuana for recreational use following in the footsteps of 4 American states (Alaska, Colorado, Oregon and Washington) and the District of Columbia. Is this a good idea, and how might we decide?

## Risks associated with cannabis use

As a start, cannabis use can lead to problems.<sup>1,2</sup> Chronic users exhibit cognitive deficits,<sup>1,3</sup> and up to 15% of users will become dependent.<sup>2,4</sup> During periods of abstinence, milder cognitive and psychomotor impairments can persist for weeks in heavy users (average 11 joints per day for 10 years),<sup>5</sup> similar to the extended withdrawal effects seen following the chronic use of other substances.<sup>6,7</sup> Neurobiological differences in brain structure,<sup>8</sup> connectivity,<sup>9</sup> and function<sup>10</sup> have been tentatively identified, though some morphological differences, at least, might reflect pre-existing traits.<sup>8</sup> There is good evidence that cannabis has clinical efficacy for nausea, certain types of pain, and symptoms of multiple sclerosis,<sup>11</sup> but most other proposed indications are largely based on anecdotes, putting physicians in a difficult position (i.e., being asked to prescribe cannabis for conditions where the evidence remains poor). Among the greatest concerns are that cannabis use increases the risk for car accidents<sup>12</sup> and accelerates the onset of — perhaps even precipitates — schizophrenia.<sup>13</sup>

Most of the above effects are well supported, refuting suggestions that cannabis use is safe. Thus, the next question is, how big are these risks? The risk for car accidents is roughly doubled with cannabis use compared with the near 10-fold increase associated with alcohol intoxication.<sup>12</sup> High-potency cannabis use is associated with a greater risk of schizophrenia,<sup>13</sup> but the magnitude of this effect is small;<sup>14</sup> indeed, it has been estimated that it would be necessary to prevent 9000 people from using cannabis to prevent 1 case of schizophrenia.<sup>15</sup> The real effect might be even smaller. Recent evidence raises the possibility that the reported associations with psychosis reflect, in substantial part, effects of tobacco rather than cannabis.<sup>16</sup> For overall risks, the most comprehensive analysis to date ranks marijuana eighth out of 20 substances, producing more personal and societal problems than MDMA, anabolic steroids, ketamine, and various hallucinogenic drugs, but fewer problems than alcohol, tobacco, heroin, crack, cocaine, and amphetamines. The largest contributors to cannabis's total score (28% of alcohol's score) are economic costs and burden on the criminal justice system.<sup>17</sup>

## Cannabis use and the law

Criminalization too produces problems.<sup>18</sup> Most prominently, an estimated 10% of users are arrested at one point in their lives.<sup>19</sup> Here in Canada, 60 000 people are arrested each year for possession,<sup>20</sup> affecting employment opportunities, social stigma, and the ability to travel across borders. There is evidence that these laws are enforced disproportionately against certain minority groups.<sup>21</sup> Economic analyses identify high financial costs from lost taxes and from charging, prosecuting, and imprisoning buyers and sellers.<sup>17,22,23</sup>

Despite these risks, cannabis use has become widely accepted in Canada. In 2015, 68% supported a relaxing of regulations.<sup>24</sup> About 20%–26% of Canadians between the ages of 15 and 25 years used cannabis at least once in the past year,<sup>25</sup> and lifetime use for all Canadians is more than 40%.<sup>20</sup> Similar changes are occurring in the United States, and past year prevalence more than doubled from 2001–2002 to 2012–2013 (4.1% v. 9.5%).<sup>26</sup> Regional analyses showed that the rates are not increasing uniquely in those states where legalization has been instituted, suggesting that the changes are not driven solely by the revised legal status.<sup>27,28</sup> Cannabis use disorders increased in these regions also, but less steeply than rates of use.<sup>26</sup>

Does cannabis legalization increase the likelihood of children using cannabis? There is little evidence of this. In the current environment, youth have ready access to cannabis sellers, no ID required. Legalization would provide no guarantee that cannabis use will be restricted to adults. Indeed, alcohol and tobacco use commonly begin before the legal age limits. Compelling evidence that legalization lowers the age at which cannabis use begins, though, is lacking.<sup>19</sup>

### Definitions

**Depenalization:** Decrease in the penalties for cannabis use.

**Decriminalization:** Changing cannabis use from a criminal to a civil offense.

**Legalization:** Removal of punitive sanctions for cannabis use.

**Tetrahydrocannabinol (THC):** Thought to be the primary psychoactive agent in cannabis.

**Cannabidiol (CBD):** A cannabis compound without psychoactive properties, but it might antagonize THC-induced anxiogenic effects and cognitive distortions. The relative ratio of THC to CBD has been proposed to influence the subjective effects of ingesting particular cannabis strains.

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## How might we think about the risks associated with cannabis use?

The fact that cannabis use has risks does not necessarily mean that it needs to be criminalized. If it did, we would outlaw alcohol, automobiles, and bathtubs. Given this, how else might we think about the risks? Are they analogous to the dangers of using a poorly designed car or a dangerous activity, such as downhill skiing? If the former, we tend to be extremely intolerant. Product flaws that raise the risk of death by only a few per million are sufficient to elicit much public outcry (e.g., 2009–2011 Toyota vehicle recalls).<sup>29</sup> If the latter, people tend to be more tolerant, accepting that they are choosing to participate in an activity with risks. Perhaps more pointedly, most people dislike risks imposed on them but are more accepting of ones that they have chosen. This raises the possibility that people will sue government-sanctioned sellers if they market a cannabis product with features different from advertised, but not if it is described accurately.

If cannabis products are legalized, the weight of evidence suggests that they should be controlled: product purity should be tested, tetrahydrocannabinol (THC) and cannabidiol (CBD) content accurately measured and labelled, and sales restricted to licensed dealers in specific locations.<sup>25</sup> Developing the infrastructure to institute and coordinate these activities requires time and thought, but the empirical data from areas where legalization has been implemented indicate that it can be done.<sup>19,25</sup> On balance, the experiences of countries that have legalized cannabis have been positive. The Dutch do not have elevated rates of cannabis use compared with neighbouring European countries. In Portugal, where use of all drugs has been decriminalized, drug-related harms have diminished, and adolescent drug use has decreased.<sup>19,20</sup> While the particulars of the Portuguese experiment might not transfer well to Canada, the weight of evidence from around the world suggests that potential costs of legalizing cannabis are outweighed by the benefits.

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