Cannabis legalization: Did we make a mistake? 
Update 2019

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In the fall of 2015, I wrote a JPN editorial endorsing the proposed Canadian legalization of cannabis for nonmedical purposes. This brief comment elicited one of the largest responses of my career. Strong opinions were expressed, with roughly half agreeing, the other half not. Members of this journal’s editorial board were no less divided, fostering the first use of a statement that “The views expressed in this editorial are those of the author(s).” See above. Now, nearly 4 years later, I examine how the endorsement holds up. The 2 primary concerns in 2015 continue to dominate discussions: potential increases in car accidents and an aggravation of cannabis-related psychoses.

Has cannabis legalization increased traffic fatalities?

The best data come from the United States, where some jurisdictions have had medical marijuana laws (MML) since the 1990s and legalization of nonmedical use since 2012. In these states, traffic fatalities decreased following the institution of MML and increased following legalization. The increases lasted no more than a year, averaged an additional 1.1 fatalities per million, and mirrored changes in states without legalization (Box 1a). A recent Canadian study bolsters these findings. In drivers treated at trauma centres (n = 2318), there was no association between responsibility for the crash and blood ∆-9-tetrahydrocannabinol (THC) levels < 5 ng/mL and only a weak, nonsignificant association with levels ≥ 5 ng/mL (p = 0.35) (Box 1b).

Does cannabis use cause psychosis?

There is now stronger evidence of a link between adolescent (but not adult) cannabis use and psychosis. The effect size continues to look small or nonexistent for sporadic use, but larger for vulnerable adolescents who use high-potency cannabis on a daily or near daily basis (Box 1c). In part, the association appears to reflect overlapping genetics, with average age of cannabis use initiation preceding the onset of psychosis.

It remains unclear whether the cannabis–psychosis association includes a causal component. If it does, one estimate is that daily adolescent use could be a contributing factor for up to 20% of new psychotic disorder cases. Establishing a causal link (if it exists) will be challenging. The great majority of cannabis users do not develop psychotic disorders, and most people with psychoses were not frequent cannabis users. One possibility suggested by Di Forti and colleagues is that adolescent cannabis use might be a necessary, but not sufficient, cause in a subset of individuals. The evidence supporting this position is not conclusive, but continues to accumulate and should not be ignored.

Does legalization increase cannabis use?

If a causal link between cannabis and psychosis becomes established, the implications for legalization are less than commonly implied. Heavy cannabis use is associated with greater psychosis risk only when use begins in adolescence. It is therefore critical to note that there remains no compelling evidence that legalization increases adolescent cannabis use. In the United States, legalization has been associated with increased use by adults, but not by youth. Preliminary observations indicate that the same is happening in Canada. During the 3 months following legalization in October 2018, cannabis use on 1 or more occasions increased in 1 group only: men aged 45–64 years (9% to 14%). Cannabis use by females and males in other age groups remained unchanged, as did the prevalence of frequent use.

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The lack of increased cannabis use by Canadian youth is all the more striking since their use markedly decreased during the 5 years leading up to 2015 (past year use decreased by 28%; daily use decreased by 90%; age of first use increased by 0.5 years). If cannabis use starts to rise again, it might be a delayed effect of legalization, but the weight of evidence suggests that it will be unrelated (Box 1e and f).

**Has everything gone smoothly?**

Not all aspects of cannabis legalization in Canada have gone smoothly. Indigenous communities were not adequately consulted. The responsibility to design and implement policies has been placed on provinces and municipalities during a period when many expected to focus on repairing infrastructure (e.g., roads, bridges, sewage). The collected tax revenue ($186 million in the first 5 and a half months and expected to increase) will assuage some concerns, but it remains unclear how it will be spent, including how much will be used for substance use prevention and treatment.

Arrest rates for cannabis possession have decreased, as anticipated. In US states with decriminalization for all, arrest rates have decreased for both adults and youth. In states with legalization for adults only, arrest rates decreased for adults but not youth. Post-legalization arrest rate data in Canada are not yet available, but in the years leading up to legalization (2013–2017) both adult and youth arrest rates decreased. If post-legalization arrest rates for youth do not decline more than the decrease in cannabis use, a potential solution is to decriminalize cannabis possession for youth while continuing to restrict legal sales to adults.

Not all cannabis-using Canadians purchase the substance from government-authorized sellers. This reflects a number of factors. Legal sellers cannot keep up with demand, their product costs more than on the street, and the range of products offered is limited. For these reasons alone, the black market continues to thrive. Like many effects of complex public policies, this is a double-edged sword. On the one hand, there is a loss of tax revenue; on the other hand, if the black market loses few customers, they will have reduced incentive to increase the selling of other potentially more dangerous substances. These effects need more study, but to date, increased legal access to cannabis has been associated with fewer opioid deaths rather than more.

As the legal cannabis market expands, it will serve us well to recall misconduct by the legal tobacco, alcohol and opioid industries. These for-profit companies have shown inadequate concern for the harm done and find little incentive to do more. Purdue Pharmaceuticals, for example, recently announced their plans for undeveloped countries, where they look forward to fighting “opiophobia.” The black market often behaves worse, but we can and should expect more.

**Conclusion**

The past 4 years have brought better quality evidence in 3 important areas. First, there is better evidence that cannabis legalization does not lead to large or sustained increases in traffic accidents. Second, there is better evidence of an association between adolescent cannabis use and psychoses. Third, there is better evidence that legalization does not increase adolescent cannabis use. The absence of these feared effects has been accompanied by anticipated positive outcomes: decreased arrests of cannabis users and generated tax revenue.

It will take a decade or more before we understand the effects of legalization in full. However, not everything about this issue is new. In their comprehensive 1973 report, Gerald Le Dain, Heinz Lehmann and others concluded that the criminalization of cannabis (and nonmedical drug use in general) was a failed policy, aggravating social ills without decreasing use (Box 1g). Many consider their analysis still valid.

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