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Cannabis-related arrests and convictions in Canada: Differences by race/ethnicity, individual socioeconomic factors, and neighborhood deprivation

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ABSTRACT

Racialized individuals were disproportionately impacted by cannabis prohibition in Canada; however, the role of socioeconomic factors and neighborhood deprivation are not well understood. The current study examined race/ethnicity, individual socioeconomic factors, and neighborhood deprivation in relation to arrests and convictions for cannabis-related offenses. Repeat cross-sectional data were analyzed from two waves of the International Cannabis Policy Study (ICPS), a web-based survey conducted in 2019 ($n=12,226$) and 2020 ($n=12,815$) in Canada among those aged 16 to 65. Respondents were recruited through commercial online panels. Respondents' postal codes were linked to the INSPQ deprivation index. Multinomial regression models examined the association between race/ethnicity, individual socioeconomic factors, neighborhood deprivation, and lifetime arrests or convictions for cannabis offenses. Overall, 4.4% of respondents reported a lifetime arrest or conviction for a cannabis-related offense. Black and Indigenous individuals had more than three times the odds of conviction than White individuals (AOR = 3.90, 95% CI = 2.07–7.35, p = <0.01; AOR = 3.24, 95% CI = 1.78–5.90, p = <0.01, respectively). Differences were still statistically significant after adjusting for cannabis use and socioeconomic factors; however, after adjusting for neighborhood deprivation, only the difference for Black individuals remained. Neighborhood deprivation was associated with cannabis-related convictions: the odds of a conviction among the "most privileged" and "privileged" neighborhoods were approximately half of those in the "most deprived" neighborhoods (AOR = 0.50, 95% CI = 0.29–0.86, $p=0.01$; AOR = 0.50, 95% CI = 0.27–0.92, $p=0.03$, respectively). Arrests and convictions for cannabis-related offenses were disproportionately higher among racialized individuals and those living in the most marginalized neighborhoods. Future research should examine whether inequities change following the legalization of recreational cannabis in Canada.

Introduction

In October 2018, Canada became the second country to legalize non-medical cannabis, after Uruguay. One of the main arguments in support of cannabis legalization has been that the costs of prohibition outweigh the potential harms associated with legalization (Adinoff & Reiman, 2019; Task Force on Marijuana Legalization and Regulation, 2016). The costs of prohibition include the economic costs associated with police enforcement, court proceedings, and imprisonment, as well as costs to individuals who enter the criminal justice system and acquire criminal records as a result of cannabis possession charges (Task Force on Marijuana Legalization and Regulation, 2016). The impact of arrest and prosecution for cannabis possession extends beyond legal repercussions and can affect an individual's employment, housing, and educational opportunities, among others (Adinoff & Reiman, 2019).

The costs of cannabis prohibition have been disproportionately experienced by racialized individuals in both Canada and the US (Adinoff & Reiman, 2019; Khenti, 2014; Nguyen & Reuter, 2012). In both countries, Black and Indigenous individuals have been disproportionately targeted and incarcerated for drug-related offenses, despite there being no significantly higher prevalence of cannabis use among these groups (Khenti, 2014; Nguyen & Reuter, 2012). In Canada, there is little publicly available information on the race of those arrested for cannabis possession, but a recent report found that in the city of Toronto, Ontario, Black individuals were four times more likely to be arrested for cannabis possession than their White counterparts (Wortley & Jung, 2020). Furthermore, a recent study using data sourced from police records found that in 2015, across Vancouver, Calgary, Regina, and Ottawa, Black and Indigenous individuals were overrepresented in arrests for cannabis possession relative to their proportion in the population, while in Halifax, only Black individuals were overrepresented (Owusu-Bempah & Luscombe, 2020). Similarly, in the US, several studies have found that the arrest rates for cannabis possession among Black and Hispanic individuals were at least double those of White individuals (Bunting et al., 2013; Koch et al., 2016; Nguyen & Reuter, 2012). Racial bias and targeting by police may result in more frequent street checks and police stops of Black and Indigenous individuals, resulting in arrests for the possession of small amounts of cannabis (Gaston, 2019; Owusu-Bempah & Luscombe, 2020).

Beyond racial differences, there is little evidence on the role that socio-economic indicators, such as income and education, play in arrests and convictions for cannabis offenses. In general, individuals from lower-income households are more likely to be arrested, convicted, and incarcerated for

street-level crimes such as drug possession than those from higher-income households (Miller, 2016; Sacco & Kennedy, 2002). Furthermore, arrestees are more likely to be unemployed or employed in low-paying jobs (Sacco & Kennedy, 2002). Socioeconomic differences in cannabis-related arrests and convictions may also reflect environmental differences, including the broader concept of neighborhood deprivation. Neighborhood deprivation may involve factors related to social and material deprivation within a community, as well as neighborhood disorder, crime, and limited access to resources (van Ham et al., 2012). More materially deprived neighborhoods are often more racially diverse. For example, in Canada, racialized people and recent immigrants are overrepresented among residents in low-income neighborhoods (Statistics Canada, 2018). The level of neighborhood deprivation has the potential to contextualize factors such as race and education level, which are typically measured and interpreted at the individual level. For example, individuals living in lower-income neighborhoods, as well as those living in neighborhoods with more Black and racial minority residents, may experience greater police presence and more street stops compared to those in more affluent neighborhoods (Boyd, 2018; Meng, 2014). Thus, being arrested for cannabis possession in this environment is likely more probable. To our knowledge, no previous work has examined the association between neighborhood deprivation and arrests or convictions for cannabis-related offenses while controlling for race/ethnicity and individual-level socioeconomic factors. Although it has been acknowledged that vulnerable communities, such as those with low income and fewer resources, have been disproportionately impacted by cannabis prohibition in Canada (Soloman, 2017), it is unclear whether this is independent of racial or socioeconomic factors.

The objective of the current study was to explore differences in arrests and convictions for cannabis-related offenses based on race/ethnicity, individual socioeconomic status, and neighborhood deprivation in a population-based survey. The study addressed three main research questions: (1) Are Black and Indigenous individuals more likely to report legal sanctions for cannabis-related offenses than White individuals? (2) Are there differences in the legal sanctions experienced based on individual socioeconomic factors? and (3) Are individuals from deprived neighborhoods overrepresented among those reporting arrests and convictions for cannabis offenses? It was hypothesized that independent effects would be observed for differences in arrests and convictions by race, socioeconomic status, and neighborhood deprivation. Specifically, we hypothesized that arrests and convictions would be more common among Black and Indigenous individuals, those with lower individual socioeconomic status, and those living in more deprived neighborhoods.

Methods

Data were obtained from waves 2 and 3 of the International Cannabis Policy Study (ICPS) conducted in Canada. Data were collected via self-completed web-based surveys taken in September and October 2019 and 2020 by respondents aged 16 to 65. Respondents were recruited using nonprobability sampling methods through the Nielsen Consumer Insights Global Panel and its partners' panels. Email invitations (with a unique link) were sent to a random sample of panelists. Surveys were conducted in English or French. Respondents provided consent prior to completing the survey. Respondents received remuneration in accordance with each panel's usual incentive structure. The study was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee (ORE#31330). A full description of the study methods can be found in the ICPS technical reports (Goodman et al., 2019, 2020).

Measures

Sociodemographic variables
Sociodemographic variables included age, sex at birth (female/male), and urbanicity (rural/urban). Lifetime cannabis use was assessed with the question "Have you ever tried marijuana?" (Yes/No).

Legal sanctions
All respondents were asked to provide information about their lifetime arrests for cannabis-related offenses by answering the following questions: "Have you ever been arrested for any of the following cannabis offences? (a) Cannabis possession; (b) Cannabis trafficking, cultivation, or importation" (Yes/No/Don't know/Refuse to answer). Respondents who had been arrested for cannabis possession were asked: "Did the arrest for cannabis possession result in a criminal conviction?" (Yes/No/Don't know/Refuse to answer). Respondents who reported being arrested for cannabis trafficking, cultivation, or importation were asked: "Did the arrest for cannabis trafficking, cultivation, or importation result in a criminal conviction?" (Yes/No/Don't know/Refuse to answer). "Don't know" and "Refuse to answer" responses were recoded as "Not reported."

Race/ethnicity
Race/ethnicity was assessed with the question about race from the Government of Ontario Data Standards for the Identification and Monitoring of Systemic Racism (Government of Ontario Anti-Racism Directorate, 2020). Respondents were categorized as follows: Black, East/Southeast

Asian, Indigenous, Latinx, Middle Eastern, South Asian, White, Other, Don't know, and Refuse to answer. Respondents who selected more than one category were recoded as "Mixed-race."

Perceived income adequacy

Perceived income adequacy measured the extent to which respondents' family income was considered sufficient to make ends meet. The ability to make ends meet was classified into five categories: Very difficult, Difficult, Not easy or difficult, Easy, Very easy.

Education

Educational attainment was assessed with the question: "What is the highest level of formal education that you have completed?" (Less than high school; High school diploma or equivalent; Some college or technical/vocational training or certificate/diploma, apprenticeship, or some university; Bachelor's degree or higher; Don't know; Refuse to answer).

For race/ethnicity, perceived income adequacy, and education, "Don't know" and "Refuse to answer" responses were recoded as "Unstated."

Postal code and neighborhood deprivation index

All survey respondents were asked to provide their postal code, which was used to link them to a national database of neighborhood deprivation indices from the Institut National de Santé Publique du Québec (INSPQ) (Gamache et al., 2019). The 2016 index is based on Canadian census dissemination areas. Where data were available, each postal code in the country was assigned two scores: (1) a material deprivation score (based on the level of education, income, and employment in the population aged 15 years and older) and (2) a social deprivation score (based on the proportion of the population aged 15 and older who are living alone or who are separated, divorced, or widowed, as well as the proportion of single-parent families). Each index is represented in quintiles on a scale of 1–5 (most deprived, deprived, not deprived or privileged, privileged, most privileged). The level of association between the material and social deprivation components in the current data was weak (Pearson correlation coefficient = 0.07).

Analysis

The final cross-sectional samples in Canada included 15,256 respondents in 2019 and 15,780 in 2020 after exclusions based on data quality checks and incomplete responses. Complete details regarding exclusions can be found in the ICPS technical report (Goodman et al., 2019). A subsample

of 12,226 and 12,815 respondents in 2019 and 2020, respectively, was included in the current analysis after excluding respondents with missing data for postal code (n_{2019} = 2,318; n_{2020} = 2,244), neighborhood deprivation index (n_{2019} = 699; n_{2020} = 708), and urban/rural designation (n_{2019} = 13; n_{2020} = 13).

Post-stratification sample weights were constructed based on Canadian census estimates. Respondents were classified into age–by sex–by province, education, and age–by smoking status groups. A raking algorithm was applied to the full cross-sectional analytic samples to compute weights calibrated to these groupings. Weights were rescaled to the sample size for Canada. Estimates are weighted unless otherwise specified. Analyses were conducted using survey procedures in SAS version 9.4.

Four separate multinomial logistic regression models were estimated with four levels of the outcome variable: (1) Never arrested for cannabis possession, trafficking, cultivation, or importation; (2) Arrested for cannabis possession, trafficking, cultivation, or importation; (3) Arrested for and convicted of cannabis possession, trafficking, cultivation, or importation; (4) Arrest for cannabis possession, trafficking, cultivation, or importation not reported. Given the current research that supports race/ethnicity as a predictor of arrest for cannabis possession, models were conducted in four steps to examine the association of race/ethnicity before and after adjustment for individual socioeconomic variables and neighborhood deprivation. Respondents with "Unstated" responses for race/ethnicity, perceived income adequacy, and education were excluded from the analyses due to small cell counts and model convergence issues. Model 1 included only race/ethnicity, while model 2 included race/ethnicity as well as cannabis use. Model 3 included the variables from model 2 as well as education and perceived income adequacy, the two individual socioeconomic indicators. Model 4 included material deprivation and social deprivation as independent variables. In addition, potential clustering based on dissemination area was accounted for by using the cluster option in the survey routines analysis in all models. Models 3 and 4 also adjusted for age, sex at birth, urbanicity, survey year, and whether the survey was completed on smartphone, tablet, or computer.

Results

Sample characteristics

Table 1 presents the weighted and unweighted characteristics for respondents from the 2019 and 2020 survey years. Across both years, close to 60% of respondents were over age 35, approximately half were female, and more than three-quarters reported White race/ethnicity. Overall, about

Table 1. Sample characteristics of 2019 and 2020 ICPS respondents.

	2019 (n = 12,226)		2020 (n = 12,815)	
	Unweighted % (n)	Weighted % (n)	Unweighted % (n)	Weighted % (n)
Age				
16–25	12.8 (1565)	16.6 (2027)	15.1 (1847)	16.6 (2128)
26–35	17.5 (2144)	19.5 (2379)	15.4 (1969)	19.7 (2526)
36–45	20.3 (2487)	19.8 (2426)	19.0 (2428)	20.2 (2586)
46–55	21.7 (2558)	21.3 (2606)	21.2 (2719)	20.4 (2620)
56–65	27.6 (3372)	22.8 (2788)	30.1 (3852)	23.1 (2955)
Sex				
Female	61.5 (7520)	50.1 (6131)	61.7 (7909)	49.6 (6352)
Male	38.5 (4704)	49.9 (6095)	38.3 (4906)	50.4 (6463)
Race/ethnicity				
Black	2.6 (315)	3.3 (406)	2.4 (302)	3.0 (390)
East/Southeast Asian	6.9 (842)	7.3 (891)	8.1 (1033)	8.8 (1132)
Indigenous	2.1 (251)	2.2 (272)	2.0 (250)	1.9 (238)
Latinx	1.1 (141)	1.4 (167)	1.1 (141)	1.5 (188)
Middle Eastern	1.0 (120)	1.0 (126)	1.3 (173)	1.7 (211)
Mixed-race	2.5 (308)	2.9 (360)	3.0 (379)	3.0 (390)
South Asian	2.6 (317)	3.1 (377)	2.9 (368)	3.5 (443)
White	78.9 (9643)	76.1 (9303)	76.7 (9832)	73.8 (9454)
Other	1.1 (134)	1.3 (155)	1.2 (155)	1.3 (164)
Unstated	1.3 (155)	1.4 (167)	1.5 (182)	1.6 (204)
Perceived income adequacy				
Very difficult	9.1 (1114)	9.6 (1173)	7.1 (912)	7.6 (978)
Difficult	22.7 (2773)	23.1 (2822)	18.8 (2403)	18.8 (2404)
Not easy or difficult	35.1 (4293)	35.4 (4329)	37.5 (4800)	37.6 (4812)
Easy	21.0 (2567)	20.0 (2440)	23.1 (2958)	22.8 (2916)
Very easy	10.5 (1285)	10.0 (1217)	11.8 (1510)	11.3 (1446)
Unstated	1.6 (194)	2.0 (246)	1.2 (232)	2.0 (259)
Education				
Less than high school	8.2 (1002)	15.0 (1834)	9.5 (1214)	14.2 (1825)
High school diploma or equivalent	16.4 (2000)	26.5 (3244)	14.9 (1914)	26.2 (3363)
Some college or technical/vocational training[a]	42.7 (5226)	33.3 (4076)	40.8 (5231)	33.7 (4320)
Bachelor's degree or higher	32.7 (3998)	24.9 (3037)	34.4 (4409)	25.4 (3249)
Unstated	0.3 (37)	0.3 (35)	0.4 (47)	0.5 (58)
Neighborhood material deprivation				
Most deprived	18.4 (2245)	20.5 (2512)	17.7 (2261)	19.9 (2547)
Deprived	20.4 (2491)	21.2 (2587)	19.8 (2533)	20.8 (2666)
Not deprived or privileged	20.4 (2500)	20.6 (2523)	20.4 (2613)	20.5 (2629)
Privileged	20.9 (2553)	19.5 (2389)	21.1 (2701)	19.8 (2534)
Most privileged	19.9 (2437)	18.1 (2216)	21.1 (2707)	19.0 (2439)
Neighborhood social deprivation				
Most deprived	26.3 (3214)	27.6 (3373)	24.6 (3148)	26.8 (3438)
Deprived	22.3 (2721)	21.1 (2582)	21.8 (2794)	21.9 (2804)
Not deprived or privileged	19.8 (2421)	19.7 (2412)	19.7 (2527)	19.1 (2453)
Privileged	17.6 (2149)	17.2 (2101)	18.3 (2346)	16.6 (2121)
Most privileged	14.1 (1721)	14.4 (1759)	15.6 (2000)	15.6 (1998)
Cannabis use status				
Ever used	63.3 (7735)	63.1 (7718)	62.5 (8015)	61.8 (7918)
Never used	36.7 (4491)	36.9 (4509)	37.5 (4800)	38.2 (4897)

[a]This category includes some college, college certificate/diploma, technical/vocational training, apprenticeship, or some university.

25% of respondents had a bachelor's degree or higher, and less than a third found it difficult or very difficult to make ends meet. While there was a relatively even distribution of respondents across levels of material deprivation, fewer lived in more socially privileged neighborhoods. Just over 60% of respondents reported using cannabis in their lifetime.

Prevalence of arrest and conviction for cannabis offenses

Overall, pooled data from 2019 and 2020 indicated that 94.4% of respondents reported never being arrested for any cannabis-related offense, with 4.4% reporting being arrested for or convicted of a cannabis-related offense in their lifetime and 1.2% choosing not to respond. Table 2 shows the frequency of arrests and convictions for cannabis possession and trafficking, cultivation, or importation by race/ethnicity, individual socioeconomic factors, and neighborhood deprivation.

Figure 1 shows the proportion of arrests, convictions, and unreported arrests within each of the following categories: race/ethnicity, perceived income adequacy, education, and neighborhood material and social deprivation. Approximately 9% of Black and Indigenous individuals and 7% of mixed-race individuals reported being arrested for or convicted of cannabis-related offenses, compared to 4% of White individuals. In the case of perceived income adequacy, a greater proportion of those reporting that making ends meet was "very difficult" or "difficult" were arrested for and convicted of a cannabis-related offense, with comparable proportions across other categories. Similarly, there was an overall decreasing trend of arrest and conviction with higher education. Individuals living in materially and socially "privileged" and "most privileged" neighborhoods reported fewer cannabis-related arrests and convictions than those in other neighborhoods.

Model 1: Arrest and conviction by race/ethnicity

As shown in Table 3, for Indigenous and mixed-race individuals, the odds of arrest were more than double that of White individuals. In addition, the odds of conviction were more than three times greater among Black and Indigenous respondents than White respondents.

Reports of arrests and convictions among East/Southeast Asian respondents were similar to those of White respondents, with slightly higher estimates of approximately 5% among Latinx and South Asian respondents and 6% of Middle Eastern respondents.

The odds of not reporting arrest status among respondents who did not identify as White were at least twice those of White respondents across all groups, with the exception of those identifying as "mixed-race" or "other" (Table 3).

Model 2: Arrest and conviction by race/ethnicity and cannabis use

Respondents who reported consuming cannabis had greater odds of being arrested and convicted for cannabis-related offenses. As Table 3 shows, after adjusting for cannabis use status, the odds of arrest for a

Table 2. Pooled 2019 and 2020 frequencies of arrests and convictions for cannabis possession, trafficking, cultivation, or importation in Canada by race/ethnicity, individual socioeconomic indicators, and neighborhood deprivation (n = 25,041)[a].

	n	Arrest-Possession			Conviction-Possession			Arrest-Trafficking			Conviction-Trafficking		
		Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)
Overall	25,041	3.8	95.0	1.2	1.5	98.3	0.2	2.6	96.2	1.2	1.0	98.8	0.2
Race/ethnicity													
White	18,479	3.6	95.7	0.8	1.4	98.4	0.2	2.2	97.0	0.8	0.9	99.0	0.1
Black	795	8.1	88.6	3.3	5.2	94.3	0.5*	6.0	90.7	3.3	3.3*	96.7	0
East/Southeast Asian	2023	3.0	95.0	2.0	0.7*	98.9	0.4*	3.5	94.5	2.0	0.8	98.3	0.9*
Indigenous	511	8.7	89.0	2.4*	4.4	95.2	0.4*	4.7	92.2	2.4*	2.4*	97.0	0.6*
Latinx	356	3.9	93.6	2.4*	1.5*	98.6	0	3.8*	93.7	2.4*	1.7*	98.3	0
Middle Eastern	337	3.3	94.0	2.7*	1.1*	98.9	0	4.7*	92.6	2.7*	2.6*	96.6	0.8*
Mixed-race	750	6.2	92.7	0.4*	2.1	97.7	0.3*	4.3	94.6	1.1*	1.7*	97.9	0.4*
South Asian	820	3.4	94.2	2.4	0.9*	98.9	0.1*	3.7	93.9	2.4	1.5*	98.2	0.3*
Other	319	1.7	98.0	0.3*	0.8*	99.2	0	0.8*	98.8	0.4*	0	100	0
Unstated	371	3.9	87.6	8.4	0	100	0	1.6*	89.9	8.5	0	100	0
Individual socioeconomic indicators													
Perceived income adequacy													
Very difficult	2150	6.3	92.3	1.4	3.1	96.4	0.5*	4.8	93.8	1.4	2.7	97.2	0.1*
Difficult	5226	4.9	94.3	0.9	1.8	98.0	0.2*	2.8	96.4	0.9	1.0	98.9	0.1*
Not easy or difficult	9140	3.4	96.2	1.4	1.2	98.7	0.1*	2.3	96.3	1.4	0.8	99.1	0.1*
Easy	5356	3.1	95.6	0.8	1.2	98.5	0.2*	2.1	97.1	0.8	0.8	99.0	0.3*
Very easy	2662	3.3	95.6	1.1	1.5	98.3	0.3*	3.0	96.0	1.1	1.4	98.1	0.5*
Unstated	505	1.7*	92.9	5.4	0.1*	98.4	1.5*	1.5*	93.1	5.4	0	98.5	1.5*
Education													
Less than high school	3658	5.0	93.6	1.4	2.0	97.9	0.2*	2.8	95.8	1.4	1.0	98.6	0.4*
High school diploma or equivalent	6607	4.4	94.5	1.1	1.7	98.0	0.4*	2.7	96.2	1.1	1.2	98.6	0.2*
Some college/vocational training[b]	8396	3.8	95.3	0.9	1.5	98.2	0.3	2.6	96.5	0.9	0.9	98.9	0.2
Bachelor's degree or higher	6287	2.6	96.1	1.3	0.9	98.9	0.1*	2.5	96.2	1.3	1.1	98.9	0.1*
Unstated	93	2.2*	80.7	17.1	1.4*	98.6	0	2.8*	80.2	17.1	2.8*	97.2	0
Neighborhood deprivation													
Material deprivation													

(Continued)

Table 2. Continued.

	n	Arrest-Possession			Conviction-Possession			Arrest-Trafficking			Conviction-Trafficking		
		Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)	Yes (%)	No (%)	Unstated (%)
Most deprived	5059	4.8	93.2	2.0	2.4	97.4	0.3*	3.3	94.7	2.0	1.6	98.1	0.3*
Deprived	5253	4.1	94.7	1.2	1.5	98.3	0.2*	2.7	96.1	1.2	1.0	98.9	0.1*
Not deprived or privileged	5151	4.0	94.9	1.1	1.6	98.2	0.2*	2.6	96.3	1.1	1.0	98.8	0.2*
Privileged	4923	3.2	96.1	0.7	0.9	98.9	0.3*	2.4	96.9	0.7	0.8	99.0	0.2*
Most privileged	4655	3.0	96.0	1.0	1.0	98.8	0.2*	2.0	97.0	1.0	0.9	98.9	0.2*
Social deprivation													
Most deprived	6811	5.0	93.8	1.2	1.9	97.7	0.3*	3.4	95.3	1.2	1.5	98.3	0.3*
Deprived	5385	4.4	94.1	1.4	1.8	98.1	0.1*	2.8	95.8	1.4	1.2	98.7	0.2*
Not deprived or privileged	4865	3.0	95.9	1.0	1.4	98.5	0.1*	2.0	96.9	1.0	0.8	99.0	0.2*
Privileged	4222	2.8	96.2	1.0	0.9	98.9	0.2*	2.1	96.9	1.0	0.8	99.1	0.1*
Most privileged	3757	3.1	95.8	1.2	1.1	98.5	0.4*	2.4	96.5	1.2	0.7	99.0	0.3*

[a]All estimates are weighted sample sizes and percentages.
[b]This category includes some college, college certificate/diploma, technical/vocational training, apprenticeship, or some university.
*High sampling variability–coefficient of variation >0.30.
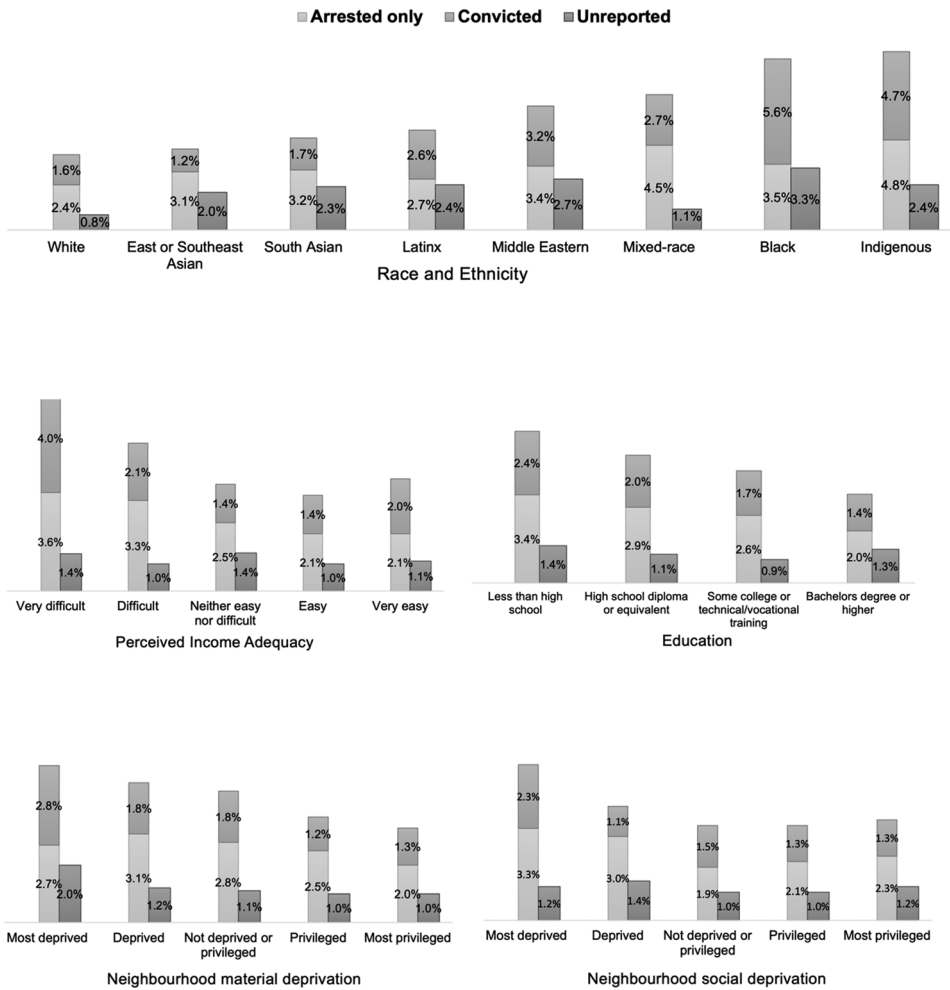
Figure 1. Lifetime arrests and convictions for cannabis-related offenses by race/ethnicity, individual socioeconomic factors, and neighborhood deprivation ($n = 25,041$).

cannabis-related offense were greater not only for Indigenous individuals but also for Black, East/Southeast Asian, and mixed-race individuals compared to White individuals. The odds of conviction were greater for both Indigenous and Black individuals. Black respondents also had greater odds of being convicted as opposed to only arrested (AOR = 2.60, 95% CI = 1.08–6.22, $p = 0.03$).

Model 3: Arrest and conviction by race/ethnicity, cannabis use, and individual-level socioeconomic indicators

More respondents who reported finding it "very difficult" or "difficult" to make ends meet reported being arrested for cannabis possession (Table 2).

Table 3. Multinomial logistic regression models for arrests and convictions for cannabis offenses in Canada by race/ethnicity and cannabis use ($n = 24,280$)[a].

	Arrested only vs No arrest or conviction (Ref)	Convicted vs No arrest or conviction (Ref)	Unreported[b] vs No arrest or conviction (Ref)
	AOR (95% CI), p-value	AOR (95% CI), p-value	AOR (95% CI), p-value
Model 1: Race/ethnicity only[c]			
Race/ethnicity*			
White	Ref	Ref	Ref
Black	1.65 (0.91–2.98), 0.10	3.90 (2.07–7.35), <0.01	5.11 (2.54–10.30), <0.01
East/Southeast Asian	1.32 (0.89–1.95), 0.17	0.79 (0.42–1.46), 0.45	2.72 (1.68–4.41), <0.01
Indigenous	2.07 (1.15–3.76), 0.02	3.24 (1.78–5.90), <0.01	3.83 (1.97–7.45), <0.01
Latinx	1.21 (0.54–2.70), 0.64	1.69 (0.61–4.64), 0.31	3.46 (1.17–10.24), 0.02
Middle Eastern	1.56 (0.66–3.72), 0.31	2.16 (0.77–6.09), 0.15	4.30 (1.68–11.05), <0.01
Mixed-race	2.01 (1.13–3.57), 0.02	1.78 (0.82–3.87), 0.14	1.78 (0.80–1.61), 0.16
South Asian	1.41 (0.72–2.74), 0.31	1.11 (0.53–2.32), 0.79	3.51 (1.97–6.27), <0.01
Other	0.37 (0.08–1.61), 0.16	0.53 (0.18–1.52), 0.18	0.41 (0.06–3.00), 0.24
Model 2: Race/ethnicity and cannabis use[d]			
Race/ethnicity*			
White	Ref	Ref	Ref
Black	1.86 (1.03–3.38), 0.04	4.53 (2.40–8.56), <0.01	4.81 (2.51–10.51), <0.01
East/Southeast Asian	1.93 (1.26–2.75), <0.01	1.22 (0.67–2.23), 0.52	2.75 (1.72–4.42), <0.01
Indigenous	1.76 (0.97–3.19), 0.06	2.66 (1.44–4.93), <0.01	3.80 (1.95–7.39), <0.01
Latinx	1.19 (0.53–2.67), 0.67	1.66 (0.60–4.57), 0.33	3.47 (1.17–10.25), 0.02
Middle Eastern	1.94 (0.81–4.66), 0.14	2.84 (0.81–4.66), 0.05	4.34 (1.70–11.07), <0.01
Mixed-race	1.96 (1.11–3.47), 0.02	1.73 (0.80–3.75), 0.17	1.78 (0.80–3.94), 0.16
South Asian	1.78 (0.91–3.45), 0.09	1.48 (0.70–3.12), 0.30	3.55 (2.00–6.29), <0.01
Other	0.39 (0.09–1.69), 0.21	0.56 (0.20–1.62), 0.29	0.41 (0.06–3.00), 0.38
Cannabis use*			
Never used	Ref	Ref	Ref
Ever used	3.42 (2.51–4.65), <0.01	5.52 (3.48–8.77), <0.01	1.04 (0.74–1.47), 0.81

[a]All estimates are weighted.
[b]"Unreported" refers to cases in which questions about arrest for a cannabis offense were not answered.
[c]Akaike information criterion: 12,890; Bayesian information criterion: 13,048.
[d]Akaike information criterion: 12,517; Bayesian information criterion: 12,759.
*Significant at $p < 0.05$ in Type 3 tests of fixed effects.

Perceived income adequacy was also associated with conviction for cannabis-related offenses, with respondents who reported finding it "difficult," "not easy or difficult," "easy," or "very easy" to make ends meet being less likely to be convicted than those who found it "very difficult" to make ends meet (Table 4).

A similar effect was noted for education: the odds of arrest only or arrest and conviction for a cannabis-related offense were lower for those with some college or vocational training and those with a bachelor's degree compared to those with less than a high school education (Table 4).

The addition of individual socioeconomic-level indicators modified the size of the effect for some race/ethnicity groups. For example, only East/Southeast Asian individuals were found to have greater odds of arrest than White individuals, while the odds of conviction for a cannabis-related offense were greater for Black, Indigenous, and Middle Eastern individuals than for White individuals.

Table 4. Multinomial logistic regression model for arrests and convictions for cannabis offenses in Canada by race/ethnicity, cannabis use, and individual socioeconomic indicators ($n = 24,280$)[a,b].

	Arrested only vs No arrest or conviction (Ref)	Convicted vs No arrest or conviction (Ref)	Unreported vs No arrest or conviction (Ref)
	AOR (95% CI), *p*-value	AOR (95% CI), *p*-value	AOR (95% CI), *p*-value
Akaike information criterion: 12.030			
Bayesian information criterion: 12,661			
Race/ethnicity*			
White	Ref	Ref	Ref
Black	1.63 (0.90–2.98), 0.11	4.63 (2.43–8.83), <0.01	4.44 (2.12–9.30), <0.01
East/Southeast Asian	1.88 (1.23–2.87), <0.01	1.34 (0.72–2.52), 0.36	2.39 (1.39–4.11), <0.01
Indigenous	1.24 (0.68–2.27), 0.48	2.00 (1.02–3.88), 0.04	3.34 (1.67–6.69), <0.01
Latinx	0.97 (0.41–2.27), 0.94	1.74 (0.62–4.88), 0.28	2.98 (0.98–9.11), 0.05
Middle Eastern	1.67 (0.68–4.08), 0.26	2.90 (1.05–7.99), 0.04	3.77 (1.45–9.79), 0.01
Mixed-race	1.75 (0.98–3.13), 0.06	1.85 (0.88–3.91), 0.11	1.49 (0.66–3.39), 0.34
South Asian	1.54 (0.78–3.06), 0.22	1.49 (0.69–3.20), 0.31	3.08 (1.68–5.65), <0.01
Other	0.38 (0.09–1.69), 0.20	0.57 (0.19–1.71), 0.31	0.38 (0.05–2.76), 0.34
Cannabis use*			
Never used	Ref	Ref	Ref
Ever used	2.88 (2.10–3.96), <0.01	4.81 (3.01–7.71), <0.01	1.07 (0.75–1.51), 0.72
Individual socioeconomic indicators			
*Perceived income adequacy**			
Very difficult	Ref	Ref	Ref
Difficult	0.91 (0.61–1.35), 0.65	0.52 (0.33–0.82), <0.01	0.58 (0.31–1.08), 0.09
Not easy or difficult	0.76 (0.52–1.12), 0.17	0.38 (0.24–0.60), <0.01	0.91 (0.53–1.56), 0.73
Easy	0.69 (0.45–1.07), 0.10	0.38 (0.23–0.63), <0.01	0.49 (0.27–0.91), 0.02
Very easy	0.72 (0.41–1.28), 0.26	0.55 (0.33–0.92), 0.02	0.72 (0.36–1.43), 0.34
*Education**			
Less than high school	Ref	Ref	Ref
High school diploma or equivalent	0.68 (0.44–1.04), 0.08	0.66 (0.39–1.10), 0.11	0.81 (0.45–1.45), 0.49
Some college/vocational training[d]	0.56 (0.37–0.84), 0.01	0.47 (0.29–0.76), <0.01	0.79 (0.44–1.43), 0.44
Bachelor's degree or higher	0.42 (0.26–0.68), <0.01	0.41 (0.23–0.72), <0.01	0.92 (0.51–1.67), 0.78

[a]All estimates are weighted.
[b]Model is adjusted for age, sex at birth, region, survey year, and type of device used to complete survey.
[c]"Unreported" refers to cases in which questions about arrest for a cannabis offense were not answered.
[d]This category includes some college, college certificate/diploma, technical/vocational training, apprenticeship, or some university.
*Significant at $p < 0.05$ in Type 3 tests of fixed effects.

Model 4: Arrest and conviction by race/ethnicity, cannabis use, individual socioeconomic indicators, and neighborhood material and social deprivation level

While neighborhood social deprivation was not associated with arrest or conviction, neighborhood material deprivation was. As Table 5 shows, the odds of conviction for those in the "privileged" and "most privileged" neighborhoods were approximately half that of those living in the most materially deprived neighborhoods. Similarly, those from "privileged" neighborhoods had lower odds of conviction versus arrest only, compared to individuals from the "most deprived" neighborhoods (AOR = 0.47, 95%CI

Table 5. Multinomial logistic regression model for arrests and convictions for cannabis offenses in Canada by race/ethnicity, cannabis use, individual socioeconomic indicators, and neighborhood deprivation ($n = 24{,}280$)[a,b].

	Arrested only vs No arrest or conviction (Ref)	Convicted vs No arrest or conviction (Ref)	Unreported vs No arrest or conviction (Ref)
	AOR (95% CI), p-value	AOR (95% CI), p-value	AOR (95% CI), p-value
Akaike information criterion: 11,989			
Bayesian information criterion: 12,814			
Race/ethnicity*			
White (Ref)	Ref	Ref	Ref
Black	1.60 (0.88–2.91), 0.12	4.15 (2.10–8.20), <0.01	3.83 (1.77–8.32), <0.01
East/Southeast Asian	1.89 (1.23–2.90), <0.01	1.35 (0.71–2.59), 0.36	2.31 (1.31–4.07), <0.01
Indigenous	1.25 (0.69–2.27), 0.47	1.88 (0.94–3.76), 0.07	3.00 (1.49–6.04), 0.02
Latinx	0.97 (0.41–2.28), 0.95	1.71 (0.63–4.62), 0.29	2.77 (0.92–8.37), 0.07
Middle Eastern	1.64 (0.67–4.01), 0.28	2.78 (1.00–7.72), 0.05	3.38 (1.31–8.69), 0.01
Mixed-race	1.74 (0.98–3.12), 0.06	1.79 (0.84–3.81), 0.13	1.39 (0.61–3.18), 0.44
South Asian	1.53 (0.77–3.04), 0.22	1.41 (0.64–3.11), 0.40	2.82 (1.48–5.37), <0.01
Other	0.38 (0.09–1.65), 0.19	0.55 (0.18–1.68), 0.30	0.37 (0.05–2.69), 0.80
Cannabis use*			
Never used	Ref	Ref	Ref
Ever used	2.87 (2.08–3.95), <0.01	4.80 (3.00–7.69), <0.01	1.05 (0.74–1.48), 0.80
Individual socioeconomic indicators			
*Perceived income adequacy**			
Very difficult	Ref	Ref	Ref
Difficult	0.93 (0.62–1.38), 0.71	0.54 (0.34–0.86), 0.01	0.61 (0.33–1.13), 0.12
Not easy or difficult	0.79 (0.53–1.16), 0.22	0.41 (0.26–0.65), <0.01	0.99 (0.57–1.70), 0.95
Easy	0.72 (0.46–1.11), 0.14	0.42 (0.25–0.71), <0.01	0.56 (0.30–1.05), 0.07
Very easy	0.76 (0.43–1.34), 0.34	0.63 (0.37–1.07), 0.09	0.84 (0.42–1.69), 0.62
*Education**			
Less than high school	Ref	Ref	Ref
High school diploma or equivalent	0.68 (0.44–1.04), 0.08	0.68 (0.40–1.15), 0.15	0.81 (0.45–1.44), 0.46
Some college/vocational training[c]	0.57 (0.37–0.86), 0.01	0.49 (0.30–0.82), 0.01	0.83 (0.47–1.49), 0.54
Bachelor's degree or higher	0.44 (0.27–0.71), <0.01	0.45 (0.25–0.84), 0.01	1.05 (0.58–1.89), 0.88
Neighborhood deprivation			
*Material deprivation**			
Most deprived	Ref	Ref	Ref
Deprived	1.20 (0.84–1.72), 0.31	0.75 (0.49–1.15), 0.19	0.70 (0.44–1.14), 0.14
Not deprived or privileged	1.22 (0.84–1.79), 0.30	0.79 (0.49–1.27), 0.32	0.53 (0.32–0.86), 0.01
Privileged	1.07 (0.74–1.54), 0.71	0.50 (0.29–0.86), 0.01	0.41 (0.24–0.71), <0.01
Most privileged	0.77 (0.52–1.12), 0.17	0.50 (0.27–0.92), 0.03	0.40 (0.22–0.72), <0.01
Social deprivation			
Most deprived	Ref	Ref	Ref
Deprived	1.01 (0.74–1.39), 0.93	1.08 (0.70–1.69), 0.73	1.12 (0.70–1.80), 0.63
Not deprived or privileged	0.70 (0.48–1.01), 0.05	0.91 (0.58–1.42), 0.67	0.88 (0.53–1.45), 0.61
Privileged	0.79 (0.55–1.14), 0.21	0.83 (0.51–1.38), 0.48	0.95 (0.55–1.64), 0.84
Most privileged	0.90 (0.60–1.36), 0.62	0.83 (0.49–1.39), 0.48	0.75 (0.42–1.32), 0.32

[a]All estimates are weighted.

[b]Model is adjusted for age, sex at birth, region, survey year, and type of device used to complete survey.

[c]"Unreported" refers to cases in which questions about arrest for a cannabis offense were not answered.

[d]This category includes some college, college certificate/diploma, technical/vocational training, apprenticeship, or some university.

*Significant at $p < 0.05$ in Type 3 tests of fixed effects.

= 0.24–0.89, $p = 0.02$). Those from the most materially deprived neighborhoods were also less likely to report their arrest status than those from "not deprived or privileged," "privileged," and "most privileged" neighborhoods.

In the models that included material and social deprivation, few differences were observed by race/ethnicity, with the exception that the odds of conviction for a cannabis-related offense for Black individuals remained more than four times that of White individuals.

Discussion

In the current study, approximately 5% of respondents in Canada reported ever being arrested for or convicted of cannabis-related offenses, with marked differences based on race/ethnicity. White respondents had among the lowest reported arrests and convictions compared to those in other race/ethnicity categories; by contrast, more than double the proportion of Black and Indigenous individuals reported arrests and convictions. This is generally consistent with the limited data on arrests for cannabis possession in Canada and the US (Bunting et al., 2013; Koch et al., 2016; Nguyen & Reuter, 2012; Owusu-Bempah & Luscombe, 2020; Wortley & Jung, 2020). Substantially higher proportions of non-White respondents chose not to answer the question about cannabis-related offenses, which may reflect the greater stigma and sensitivity of such questions for racialized individuals. It is plausible that some of those who chose not to answer this question may in fact have been arrested for or convicted of a cannabis-related offense, which would underestimate racial differences.

The model-building strategy used in the current study—which examined race/ethnicity prior to adjusting for cannabis use, individual socioeconomic factors, and neighborhood deprivation—highlights the association between race and potential moderators. After adjusting for cannabis use, the effect size for cannabis-related arrests among Black, East/Southeast Asian, and mixed-race individuals increased, suggesting that the differences in arrest are not explained by greater cannabis use in these racial/ethnic groups. Racial differences for convictions were somewhat attenuated but generally persisted after adjusting for socioeconomic factors; however, adjusting for neighborhood deprivation resulted in non-significant racial effects, with the notable exception of Black respondents. This pattern of findings underscores the broad impact of systematic racism and highlights the complex impact of systemic racism on socioeconomic status and neighborhood-level factors. For example, in Canada, Black individuals are more likely than the rest of the population to live in a low-income household; they also experience higher unemployment, and Black men have a substantially

lower median annual income (Do, 2020). Clearly, the impact of racial bias is not limited to arrests and convictions but is woven into many aspects of life, including inequities in employment opportunities, income, and residential patterns.

The findings are consistent with previous research which suggests the existence of systemic racism within policing practices and the criminal justice system, particularly toward Black and Indigenous people (Kahn & Martin, 2016; Khenti, 2014; Owusu-Bempah & Luscombe, 2020). Although recreational cannabis is now legal in Canada, this does not mean that racial disparities in arrests and convictions for cannabis-related offenses will be eliminated. Police-reported arrests for cannabis offenses in Canada declined from 99 per 100,000 in 2018 to 45 per 100,000 in 2019, but we are unaware of any data examining differences based on race (Statistics Canada, 2019). Research in US states where cannabis has been legalized for several years suggests that while arrests for cannabis possession have decreased, racial disparities still exist (Willits et al., 2022). For example, a Colorado report found that the arrest rate for cannabis-related offenses among Black people was more than two times that of White people in 2010, before the legalization of cannabis, and it remained the same in 2014, four years after legalization (Gettman, 2015). Similarly, while comparable prevalence rates of cannabis use have been reported among adults in Washington State, racial disparities in cannabis-related arrests persist, despite legalization in 2012 (Firth et al., 2019). To change these entrenched practices, establishing guidelines to collect, and make accessible, data on police stops, searches, and arrests by race/ethnicity, is needed.

Individual socioeconomic factors—namely, perceived income adequacy and education—were negatively associated with cannabis-related arrests and convictions. This is not surprising, given that those with greater financial resources may be better equipped to navigate the legal system (Denvir et al., 2012). Neighborhood deprivation was also associated with arrests and convictions, with individuals living in the most socially and materially deprived neighborhoods reporting higher rates of cannabis-related arrests and convictions than those residing in more privileged neighborhoods. Even after controlling for cannabis use, individual socioeconomic factors, and race, those living in the most materially privileged neighborhoods were half as likely as those living in the most deprived neighborhoods to report being convicted. These findings are consistent with previous work that found an increased police presence in more deprived neighborhoods and more frequent stops and searches of those deemed suspicious (Lopez, 2015; Smith, 1986; Terrill & Reisig, 2003). The physical environment may put these individuals at greater risk for arrest and conviction, even though their cannabis use may be similar to that of those living in more privileged neighborhoods.

Strengths and limitations

This study used a large national sample to examine the impact of race/ ethnicity, neighborhood deprivation, and individual socioeconomic factors on arrests and convictions for cannabis-related offenses, but it has limitations. As the ICPS uses self-reported survey methodology, it is subject to the limitations common to survey research, such as social desirability and self-selection bias (Gordis, 2004). Respondents were recruited using non-probability-based sampling; therefore, the findings do not provide nationally representative estimates. Estimates of cannabis use were within the range of national estimates for young adults, whereas estimates among the full ICPS sample were generally higher than those based on national surveys in Canada (Goodman et al., 2019). This is likely due to the fact that the ICPS sampled individuals aged 16 to 65, whereas the national surveys included older adults, who are known to have lower rates of cannabis use.

Due to the cross-sectional nature of the ICPS design, this research cannot establish a temporal association between socioeconomic indicators or neighborhood deprivation and the outcome of arrest and conviction. Similarly, it cannot establish whether respondents were arrested in their own neighborhoods. Furthermore, the measures are based on lifetime arrests and convictions; they are not specific to the period after the legalization of non-medical cannabis. As a result, it is not possible to determine what impact legalization may have on these outcomes. Finally, the measures do not allow an assessment of the number of arrests for possession of cannabis or other offenses, which may impact conviction estimates.

The INSPQ material and social deprivation index is based on 2016 census data, which might have changed over the past several years. However, it is unlikely that the distribution of socioeconomic indicators would shift dramatically during this time frame. An additional limitation is the assumption that the deprivation indices are representative of a neighborhood. Postal code distribution may not align exactly with how neighborhoods are viewed by those living in them.

Conclusion

The current study highlights the disproportionate burden of arrests and convictions for cannabis-related offenses experienced by racialized individuals, those with lower socioeconomic status, and those living in the most materially deprived neighborhoods. Many see the legalization of cannabis as an opportunity to change this situation for marginalized and racialized groups. However, it is unlikely that issues deeply rooted in systemic racism can be swiftly eliminated. In Canada, ongoing efforts to ensure transparency in cannabis-related arrests and convictions will be

crucial to determine whether the policies associated with legalization are having the desired impact. Furthermore, policies focused on rectifying the disproportionate harms, such as expungement of criminal records for cannabis possession, inclusion of racialized groups in the legal cannabis market, and giving back to the communities most adversely affected by prohibition, are needed.

Disclosure statement

The authors have no conflicts of interest to declare.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author (DH) following submission and review of a proposal request. The data are not publicly available because they contain information that could compromise the privacy of research participants.

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