

Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

CRISM AND ALBERTA HEALTH SERVICES  
ADVANCEMENT OF ANALYTICS IN SUBSTANCE USE

# Post Legalization Follow Up to Cannabis in Alberta: Impacts on Public Health and Service Utilization (2019-2021)

August 28, 2023

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**Proposal title/overview**

Post-legalization follow up to cannabis in Alberta: Impacts of legalization on public health and service utilization

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**Description of information**

A description of clients who receive Alberta Health Services addiction service treatment who use cannabis, and comparison to other client groups post legalization.

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**Proposal number**

22-01

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# Overview

Cannabis legalization became the new reality in Canada on October 17th, 2018. Some research in other jurisdictions found that legalization of medical cannabis use coincided with increased rates of cannabis dependence symptoms and more adults seeking treatment voluntarily (Hall & Lynskey, 2016). However, the literature addressing the effect of legalization of recreational cannabis consumption on health service use is nascent and comes primarily from single jurisdictions in the United States of America. Epidemiological research in Colorado found no increase in cannabis use since legalization for recreational use (Ghosh, et al., 2017) but in the first year after legalization (2013 to 2014), there was an increase in ED visits followed by a decrease in the second year, (2014 to 2015) where ED visits decreased to a rate lower than 2013. There was a 63% increase in accidental poisonings among children (measured through poison control calls) and this has remained stable since legalization. (Ghosh, et al., 2017; Kim & Monte, 2016). The authors encouraged caution around the interpretation, since legalization may have reduced the stigma of disclosure and resulted in a reporting increase without an underlying increase in incidence.

With cannabis legalized in Canada, many stakeholders are interested in the impact on the health care system. In this project, AHS administrative data were used to describe substance misuse treatment pre- and post-legalization. Specifically, this report presents results of analyses designed to answer the following questions:

- I. What is the profile and service use patterns of clients who seek treatment for cannabis use (in AHS)? and
- II. Was legalization and/or the first year of COVID-19 pandemic associated with changes in this profile?

The pre-legalization baseline data analysis and report was completed in 2020 (CRISM-Alberta Health Services, 2020). The project covers six fiscal years *preceding* legalization of cannabis in Canada: 2012-2013 to 2017-2018. The project linked specialty mental health and addictions treatment service data with wider health system data to provide information on demographics of Albertans seeking treatment for cannabis misuse and their health care utilization.

AHS substance use treatment attendance pre-legalization was described in relation to:

- cannabis use,
- concerns about cannabis use, and
- demographics, other health service use, and comorbid mental health diagnoses.

The current report is a follow-up to the above-mentioned pre-legalization (baseline) report and focuses on the *post-legalization* period spanning from 2019-20 to 2020-21 fiscal years. The report builds on the baseline results by further investigating if there have been changes in clients accessing AHS treatment for substance misuse for cannabis post-legalization (April 1, 2019 through March 31, 2020) and, separately, during the first year of the public health protections due to the COVID-19 pandemic (April 1, 2020 through March 31, 2021).

Using the same type of analysis as the previous baseline project, the number of clients and profile of clients for both post-legalization time periods were analyzed and compared to those clients seeking treatment for polysubstance use only and for alcohol only. The following questions were addressed in this report:

- I. What is the profile and service use patterns of clients who seek treatment for cannabis use (in AHS)? Specifically:
  1. Are there demographic (e.g., age, sex, location) or health care utilization (e.g., mental health, number and types of addiction services used) differences between:
    - a. clients in substance treatment who use cannabis compared to clients in substance use treatment who do not use cannabis; and
    - b. clients in substance use treatment who use cannabis and are concerned about it compared to clients in substance use treatment who do not use cannabis?
  2. Are there demographic or health care utilization differences among clients who use cannabis and are concerned about their use compared to clients who use cannabis and are not concerned about their use?
  3. Are there demographic or health care utilization differences among those who use and are concerned about cannabis only compared to:
    - a. clients who may or may not have used cannabis but are concerned about alcohol only;
    - b. clients who may or may not have used cannabis but are concerned about other single drug use only; and
    - c. clients who may or may not have used cannabis but are concerned about other polydrug use (excluding cannabis and alcohol)?
  4. Now that cannabis is legal will the profile and pattern of service use start to resemble other legal substances (e.g., alcohol)?
- II. Were client profiles post-legalization and during the first year of COVID-19 different from the pre-legalization period?

# Objectives

## Objective 1: Compare clients who did and did not report past-year cannabis use

Compare demographic characteristics, health care utilization, and mental health comorbidities between clients seeking addiction treatment services who did and did not report using cannabis in the year preceding treatment enrollment (refer to Tables 1-3).

## Objective 2: Compare past-year cannabis users who were and were not concerned about their cannabis use

Compare demographic characteristics, health care utilization, and mental health comorbidities between clients seeking addiction treatment services who did and did not report a concern with their cannabis use in the year preceding treatment enrollment (refer to Tables 4-6).

## Objective 3: Compare clients with cannabis concern only versus alcohol concern only versus other polydrug concern only

Compare demographic characteristics, health care utilization, and mental health comorbidities between clients seeking addiction treatment who (a) used cannabis and reported *only* being concerned about their cannabis use in the year preceding treatment enrollment; (b) may or may not have used cannabis but were concerned only about alcohol use, and (c) may or may not have used cannabis but reported concerns related to other polydrug use (i.e., one or more substances excluding cannabis and alcohol) (refer to Tables 7-9). The rationale for this objective was to understand whether the profile of clients who were concerned only about cannabis differed from clients concerned only with other legal and illegal substance use.

# Method

## Time period

**Cannabis post-legalization:** Fiscal year 2019-2020.

**Cannabis post-legalization during the first year of the public health restrictions due to the COVID-19 pandemic:** Fiscal year 2020-2021.

## Data Sources

Clients were identified using the Addiction and Mental Health System for Information and Service Tracking (ASIST) database. To identify diagnosed comorbid mental health conditions,



we used the Discharge Abstract Database (DAD), the National Ambulatory Care Reporting System (NACRS, since 2010), and the Practitioner Claims Database (refer to the table below).

| Database  | Function  | Types of Data Captured  | Uses in the Report  |
|---|---|---|---|
| Addiction and Mental Health System for Information and Service Tracking (ASIST) | Used by AHS addiction staff throughout the province to capture enrollments and is the electronic health record for clients receiving addiction services | <ul style="list-style-type: none"> <li>Entered by clinicians at the point of care</li> <li>Collects data on treatment, prevention, and information services provided</li> <li>Services include outpatient, residential, detoxification, and opioid dependency program</li> <li>Client-level information includes demographics (age, sex, education, and employment) as well as information on substance use at time of enrollment in addiction services.</li> </ul> | <ul style="list-style-type: none"> <li>To identify patients who are concerned with their cannabis use and other drug use for comparison purposes</li> </ul> |
| Discharge Abstract Database (DAD)   | Captures inpatient service utilization  | <ul style="list-style-type: none"> <li>Comorbidities/co-diagnoses (physical and psychological)</li> <li>Visits are coded with ICD10 diagnostic codes</li> </ul>   | <ul style="list-style-type: none"> <li>Identify comorbidities</li> <li>Inform client profile analysis</li> </ul>  |
| National Ambulatory Care Reporting System (NACRS, since 2010)                   | Captures emergency department and urgent care centre service utilization  | <ul style="list-style-type: none"> <li>Comorbidities/co-diagnoses (physical and psychological)</li> <li>Visits are coded with ICD10 diagnostic codes</li> </ul>   | <ul style="list-style-type: none"> <li>Identify comorbidities</li> <li>Inform client profile analysis</li> </ul>  |
| Practitioner Claims Database  | Captures physician service utilization based on diagnostic codes from fee for service physician visits  | <ul style="list-style-type: none"> <li>Comorbidities/co-diagnoses (physical and psychological)</li> <li>Visits are coded with ICD9 diagnostic codes</li> </ul>  | <ul style="list-style-type: none"> <li>Identify comorbidities</li> <li>Inform client profile analysis</li> </ul>  |

## Client Identification

Unique clients were identified and included for analyses based on their first enrollment in any AHS addiction service during a single fiscal year (April 1<sup>st</sup> to March 31<sup>st</sup>). To account for clients who had more than one addiction treatment service episode (enrollment) in a given fiscal year, aggregate service utilization variables were created to capture the number and type of enrollments. This allowed us to identify clients who had more than a single addiction treatment service episode in a single fiscal year.

## Data Linkage

Upon enrollment in an addiction treatment service, client information is collected by a clinician. Substance use data is collected through the responses to the following two optional questions:

1. Have you used the substance one or more times in the past 12 months?

2. Have you been concerned about this substance use in the past 12 months?

For each question, clients respond either “yes” or “no” to a list of 17 substances, consisting of: alcohol, non-beverage alcohol (Lysol), cannabis, cocaine, opiates, psychedelics, tranquilizers, antidepressants, barbiturates, amphetamines, crystal methamphetamine, inhalants, Talwin & Ritalin, androgens, smoking tobacco, chewing tobacco, and other tobacco.

Using personal health numbers (PHNs), acute care service use, inpatient service use, and practitioner claims data were linked for a two-year period preceding index enrollment in an addiction treatment service. The linked data sets were then used to describe service utilization and to determine mental health comorbidities.

A client was considered to have a history of a comorbid condition if, within a two-year retrospective window from their initial visit for substance use treatment in AHS, they had:

- At least one hospital record with an eligible corresponding ICD-10 code, or
- At least one emergency department record with an eligible corresponding ICD-10 code, or
- At least three physician claims, within a single fiscal year, with the same eligible corresponding ICD-9 code.

Eligible ICD9/10 codes (see table in Appendix C) included codes for any mental health or addiction related problem as identified by the DSM-5. Readers should note that these comorbidity profiles indicate a history of a comorbid mental disorder but may not be an accurate representation of current health status.

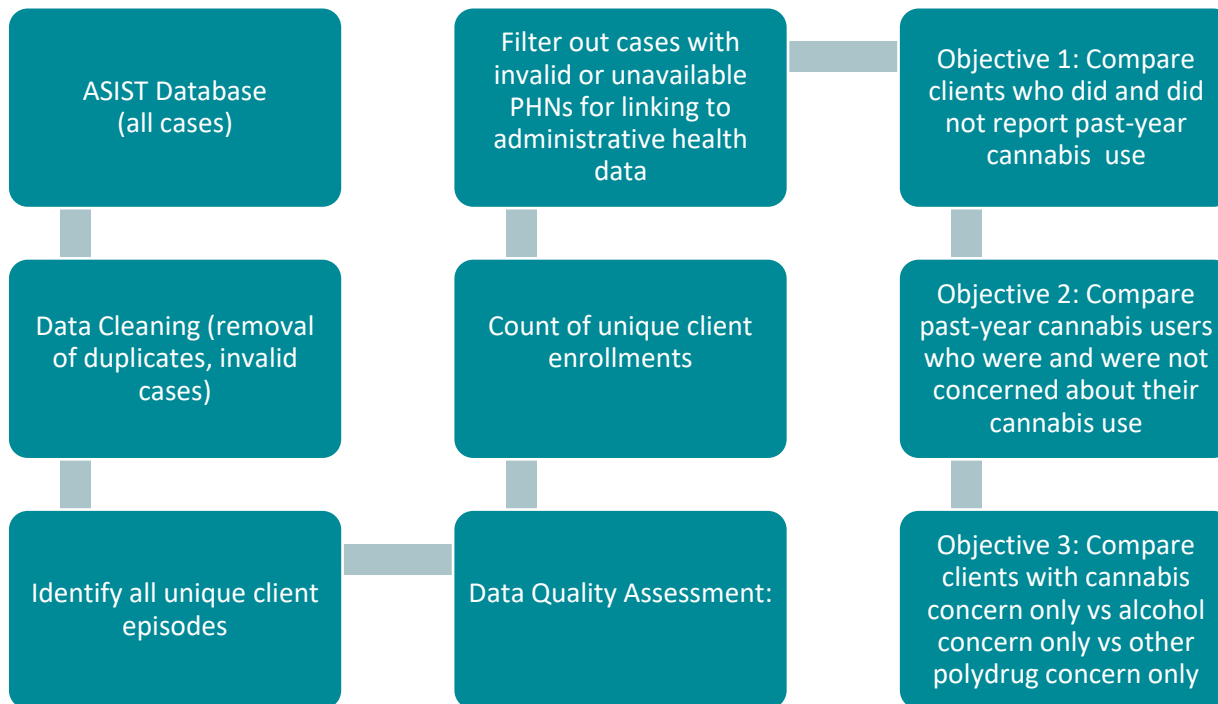
## Client Cohorts

To meet the project objectives, the following client cohorts were recreated for the post-legalization time period based on the cohorts created for the preceding pre-legalization baseline analysis (see the table below).

| Objective   | Compared Cohorts  |  |
|---|---|--|
| <p><b>1</b></p> <p>(1a) Clients who entered substance use treatment and used cannabis in the previous 12 months (regardless of specific substance use concerns)</p> | <p><b><u>Compared to:</u></b><br/>Clients who entered substance use treatment and did not report using cannabis in the last 12 months.</p>        |  |
| <p>(1b) Clients who enter substance use treatment and have a concern about their cannabis use</p>   | <p><b><u>Compared to:</u></b><br/>Everyone else who enters substance use treatment (excluding clients who use cannabis and are not concerned)</p> |  |
| <p><b>2</b></p> <p>(2) Clients who used cannabis in the previous 12 months but were not concerned with their cannabis use</p>                                       | <p><b><u>Compared to:</u></b><br/>Clients who used cannabis in the previous 12 months and were concerned with their cannabis use</p>              |  |
| <p><b>3</b></p> <p><b><u>Reference Group:</u></b><br/>Clients who used cannabis and were only concerned with their cannabis use in the last 12 months</p>           | <p>(3a) Clients who may or may not have used cannabis but were only concerned about their alcohol use in the last 12 months</p>                   | <p>(3b) Clients who may or may not have used cannabis but were concerned about other polydrug use (excluding cannabis and alcohol)</p> |

Flowchart 1, below describes the analytical steps taken to produce this technical report.

**Flowchart 1. Cohort creation and analysis logic model**



The analysis was performed in SAS Enterprise Guide 8.3. Binary variables were presented as percentages, raw counts (n), and 95% confidence intervals. Means and standard deviations are presented for continuous variables.

## Data Quality Assessment

### Overview

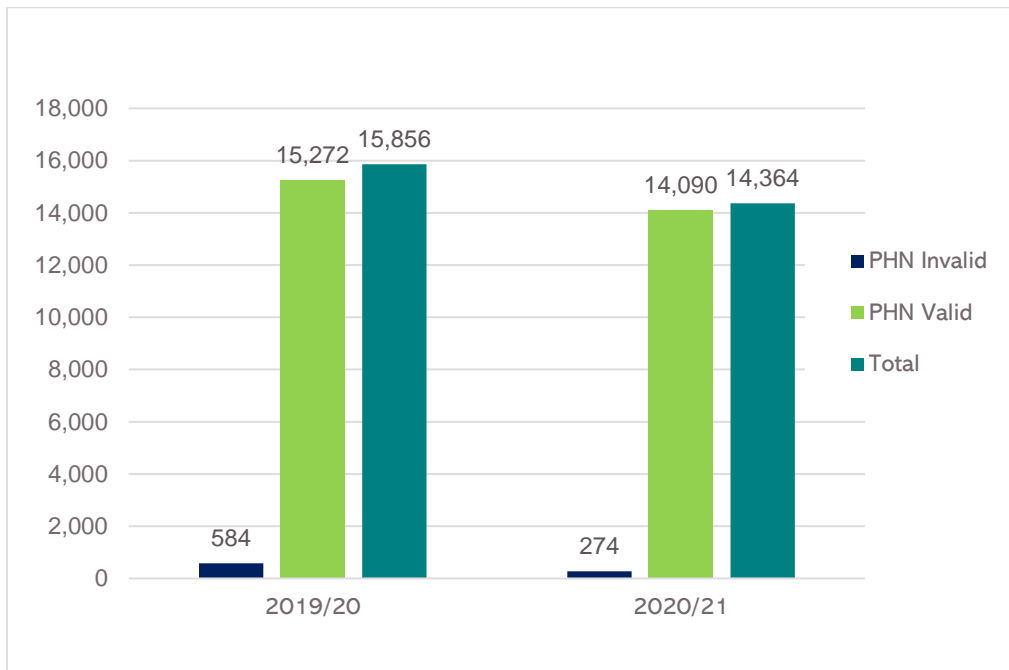
Data quality may be affected by the following factors. This may limit interpretation of results.

- PHNs within ASIST have a trivial missing rate (less than 5%) and should not impact the results of the analysis.
- Some fields in ASIST have non-trivial non-completion rates (e.g., concern about use). Steps will be taken to mitigate effects.
- Transitioning of information management systems from the above databases to Connect Care, may cause challenges in data quality and interpretation of results. For example, these developments have led to the removal of Edmonton Zone from the post-legalization analysis.
- There will be challenges in maintaining consistent reporting between pre-legalization baseline analysis and this post-legalization analysis as several zones have transitioned off ASIST to Connect Care. Potentially changing the data reported.

### **Personal Health Number Validity over Time**

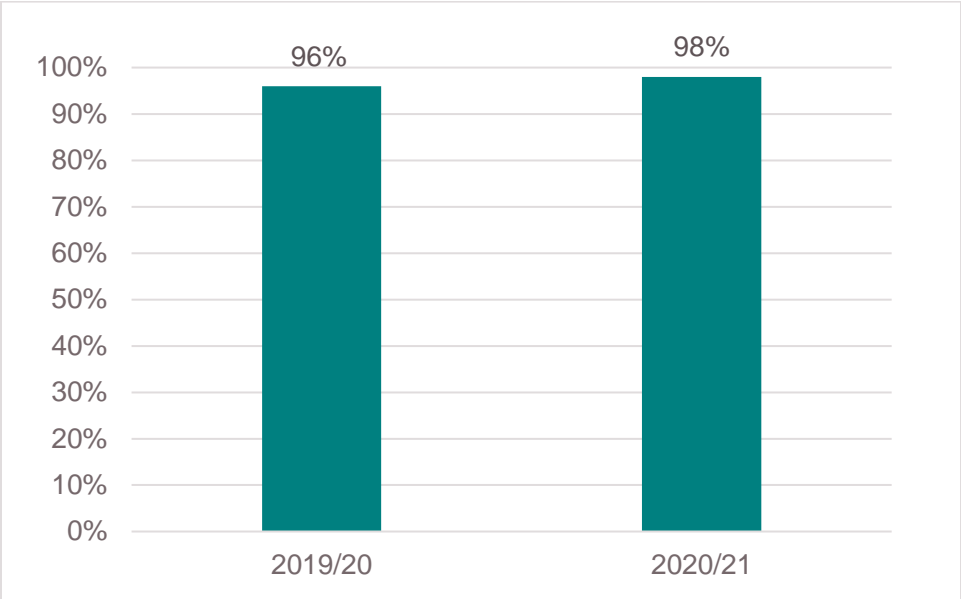
As is evident from Figure 1, the total number of unique specialty addiction treatment clients decreased from 15,856 in 2019/20 to 14,364 in 2020/21. The number of clients with a valid PHN has declined over the two fiscal years, from 15,272, to 14,090 respectively.

**Figure 1. Number of Unique Specialty Addiction Treatment Clients with a Valid PHN, 2018/19 to 2020/21, Alberta**



To stay consistent with our reporting in the pre-legalization period of the last report, we continue using proportions of valid PHNs (see Figure 2). According to Figure 2, the percentage of clients with a valid PHN slightly increased from 96% in 2019/20 to 98% in 2020/21.

**Figure 2. Proportion of Unique Specialty Addiction Treatment Clients with a Valid PHN, 2018/19 to 2020/21, Alberta**



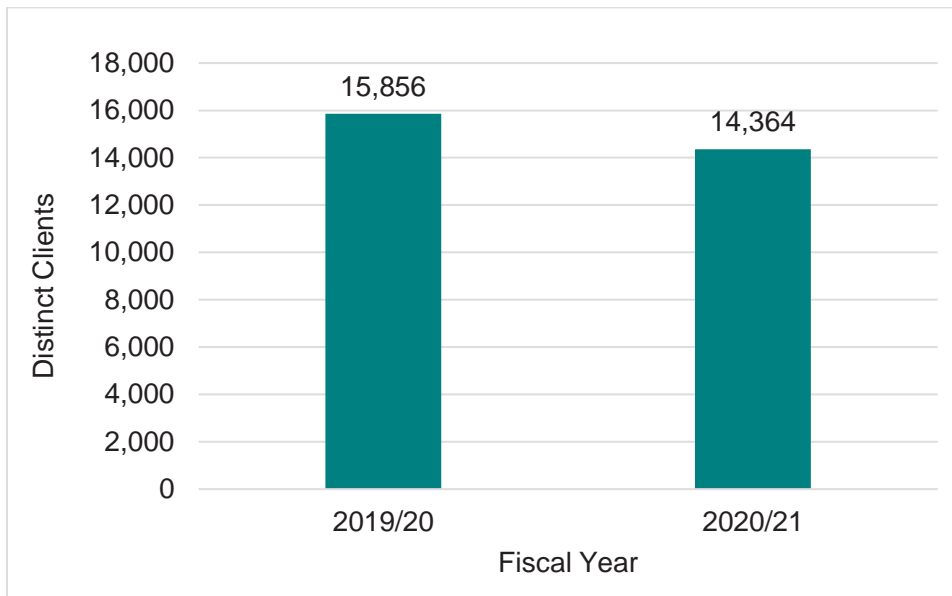
For further details on quality assessment of data from the ASIST clinical electronic health records system see Appendix B of this report.

# Results: Post-legalization Overview

## Overall Client Counts

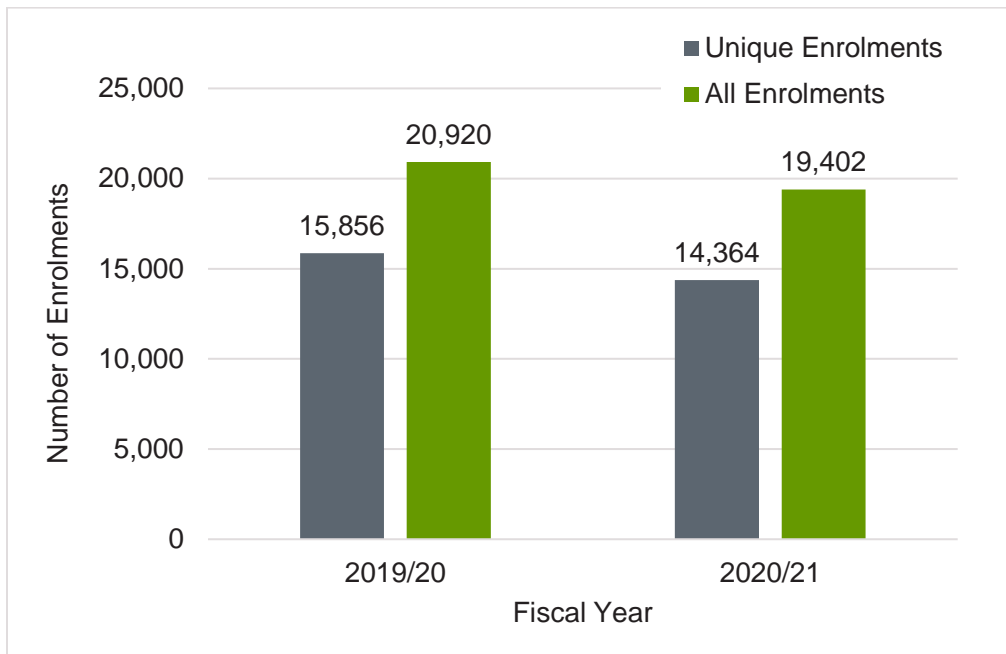
As depicted in Figure 3, the number of unique clients seeking addiction treatment services saw a reduction from 15,856 during the first post-legalization year (2019-20) to 14,364 during the subsequent period of public health restrictions due to the COVID-19 pandemic (2020-21).

**Figure 3. Count of Unique Clients for a New Addiction Treatment Service, by Fiscal Year, Alberta (2019/20-2020/21)**



In all, 15,856 unique clients were enrolled in a specialty addiction treatment service in the 2019/20 fiscal year, of which 12,596 or 79.4% were enrolled one time (unique enrollments) and the remaining 3,260 (20.6%) were enrolled two or more times (see Figure 4). In 2020/21 the total number of enrollments was lower at 14,364 and unique and repeat involvements were 11,099 (77.3%) and 3,263 (22.7%) respectively.

**Figure 4. Count of Unique Enrollments\* and All Client Enrollments for a New Addiction Treatment Service, by Fiscal Year, Alberta (2019/20-2020/21)**



\*Unique enrollments are the incident enrollment into a specialty addiction treatment service by year.

*Note: from this point on in the report, only unique clients who enrolled in specialty addiction services with a valid PHN are included in the analysis.*



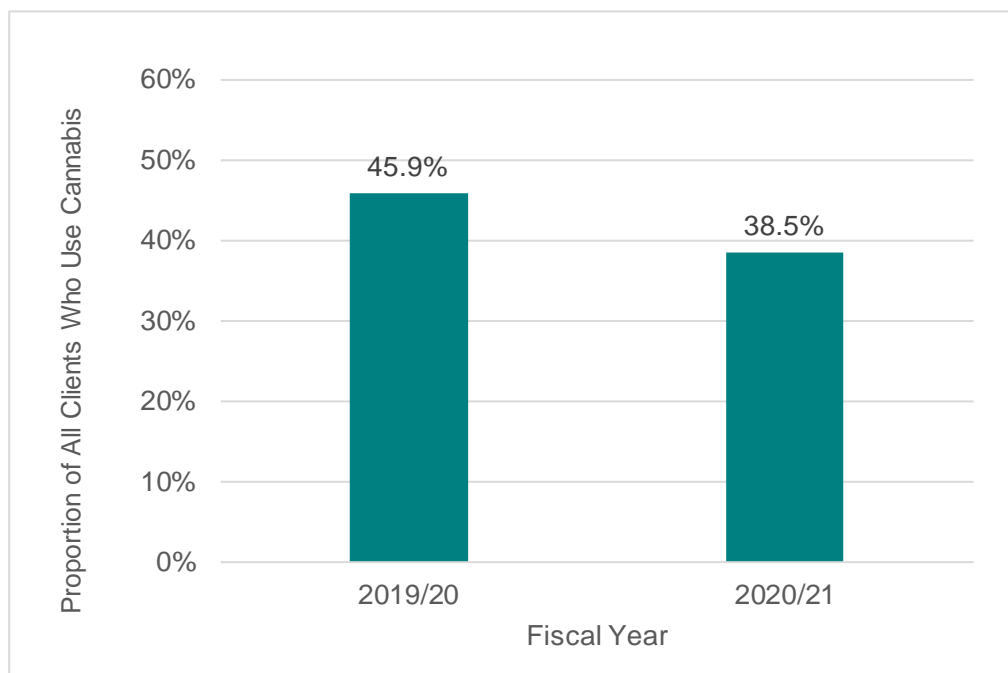
## System-Wide Trends in Cannabis Use and Cannabis Concerns

This subsection presents results from analyses of cannabis use and cannabis-related concerns by age and sex.

### ***Past-Year Cannabis Use***

As shown in Figure 5, just under half of all clients (45.9%) reported using cannabis in the past 12 months post-legalization (2019-20). The percentage of clients who reportedly used cannabis in the past 12 months was lower at 38.5% during the COVID-19 pandemic in 2020-21.

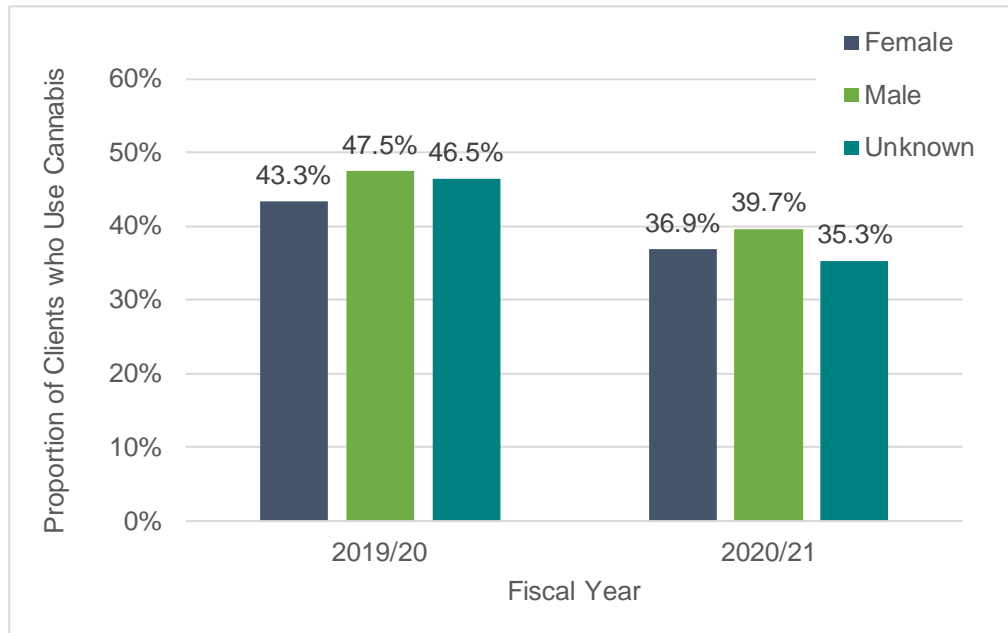
**Figure 5. Proportion of Clients Enrolled in Specialty Addiction Treatment Who Reported Using Cannabis in the Past 12 Months, Alberta 2019/20-2020/21**



### ***Past-Year Cannabis Use by Sex***

As shown in Figure 6, reported use of cannabis in the 12 months preceding enrollment in addiction services decreased from 2019/20 to 2020/21 among male clients, female clients, as well as clients with their sex unknown.

**Figure 6. Proportion of Unique Clients Reporting Past-Year Cannabis Use by Sex, Alberta 2019/20-2020/21**

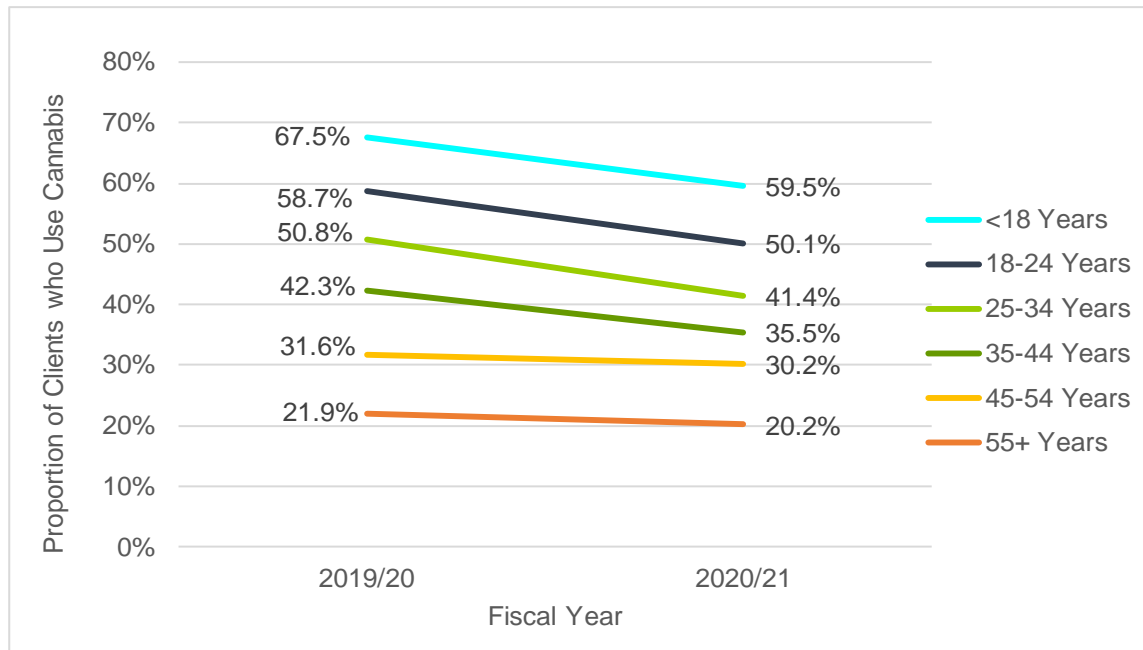


### ***Past-Year Cannabis Use by Age***

As depicted in Figure 7, across all reporting years, the proportion of clients who used cannabis was highest in the youngest age groups (18-24 years old or younger), and lowest among the oldest clients (55 years of age or older). Specifically, about 60% to 68% of clients under age 18 who enrolled in a specialty addiction service reported past-year cannabis use. As well, over 50% of clients between 18-24 years reported cannabis use in the past 12 months. On the other hand, cannabis usage in clients in the oldest age groups (45-54 and 55 years and older) ranged between about 20% and 32%.

Overall, cannabis use decreased from 2019/20 to 2020/21 among all age groups, with the clients who were 35 years old or younger showing steeper decreases hovering between about 7% and 9% and the two oldest age groups (45-54 and 55 years and older) showing a very small decline of under 2%.

**Figure 7. Proportion of Unique Clients who Use Cannabis by Age Group and Fiscal Year, Alberta 2019/20-2020/21**

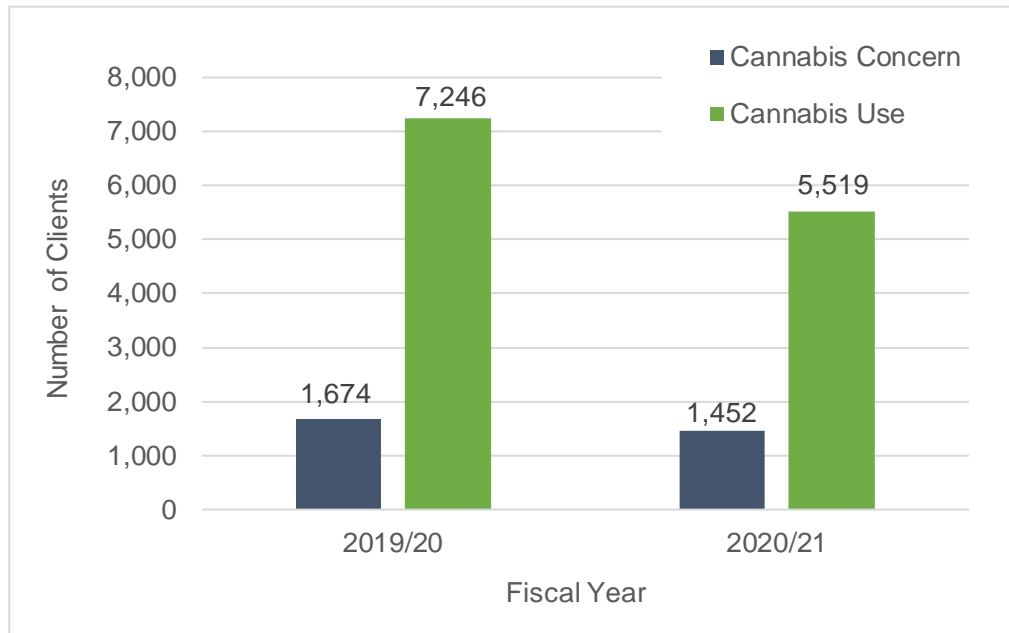


### ***Cannabis Use versus Cannabis Concerns***

When considering unique client counts, the overall number of clients indicating they have used cannabis in the past twelve months has decreased by 23.8% from 7,246 in 2019/20 to 5,519 in 2020/21 (Figure 8). The number of clients reporting that they were concerned with their cannabis use also showed a smaller decrease from 1,674 to 1,452, (13.3%).

Caution is warranted in that there was a 9% increase in missing responses for the question about a specific substance of concern. With this in mind, at least some of the decrease in numbers of clients concerned about cannabis use can be attributed to the increase in non-response to this question combined with overall reported decrease in numbers of cannabis users.

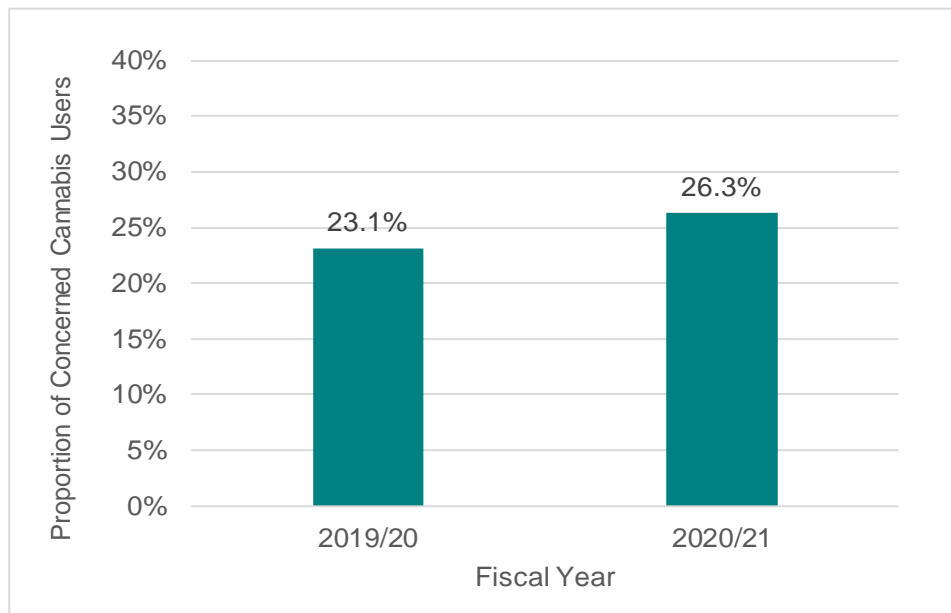
**Figure 8. Unique Client Counts, Past-Year Cannabis Use versus Cannabis Concerns Alberta 2019/20-2020/21**



***Cannabis Concern Rates among Clients Who Used Cannabis in the Previous Year***

On the other hand, the proportion of past-year cannabis users who were concerned with their cannabis use has showed a slight increase from 23.1% in 2019/20 to 26.3% in 2020/21 (Figure 9).

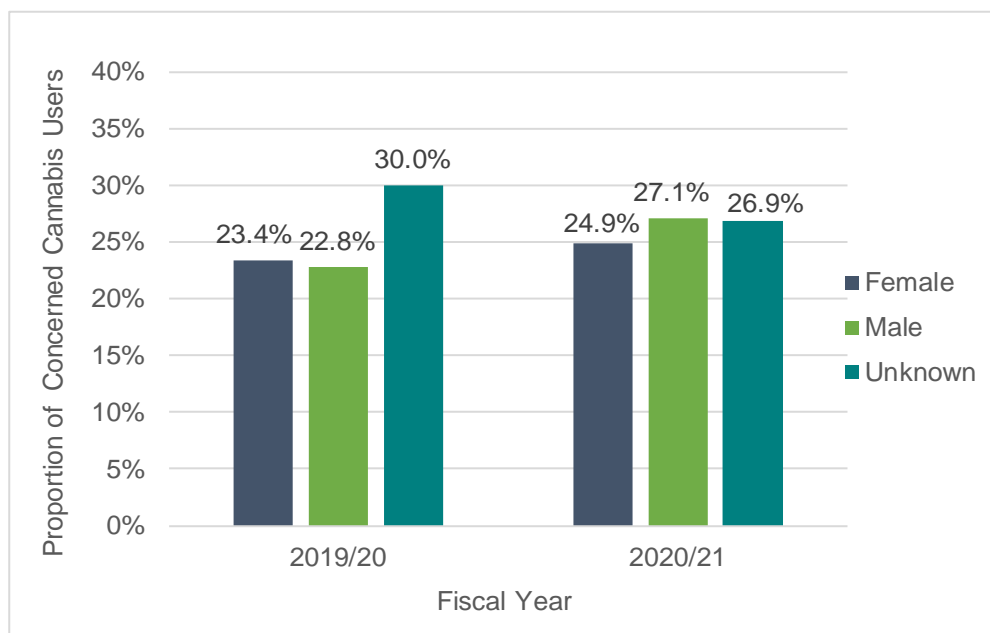
**Figure 9. Proportion of Cannabis Users who are Concerned with their Use, Alberta 2019/20-2020/21**



### ***Cannabis Concern Rates by Sex among Clients Who Used Cannabis in the Previous Year***

The proportion of past-year cannabis users who were concerned with their cannabis use showed slight increase from 2019/20 to 2020/21 for both males (by 4.3%) and females (by 1.5%) (Figure 10). There was a 3.1% decrease in cannabis use concern among the clients who had their sex unidentified, but due to the small sample size (30/100 for 2019/20 and 25/93 for 2020/21) there is greater variability seen in this population generally.

**Figure 10. Proportion of Unique Clients who Reported Past-Year Cannabis Use and Concern with their Cannabis Use, by Sex, Alberta 2019/20-2020/21**

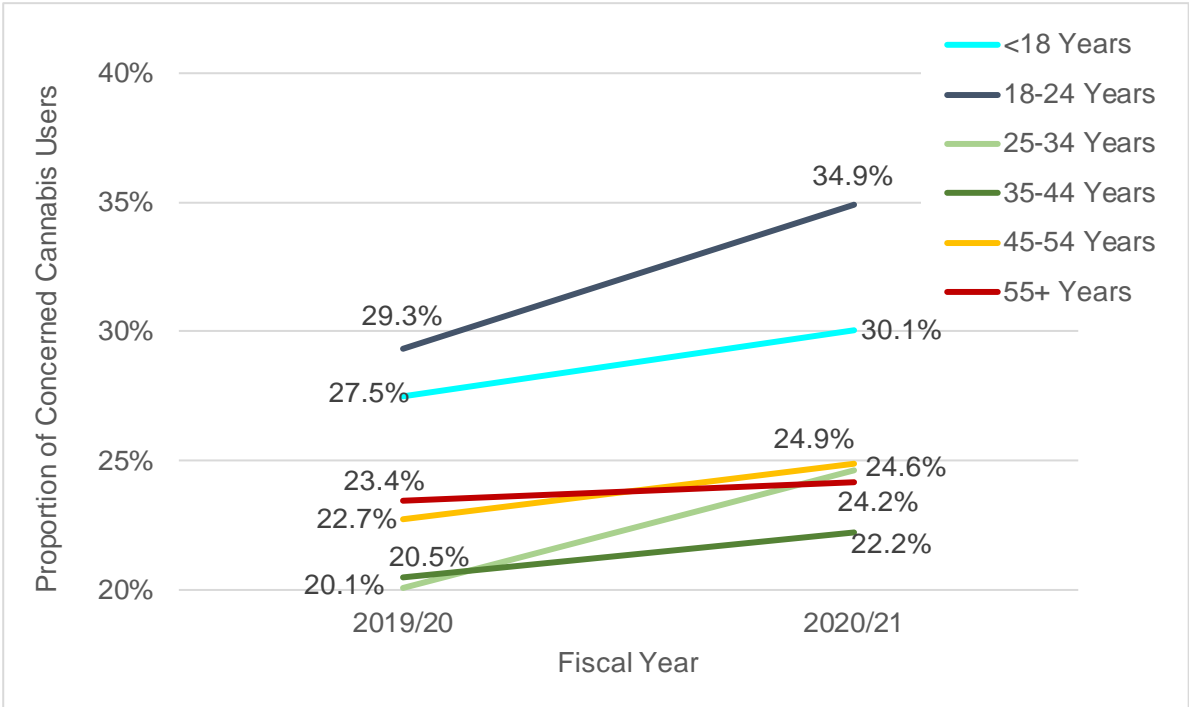


### ***Cannabis Concern Rates by Age among Clients Who Used Cannabis in the Previous Year***

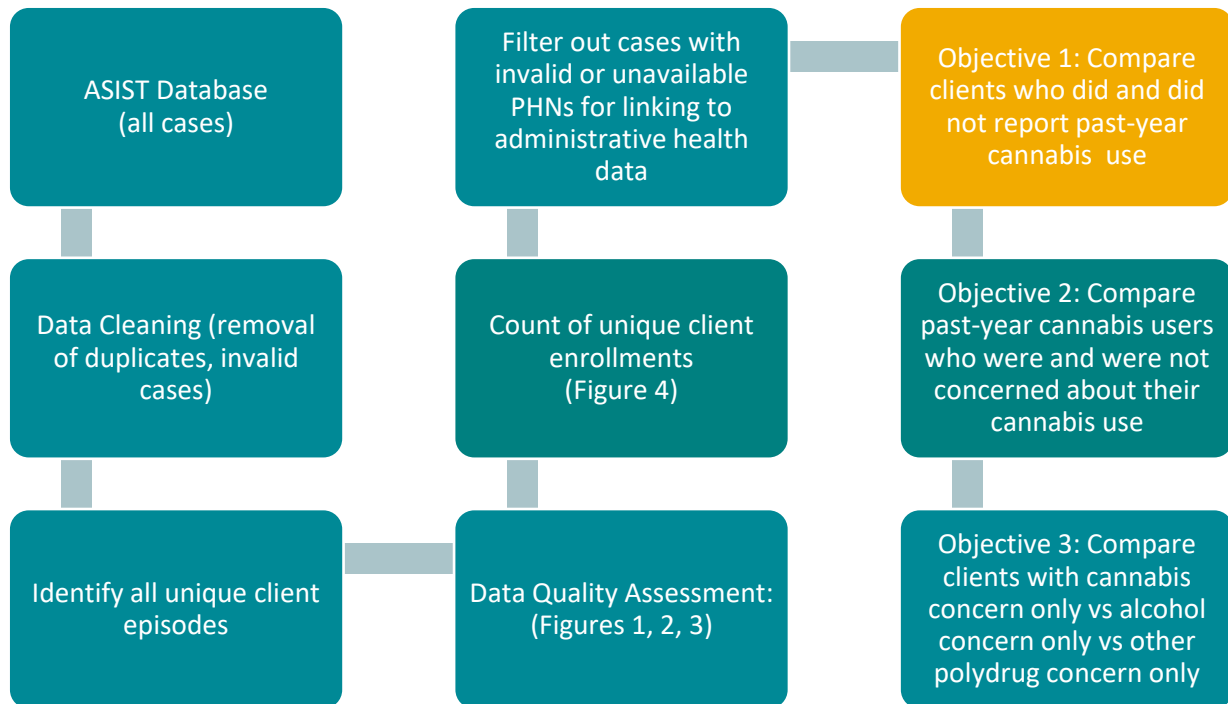
According to Figure 11, the proportions of clients who used cannabis in the past 12 months and reported concern with their cannabis use in 2019/20 and 2020/21 were the highest in the youngest age groups, ranging from 29.3% to 34.9% for those who were 18-24 years old and 27.5% to 30.1% for those under 18. The proportions of the past-year cannabis users who were concerned about their cannabis use among other age groups varied between 21.1% and 24.9%.

Concerns about cannabis use among the past-year cannabis users generally increased from 2019/20 to 2020/21 in all age categories. The largest increase of 5.6% was observed in clients who were 18-24 years old, followed by the second largest increase of 4.5% among those aged 25-34. The increase in concern among the remaining age groups was low – under or slightly over 2%.

**Figure 11. Proportion of Unique Clients who Reported Past-Year Cannabis Use and Concern about their Cannabis Use by Age Group, Alberta 2019/20-2020/21**



## Objective 1: Comparing Clients Who Did and Did Not Report Past-year Cannabis Use



### ***Cannabis Use: Demographics, Healthcare Utilization & Mental Health Comorbidities***

Some demographic, healthcare utilization and mental health comorbidity differences were observed only for the first (2019/20) post-legalization year or for the following (2020/21) year, which was marked by the COVID-19 pandemic.

Compared to clients who did not report using cannabis in the year preceding the index enrollment in specialty addiction services, clients who reported past-year cannabis use were: about 5-7 years younger; less likely to have achieved a high school degree, and less likely to be employed (Table 1). As well, clients who reported past-year cannabis use were more likely to use detox services and utilize residential addiction services but less likely to receive opioid dependency program (ODP) services than clients who did not report using cannabis. These trends occurred across each fiscal year in the study period.

Clients who reported past-year cannabis use had average emergency department utilization rates similar to cannabis non-users but were less likely to enroll in addiction treatment (Table 2). These trends occurred across each fiscal year in the study period. Hospital admissions were somewhat lower during the 2019/20 post-legalization year among past-year cannabis users

compared to non-users, whereas the following (2020/21) pandemic year did not show differences in hospital utilization between past-year cannabis users and non-users.

Compared to clients who did not report using cannabis in the year preceding index enrollment in specialty addiction services, clients who reported past-year cannabis use were more likely to have a comorbid developmental, eating or personality disorder diagnosis, but were less likely to be diagnosed with substance abuse disorder (Table 3). This trend occurred across each fiscal year in the study period. Also, past-year cannabis users were more likely than non-users to be diagnosed with a mood disorder or schizophrenia during the 2019/20 post-legalization year but were less likely to be diagnosed with a cognitive disorder. As far as the following COVID-19 pandemic (2020/21) year is concerned, the past-year cannabis users were more likely to be diagnosed with an anxiety disorder compared to non-users.



**TABLE 1. DEMOGRAPHIC AND ADDICTION SERVICE TYPE PROFILES AMONG ENROLLED CLIENTS WHO DID AND DID NOT REPORT USING CANNABIS IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

|                      |               |             | 2019/20     |             | 2020/21     |             |
|----------------------|---------------|-------------|-------------|-------------|-------------|-------------|
|                      |               |             | CANNABIS    | OTHER       | CANNABIS    | OTHER       |
| <b>AGE</b>           | Total         | N           | 6706        | 7883        | 5194        | 8283        |
|                      | Age           | mean        | 31.57       | 38.57       | 32.46       | 37.95       |
|                      |               | SD          | 11.78       | 13.74       | 11.68       | 13.18       |
|                      |               | 95%CI       | 31.29,31.85 | 38.27,38.87 | 32.14,32.78 | 37.67,38.23 |
| <b>SEX</b>           | Female        | %           | 36.71       | 40.45       | 37.62       | 39.94       |
|                      |               | n           | 2462        | 3189        | 1954        | 3308        |
|                      |               | 95% CI      | 36.70,36.73 | 40.44,40.47 | 37.61,37.63 | 39.92,39.95 |
|                      | Male          | %           | 61.93       | 58.20       | 60.76       | 58.14       |
|                      | n             | 4153        | 4588        | 3156        | 4816        |             |
|                      | 95% CI        | 61.91,61.94 | 58.19,58.22 | 60.75,60.77 | 58.13,58.16 |             |
|                      | Unknown       | %           | 1.36        | 1.34        | 1.62        | 1.92        |
|                      | n             | 91          | 106         | 84          | 159         |             |
|                      | 95% CI        | 1.35,1.36   | 1.34,1.35   | 1.61,1.62   | 1.92,1.92   |             |
| <b>EDUCATION</b>     | High School+  | %           | 43.41       | 45.88       | 43.32       | 42.22       |
|                      |               | n           | 2911        | 3617        | 2250        | 3497        |
|                      |               | 95% CI      | 43.39,43.42 | 45.87,45.90 | 43.31,43.33 | 42.21,42.23 |
|                      | < High School | %           | 41.80       | 33.87       | 37.22       | 33.00       |
|                      | n             | 2803        | 2670        | 1933        | 2733        |             |
|                      | 95% CI        | 41.78,41.81 | 33.86,33.88 | 37.21,37.23 | 32.98,33.01 |             |
|                      | Missing       | %           | 14.79       | 20.25       | 19.46       | 24.79       |
|                      | n             | 992         | 1596        | 1011        | 2053        |             |
|                      | 95% CI        | 14.78,14.80 | 20.23,20.26 | 19.46,19.47 | 24.77,24.80 |             |
| <b>EMPLOYMENT</b>    | Employed      | %           | 32.91       | 34.24       | 30.50       | 31.06       |
|                      |               | n           | 2207        | 2699        | 1584        | 2573        |
|                      |               | 95% CI      | 32.90,32.93 | 34.22,34.25 | 30.49,30.51 | 31.05,31.08 |
|                      | Un-employed   | %           | 52.95       | 46.48       | 51.44       | 45.82       |
|                      | n             | 3551        | 3664        | 2672        | 3795        |             |
|                      | 95% CI        | 52.94,52.97 | 46.47,46.49 | 51.43,51.46 | 45.80,45.83 |             |
|                      | Missing       | %           | 14.14       | 19.28       | 18.06       | 23.12       |
|                      | n             | 948         | 1520        | 938         | 1915        |             |
|                      | 95% CI        | 14.13,14.15 | 19.27,19.29 | 18.05,18.07 | 23.11,23.13 |             |
| <b>SERVICE TYPE*</b> | Detox         | %           | 16.06       | 13.42       | 15.65       | 12.25       |
|                      |               | n           | 1077        | 1058        | 813         | 1015        |
|                      |               | 95% CI      | 16.05,16.07 | 13.41,13.43 | 15.64,15.66 | 12.25,12.26 |
|                      | ODP           | %           | 8.22        | 12.23       | 12.30       | 18.28       |
|                      |               | n           | 551         | 964         | 639         | 1514        |
|                      |               | 95% CI      | 8.21,8.22   | 12.22,12.24 | 12.30,12.31 | 18.27,18.29 |
|                      | Outpatient    | %           | 70.58       | 70.56       | 66.10       | 66.75       |
|                      |               | n           | 4733        | 5562        | 3433        | 5529        |
|                      | 95% CI        | 70.56,70.59 | 70.54,70.57 | 66.08,66.11 | 66.74,66.76 |             |
|                      | Residential   | %           | 5.14        | 3.79        | 5.95        | 2.72        |
|                      | n             | 345         | 299         | 309         | 225         |             |
|                      | 95% CI        | 5.14,5.15   | 3.79,3.80   | 5.94,5.95   | 2.71,2.72   |             |

\* A single client could have multiple new enrollments of various service types within a single year.

**TABLE 2. HEALTHCARE UTILIZATION AMONG ENROLLED CLIENTS WHO DID AND DID NOT REPORT USING CANNABIS IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

|                      |                                 |        | 2019/20   |           | 2020/21   |           |
|----------------------|---------------------------------|--------|-----------|-----------|-----------|-----------|
|                      |                                 |        | CANNABIS  | OTHER     | CANNABIS  | OTHER     |
| <b>UTILIZATION**</b> | Total                           | N      | 6706      | 7883      | 5194      | 8283      |
|                      | Addiction Treatment Enrollments | mean   | 1.47      | 1.23      | 1.52      | 1.27      |
|                      |                                 | SD     | 0.97      | 0.61      | 0.99      | 0.69      |
|                      |                                 | 95% CI | 1.45,1.49 | 1.22,1.24 | 1.49,1.55 | 1.26,1.28 |
|                      | Emergency Department Visits     | mean   | 3.65      | 3.74      | 3.52      | 3.48      |
|                      |                                 | SD     | 6.53      | 7.18      | 6.03      | 6.74      |
|                      |                                 | 95% CI | 3.49,3.81 | 3.58,3.90 | 3.36,3.68 | 3.33,3.63 |
|                      | Hospital Admissions             | mean   | 0.91      | 1.01      | 1.02      | 1.03      |
|                      |                                 | SD     | 2.48      | 2.45      | 2.39      | 2.27      |
|                      |                                 | 95% CI | 0.85,0.97 | 0.96,1.06 | 0.96,1.08 | 0.98,1.08 |

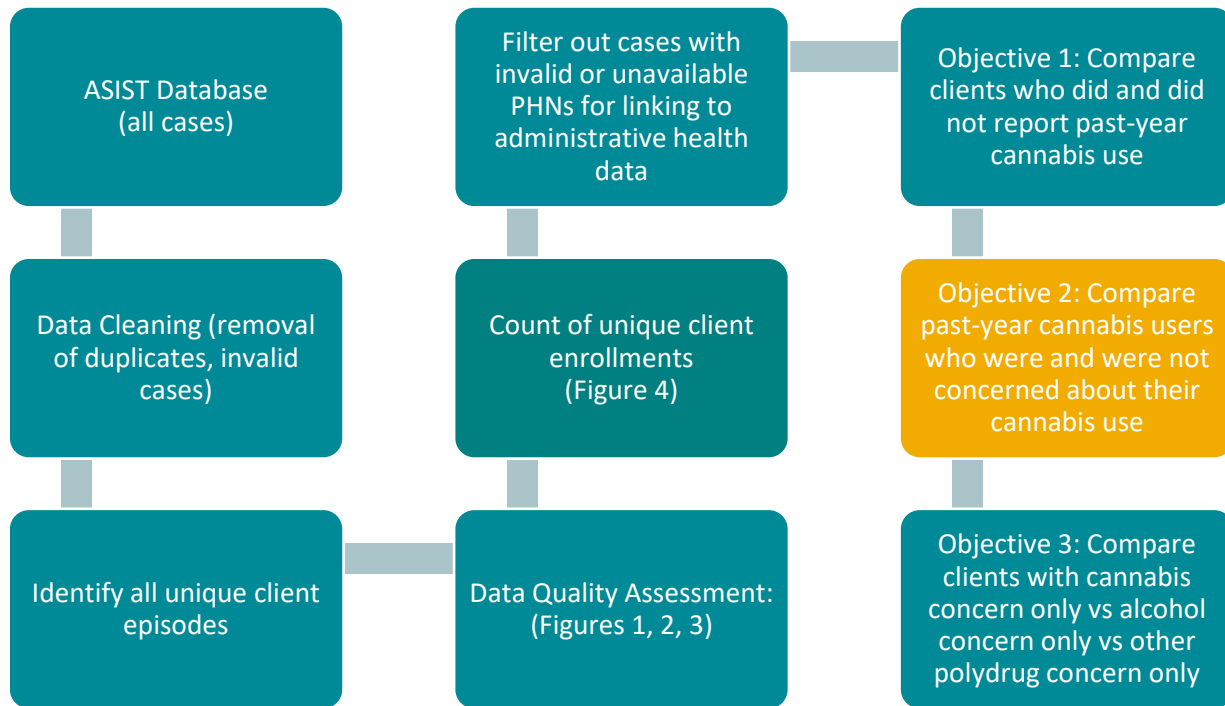
\*\* Average number of times a client visited an emergency department for any reason, was admitted as an inpatient for any reason, and the number of addiction treatment enrollments that occurred within the same fiscal year as the index enrollment to a specialty addiction treatment service.

## Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

**TABLE 3. MENTAL HEALTH COMORBIDITIES AMONG ENROLLED CLIENTS WHO DID AND DID NOT REPORT USING CANNABIS IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

|                                    |           | 2019/20   |             | 2020/21     |             |             |
|------------------------------------|-----------|-----------|-------------|-------------|-------------|-------------|
|                                    |           | CANNABIS  | OTHER       | CANNABIS    | OTHER       |             |
| <b>MENTAL HEALTH COMORBIDITIES</b> | Total     | N         | 6706        | 7883        | 5194        | 8283        |
|                                    | Substance | %         | 50.09       | 52.99       | 48.50       | 52.08       |
|                                    |           | n         | 3359        | 4177        | 2519        | 4314        |
|                                    |           | 95% CI    | 50.07,50.10 | 52.97,53.00 | 48.49,48.51 | 52.07,52.10 |
|                                    | Mood      | %         | 34.82       | 31.84       | 31.17       | 30.12       |
|                                    |           | n         | 2335        | 2510        | 1619        | 2495        |
|                                    |           | 95% CI    | 34.81,34.83 | 31.83,31.85 | 31.16,31.18 | 30.11,30.13 |
|                                    | Anxiety   | %         | 29.69       | 28.45       | 29.17       | 26.33       |
|                                    |           | n         | 1991        | 2243        | 1515        | 2181        |
|                                    |           | 95% CI    | 29.68,29.70 | 28.44,28.47 | 29.16,29.18 | 26.32,26.34 |
|                                    | Other     | %         | 28.75       | 24.91       | 27.49       | 23.96       |
|                                    |           | n         | 1928        | 1964        | 1428        | 1985        |
|                                    |           | 95% CI    | 28.74,28.76 | 24.90,24.93 | 27.48,27.50 | 23.95,23.98 |
| Develop-<br>mental                 | %         | 9.89      | 7.08        | 9.95        | 6.88        |             |
|                                    | n         | 663       | 558         | 517         | 570         |             |
|                                    | 95% CI    | 9.88,9.90 | 7.07,7.09   | 9.95,9.96   | 6.87,6.89   |             |
| Schizo-<br>phrenia                 | %         | 9.63      | 7.87        | 8.63        | 7.88        |             |
|                                    | n         | 646       | 620         | 448         | 653         |             |
|                                    | 95% CI    | 9.62,9.64 | 7.86,7.87   | 8.62,8.63   | 7.88,7.89   |             |
| Personality                        | %         | 7.75      | 5.76        | 6.87        | 5.65        |             |
|                                    | n         | 520       | 454         | 357         | 468         |             |
|                                    | 95% CI    | 7.75,7.76 | 5.75,5.77   | 6.87,6.88   | 5.64,5.66   |             |
| Cognitive                          | %         | 1.92      | 2.49        | 1.89        | 2.20        |             |
|                                    | n         | 129       | 196         | 98          | 182         |             |
|                                    | 95% CI    | 1.92,1.93 | 2.48,2.49   | 1.88,1.89   | 2.19,2.20   |             |
| Eating                             | %         | 0.55      | 0.29        | 0.67        | 0.25        |             |
|                                    | n         | 37        | 23          | 35          | 21          |             |
|                                    | 95% CI    | 0.55,0.55 | 0.29,0.29   | 0.67,0.68   | 0.25,0.25   |             |
| Sex                                | %         | 0.48      | 0.34        | 0.64        | 0.43        |             |
|                                    | n         | 32        | 27          | 33          | 36          |             |
|                                    | 95% CI    | 0.48,0.48 | 0.34,0.34   | 0.63,0.64   | 0.43,0.44   |             |

## Objective 2: Comparing Past-year Cannabis Users Who Were and Were Not Concerned about Their Cannabis Use



### ***Cannabis Concern in Those Who Used Cannabis in the Last Year: Demographics, Healthcare Utilization & Mental Health Comorbidities***

Tables 4 through 6 compare demographic, health care utilization and mental health comorbidity information on clients who expressed concern about their cannabis use to those who did not report concern. Some of the differences were consistent across the 2019/20 and 2020/21 fiscal years, whereas other differences were particular to only one of these years.

Compared to clients who did not report being concerned about using cannabis in the year preceding index enrollment in specialty addiction services, clients who reported past-year cannabis concern were slightly (approximately 1.5 – 2 years) younger (Table 4). This trend occurred across each fiscal year in the study period. There were no differences in employment status between the concerned and unconcerned clients. However, during the 2020/21 COVID-19 pandemic year clients who reported concern about their cannabis use in the previous year were on average slightly more educated (i.e., higher percentages completed at least high school or had higher levels of education) compared to those who were not concerned about cannabis use.

Compared to clients who did not report being concerned about using cannabis in the year preceding index enrollment in specialty addiction services, clients who reported cannabis concern were more likely to use detox services but less likely to receive ODP services (Table 4). The clients who expressed concern about their cannabis use were also more likely to receive outpatient services but were less likely to get residential addiction services compared to clients who were not concerned about cannabis use. These trends occurred across each fiscal year in the study period.

No differences in average addiction treatment enrollment rates and emergency department utilization rates were detected between clients who were concerned about their cannabis use and unconcerned clients (Table 5). This trend occurred across each fiscal year in the study period. However, hospital admissions were somewhat higher during the 2020/21 COVID-19 pandemic year among clients who were concerned about their cannabis use compared to unconcerned clients.

Compared to clients who did not report being concerned about using cannabis in the year preceding index enrollment in specialty addiction services, clients who reported past-year cannabis concern were more likely to have a mood, developmental, personality disorder or schizophrenia diagnosis (Table 6). At the same time, those who expressed concern about their cannabis use were less likely to be diagnosed with substance abuse disorder than clients who expressed no concern with cannabis use. These trends occurred across each fiscal year in the study period.

Lastly, clients who reported concern about their cannabis use were more likely to be diagnosed with an anxiety or eating disorder during the 2020/21 COVID-19 pandemic year compared to clients who were unconcerned about cannabis use.

## Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

**TABLE 4. DEMOGRAPHIC AND ADDICTION SERVICE TYPE PROFILES OF PAST-YEAR CANNABIS USERS WHO DID AND DID NOT REPORT A CONCERN ABOUT THEIR CANNABIS USE IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

|               |               |             | 2019/20     |             | 2020/21     |             |
|---------------|---------------|-------------|-------------|-------------|-------------|-------------|
|               |               |             | CONCERNED   | USED        | CONCERNED   | USED        |
| AGE           | Total         | N           | 1547        | 5159        | 1357        | 3837        |
|               | Age           | mean        | 30.36       | 31.94       | 30.93       | 33.00       |
|               |               | SD          | 12.14       | 11.64       | 11.69       | 11.63       |
|               |               | 95%CI       | 29.76,30.96 | 31.62,32.26 | 30.31,31.55 | 32.63,33.37 |
| SEX           | Female        | %           | 36.52       | 36.77       | 35.37       | 38.42       |
|               |               | n           | 565         | 1897        | 480         | 1474        |
|               |               | 95% CI      | 36.46,36.58 | 36.75,36.79 | 35.30,35.44 | 38.39,38.44 |
|               | Male          | %           | 61.67       | 62.01       | 63.01       | 59.97       |
|               |               | n           | 954         | 3199        | 855         | 2301        |
|               |               | 95% CI      | 61.61,61.73 | 61.99,62.03 | 62.94,63.08 | 59.94,59.99 |
| Unknown       | %             | 1.81        | 1.22        | 1.62        | 1.62        |             |
|               | n             | 28          | 63          | 22          | 62          |             |
|               | 95% CI        | 1.79,1.83   | 1.22,1.23   | 1.60,1.64   | 1.61,1.62   |             |
| EDUCATION     | High School+  | %           | 43.37       | 43.42       | 46.13       | 42.32       |
|               |               | n           | 671         | 2240        | 626         | 1624        |
|               |               | 95% CI      | 43.31,43.44 | 43.40,43.44 | 46.06,46.20 | 42.30,42.35 |
|               | < High School | %           | 41.63       | 41.85       | 34.34       | 38.23       |
|               |               | n           | 644         | 2159        | 466         | 1467        |
|               |               | 95% CI      | 41.57,41.69 | 41.83,41.87 | 34.27,34.41 | 38.21,38.26 |
| Missing       | %             | 30.77       | 14.73       | 19.53       | 19.44       |             |
|               | n             | 232         | 760         | 265         | 746         |             |
|               | 95% CI        | 30.71,30.83 | 14.72,14.75 | 19.47,19.59 | 19.42,19.46 |             |
| EMPLOYMENT    | Employed      | %           | 30.77       | 33.55       | 30.66       | 30.44       |
|               |               | n           | 476         | 1731        | 416         | 1168        |
|               |               | 95% CI      | 30.71,30.83 | 33.54,33.57 | 30.59,30.72 | 30.42,30.46 |
|               | Un-employed   | %           | 54.49       | 52.49       | 51.07       | 51.58       |
|               |               | n           | 843         | 2708        | 693         | 1979        |
|               |               | 95% CI      | 54.43,54.56 | 52.47,52.51 | 51.00,51.14 | 51.55,51.60 |
| Missing       | %             | 14.74       | 13.96       | 18.28       | 17.98       |             |
|               | n             | 228         | 720         | 248         | 690         |             |
|               | 95% CI        | 14.69,14.78 | 13.94,13.97 | 18.22,18.33 | 17.96,18.00 |             |
| SERVICE TYPE* | Detox         | %           | 17.91       | 15.51       | 15.70       | 15.64       |
|               |               | N           | 277         | 800         | 213         | 600         |
|               |               | 95% CI      | 17.86,17.95 | 15.49,15.52 | 15.64,15.75 | 15.62,15.66 |
|               | ODP           | %           | 3.17        | 9.73        | 4.72        | 14.99       |
|               |               | n           | 49          | 502         | 64          | 575         |
|               |               | 95% CI      | 3.15,3.19   | 9.72,9.74   | 4.69,4.75   | 14.94,15.00 |
|               | Outpatient    | %           | 74.14       | 69.51       | 73.10       | 63.62       |
|               |               | n           | 1147        | 3586        | 992         | 2441        |
| 95% CI        |               | 74.09,74.20 | 69.49,69.53 | 73.04,73.17 | 63.59,63.64 |             |
| Residential   | %             | 4.78        | 5.25        | 6.48        | 5.76        |             |
|               | n             | 74          | 271         | 88          | 221         |             |
|               | 95% CI        | 4.76,4.81   | 5.24,5.26   | 6.45,6.52   | 5.75,5.77   |             |

\* A single client could have multiple new enrollments of various service types within a single year.

Note: 7,883 client records were excluded for 2019/20 and 8,283 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).

**TABLE 5. HEALTHCARE UTILIZATION AMONG PAST-YEAR CANNABIS USERS WHO DID AND DID NOT REPORT A CONCERN ABOUT THEIR CANNABIS USE IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

|                      |                                 |        | 2019/20   |           | 2020/21   |           |
|----------------------|---------------------------------|--------|-----------|-----------|-----------|-----------|
|                      |                                 |        | CONCERNED | USED      | CONCERNED | USED      |
| <b>UTILIZATION**</b> | Total                           | N      | 1547      | 5159      | 1357      | 3837      |
|                      | Addiction Treatment Enrollments | mean   | 1.57      | 1.44      | 1.54      | 1.52      |
|                      |                                 | SD     | 1.16      | 0.91      | 1.03      | 0.98      |
|                      |                                 | 95% CI | 1.51,1.63 | 1.43,1.45 | 1.49,1.59 | 1.49,1.55 |
|                      | Emergency Department Visits     | mean   | 3.80      | 3.60      | 3.66      | 3.47      |
|                      |                                 | SD     | 7.34      | 6.27      | 6.27      | 5.94      |
|                      |                                 | 95% CI | 3.43,4.17 | 3.43,3.77 | 3.33,3.99 | 3.28,3.66 |
|                      | Hospital Admissions             | mean   | 0.92      | 0.91      | 1.19      | 0.95      |
|                      |                                 | SD     | 2.40      | 2.50      | 2.67      | 2.28      |
|                      |                                 | 95% CI | 0.80,1.04 | 0.84,0.98 | 1.05,1.33 | 0.88,1.02 |

\*\* Average number of times a client visited an emergency department for any reason, was admitted as an inpatient for any reason, and the number of addiction treatment enrollments that occurred within the same fiscal year as the index enrollment to a specialty addiction treatment service.

Note: 7,883 client records were excluded for 2019/20 and 8,283 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).

**TABLE 6. MENTAL HEALTH COMORBIDITIES OF PAST-YEAR CANNABIS USERS WHO DID AND DID NOT REPORT A CONCERN ABOUT THEIR CANNABIS USE IN THE PREVIOUS 12 MONTHS, ALBERTA, 2019-2021**

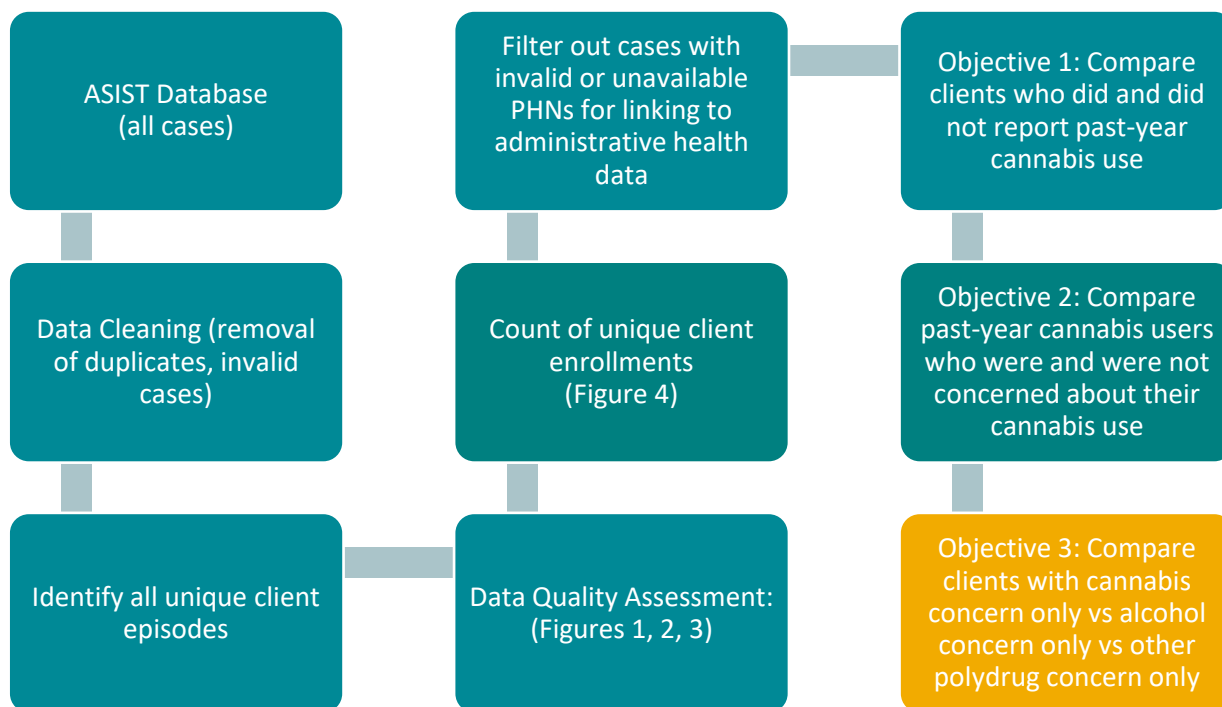
|                                    |                |             | 2019/20     |             | 2020/21     |             |
|------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|
|                                    |                |             | CONCERNED   | USED        | CONCERNED   | USED        |
| <b>MENTAL HEALTH COMORBIDITIES</b> | Total          | N           | 1547        | 5159        | 1357        | 3837        |
|                                    | Substance      | %           | 45.64       | 51.42       | 45.69       | 49.49       |
|                                    |                | n           | 706         | 2653        | 620         | 1899        |
|                                    |                | 95% CI      | 45.57,45.70 | 51.41,51.44 | 45.62,45.76 | 49.47,49.52 |
|                                    | Mood           | %           | 39.11       | 33.53       | 36.04       | 29.45       |
|                                    |                | n           | 605         | 1730        | 489         | 1130        |
|                                    |                | 95% CI      | 39.05,39.17 | 33.52,33.55 | 35.97,36.10 | 29.43,29.47 |
|                                    | Anxiety        | %           | 31.22       | 29.23       | 32.42       | 28.02       |
|                                    |                | n           | 483         | 1508        | 440         | 1075        |
|                                    |                | 95% CI      | 31.16,31.28 | 29.21,29.25 | 32.36,32.49 | 27.99,28.04 |
|                                    | Other          | %           | 29.80       | 28.44       | 29.11       | 26.92       |
|                                    |                | n           | 461         | 1467        | 395         | 1033        |
|                                    |                | 95% CI      | 29.74,29.86 | 28.42,28.45 | 29.04,29.17 | 26.90,26.94 |
|                                    | Schizo-phrenia | %           | 13.06       | 8.61        | 11.50       | 7.61        |
| n                                  |                | 202         | 444         | 156         | 292         |             |
| 95% CI                             |                | 13.01,13.10 | 8.60,8.62   | 11.45,11.54 | 7.60,7.62   |             |
| Develop-mental                     | %              | 11.96       | 9.27        | 11.27       | 9.49        |             |
|                                    | n              | 185         | 478         | 153         | 364         |             |
|                                    | 95% CI         | 11.92,12.00 | 9.25,9.28   | 11.23,11.32 | 9.47,9.50   |             |
| Personality                        | %              | 9.37        | 7.27        | 9.29        | 6.02        |             |
|                                    | n              | 145         | 375         | 126         | 231         |             |
|                                    | 95% CI         | 9.34,9.41   | 7.26,7.28   | 9.24,9.33   | 6.01,6.03   |             |
| Cognitive                          | %              | 1.81        | 1.96        | 2.06        | 1.82        |             |
|                                    | n              | 28          | 101         | 28          | 70          |             |
|                                    | 95% CI         | 1.79,1.83   | 1.95,1.96   | 2.04,2.08   | 1.82,1.83   |             |
| Eating                             | %              | 0.65        | 0.52        | 1.33        | 0.44        |             |
|                                    | n              | 10          | 27          | 18          | 17          |             |
|                                    | 95% CI         | 0.64,0.66   | 0.52,0.53   | 1.31,1.34   | 0.44,0.45   |             |
| Sex                                | %              | **          | 0.45        | 0.88        | 0.55        |             |
|                                    | n              |             | 23          | 12          | 21          |             |
|                                    | 95% CI         |             | 0.44,0.45   | 0.87,0.90   | 0.54,0.55   |             |

\*\*Indicates data is censored due to cell size less than 10

Note: 7,883 client records were excluded for 2019/20 and 8,283 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).



### Objective 3: Comparing Clients With Cannabis Concern Only versus Alcohol Concern Only, versus Other Polydrug Concern Only



#### ***Clients Concerned with Cannabis Only, Alcohol Only, and Other Polydrug Use: Demographics, Healthcare Utilization & Mental Health Comorbidities***

To get a more complete picture of clients who use cannabis, an analysis was conducted comparing clients who identified cannabis as their only substance of concern to a) other clients whose only concern was alcohol, and b) clients concerned with polydrug use (excluding cannabis and alcohol). The reason for these comparisons is so we can compare clients who are only concerned with cannabis with:

- Clients using the most prevalent single substance of concern (alcohol); and
- the average specialty addiction treatment services clients who are polydrug users.

While a client may have indicated that they are only concerned with a single substance, that does not necessarily mean that they did not use other substances within the last 12 months. It is important to note that a small fraction of AHS AMH clients identify their only concern is cannabis. Therefore, the focus of this analysis is not about volumes; rather, the focus is to isolate the profile of clients who are concerned only about cannabis to minimize dilution of associations due to clients who are concerned with multiple substances.

Compared to clients who reported being only concerned about using alcohol in the year prior to index enrollment in specialty addiction services or reported being concerned about multiple substances excluding cannabis and alcohol, clients only concerned about using cannabis in the year preceding index enrollment were: on average 5-8 years younger than the polydrug clients; 12-15 years younger than alcohol only clients; and less likely to have completed high school (Table 7). These trends occurred across each fiscal year in the study period.

Compared to clients who reported being only concerned about using alcohol in the year preceding index enrollment in specialty addiction services or reported being concerned about multiple substances excluding cannabis and alcohol, clients only concerned about using cannabis were less likely to receive detox services and were seen primarily in an outpatient setting (Table 7). This trend occurred across each fiscal year in the study period.

Compared to clients who reported being only concerned about using alcohol in the year preceding index enrollment or reported being concerned about multiple substances excluding cannabis and alcohol, clients only concerned about using cannabis were less likely to enroll in addiction treatment, visit the emergency department or be admitted to hospital (Table 8). This trend occurred across each fiscal year in the study period.

As indicated in Table 9, clients who reported being only concerned about using cannabis in the year preceding index enrollment in specialty addiction services were:

- more likely to be diagnosed with a developmental disorder compared to clients who reported being only concerned about using alcohol in the year preceding index enrollment, or reported being concerned about multiple substances excluding cannabis and alcohol;
- more likely to be diagnosed with a mood disorder than clients who reported being only concerned about using alcohol, but showed not much variation compared to those concerned with multiple substances excluding cannabis and alcohol;
- less likely to have a substance abuse disorder diagnosis than clients who were only concerned about using alcohol and clients concerned about multiple substances excluding cannabis and alcohol;
- more likely to be diagnosed with schizophrenia than clients who were only concerned about using alcohol, but showed not much difference or no difference compared to clients concerned about multiple substances excluding cannabis and alcohol;
- more likely to be diagnosed with a personality disorder than clients who were only concerned about using alcohol, but were less likely to be diagnosed with a personality disorder than clients concerned about multiple substances excluding cannabis and alcohol.

The above-mentioned trends occurred across each fiscal year in the study period.

In addition, clients who were only concerned about using cannabis were less likely to be diagnosed with an anxiety disorder in 2019/20 but were more likely to be diagnosed with an eating or sex-related disorder in 2020/21 compared to clients who were only concerned about using alcohol and clients concerned about multiple substances excluding cannabis and alcohol (Table 9). (The eating and sex-related disorder results should be interpreted with caution due to very small numbers of cases).

**TABLE 7. DEMOGRAPHIC AND ADDICTION SERVICE TYPE PROFILES OF CLIENTS CONCERNED WITH CANNABIS ONLY, ALCOHOL ONLY AND POLYDRUG USE, ALBERTA, 2019-2021**

|              |               |        | 2019/20     |             |             | 2020/21     |             |             |
|--------------|---------------|--------|-------------|-------------|-------------|-------------|-------------|-------------|
|              |               |        | ALCOHOL     | CANNABIS    | POLYDRUG    | ALCOHOL     | CANNABIS    | POLYDRUG    |
| AGE          | Total         | N      | 2178        | 241         | 5608        | 2330        | 294         | 4248        |
|              | Age           | mean   | 41.44       | 26.86       | 34.41       | 41.12       | 28.56       | 34.32       |
|              |               | SD     | 13.69       | 13.21       | 11.66       | 13.06       | 12.58       | 11.32       |
|              |               | 95%CI  | 40.87,42.01 | 25.19,28.53 | 34.10,34.72 | 40.59,41.65 | 27.12,30.00 | 33.98,34.99 |
| SEX          | Female        | %      | 36.55       | 32.37       | 38.43       | 37.94       | 34.01       | 38.39       |
|              |               | n      | 796         | 78          | 2155        | 884         | 100         | 1631        |
|              |               | 95% CI | 36.50,36.59 | 31.98,32.75 | 38.41,38.44 | 37.90,37.98 | 33.70,34.33 | 38.37,38.42 |
|              | Male          | %      | 62.40       | 65.98       | 60.27       | 60.73       | 64.63       | 60.17       |
|              |               | n      | 1359        | 159         | 3380        | 1415        | 190         | 25.56       |
|              |               | 95% CI | 62.35,62.44 | 65.59,66.36 | 60.25,60.29 | 60.69,60.77 | 64.31,64.94 | 60.15,60.19 |
|              | Unknown       | %      | 1.06        | **          | 1.30        | 1.33        | **          | 1.44        |
|              |               | n      | 23          |             | 73          | 31          |             | 61          |
|              |               | 95% CI | 1.05,1.07   |             | 1.30,1.31   | 1.32,1.34   |             | 1.43,1.44   |
| EDUCATION    | High School+  | %      | 62.26       | 41.91       | 46.79       | 62.53       | 48.30       | 43.08       |
|              |               | n      | 1356        | 101         | 2624        | 1457        | 142         | 1830        |
|              |               | 95% CI | 62.22,62.30 | 41.51,42.31 | 46.77,46.81 | 62.49,62.57 | 47.97,48.63 | 43.06,43.10 |
|              | < High School | %      | 23.83       | 42.32       | 39.44       | 21.50       | 26.53       | 38.11       |
|              |               | n      | 519         | 102         | 2212        | 501         | 78          | 1619        |
|              |               | 95% CI | 23.79,23.87 | 41.92,42.73 | 39.43,39.46 | 21.47,21.54 | 26.24,26.82 | 38.09,38.13 |
|              | Missing       | %      | 13.91       | 15.77       | 13.77       | 15.97       | 25.17       | 18.81       |
|              |               | n      | 303         | 38          | 772         | 372         | 74          | 799         |
|              |               | 95% CI | 13.88,13.94 | 15.47,16.06 | 13.75,13.78 | 15.93,16.00 | 24.88,25.46 | 18.79,18.83 |
| EMPLOYMENT   | Employed      | %      | 46.37       | 32.78       | 33.38       | 42.66       | 28.23       | 30.04       |
|              |               | n      | 1010        | 79          | 1872        | 994         | 83          | 1276        |
|              |               | 95% CI | 46.33,46.42 | 32.40,33.16 | 33.36,33.40 | 42.62,42.70 | 27.93,28.53 | 30.02,30.06 |
|              | Un-employed   | %      | 41.32       | 48.96       | 54.28       | 43.00       | 49.32       | 52.78       |
|              |               | n      | 900         | 118         | 3044        | 1002        | 145         | 2242        |
|              |               | 95% CI | 41.28,41.37 | 48.56,49.37 | 54.26,54.30 | 42.96,43.05 | 48.99,49.65 | 52.75,52.80 |
|              | Missing       | %      | 12.30       | 18.26       | 12.34       | 14.33       | 22.45       | 17.18       |
|              |               | n      | 268         | 44          | 692         | 334         | 66          | 730         |
|              |               | 95% CI | 12.28,12.33 | 17.94,18.57 | 12.33,12.35 | 14.31,14.36 | 22.17,22.73 | 17.17,17.20 |
| SERVICE TYPE | Detox         | %      | 20.06       | 4.98        | 22.63       | 17.17       | 3.74        | 22.39       |
|              |               | n      | 437         | 12          | 1269        | 400         | 11          | 951         |
|              |               | 95% CI | 20.03,20.10 | 4.80,5.16   | 22.61,22.64 | 17.14,17.20 | 3.61,3.87   | 22.37,22.41 |
|              | ODP           | %      | **          | **          | 10.34       | **          | **          | 16.57       |
|              |               | n      |             |             | 580         |             |             | 704         |
|              |               | 95% CI |             |             | 10.33,10.35 |             |             | 16.56,16.59 |
|              | Outpatient    | %      | 74.06       | 92.53       | 60.66       | 77.34       | 93.54       | 54.68       |
|              |               | n      | 1613        | 223         | 3402        | 1802        | 275         | 2323        |
|              |               | 95% CI | 74.02,74.10 | 92.32,92.74 | 60.65,60.68 | 77.30,77.37 | 93.37,93.70 | 54.66,54.71 |
|              | Residential   | %      | 5.83        | **          | 6.37        | 5.24        | **          | 6.36        |
|              |               | n      | 127         |             | 357         | 122         |             | 270         |
|              |               | 95% CI | 5.81,5.85   |             | 6.36,6.37   | 5.22,5.25   |             | 6.34,6.37   |

\*\*Indicates data is censored due to cell size less than 10

Note: 6,562 client records were excluded for 2019/20 and 6,605 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).

**TABLE 8. HEALTHCARE UTILIZATION OF CLIENTS CONCERNED WITH CANNABIS ONLY, ALCOHOL ONLY, AND POLYDRUG USE, ALBERTA, 2019-2021**

|                      |                      | 2019/20 |           |           | 2020/21   |           |           |           |
|----------------------|----------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|
|                      |                      | ALCOHOL | CANNABIS  | POLYDRUG  | ALCOHOL   | CANNABIS  | POLYDRUG  |           |
| <b>UTILIZATION**</b> | Total                | N       | 2178      | 241       | 5608      | 2330      | 294       | 4248      |
|                      | Addiction Treatment  | mean    | 1.26      | 1.15      | 1.59      | 1.31      | 1.13      | 1.67      |
|                      |                      | SD      | 0.61      | 0.49      | 1.06      | 0.66      | 0.38      | 1.13      |
|                      | Enrollments          | 95% CI  | 1.23,1.29 | 1.12,1.18 | 1.58,1.60 | 1.28,1.34 | 1.11,1.15 | 1.65,1.69 |
|                      | Emergency Department | mean    | 3.63      | 1.88      | 4.39      | 3.45      | 2.44      | 4.05      |
|                      |                      | SD      | 6.01      | 2.86      | 7.53      | 7.27      | 4.43      | 6.61      |
|                      | Visits               | 95% CI  | 3.38,3.88 | 1.52,2.24 | 4.19,4.59 | 3.15,3.75 | 1.93,2.95 | 3.85,4.25 |
|                      | Hospital Admissions  | mean    | 1.16      | 0.60      | 1.06      | 1.00      | 0.76      | 1.13      |
|                      |                      | SD      | 2.56      | 1.77      | 2.71      | 2.17      | 1.90      | 2.50      |
|                      |                      | 95% CI  | 1.05,1.27 | 0.38,0.82 | 0.99,1.13 | 0.91,1.09 | 0.54,0.98 | 1.05,1.21 |

Note: 6,562 client records were excluded for 2019/20 and 6,605 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).

**TABLE 9. MENTAL HEALTH COMORBIDITIES OF CLIENTS CONCERNED WITH CANNABIS ONLY, ALCOHOL ONLY AND POLYDRUG USE, ALBERTA, 2019-2021**

|                                    |               | 2019/20   |             |             | 2020/21     |             |             |             |
|------------------------------------|---------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                    |               | ALCOHOL   | CANNABIS    | POLYDRUG    | ALCOHOL     | CANNABIS    | POLYDRUG    |             |
| <b>MENTAL HEALTH COMORBIDITIES</b> | Total         | N         | 2178        | 241         | 5608        | 2330        | 294         | 4248        |
|                                    |               | %         | 56.01       | 22.41       | 60.15       | 51.42       | 25.51       | 57.16       |
|                                    | Substance     | n         | 1220        | 54          | 3373        | 1198        | 75          | 2428        |
|                                    |               | 95% CI    | 55.97,56.06 | 22.07,22.75 | 60.13,60.16 | 51.37,51.46 | 25.22,25.80 | 57.13,57.18 |
|                                    |               | %         | 31.45       | 34.85       | 36.63       | 27.17       | 37.07       | 33.17       |
|                                    | Mood          | n         | 685         | 84          | 2054        | 633         | 109         | 1409        |
|                                    |               | 95% CI    | 31.41,31.49 | 34.47,35.24 | 36.61,36.64 | 27.13,27.20 | 36.75,37.40 | 33.15,33.19 |
|                                    |               | %         | 28.65       | 22.82       | 32.33       | 27.42       | 28.57       | 29.45       |
|                                    | Anxiety       | n         | 624         | 55          | 1813        | 639         | 84          | 1251        |
|                                    |               | 95% CI    | 28.61,28.69 | 22.48,23.16 | 32.31,32.35 | 27.39,27.46 | 28.27,28.87 | 29.43,29.47 |
|                                    |               | %         | 24.10       | 21.16       | 30.46       | 22.40       | 26.19       | 29.54       |
|                                    | Other         | n         | 525         | 51          | 1708        | 522         | 77          | 1255        |
|                                    |               | 95% CI    | 24.07,24.14 | 20.83,21.49 | 30.44,30.47 | 22.37,22.44 | 25.90,26.48 | 29.52,29.56 |
|                                    |               | %         | 4.22        | 8.30        | 10.43       | 3.86        | 9.86        | 9.86        |
|                                    | Schizophrenia | n         | 92          | 20          | 585         | 90          | 29          | 419         |
|                                    |               | 95% CI    | 4.21,4.24   | 8.07,8.52   | 10.42,10.44 | 3.85,3.88   | 9.67,10.06  | 9.85,9.88   |
|                                    | %             | 4.04      | 7.47        | 8.01        | 3.91        | 5.10        | 8.07        |             |
| Personality                        | n             | 88        | 18          | 449         | 91          | 15          | 343         |             |
|                                    | 95% CI        | 4.02,4.06 | 7.26,7.68   | 8.00,8.02   | 3.89,3.92   | 4.96,5.25   | 8.06,8.09   |             |
|                                    | %             | 3.72      | 12.03       | 8.58        | 3.09        | 13.27       | 8.22        |             |
| Developmental                      | n             | 81        | 29          | 481         | 72          | 39          | 349         |             |
|                                    | 95% CI        | 3.70,3.74 | 11.77,12.30 | 8.57,8.59   | 3.08,3.10   | 13.04,13.49 | 8.20,8.23   |             |
|                                    | %             | 2.39      | **          | 2.39        | 2.36        | **          | 2.10        |             |
| Cognitive                          | n             | 52        |             | 134         | 55          |             | 89          |             |
|                                    | 95% CI        | 2.37,2.40 |             | 2.38,2.39   | 2.35,2.37   |             | 2.09,2.10   |             |
|                                    | %             | 0.60      | **          | 0.50        | **          | **          | 0.54        |             |
| Eating                             | n             | 13        |             | 28          |             |             | 23          |             |
|                                    | 95% CI        | 0.59,0.60 |             | 0.50,0.50   |             |             | 0.54,0.54   |             |
|                                    | %             | **        | **          | 0.32        | **          | **          | 0.40        |             |
| Sex                                | n             |           |             | 18          |             |             | 17          |             |
|                                    | 95% CI        |           |             | 0.32,0.32   |             |             | 0.40,0.40   |             |

\*\*Indicates data is censored due to cell size less than 10

Note: 6,562 client records were excluded for 2019/20 and 6,605 records were excluded for 2020/21 due to missing values in the variable used to categorize clients by groups (BY Group variable).

## References

CRISM-Alberta Health Services. (2020). Cannabis use and concerns among clients seeking addiction treatment: Demographics, comorbidities, and service utilization patterns pre-legalization (2012-2018). Edmonton, AB: Hathaway, J., Jahrig, J., Rittenbach, K.

## Notes

**Substance of Use:** A client enrolling in an addiction treatment service has indicated that they have used a substance in the last 12 months.

**Substance of Concern:** A client enrolling in an addiction treatment service has indicated that they are concerned with their use of a substance within the last 12 months.

Health service utilization was broken down into three parts:

1. Emergency department visits. This data was collected by aggregating the number of times a study participant appeared in the *National Ambulatory Care Reporting System* (NACRS) database within each fiscal year.
2. Hospital inpatient visits. This data was collected by aggregating the number of times a study participant appeared in the *Discharge Abstract Database* (DAD) within each fiscal year.
3. Addiction service treatment enrollments. This data was collected by aggregating the number of unique enrollments a study participant had within each fiscal year in Addiction and Mental Health System for Information and Service Tracking (ASIST).

The study participants were identified from the ASIST database and then linked to other administrative data for analysis. Please note the data limitations of ASIST in the data quality notes section (Appendix B).

ASIST is the only source used for addiction information in this report. This report does not reflect any activity that might be occurring where the main information system is different.

## Data Sources

AHS Administrative Data Repository (DRRX):

- Discharge Abstract Database (DAD)
- National Ambulatory Care Reporting System (NACRS, since 2010)
- Addiction and Mental Health System for Information and Service Tracking (ASIST)

## Appendix A: Data Systems

*Addiction and Mental Health System for Information and Service Tracking (ASIST)* is the clinical application used by addiction staff throughout the province and is one of the electronic health records for addiction services clients. Information collected on different information systems in some zones were not included in the results. ASIST collects data for treatment, prevention and information services provided and entered by clinicians.

*Discharge Abstract Database (DAD)* which captures admissions to acute care facilities including dates, a primary diagnosis, and up to 24 secondary diagnoses coded using the Canadian Enhancement of the International Statistical Classification of Diseases, 10<sup>th</sup> Revision (ICD-10). Trained professionals code diagnosis codes, and record data elements according to national guidelines set forth by the Canadian Institute for Health Information (<https://www.cihi.ca/en/discharge-abstract-database-metadata>).

*Practitioner Claims Database*, which records physician billing claims and up to 3 diagnosis codes, coded using the International Statistical Classification of Diseases, 9<sup>th</sup> Revision (ICD-9). This data is collected primarily to facilitate payment to physicians by the provincial government but is commonly used for health research studies.

*National Ambulatory Care Reporting System (NACRS, since 2010)* and *Alberta Ambulatory Care Reporting System (AACRS, before 2010)*, which include visits to emergency departments including relevant dates, a primary diagnosis, and up to 9 secondary diagnoses coded using ICD-10. Diagnosis codes are coded by trained professionals using national guidelines, and data elements are recorded according to national guidelines set forth by the Canadian Institute for Health Information (<https://www.cihi.ca/en/national-ambulatory-care-reporting-system-metadata>).



## Appendix B: Data Quality Assessment Details

*Addiction and Mental Health System for Information and Service Tracking (ASIST)* is the clinical application used by addiction staff throughout the province and is one of the electronic health records for addiction

### **ASIST Enrollments with no Valid PHN**

As shown in the table below, some ASIST enrolments did not contain a valid PHN for linking to other health care systems.

| Fiscal Year | Total Patient | PHN Invalid | No Valid PHN (%) |
|-------------|---------------|-------------|------------------|
| 2019/20     | 15,856        | 584         | 3.7%             |
| 2020/21     | 14,364        | 274         | 1.9%             |

### **Age and Sex Stratification for Missing PHNs**

Clients aged 18-24 were most likely to have their PHNs missing (4.38%), and those 55 years of age or older were least likely to be missing PHN (3.15%), compared to the overall percentage of clients with missing PHN (3.77%) (see the table below). These differences were statistically significant based on Chi-Square statistics ( $\chi^2=33.77, df=5, p<0.0001$ ).

| Age Group | No Valid PHN (%) |
|-----------|------------------|
| Under 18  | 4.20%            |
| 18-24     | 4.38%            |
| 25-34     | 3.97%            |
| 35-44     | 3.18%            |
| 45-54     | 3.95%            |
| 55+       | 3.15%            |
| Overall   | 3.77%            |

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Unknown sex had the highest missing rate for linkable PHNs (5.64%), followed by males (4.16%) and then females (3.08%) (see the table below). The overall PHN missing rate was 3.77%. Statistically significant Chi-Square ( $\chi^2=53.85, df=2, p<0.0001$ ).

| Sex     | No Valid PHN (%) |
|---------|------------------|
| Male    | 4.16%            |
| Female  | 3.08%            |
| Unknown | 5.64%            |
| Overall | 3.77%            |

### **Association between Reported Cannabis Use/Concern and Missing PHNs**

Cannabis use or concern was not statistically associated with a difference in PHN missing rate. Chi-Square p value = 0.9946.

### **Non-response Rates for Substance of Concern Question in ASIST**

During the addiction treatment intake process, clients are asked the question about substance(s) of concern, including alcohol, drugs and tobacco. The first question (with “yes” or “no” answer choices) asks whether there is a substance of concern in general, and the question that follows asks about specific substances clients are concerned about. Specific substances of concern can be selected from the provided list. Missing response rate indicates that the introductory general question about having a concern was not responded to.

As evident from the table below, the missing response rate increased from 2018/19 to 2020/21. This negative data quality trend should be considered when evaluating results. For example, a decrease in the volume of clients with a particular substance of concern could be due to an increase in missing data for the substance of concern fields. For this reason, we use proportions wherever appropriate.

| Treatment Admission (Fiscal Year) | General Concern Response Rate (%)* | Specific Concern Response Rate (%)** | Missing Rate*** |
|-----------------------------------|------------------------------------|--------------------------------------|-----------------|
| 2019/20                           | 79.27%                             | 76.06%                               | 20.73%          |
| 2020/21                           | 72.29%                             | 67.14%                               | 27.71%          |
| Total                             | 79.11%                             | 75.11%                               | 20.90%          |

**Notes:**

\* General Concern Response Rate is percentage of enrollments that answered “yes” or “no” to the question of whether clients have any substance(s) of concern (SUBSTANCE\_CON\_CNA question)

\*\*Specific Concern Response Rate is the percentage of enrolments that answered the SUBSTANCE\_CON\_CNA question positively and provided data on specific substance(s) of concern.

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\*\*\* Missing Rate” is percent of enrolments that didn’t respond “yes” or “no” to the general SUBSTANCE\_CON\_CNA question.

### **Age and Sex Stratification of Missing Rates for Substance of Concern Data**

As indicated in the table below, missing rate on the substance of concern question was 20.90% overall. The age group with the highest missing data rate was under 18 years old (23.83%). The age group with the lowest missing data rate was 45-54 (18.87%). The difference was statistically significant with a Chi-Square ( $\chi^2=140.17, df=10, p<0.0001$ ).

| Age Group | No Substance of Concern (%) |
|-----------|-----------------------------|
| Under 18  | 23.83%                      |
| 18-24     | 21.16%                      |
| 25-34     | 21.04%                      |
| 35-44     | 20.92%                      |
| 45-54     | 18.87%                      |
| 55+       | 20.01%                      |
| Overall   | 20.90%                      |

When examined by clients’ sex, missing rate on substance of concern was 20.90% overall, those with an unknown sex had the highest missing rate (27.85%), followed by females (22.84%) and then males (19.52%) (see the table below). The difference was statistically significant with a Chi-Square p value ( $\chi^2=145.95, df=4, p<0.0001$ ).

| Sex     | No Substance of Concern (%) |
|---------|-----------------------------|
| Males   | 19.52%                      |
| Females | 22.84%                      |
| Unknown | 27.85%                      |
| Overall | 20.90%                      |

### **Effect of Removal of the Edmonton Zone Data from Post-legalization Analysis**

Removal of the Edmonton Zone data decreased the missing rate substantially and lines up with eClinician and ASIST double entry requirements for the pre-legalization time period.

## Appendix C: ICD Codes

**Table 10. ICD-9/10 Coding Algorithms for Comorbid Condition Case Definitions.**

| Comorbidities | ICD-10  | ICD-9  |
|---------------|---|--|
| Liver Disease | B18.x, K70.0–K70.3, K70.9, K71.3–K71.5, K71.7, K73.x, K74.x, K76.0, K76.2–K76.4, K76.8, K76.9, Z94.4, I85.0, I85.9, I86.4, I98.2, K70.4, K71.1, K72.1, K72.9, K76.5, K76.6, K76.7 | 070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 570.x, 571.x, 573.3, 573.4, 573.8, 573.9, V42.7, 456.0–456.2, 572.2–572.8  |
| AIDS/HIV      | B20.x–B22.x, B24.x  | 042.x–044.x  |
| Substance     | F10-F19, F55  | 291.0–291.9, 292.0–292.9, 303.0–303.9, 304.0–304.9, 305.0–305.9  |
| Mood          | F30, F31, F34.0, F32, F33, F34.1, F38.1, F34.8, F34.9, F38.0, F38.8, F39  | 296.0–296.1, 296.4–296.8, 296.2, 296.3, 300.4, 311, 296.9  |
| Anxiety       | F40, F41, F42, F93.0–F93.2, F43.0, F43.1, F43.8, F43.9  | 300.0, 300.2, 300.3, 309.8, 308.3  |
| Schizophrenia | F20–F29   | 295.0–295.9, 298.8, 298.9, 297.1–297.3, 297.0–297.3, 297.8–297.9, 298.0–298.4  |
| Personality   | F60, F61, F62, F68, F69   | 301.0–301.9  |
| Other         | F44, F45, F48, F53, F54, F59, F99, G21, G24, G25, T50.9, T74.0–T74.2, Z00.4, Z04.6  | 300, 3001, 30011, 30013, 30014, 30015, 30016, 30019, 3007, 30070, 30081, 30082, 3009, 30090, 306, 3069, 307, 30789, 3100, 31000, 3101, 31010, 3102, 3108, 3109, 313, 316, 7999 |

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|               |                                 |  |
|---------------|---------------------------------|--|
| Developmental | F80-F84, F88-F90, F94, F95, F98 | 299, 2990, 29900, 29901, 2991, 29911, 2998, 29980, 29981, 2999, 29990, 29991, 307, 3070, 30723, 3076, 30921, 3120, 31200, 31220, 3128, 31281, 31289, 3129, 31290, 313, 31381, 31389, 31400, 31401, 3149, 315, 31500, 3152, 31531, 3159, 31590, 317, 31700, 318, 3180, 31800, 3181, 31810, 319, 31900 |
| Cognitive     | F00-F07, F09, G30               | 290, 2900, 29000, 2901, 29010, 29013, 2902, 29020, 29021, 2903, 29030, 2904, 29040, 29041, 29042, 29043, 2908, 2909, 293, 2930, 29300, 2931, 29389, 2939, 294, 2940, 29400, 2941, 29410, 2948, 29480, 2949, 78009  |
| Eating        | F50, F98.2, F98.3               | 307.1, 307.50, 307.51, 307.54  |
| Sex           | F52, F64, F65, F66              | 302.0–302.9  |

Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

**Table 11. ICD-9/10 “Other” mental health diagnosis breakdown.**

| <b>Diagnosis Group</b> | <b>ICD10</b>   |
|------------------------|--|
| <b>OTH</b>             | Dissociative Disorders   |
|                        | General Psychiatric Examination  |
|                        | Other Conditions that are a Focus of Clinical attention                                  |
|                        | Other Neurotic Disorders   |
|                        | Postpartum Depression  |
|                        | Psychological and behavioural factors  |
|                        | Somatoform Disorders   |
|                        | Unspecified Mental Disorder  |
|                        | Unspecified behavioral syndromes   |
|                        |  |
| <b>DIS</b>             | Developmental Disorders  |
|                        | Impulse-Control Disorders  |
| <b>ISH</b>             | Intentional Self-Harm  |
| <b>NEU</b>             | Intellectual Disability  |
| <b>SLE</b>             | Nonorganic sleep disorders   |
|                        | Other Conditions that are a Focus of Clinical attention                                  |
|                        | <b>ICD9</b>  |
| <b>OTH</b>             | ...[Specified Psychological Factor] Affecting...[Indicate the General Medical Condition] |
|                        | Age-Related Cognitive Decline  |
|                        | Depersonalization Disorder   |
|                        | Dissociative Amnesia   |
|                        | Encopresis w Const/Incont  |
|                        | Identity Problem   |
|                        | Neurotic Disorders   |
|                        | Organic Mental Disorder  |
|                        | Organic Personality Disorder   |
|                        | Other Ill-Defined & Unknown Causes of Morbidity/Mortality                                |
|                        | Pain Disorder Associated With Psychological Factors                                      |
|                        | Physiological Malfunction Arising from Mental Factors                                    |
|                        | Physiological malfunction arising from mental disorders                                  |
|                        | Psychalgia   |
|                        | Sleep Disorder Due to ç [Indicate the General Medical Condition], Mixed Type             |
|                        | Somatoform Disorder, Hypochondriasis   |
|                        | Special Symptoms or Syndromes, NEC   |
|                        | Specific Nonpsychotic Mental Disorders d/t Organic Brain Dam                             |
|                        | Unspecified Mental Disorder (non Psychotic)  |

## Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

Vaginismus (Not Due to a General Medical Condition)  
cardiovascular  
cocaine affecting fetus via placenta or breast milk  
disorder of organs  
endocrine  
gastrointestinal  
genitourinary  
musculoskeletal  
observation and evaluation for suspected conditions not found  
observation for unspecified suspected condition  
other specified physiological  
specific Nonpsychotic Mental Disorders d/t Organic Brain Dam  
respiratory  
screening for alcoholism  
skin disorder

**OFC** Added By Macro  
Adult Antisocial Behavior  
Adverse Effects Of Work Environment  
Alcoholism In Family  
Borderline Intelligence  
Circadian Rhythm Sleep Disorder  
Convalescence Following Psychotherapy And Other Treatment For Mental Disorder  
Family Disruption  
Follow-Up Examination Following Psychotherapy And Other Treatment For Mental Disorder  
Gambling And Betting  
General Psychiatric Examination, Other And Unspecified  
General Psychiatric Examination, Requested By The Authority  
Health Problems Within Family  
Legal Circumstances  
Malingering  
Mental And Behavioral Problems  
Mental And Behavioral Problems With Communication (including Speech)  
Mental And Behavioral Problems With Learning  
Noncompliance With Treatment  
Observation & Evaluation for Suspected Conditions not Found  
Observation And Evaluation For Suspected Conditions Not Found  
Observation For Suspected Malignant Neoplasm  
Observation For Suspected Mental Condition  
Observation and Evaluation for Suspected Conditions not found

## Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

Other Behavioral Problems  
Other Family Circumstances  
Other Mental Problems  
Other Parent-Child Problems  
Other Persons Seeking Consultation W/O Complaint/Sickness  
Other Psychological Or Physical Stress, Not Elsewhere Classified  
Other Psychosocial Circumstances  
Other spec. Family Circumstance  
Parasomnia NOS  
Personal History Of Affective Disorders  
Personal History Of Alcoholism  
Personal History Of Mental Disorder  
Personal History Of Neurosis  
Personal History Of Other Mental Disorders  
Personal History Of Schizophrenia  
Personal History Of Unspecified Mental Disorder  
Physical Abuse  
Physical Abuse of Child  
Primary Hypersomnia  
Problems With Aged Parents Or In-Laws  
Refusal Of Treatment For Reasons Of Religion Or Conscience  
Screening For Alcoholism  
Screening For Depression  
Screening For Developmental Handicaps In Early Childhood  
Screening For Mental Retardation  
Screening For Other Specified Mental Disorders And Developmental Handicaps  
Screening For Unspecified Mental Disorder And Developmental Handicap  
Sexual Abuse of Adult (if focus of clinical attention is on the perpetrator and abuse is by person other than partner)  
Sexual Abuse of Child (if focus of attention is on victim)  
Sleep  
Sleepwalking Disorder  
Special Screening For Mental Disorders And Developmental Handicaps  
Special Symptoms or Syndromes, Not Elsewhere Classified  
Unemployment  
Unspecified Mental Or Behavioral Problem  
Unspecified Psychosocial Circumstance  
child maltreatment syndrome  
colostomy status



## Post Legalization Follow Up to Cannabis in Alberta (2019-2021)

|            |  |
|------------|--|
|            | family disruption  |
|            | housing economic   |
|            | inadequate housing   |
|            | unspecified family circumstance                                |
| <b>ADJ</b> | Adjustment Disorder with Depressive Mood                       |
|            | Adjustment Disorder with Disturbance of Conduct                |
|            | Adjustment Disorder with Mixed Disturbance                     |
|            | Adjustment Disorder, Nos                                       |
|            | Adjustment Reaction  |
|            | Adjustment reaction  |
|            | Post-Traumatic Stress Disorder                                 |
| <b>FAS</b> | Alcohol Affecting Fetus Or Newborn Via Placenta Or Breast Milk |
| <b>IMP</b> | Disorders of impulse control                                   |
|            | Disturbance of Conduct, NOS                                    |
|            | Disturbance of Conduct, Not Elsewhere Classified               |
|            | Kleptomania  |
|            | Pyromania  |
|            | Trichotillomania   |