

Measuring Illicit Cannabis Seizures in Canada

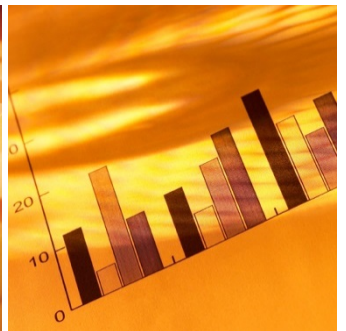
Methods, Practices and Recommendations

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Abstract

The measurement of illicit cannabis seizures in Canada was not previously studied in detail. Measuring seizures is important because the data can be analyzed to develop an understanding of many areas of cannabis regulation and enforcement—from trends in criminal methods or enforcement efficiency, to the size and value of illicit markets. This report examines the current methods of measuring the metric of cannabis seizures in Canada, with particular attention paid to the way seizure information is recorded by law enforcement officials. A discussion of potential improvements to the way Canada currently measures the metric of cannabis seizures is presented, including a critical review of which analyses could be undertaken if improvements to seizure reporting were introduced.

Author's Note

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Introduction

The Minister of Public Safety and Emergency Preparedness Canada was tasked by the Prime Minister in 2016 to “work with the Minister of Justice and the Minister of Health on efforts that will lead to the legalization and regulation of marijuana” (Canada 2016). In support of this commitment, researchers from Public Safety Canada have recently completed a report titled “Cannabis Performance Metrics for Policy Consideration: What do we Need to Measure?” (Maslov et al., 2016). In it, the authors identified some 45 cannabis policy metrics on which policy makers could consider collecting baseline data prior to any shift in policy on marijuana. Collection of baseline data is important because it allows researchers and policy makers to examine the impact of policy through comparing pre- and post-policy data to further inform decision-making.

The Taskforce on Marijuana Legalization and Regulation completed a *Discussion Paper on the Legalization, Regulation and Restriction of Access to Marijuana*, which outlines that the design and implementation of a new regime for marijuana legalization and regulation requires careful attention to a number of particularly challenging issues grouped into five themes: minimizing harms of use; establishing a safe and responsible production system; designing an appropriate distribution system; enforcing public safety and protection; and, accessing marijuana for medical purposes.

Cannabis¹ is the number one cultivated, produced, trafficked, and consumed illicit drug worldwide (United Nations Office on Drugs and Crime (UNODC), 2016). The most recent data from the World Drug Report (UNODC, 2016: 43) states that North America accounts for 37% of seized cannabis herb globally. Most countries around the world consider cannabis to be an illegal substance, though there have been recent shifts in several countries to allow for various forms of use for medicinal, religious, or personal use to be decriminalized or legalized. In Canada, the act of possessing, producing, distributing, and trafficking of cannabis remains an offence under the *Criminal Code* until legislation that stipulates otherwise is passed in the House of Commons. Thus, from the perspective of the criminal justice system, cannabis remains illegal. It is listed as a Schedule II illicit substance under the *Controlled Drugs and Substances Act* (CDSA) (see Appendix A), and is seized by law enforcement as contraband.

Whenever there is a change in policy, it is important to collect information on metrics that will be used by researchers and policy makers to examine the impact of the policy. Legalization of the recreational use of cannabis is a historic policy change for Canada. It is vitally important to create a regime of data collection pre- and post-legalization in order to determine what impact the regime change has had on society. In the example of State of Colorado, where the recreational use of cannabis was legalized in 2012 and the full implementation of the policy occurred in 2014, very little data was collected pre-legalization as well as some time after the legalization (Police

¹ The terms “cannabis” and “marijuana” are used interchangeably throughout this report. Unless otherwise specified, both of the terms refer to the plants *Cannabis sativa*, *Cannabis indica*, *Cannabis ruderalis*, or their hybrids.

Foundation, 2015: 9). While much more attention is being paid to the collection of data in Colorado after the legalization, there exists a wide data gap that does not allow for the comparison of post- to pre-legalization metrics.

Illicit cannabis seizures was brought up as an important concept in Maslov et al. (2016), and one that needs to be examined in much more detail because this source of data can contribute to the development of an array of other cannabis policy metrics. These include metrics to quantify: diversion between markets and exportation across borders; the use of particular shipment methods, such as the postal service; trends in the potency of cannabis; and the effectiveness of efforts to eradicate illicit supply and trafficking. Seizure data can potentially be used to measure metrics in each of these areas, and were all identified as metrics on which it is essential to collect baseline data in Canada (Maslov et al., 2016: 21-22) prior to legalization. The authors discussed how the metrics are currently being measured. They also brought the readers' attention to the current existing statistics on these metrics. Some constructive criticism of the way the metrics are currently measured was also offered.

Measuring illicit cannabis seizures is an important element in understanding the illicit drug market. Data on all of these metrics can be collected through proper measurement of cannabis seizures. Properly measuring these metrics would help explain how efficient law enforcement is at eliminating illicitly-produced cannabis products, or the domestic and international trafficking of cannabis through various means.

Objective

The objective of this project is to examine the current methods of measuring the metric of cannabis seizures with particular attention paid to the way seizure information is recorded by law enforcement as well as to discuss the potential improvements to the way we currently measure the metric of cannabis seizures. In particular, this project will be a critical review of what valuable information could potentially be gathered from seizure reports if improvements were introduced.

Approach

The report titled “Cannabis Performance Metrics for Policy Consideration: What do we Need to Measure?” (Maslov et al., 2016) served as a background paper to the current project. The sections on Diversion to Other Jurisdictions; Transfer Using Parcel Services; Exportation across Borders; Potency; and Eradication were used as a starting point and were expanded upon with additional literature and further insightful critical assessment of the metrics.

The project involved a thorough literature review and examination of the relevant performance metrics that can be applied to the upcoming legalization of the non-medical use of cannabis. The literature that was considered for examination consisted of academic published material, documents originating from governments and law enforcement agencies, and grey literature such as newspaper articles and non-academic discussion pieces in OECD countries. Furthermore,

relevant course material literature from the Canadian Police Knowledge Network (CPKN) and the Canadian Police College (CPC) was consulted. A literature sorting strategy consisting of a “literature grid” that was used in Maslov et al. (2016) was applied in the current project. Upon gathering, sorting and analyzing the literature, a critical discussion of the cannabis seizure metric for which the literature was available took place.

Further to the thorough literature review, the results of the consultations led by the Canadian Centre for Justice Statistics (CCJS) with the members of the Canadian Association of Chiefs of Police (CACP) Police Information and Statistics (POLIS) Committee on cannabis-related metrics that are possible to collect through police jurisdictions in Canada was used for the purpose of discussion and analysis. Overall, 11 of 17 police services invited to participate provided a submission. Moreover, attempts to consult experts in relevant fields were made. This resulted in consultations with Royal Canadian Mounted Police (RCMP) and Canada Border Services Agency (CBSA) colleagues who are either performing the seizures themselves, or work in the research and policy areas relevant to seizures; Health Canada colleagues who have expertise in cannabis seizures and the specifics of the functioning of Drug Analysis Service (DAS) laboratories; CPC instructors who teach the courses on drug investigative techniques; and with Public Safety Canada (PS) policy colleagues who are working with the RCMP units who perform seizures of cannabis.

Definitions and Sources

Cannabis and Seizures

Cannabis and its by-products exist in several forms. The commonly-reported types of cannabis that are seized by the RCMP (RCMP, 2015a) are 1) cannabis (marijuana); 2) cannabis resin (hash); 3) cannabis resin (hash oil); and 4) cannabis (marijuana) plants. Other forms of cannabis may include cannabis-infused edible food products and drinks; tinctures and creams crystalized resins and waxes; viable seeds and cuttings; as well as pills and capsules (Lawrence, 2016). However, these are not included as separate types in the RCMP’s list of seized cannabis products because either the amount of seized products is less than 3kg, 1L, or 125 tablets/capsules, or the frequency of the seizures of these products is negligible.

Cannabis seizures may come about as the result of law enforcement investigations, actions, and reports at the federal, provincial and municipal level of enforcement. The act of law enforcement taking possession of an illicit substance may be understood as a seizure. Seizures can occur and be reported in a variety of ways: by weight (kg), by volume (L), or by numerical quantity (especially in plants). Below are examples of how the cannabis seizure is reported by the RCMP in the 2015 National Drug Seizure report (RCMP, 2015a):

- 1) seizures measured by weight of cannabis: 8,906 occurrences; 1,771 kg; \$13,300,000 value;
- 2) seizures measured by volume of cannabis: 10 occurrences; 983 L; \$2,000 value; and
- 3) seizures counted by quantity of cannabis products: 104 occurrences; 1,668 tablets/capsules; \$11,000 value.

Reports and Databases

There are four main databases in Canada that contain the information needed to supply data required for a proper measurement of seizure-based metrics. These databases are described below, in no particular order of importance, and will be referred to throughout this paper. Each of these databases has been established for operational purposes. None of the data is currently available to the public either in raw, anonymized, or aggregated forms. The release of detailed data is usually restricted in order to ensure the integrity of ongoing investigations, as well as to maintain the effectiveness of investigative methods and practices.

- 1) **Integrated Customs Enforcement System (ICES) Database.** This database is used by the CBSA and provides valuable information on cannabis seizures that take place at Canada's points of entry, including land border offices, international mail processing centres, and a number of other service locations. Among others, it includes variables such as: the date and time of occurrence of the seizure; status of the seizure; the substances seized separated by type, category, quantities seized, and estimated value. The full list of fields collected in the ICES database can be found in Appendix B.
- 2) **Controlled Drugs and Substances Database (CDS).** This database is used by HC. Whenever law enforcement performs a seizure of cannabis or other substances that are listed in the CDSA, they report on the seizure using the HC/SC 3515 form. The information on the seizures is sent to HC and entered into the CDS. The database does not contain definitions for how cannabis seizures are valued or measured. The variables provided include the date and time of occurrence of the seizure, the type, generic name, drug name, strength (potency) and quantities seized. It also includes information on the number of requests for destruction of seized drugs. As such, it could potentially include the most accurate data on seized cannabis because all seized cannabis should be destroyed. Cannabis plants may be destroyed before charges are laid; however, dried cannabis and seed may be destroyed after the investigation is completed, the conclusion of the court case, or after 60 days (CDSA, 1996). The level of detail of information on the seizure is determined by the reporting officer. The full list of fields collected in the CDS can be found in Appendix C.
- 3) **Laboratory Information Management System (LIMS).** This database is used by HC's Drug Analysis Service (DAS) to record information on cannabis sample exhibits from seizures that are part of the evidence of investigations and court procedures. The database includes information on a chemical analysis of the seized drugs to indicate the presence of cannabis, but does not include information on the quantity seized. The full list of fields collected in the LIMS database that are used for reporting on the substances found in the exhibits can be found in Appendix D.
- 4) **RCMP's Records Management System (RMS).** "RMS" refers to the general database for the recording and reporting on criminal incidents used by law enforcement jurisdictions. As such, each police service tailors and modifies "RMS" software to meet their unique needs (Brooks, 2014). "RMS" systems often are also specifically used to record cannabis seizure occurrences. There are two main software vendors creating these systems for Canadian police services: Niche and Versaterm. The RCMP RMS (referred to hereafter as RMS) system consists of three databases: the Police Reporting and Occurrence System (PROS); BC PRIME and Halifax Versadex. The RCMP uses drug seizure information from their RMS databases to report annually on the overall seizures of illegal drugs in Canada. While individual data sets are not available to the public,

RCMP data at the national and divisional level is published in the form of a National Drug Seizure (NDS) report (RCMP, 2015a).² RMS includes variables that include data on the type, value, quantity, and form of the seized drug; and details on the seizing procedure by law enforcement. The full list of fields collected in the RMS database can be found in Appendix E.

Measuring Seizures

As a Schedule II illicit substance under the CDSA, cannabis seizures only require reasonable grounds to believe that any controlled substance is present. Cannabis can be seized at any point between its production and consumption, including during transportation, exchange, cultivation, or while it is in the presence of any individual who is not authorized to possess it. Points along this spectrum of cannabis possession are governed by different enforcement authorities, which seize cannabis under their jurisdiction and mandate. As a result, there are several databases in Canada that record cannabis seizures under different mandates, including CBSA's ICES, HC's CDS and LIMS, and the RCMP's RMS databases. Multiple data collection points for measuring cannabis seizures are beneficial in developing a deeper understanding of the context of the cannabis market in Canada. Sources of data are collected and maintained by three key public safety partners and are tailored to meet their operational and data needs: individual police services (including the RCMP), CBSA, and HC. Additionally, this data and internal intelligence is used by PS for policy work related to cannabis legislation. Given the level of resources required to collect data of value for each organization, data collection is generally limited to the data areas that provide the performance indicators necessary to carry out their own particular mandate.

Consulting data from all seizure data points allows for more informed decision-making with appropriate models of the cannabis market in Canada. Comparison across the data sources allows for wider and more comprehensive analysis, but requires data to be reliable and comparable across data sources. Unfortunately, it is often the case that data from the same source may change over time, as the definitions or parameters for the data field evolve over time, or as policing priorities change.³

In Canada, the *Narcotics Drug Act Amendment Bill* made it illegal to possess cannabis in 1923. The *Controlled Drugs and Substances Act* (CDSA) is the current legislation making the possession of cannabis for non-medical cannabis illegal. In 1999, legal access to dried marijuana for medical purposes was established (Health Canada, 2016a). In *R. v. Parker* it was interpreted that individuals with medical need had the right to possess cannabis for medical purposes. Under

² NDS includes information on cannabis seizures from the three RMS operated by RCMP only. As such, the NDS includes seizure data for all of Canada. Other law enforcement agencies in Canada maintain their own cannabis seizure data.

³ Previous attempts to graph the number of seizures of illicit drugs were unsuccessful due to inconsistency in labelling. For example, hundreds of opium pipes, bowls, and stems were reported as seized in the 1920's. By 1937, this number had fallen to practically zero (Carstairs 2000, p77p. 77–78).

the current cannabis regulation regime, cannabis that is not possessed for medical purposes is still deemed to be illicit. The CDSA outlines powers of state for enforcing the possession of illegal drugs, as well as outlining what is included as a Schedule II drug (see Appendix A). There have also been a number of cannabis strains that have been added or repealed over time, changing what forms of cannabis or cannabis products were to be deemed legal or illegal.

In *Allard v. Canada*, the Federal Court struck down rules that prohibited Canadian medical marijuana patients from growing a “limited” amount of their own cannabis, or have someone grow it for them (CBC 2016). Following this ruling, the CDSA was updated to include the *Access to Cannabis for Medical Purposes Regulations* (ACMPR). The ACMPR regulates legal access to cannabis for medical purposes.

Over time, data collection methods have evolved to capture information on cannabis seizures in several areas in public administration. Specific to their context, it is important that analysis of cannabis seizure metrics takes into account these changes when making inferences and undertaking analyses. Depending on the nature of the evolution, certain trends may not be actually indicative of changes in consumption, production, or distribution patterns, but be more reflective of shifting operational tactics, data collection policies, or level of enforcement efforts.

The primary departments and agencies that were identified as sources for cannabis seizure metrics are: RCMP, CBSA, and HC. PS was identified among users of cannabis seizure metrics. Data on cannabis seizures collected by these different departments and agencies provide different types of information to tackle the issue from the perspective of the responsibilities as set out in their organizational mandates.

Illicit drugs have significant links with organized crime, both nationally and transnationally (World Drug Report, 2016). How organized crime groups operate to profit from the movement of illegal cannabis within Canada is important for policy considerations. Additionally, attention must also be given to cannabis that originated outside of Canadian borders. It is often challenging to identify the originating source of cannabis production, without conducting an extensive investigation. Limited geographic source information for seizures at ports of entry does exist, but may not be representative of the drug situation in Canada.

The RCMP and CBSA are sometimes asked to participate in international cannabis investigations, where the investigations have ties to Canada. These “assistance files” include limited access to international cannabis data or reports. This data and information are spotty and not regularly recorded in databases by either organization. Even with its closest neighbour, Canada and the United States have limited information sharing or access to data on seized cannabis crossing this border.

Canada Border Services Agency

The CBSA is responsible for Canada’s borders, “ensure[ing] the security and prosperity of Canada by managing the access of people and goods to and from Canada” (CBSA, 2016a). This includes the prevention of illicit drugs and precursor chemicals from being smuggled across Canada’s borders. Seizure of illegal drugs is included within CBSA’s mandate but is not their top priority.

One of the key pieces of legislation that govern the CBSA is the *Customs Act*, which CBSA is responsible for enforcing. The *Customs Act* outlines the authorities for CBSA in respect to regulating goods being imported or exported across Canadian borders. As CBSA operations center on regulating imported goods, operations for exports lack both the funding and process to operate in the same manner. Powers are limited in regards to exported goods, which generally limits the CBSA to seizing cannabis that is imported into Canada at the ports of entry. However, it is important to note the metric of export and import seizures are not currently captured in ICES. While the data is primarily import-related, it does not directly currently distinguish between import and export data; however, it is possible through data manipulation using *point of origin*.

The majority of CBSA's cannabis seizures are small or personal seizures, though there are occasional larger seizures that take place. The threshold where the RCMP requests law enforcement partners to refer a seizure of any illicit drug for investigation is either 3 kg, 1 L, or 125 tablets/capsules, depending on the unit of measurement used to record the seizure (RCMP, 2015a).

The *Customs Act* provides CBSA officers with the authority to examine individuals or goods crossing the Canadian border at one of Canada's ports of entry and seize any goods where the officer has reasonable grounds to believe that the *Customs Act* or its regulations have been contravened. The examination authority is exercised on a no-threshold basis for goods that have been imported but not yet released by the CBSA, with the exception of "any mail that is being imported or exported and that weighs thirty grams or less" that does not have the consent of the sender or addressee to open it (*Customs Act*, s. 99(2)(3), 1985). Confirmation of suspected cannabis is often done through a combination of visual and scent identification of common drug characteristics, as well as simple field tests that identify signature chemicals. Upon successful identification of cannabis, officers are authorized to seize the cannabis, and record the seizure in ICES.

In the event that officers are unable to positively confirm the presence of cannabis, or require additional analysis to identify suspected drugs, the sample can be sent to the CBSA laboratory for further testing. The CBSA laboratory tests to detect the presence of cannabis, but does not do additional analysis regarding the potency, purity, or strain of the cannabis without additional authorization. In the event that a cannabis seizure is being investigated or a formal charge is going to be laid, samples of the cannabis are then sent to DAS for certification.

Cannabis is categorized by the CBSA officers conducting the seizure. While most cannabis seizures are fairly straightforward, it is possible that the seizure does not fit neatly within the four pre-identified cannabis categories (cannabis, hashish, hashish oil, plants). Current best practices are to include as many details as possible in the cannabis seizure report, though this is often included as notes or attachments to the metrics that are included within the various seizure databases. Emerging forms of cannabis concentrates, including wax or shatter, cannot be recorded directly, unless data collection includes officer field notes. These forms of cannabis have distinct compositions and may vary in terms of potency and estimated value. The CBSA has made efforts to identify a procedure for properly recording some emerging forms of cannabis; more guidance and a systems update is needed.

Seizure measurements may vary, depending on the level of concealment material included in the calculation. These measurements may include other material that is not cannabis, including

packaging such as plastic or glass containers as well as non-useable parts of the cannabis plant (such as the stem, leaves, etc.). The CBSA established best practice is to remove the cannabis from the concealment material and measure the cannabis separately. While this method works most forms of cannabis, it is not operationally possible to extract cannabis from cannabis infused products. Cannabis infused products introduces material in the measurement which is not included within the amount of seized cannabis. These details may be included in the seizure narrative (an open text variable), but are inexact and should be interpreted with caution. The measured amount of raw plant material or pure solids extracts is reported to be the most accurately measured types of cannabis products, with instances of less accurate amounts being measured for liquid cannabis products, and significantly less accuracy when it comes to infused and mixed products, particularly what are termed edibles. The amount of cannabis in infused and mixed products is far less than the actual amount of the product itself, though CBSA officers have been known to weigh the product as a whole. As more cannabis infused products enter the market, a false inflation of the data may occur, skewing this metric. Currently, there is no guidance on how to more accurately capture measurements or report seizure amount when non-cannabis material is included

Despite recognizing that the measurement of seized cannabis may not be exact or may be significantly inflated, CBSA officials must consider the costs and benefits to investigate and report more accurate measurements. The process for seizures is already time-consuming for CBSA officers, and additional investigation would increase the amount of resources required to complete each case.

Cannabis may also be seized by the CBSA in plant form. In reporting these seizures, CBSA officers count and report on the number of individual plants seized. CBSA officers do not report on features of seized cannabis plants that can affect the value or amount of seized cannabis. For example, reports do not require officers to differentiate between seedlings and mature plants, plant strain, or amount of useable cannabis in recording the number of plants seized. Instead, all cannabis plants seized are counted and reported on as if they were equivalent to each other.

ICES also includes a field for the estimated value of seized cannabis, which may be useful for analysis. Cannabis values are automatically recorded at “street value,” based on the system-calculated, per gram price of the seized product. The CBSA has limited involvement in determining the pricing list values. The value field in ICES is automatically calculated using the seizure information reported by CBSA officers. Most recently, these values were calculated using price lists that were provided by the Criminal Intelligence Service of Canada (CISC), though this role was previously held by the RCMP. This price list provides a static price for Schedule II drugs, including cannabis. At this time, it is unclear if the price list will continue to be generated by CISC. The street value of cannabis has remained relatively stable over time (Boucher, Lawrence & Maslov, 2013). However, there are some variations that are not captured when using this price list to estimate the value of seizures. These include regional variations between urban and rural regions, and the North in particular. Moreover, price fluctuations occur when the supply-demand ratio is altered. In particular, price decreases occur when outdoor cannabis in Canada is ready for cultivation, and these variations are not taken into account when estimating the value of seized cannabis. Nor are prices differences between domestically-produced and imported cannabis products accounted for.

Upon completion of a cannabis seizure, the CBSA transfer the responsibility of the seized cannabis to the RCMP for destruction. The RCMP must submit an HC/SC 3515 form to HC for authorization before destroying the cannabis (see Appendix F).

Cannabis metrics are also analyzed and reported via Drug Analysis Report twice a year. These reports, produced by the CBSA, provide an analysis of trends in cannabis seizures, and inform the CBSA how to prioritize and better target investigations for cannabis seizures at Canada's ports of entry. These reports are distributed to the CBSA, the Minister of PS, international partners, as well as federal partners such as PS. Ad-hoc products may also be produced, as needed and shared with relevant partners. Although not distributed publicly, these reports are available internally and may provide valuable information for researchers and policymakers when working with cannabis data. It is unclear if this information is shared with the CISC, which is responsible for establishing national price lists for illicit drugs.

Royal Canadian Mounted Police

Federal, provincial, municipal, and First Nations police services all have the authority to seize illicit cannabis. However, police-reported cannabis seizures are not centrally coordinated. While the RCMP is unique in that it provides federal police services, as well as contracted policing services in a number of provincial and municipal jurisdictions across Canada, it should be noted that findings pertaining to the procedure for collecting cannabis seizure data by the RCMP should not be generalized to all police services in Canada. It is beyond the scope of the current project to discuss what other law enforcement agencies in Canada are doing with regards to capturing and measuring cannabis seizure data.

The RCMP carries out a number of activities to fulfill its mandate, including those to combat organized crime and disrupt illicit drug markets. Through intelligence-led operations and roadside seizures, the RCMP investigates criminal offences relating to cannabis (RCMP 2015). The RCMP generally investigates cannabis-related offences in-land, while the CBSA operates along Canada's borders. In 2015, the RCMP made 37,194 seizures of drugs listed in the CDSA of which cannabis represented 46% of the seizures. These 8,906 cases of cannabis seizures resulted in 1,771.7 kg of seized cannabis, which had an estimated value of \$13.3 million.

The RCMP has a number of special initiatives that target illicit cannabis and use seizures as a performance metric. The Marihuana⁴ Grow Initiative (MGI) targets illegal cannabis grow operations in Canada and also includes a centralized database that collects metrics on cannabis grow-ops that are dismantled each year. The MGI also includes geographical locations of dismantled grow-ops. The MGI database is currently not available to the public, but U.S. Department of State reports can be used as a source for the number of grow-ops and clandestine laboratories from previous years when the MGI database was operational and publicly available (U.S. Department of State 2014; 2015).

⁴ "Marihuana" is an archaic, anglicized spelling of the common Spanish colloquial name for psychoactive cannabis, "marijuana." The spelling is sometimes used in Canadian formal and legal records, as an artifact of older official usage.

Project SABOT is a joint initiative between the RCMP and the Department of National Defense (DND) in an annual multi-jurisdictional marijuana eradication program of outdoor-grown cannabis (National Defence and the Canadian Armed Forces, 2016). This involves the use of aerial detection methods during the peak harvesting season of outdoor cannabis growing operations.

Since April 2015, the RCMP no longer uses the Significant Drug Seizure Report form to collect data, and instead enters the report directly into RMS to capture drug seizures. Data fields do not provide much in the way of specific details about the seized cannabis. In order to accurately quantify and qualify the seized cannabis, a tool the RCMP creates to supplement the variables collected into RMS directly are investigation “flowcharts” that detail each seized item. The RCMP requires the most amount of information possible on the seized cannabis when conducting their investigations. These “flowcharts” are used for the RCMP investigations and for court cases. However, they are only created in analogue format and attached to the case file, meaning that this data is not readily accessible or shared often because it is not machine-readable.

The RCMP identification of cannabis consists of the use of visual and scent testing to determine if the seizure is, or contains, cannabis. As with the CBSA, field tests may be used if needed but this is rare. Unknown samples or seizures where charges have been formally laid are typically sent to DAS for testing.

Once cannabis seizures are ready to be destroyed, the RCMP must submit an HC/SC 3515 to HC to authorize the destruction. The RCMP is responsible for carrying out the destruction process of seized cannabis products in their possession. Incineration is the preferred method for cannabis destruction, but any method that is allowed by the province in which they are located is authorized.

Previously, the RCMP had played a role in creating price lists for seized drugs, including cannabis. Since 2016, price lists are being generated by the CISC and are shared with law enforcement to be used to calculate the value of seized cannabis. At this time, it is unclear to what extent those price lists are used by RCMP in recording cannabis seizures.

Health Canada

All drug seizures may not always come to the attention of one centralized enforcement authority, such as the RCMP. Therefore, it is understood that no single enforcement authority has accurate data on the amount of cannabis seized across Canada. Authorization to destroy all seized illicit substances and record this information in a HC database is required under the CDSA. The CDSO is able to provide details on the quantity of seized cannabis (quantity indicated in the same manner as it was seized, in kg or L) that has been sent for destruction, as well as the number of plants seized. According to experts at HC, it is estimated that most seized illicit cannabis is sent for destruction and reported to HC. Therefore, the CDSO can be considered the most comprehensive database on cannabis seizures. The CDSO includes a reference number to the associated police file for the cannabis seizure. HC is not able to access RCMP or CBSA files directly to make modifications to the seizure data, even to confirm that a Certificate of Analysis was issued for an unknown seized substance.

Since HC is only responsible for the data entry of information provided through the HC/SC 3515, there are no measures in place to ensure that all cannabis is categorized uniformly. Information

that is provided in the seizure report form is entered exactly as it is provided. Due the fact that there can be a delay between when the cannabis has been seized and when an investigation has been completed, there are some discrepancies in the reporting timeframe for this metric. In the event that an investigation is completed in a different calendar year than the original seizure, it can be recorded in the CDSB for the following calendar year (RCMP, 2012).

HC also operates the Drug Analysis Service (DAS) to analyze and identify the presence of illegal drugs, including cannabis. However, only cases where formal charges are being laid or cases that are the result of an investigation or accident (such as a vehicle collision) are referred to the DAS. The DAS' primary responsibility is the identification of controlled drugs and substances listed in the CDSA and in the Prescription Drug List and to produce a Certificate of Analysis. Currently, the DAS does not test for potency, purity, or strain of cannabis, either genetically, by cannabinoid profile, or morphological analysis, unless specific authorizations have been obtained. Due to high volumes of drug seizures in Canada, DAS analyses drug samples if the drug or case meets certain criteria (see Appendix K). Other responsibilities of the DAS may include: clandestine laboratory investigations support, providing training on testifying in court and, testifying in court as an expert (Health Canada, 2013b).

Data from the DAS is recorded in the LIMS (see Appendix D). The DAS receives only a sample of the seized cannabis, which is not representative of national seizure rates. Instead, the LIMS includes data on the chemical analysis of the cannabis seized. Other reports that the DAS is able to produce with the data include the number of exhibits that are submitted containing cannabis, as well as the number of requests for destruction.

The DAS provides additional guidance to police in the form of a DAS Client Manual (Health Canada, 2013b). This information pertains more to the procedure for submitting a sample as an exhibit, instead of providing assistance on how to complete the HC/SC 3515 form itself. In the past, some promotional material was developed by the DAS on how to complete the HC/SC 3515, although no further information was available about the status of these efforts at the time of this report.

Public Safety Canada

In 2007, the Government of Canada launched the National Anti-Drug Strategy (NADS). Led by the Department of Justice, 12 federal departments and agencies began to work together to “contribut[e] to safer and healthier communities by helping prevent use, treat dependency and reduce production and distribution of illicit drugs as well as by addressing prescription drug abuse” (Health Canada, 2014b). Three pillars are used to coordinate efforts most effectively across the various departmental mandates (Justice Canada, 2016a).

- **Prevention:** Aimed at increasing youth awareness and understanding of the harmful effects of illicit substance use, and implementing community-based initiatives.
- **Treatment:** Aimed at developing and implementing innovative and collaborative approaches to treatment and rehabilitation systems and services.
- **Enforcement:** Aimed at disrupting illicit drug operations, targeting criminal organizations in particular.

A multi-targeted approach means that efforts do not just tackle the symptoms, but also address root causes. Enforcement of illicit drugs, such as cannabis, is an important element of the overall

Anti-Drug framework. As the lead for the Enforcement pillar, Public Safety is responsible for national coordination of the action plan.

PS does not have a database for cannabis seizure data. Instead, PS is responsible for the policy work on cannabis law enforcement, based on existing legislation and drawing its analysis on existing data. Existing metrics enable PS to develop analysis on the use and context of cannabis in Canada for informed decision-making. Due to limited publicly available data, PS must work with PS partners to obtain information on an as-needed basis and through informal channels. This can present challenges in their role, because PS needs are policy-driven instead of operational. The types of information required may not necessarily be reflected in the data fields that are gathered by its partners. Moreover, there is a need to balance data methodologies from different sources, further complicating data analysis.

Media Reporting

Mass media is a powerful tool for bringing awareness to the public on a number of news items. With most media coverage tackling shocking events or dangerous trends, mass media coverage can highlight the profile of a particular issue or can conduct investigative work that exposes the dangers in the everyday. However, disproportionate media coverage on infrequent events may also lead to exaggerated fears of the public on the danger of a particular issue, commonly referred to as “moral panic” (Cohen 2002). Smaller seizures of cannabis occur regularly by law enforcement and often receive little or no media attention while significant (in quantity or value) seizures, or sensational seizures (such as those linked to sophisticated organized crime groups) are reported at a much higher frequency (RCMP Consultation, 2016). Fueled by fear of the danger of significant drug seizures, public pressure may direct the political agenda in a particular direction. Understanding the role and influence of mass media on public opinion is important, as it provides a pulse of public opinion in a particular space and time, and it also plays an important role in shaping public opinion, “often ‘breaking’ news and setting or framing the agenda of public debate” (MacNamara, 2005).

Illegal drugs have long been a component of mass media reporting globally. However, emphasis is typically placed on sensationalized events that are not representative of the drug problem and can cause the public to fear the worst possible outcomes. Media coverage is typically triggered by an event. While the event may be captured within data sources on the issue at hand, it can include outliers that are not representative of the dataset in general. Instead, “moral panic” may fuel public opinion that is not representative of everyday numbers for everyday people. Sensational mass media coverage can detract from more pressing issues or trends that may not be as dramatic, but which are more likely to have an impact on the general population.

While a comprehensive and systematic content analysis of media was not possible for this study, the literature search yielded several useful findings. Cannabis seizures are often sensationalized when reported. When reporting on cannabis seizures, the CBSA and RCMP provide raw numbers that do not include details on how representative the seizure is. It is the role of the media to locate and provide that information to the public. This type of reporting does occur, but is uncommon. While the RCMP investigates a number of cannabis seizure cases, it usually provides details to

the media only for the most significant seizures or when the seizure presents public safety concerns. In the latter case, the RCMP may collaborate with HC on a bulletin which will receive greater media attention despite its infrequency (RCMP consultation, 2016). A meta-analysis of Australian media revealed that the figures of amount and value of cannabis seizures as presented in mass media were highly inflated. When compared to estimated values using cannabis data on plant yield and price from the research literature, reported values were as much as 11.9 times higher than research estimates times (Simons, Shanahan, and Ritter, 2011). While the authors acknowledge that there might be a number of potential reasons for the discrepancy between values as reported in the media and the estimates from the research literature examined in their study, it is important that greater transparency on the value of cannabis reported by the media, as well as the value used in data collection, to make better inferences about the impact of law enforcement in the illicit drug market.

Language also plays a role in fueling public fears of an issue by the media. Fear-based and speculative language shapes how a cannabis seizure is contextualized. Several RCMP articles include phrases that imply an increase in the danger of cannabis going undetected, “that otherwise might have been trafficked in our communities” (RCMP, February 25 2016; RCMP, 2015, September 30). No reference is made as to the significance of cannabis seizures within the context of the drug problem nationally, such as how typical this size of seizure would be. Other times, the street value of the seized cannabis is presented with large figures that are also presented out of context. Bringing the seizure closer to home increases the perceived impact of the seizure on individuals, their families, and their communities. High figures can be used to add “shock-value” to media coverage, with the effect of increasing public fear through exposure to atypical cannabis seizures. One news report compares typical cannabis with shatter, a highly potent form of cannabis with “THC level between 12 and 15 percent, [while] shatter is significantly higher ... as high as 90 percent” (Wong, 2015; see also Davidson, 2016).

Media coverage of cannabis seizures generally take the figures provided by officials at face value, without seeking additional sources or verification (Larsen, 2016). The RCMP and CBSA provide figures on cannabis seizures to the media, but coverage is not necessarily representative of the illicit cannabis market in Canada. The CBSA indicated that seizure information that is released to the media is often produced as raw numbers with little contextualizing or breakdown of the seizures themselves. Value is automatically calculated by the RCMP and CBSA at the street value, resulting in large numbers that trigger public reactions. However, the wholesale value of seized cannabis is also an important measure of the current value of cannabis seized in large quantities, and can be up to 92% lower than the values shared in mass media “This is only about 8% of the RCMP’s claimed half-million value. But a press release about a \$37,000 bust wouldn’t make headlines like a half-million dollar bust!” (Larsen, 2016). Other examples where cannabis seizure values were examined at the street value versus another value (wholesale, domestic/international) revealed similar findings (see CBC, 2014, November 14). A cannabis seizure in Taiwan that was destined for Australia revealed a price difference of \$5.9M between the domestic and international value (Associated Press, 2016). Similar price differentials can also be found between separate domestic markets (Boucher et al., 2013).

Cannabis seizures at the border largely involve routine, personal seizures that are not reported on an individual basis. Larger seizures at the border that are sent to the RCMP for investigation occur rarely but garner significantly more media attention, contributing to public fears of the illicit cannabis market generally being dominated by sophisticated organized crime actors.

Coupled with data on the number of cannabis seizures that take place at the border, which includes both the small personal seizures as well as fewer but larger cannabis seizures, the public may interpret media portrayal of cannabis seizures at the border as being both significant in the number of occurrences as well as the significance of each occurrence.

Presenting too much information can be just as problematic in creating moral panics as is presenting too little information. A recent coordinated raid of Toronto marijuana dispensaries in July 2016 illustrates this best when stating that 186 possession charges, and 71 profiting from the proceeds of crime charge were laid, resulting in "...270 kilograms of dried marijuana, 30 kg of resin, 25 kg of hash, 27 kg of pills, 73 kg of chocolate, 142 kg of cookies, 129 kg of candies, 101 kg of bars, 135 e-cigarettes, 457 drinks, 127 kg of oils and spreads and 121 kg of other marijuana byproducts" (Global News, 2016). A police raid is by nature, not representative of the general number of cannabis seizures, which can raise public concerns about the pervasiveness of the problem, without contextualizing it in terms of other issues.

Training for Officials

The formal training received by law enforcement officers and forensic employees is an important consideration in determining best practices for data collection on cannabis seizures. Law enforcement officers are often the original source for data collection that provides the baseline metrics on cannabis seizures, before cannabis samples are sent for analysis or used as evidence in court. Front-line police officers are often responsible for conducting the investigation into a drug seizure (if any), conducting the seizure itself, and reporting the data using the relevant forms or databases. Any sworn officer with adequate training is able to conduct a drug investigation. However, larger-scale operations are usually handled by senior officers or speciality units. This study consulted two sources for training material relating to cannabis seizure training for law enforcement officers: the Canadian Police Knowledge Network (CPKN) and the Canadian Police College (CPC).

The CPKN provides online training for police and law enforcement personnel. Consulting the CPKN course catalogue revealed no specific training material pertaining specifically to cannabis, seizures of illicit drugs, or data collection. A 20-minute course titled "Report Writing" is available for law enforcement officers (CPKN, 2016; see Appendix G). This course informs participants of the importance of report writing in the police report pathway. However, given the basic nature of this training, the length of training, and the frequency that police are required to write reports, it is believed that the impact of on-the-job learning, report-writing culture, and demands on police services for resources will have a stronger impact on the quality of police reports than "Report Writing."

The CPC is a national police service of the RCMP that provides in-class training for law enforcement personnel across Canada, as well as internationally. The CPC develops advanced and specialized courses based on identified needs and emerging trends in policing. Two current courses were identified as being relevant to the training of law enforcement officers on seizures: Drug Investigative Techniques (DITC) and Clandestine Laboratory Investigations (CLIC) (see Appendix H; J). An Advanced Drug Investigative Techniques course was previously provided at

the CPC (see Appendix I), but was removed from the curriculum, as much of the information is the same as the basic Drug Investigative Techniques training course.

The DITC training is in high demand, with approximately 170 police officers trained annually. Initially, police officers who were already in plainclothes speciality units were the only officers eligible to receive this training. However, due to police rotations, these police officers were often only able to apply the training in their final year of their placement. The DITC training currently targets young candidates who are interested in working in drug enforcement and is being expanded to include officers who work in smaller-sized police jurisdictions.

Training in DITC operates on the assumption that officers have never handled a drug investigation. The course outlines the investigation process from start to finish, and each stage is discussed in detail. DITC offers a separate module for cannabis, while marijuana grow-ops are addressed in another module in the CLIC training course. While the process for investigating cannabis is the same as with other drugs, the analysis is conducted differently. While field tests are used to test for most unknown drugs, cannabis has a very distinct scent and can often be visually- or scent-identified as cannabis. Field tests are costly, and cannabis can be easily identified by police officers, saving time and resources for additional police work. With the exception of identification of cannabis, the investigation of cannabis is treated like any other Schedule II drug.

The formal DITC training includes detailed measurement practices that consider how cannabis estimates vary based on a number of factors, such as if the cannabis is wet or dry, if the seized plants are mature or seedlings, or on which part of the plant that is seized. While there has been increased public concern in regards to cannabis seized in edible forms, there have not been enough cases yet to warrant additions in this area to the course at this time.

While police officers are not asked to estimate or report on the potency of seized cannabis, they do receive formal training that follows HC rules on how to handle illicit drugs. In particular, handling techniques are specified that will preserve the concentration of THC in seized cannabis. The course also provides training on procedures related to extraction techniques, measuring seized cannabis, and counting the number of plants during a grow-op seizure. While the CPC acknowledged that the potency of seized cannabis is valuable information, currently no training is provided in this area. It was acknowledged that there needs to be a balance in how these additional details are reported.

As part of their formal training in the seizure of illicit drugs, police officers are also trained to estimate the value of seized cannabis. Using examples of price lists that are generated through the use of informants, historical data, intelligence reports, as well as police networks, officers are able to estimate the value of seized cannabis. Unfortunately, these price lists are standardized across the country, and do not take into account regional variations or market segment (i.e., retail versus wholesale), sampling method consistency, price fluctuations due to supply and demand, or the need to update variables and price lists regularly. There have been initial discussions in considering teaching newer approaches to how seized cannabis should be valued that take into account more factors, rather than using values that are often inflated or calculated at the highest possible cost, though these have not yet been incorporated into the training received by police officers.

Canada Border Services Agency

During the hiring process for CBSA officers, all recruits go through an extensive training process that includes both an online and in-residence formal training components. Following 50 hours of online training, recruits attend an 18-week in-residence training at the CBSA College in Rigaud, Quebec. There, recruits receive structured training on the functions that they will need to perform as Border Services Officers, including how to perform inspections and conduct seizures. Once completed, recruits are appointed as CBSA officer trainees, where they will receive on-the-job training that puts their training into practice. The development program takes between 12 and 18 months to complete (CBSA, 2016b).

CBSA border officers also have access to intelligence products via the Customs Enforcement Library (CEL), and the Intelligence Tactical Operations Centre (ITOC) wiki page. These resources include information on conducting seizures, guidance to identify high-risk countries and import methods, as well as concealment methods. CEL is hosted within the ICES database, while the ITOC is available to all front-line officers. This enables officers to have access to the intelligence products remotely while conducting seizures.

Royal Canadian Mounted Police

Following successful completing of the RCMP recruitment process, Cadets must complete an extensive 26-week training program at Depot, the RCMP Training Academy in Regina, Saskatchewan. This training prepares RCMP officers for general duty assignments. RCMP officers with the appropriate competency profile may be considered for specialized units where they receive more specialized training on drug enforcement and investigations. In 2012, the RCMP launched an online training initiative on its MGI database to report illegal cannabis grow operations in Canada. As of 2015, over 1,000 officers have taken this training (U.S. Department of State, 2015). Other training initiatives include the Pipeline/Convoy/Jetway initiatives that provide training on detecting and apprehending traveling criminals on local highways. The Jetway component of this initiative focuses on stopping the transport of contraband through the use of local bus terminals, airports and train stations by organized crime groups (RCMP, 2009).

Health Canada

DAS has developed training modules that provide training for police officers in handling and preparing drugs that require processing to be submitted to the DAS lab for analysis as exhibits for court. This training is available in both official languages, and is given at an appropriate facility provided by the police service requesting the training. Available modules include: 1) dismantling a clandestine laboratory; 2) drug analysis and identification; and 3) evidence and exhibit sampling. The cost of travel and salary of DAS employees to deliver this training is covered by HC, and is offered at the discretion of the DAS unit (Health Canada 2013b).

Discussion

Interpretive Cautions

Current cannabis seizure data must be interpreted with caution, especially when using data from different sources. Experts have highlighted the need to interpret all cannabis seizure data with restraint because of the importance of context in the case of each seizure. Raw data on cannabis seizures mean little without robust analysis of the context of cannabis seizures and how it fits into the context of the drug market in Canada. Researchers have identified a number of factors that bear consideration when interpreting cannabis seizure metrics as they stand today.

Valuation

One of the primary cannabis metrics that is used in understanding the drug situation in Canada is that of the value of seized cannabis. While value provides a tool for measuring and comparing seizures, it can also be quite problematic.

As several consulted experts have indicated, the reported value of seized cannabis is generally inaccurate, unless the cannabis was seized as part of an undercover operation. Similar to purchasing a used car, the price of cannabis is only valid at the point of the exchange and average general market prices may not necessarily be representative of any given seizure. The price will vary with the demand, quantity, quality, region, the relationship between the buyer and seller, and other variables. Bulk seizures are conventionally valued at street level (i.e., commercial, illicit retail) prices, and cannot capture the wholesale prices at which the cannabis is valued at a particular point in the supply chain (Caulkins, 1994). Values assigned by roadside officers cannot be accurate, as it is nearly impossible to estimate all the contextual factors that make up the value of that seizure. In the event that a cannabis seizure goes to court, a detailed price analysis can be conducted by an expert. However, no expert advice on price is given for seizures that do not result in a court case.

There have been efforts to change the process for valuation, but even estimates that are developed through intelligence by informants, regional price fluctuations, and supply-demand cycles are changing constantly. Currently, price lists for seizures of illicit drugs provide some indication for seizures in different measures, such as dosage, gram, and kilogram and are coordinated through the CISC on an annual basis. However, these prices are set at the national level and are not adjusted for other important factors that influence the value of the seizure. Creating more detailed price lists that are used to estimate price might be beneficial at reaching more accurate valuations for cannabis seizures, but these will continue to be best estimates.

Differential Enforcement

The number of police resources dedicated to the enforcement efforts against drugs, including cannabis, has a significant impact on the reported levels of cannabis seized. Policing priorities shift over time, targeting certain crimes, regions, being reactive or proactive towards certain enforcement areas. These priorities directly impact the level of resources that are directed towards certain activities, such as drug law enforcement. The World Drug Report has identified the important role the level of resources dedicated towards drug seizures has a positive relationship with the number of drug seizures that are reported (UNODC, 2016).

Proactive cannabis seizure efforts can target larger-scale operations or direct additional police resources towards increasing the number of small-scale cannabis seizures, while a reactive approach encourages random searches, decreasing the likelihood of significant cannabis seizures. In part due to limited authority and resources, targeted investigations to seize illegal drugs being exported from Canada has not been set as an organizational priority (Office of the Auditor General, 2015). There is a need to acknowledge that the operational capacity of enforcement organizations, as well as organizational priorities for law enforcement activities, contributes to the number of reported cannabis seizures (Leone et al., 2012). Broadly speaking, historically in Canada, trends in drug crime offences and other crime tend to move in roughly opposite directions (Cotter et al., 2015).

The majority of the seizures at the CBSA result from smaller-scale import seizures (95% of cannabis seizures are under 200g). Large-scale individual seizures by the CBSA, which account for only 5% of seizures, are the result of both random identification and intelligence-led operations. The RCMP is responsible in investigating larger-scale cannabis smuggling operations led by organized crime groups, though the CBSA is generally involved in all cannabis investigations through joint force operations with the RCMP. During consultations, one expert noted that although canine teams can increase the number of cannabis seizures, resourcing constraints mean that this method of investigation is not generally used consistently at each port of entry, impacting the rate of “positive” searches that result in a cannabis seizure (CBSA Consultation, 2016).

The Canadian cannabis market is increasingly made up of a combination of both licit and illicit cannabis, all with the potential for seizure. More and more, cannabis may become the object of a criminal offence and seized for reasons that are not associated with its illicit nature. Distinction will need to be made between illicit cannabis seizures and licit cannabis seizures. Illicit cannabis seizures would usually be defined by the fact that the seized material could be considered contraband, while licit cannabis seizures might be defined as seized legal material that is in law enforcement’s possession as evidence or assets associated with criminal behaviour not related to a drug offence (such as theft, fraud, proceeds of crime, taxation or contractual disputes, etc.). This distinction will need to be taken into account when developing trends in cannabis seizure rates.

Operational data tracked by police services and enforcement agencies includes some information on the level of resources dedicated to enforcement activities. Changes in trends of seizure data within one organization or in a particular jurisdiction would do well to incorporate the level of resources dedicated to cannabis seizures. This would enable more accurate inferences of the drug market context at any given time. More specifically, resource data could be used in cannabis seizure analysis to develop more reflective assessments of cannabis-related patterns.

Potency

None of the consulted experts considered it operationally feasible to measure the potency of cannabis seizures. From an operational perspective, this information does not provide enough value for the amount of resources required to conduct potency analysis of cannabis seizures as a standard practice. Not only is potency data valuable for policy makers, it is also reflective of trends that are useful for intelligence purposes. Methods of obtaining this information in a way that is feasible will require further reflection.

Data Accessibility

Consultations revealed that data accessibility was one of the biggest challenges in the collection of data and analysis of seizure metric data. More consistent reporting between agencies and with the public is needed. A wealth of information is available and recorded by partners working to achieve the objectives of the National Anti-Drug Strategy. However, the accessibility of this data between departments and agencies continues to hinder a comprehensive analysis of the issue. A number of specific areas for potential opportunities were identified.

Data Linkages

Several opportunities for greater co-ordination of information were identified through the consultations for this research. Data sharing is currently triggered by a need from one organization and is made possible through informal channels such as networks and personal contacts. Data must be extracted from requested databases manually and shared with partners, with personal identifying information removed for confidentiality. Information that is not stored electronically, such as analogue “flowcharts” used by the RCMP, are often not included in the data exchange. Due to the resources that would be required to collect and transfer analogue information, it is usually not feasible to include information that is not electronically stored and accessible. Formalized communication and data sharing methods have the potential to increase the frequency of data sharing outside of specific ad-hoc requests. Furthermore, formalized communication channels are important for ensuring that data sharing is not limited to certain areas within organizations but available more broadly.

Formal agreements between organizations on data-sharing and the ability to link records enable robust data sets to be built and analyzed. Data linkages have the ability to improve the operational effectiveness of individual agencies, and undertake policy and trend analyses that would be impossible with any single database. For example, potency data from HC’s LIMS database could be combined with RCMP or CBSA seizure data and be included in CISC’s price data to reveal improved price modelling for more appropriate valuation determinations. This would complement more detailed data for research and policy work in the area of cannabis seizures across organizations.

System Interoperability

Each department or agency that is responsible for recording cannabis seizure metric data operates a separate database. Data is captured in proprietary databases according to the objectives of the organization with respect to the data, and particular structures and fields have evolved over time as they work towards fulfilling their mandates. For example, while all fields within the ICES database respond to the operational needs of the CBSA, only certain fields may be useful for partner organizations, such as HC. As data is shared between partner organizations, such as the CBSA and HC, discrepancies in fields used by each database may result in loss of information or data gaps. While the CDSO may contain the most comprehensive data on cannabis seizures, this data is less detailed than the records held by the CBSA. Such discrepancies in database systems may result in data gaps or loss of information in instances of data sharing, hindering their effective use.

As defined by its jurisdictional boundaries, the CBSA’s ICES database is designed to act as a repository for data that is collected at Canada’s ports of entry. The ICES database is useful for gathering intelligence on cannabis seizures along Canada’s borders. The RCMP’s RMS database

can be used for national intelligence on cannabis seizures that take place inland, or along Canada's borders that are not located at a port of entry. RMS feeds data to the Uniform Crime Reporting Survey (UCR) on a monthly basis via an interface designed in accordance with UCR rules. RMS includes data on investigations of cannabis seizures that are relevant to police services and large cannabis seizures along Canada's borders (typically related to organized crime). Since these systems are not intended to collect the same information, data must be transferred in an alternative format so that it can be used by the receiving organization. In the transfer, data may be excluded or lost. Similarly, neither the ICES nor RMS systems are compatible with HC's CDS. Data for comprehensive metrics on the total cannabis that has been destroyed is entered manually by HC employees by submitting paper copies of the HC/SC 3515. Some data can be automatically generated by the RMS system into an electronic version of the HC/SC 3515. However, this form is still currently submitted in paper format to HC. System inoperability also increases the potential for error as information is translated from system to system, as well as delays in reporting information in a timely manner. Regardless of any reluctance between organizations to share data, this exchange is further challenged by the lack of system interoperability between existing databases.

Centralization

Cannabis intelligence and expertise on illicit drugs exist across the PS portfolio, within police agencies and at HC. Products such as the RCMP's National Intelligence Reports, RCMP seizure data and trends, CBSA intelligence products, and HC's inventory of all controlled drugs and substances all contain valuable data that is useful for informed policymaking efforts as part of the National Anti-Drug Strategy. All drug seizures at Canada's ports of entry, including those over three kilograms or one litre, are captured within CBSA's databases and intelligence products. However, RCMP National Intelligence Reports only includes data on large cannabis seizures over three kilograms or one litre. While it is possible to cross-reference the RCMP statistics with CBSA statistics to prevent double-counting, it is often only the final reports and not the raw data itself that is being shared for analysis, preventing such analysis from occurring.

There appears to be a disconnect between the data needs of operations and policy across partner organizations. Operational consultations highlighted the need to quantify cannabis seizures in a way that does not overburden the reporting process, which maximizes the ability to triage more serious cases for intelligence purposes, thereby maintaining the integrity of evidence. These considerations result in establishing purposive thresholds for dealing with solid versus liquid substances and practices regarding the inclusion or exclusion of packaging that privileges later operational uses for the sample and collected data.

A horizontal approach to drug enforcement in Canada removes roadblocks imposed by data that is segmented by jurisdictions and mandates. Policymaking that reflects the drug situation across Canada requires that a number of datasets are pieced together before fulsome analysis can occur. In sharing certain information with the RCMP, confidentiality considerations restrict some data from being included. There may be a concern that identifying information that was collected for certain purposes will be used by the RCMP to conduct an investigation. There are several hub models that could be used to meet the need to build a complete picture of the state of cannabis in Canada. During consultations, several experts referred to centralized models, such as the United States' Drug Enforcement Agency model that serves as a centralized information point for all data pertaining to controlled drugs and substances. Moreover, this has the potential to streamline reporting and ensure greater data accuracy which, despite its complexity, is very important. Furthermore, a formalized horizontal or national strategy that synchronizes the data needs for

both operational and policy considerations across jurisdictions would contribute to more informed decision-making.

Partnerships

Generally, experts revealed that access to necessary information across organizational jurisdictions is limited. It is possible that data can be shared with different organizations in a number of scenarios: shared unilaterally in a one-way exchange between organizations, reciprocally, or not shared at all. While organizations reported that they were open to sharing information themselves, most organizations indicated that the data received from other organizations was challenging (CBSA Consultation, 2016; RCMP Consultation, 2016; PS Consultation, 2016; HC Consultation, 2016). Lack of formal mechanisms, such as reporting requirements, was cited as a contributing factor to roadblocks in information-sharing.

One area that was identified as particularly problematic is competing legislations that undermine the authority of enforcement agencies to conduct seizures. Both the *Customs Act* and the *Canada Post Corporation Act* place limitations on enforcement authorities to examine suspected mail that is under 30 grams without the consent of the sender or addressee. This creates a legal vacuum, since Canada Post does not view its role as a law enforcement body, but to merely comply with its requirements under the *Canada Post Corporation Act*. This highlights the need for greater cooperation between enforcement authorities responsible for seizing cannabis and auxiliary organizations, and/or legislative reform.

Data Reconciliation

Data reconciliation is the process by which initial data is verified and updated to reflect new information. Cannabis seizure metrics may be transferred between several organizations from the initial cannabis seizure and reporting to the final destruction, depending on the case. For example, a large cannabis seizure by the CBSA will be initially entered into the ICES database before the responsibility for investigating the case is transferred to the RCMP for investigation, using the RMS database. In anticipation of an investigation going to court, a sample of seized cannabis is sent to DAS as an exhibit for court, where the results of the analysis are recorded in the LIMS database. DAS will also issue a Certificate of Analysis to be included in the court files, along with the final court ruling. Following the completion of a completed seizure, investigation or case, authorization from HC must be obtained prior to destruction. Requests for destruction are captured within the CDS by HC. Data is generated along several points by different partners and recorded at different stages of the investigation. Overburdened caseloads may prevent information that is generated by other partners to be reconciled with in the original data. This may result in a failure to provide a complete picture of each cannabis seizure. Figure 1 illustrates how the data is captured at different points of the cannabis seizure. Without data reconciliation, the snapshot provided by each database remains incomplete.

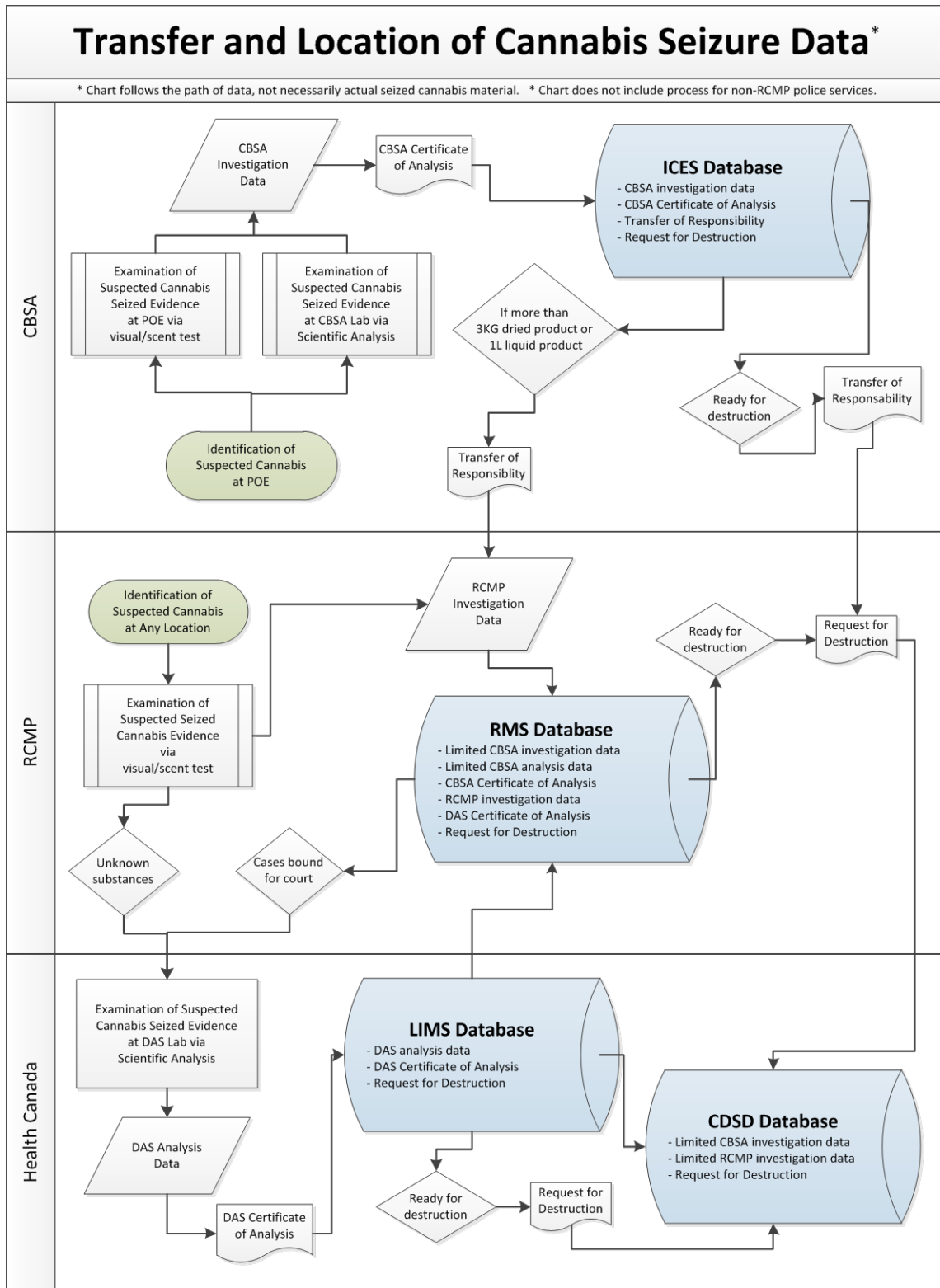


Figure 1: Example of data captured in regards to a cannabis seizure

Best Practices

Lack of standardization across databases or within organizations can lead to inappropriate conclusions being drawn from cannabis data. Taking steps to ensure greater consistency would increase the reliability of data and of the analysis. There are currently no mechanisms or direction to ensure that reporting methodologies between departments are consistent. While cannabis seizures are carried out fairly consistently across organizations, the reporting process varies within and between organizations. As a result, cannabis seizure data cannot be used to gather an accurate representation of the drug situation in Canada. Lack of standardized measurement was found in a number of areas within the data collection process. Cannabis is a drug that is found in varied forms, increasing the difficulty in developing guidelines on how to treat cannabis systematically.

POLIS is a CACP committee that “supports progressive change in policing, in partnership with the Policing Services Program of the Canadian Centre for Justice Statistics (CCJS), a Division of Statistics Canada, and other partners, through the development and communication of meaningful public safety information.” (CACP 2014b). POLIS collaborates on initiatives to improve the data collected by police that can be used to improve policing. This may be an appropriate forum where a standard cannabis seizure reporting instrument, with CACP board approval, be recommended to be implemented across police services in Canada should one be developed. The Ontario Provincial Police (OPP) has also developed an inventory of organized crime committees in Canada at the federal, national and provincial levels that could be used to identify relevant networks (Baks, 2014). Another appropriate venue for disseminating the consistent approach for reporting cannabis seizures is the National Coordinating Committee on Organized Crime (NCCOC), whose mandate is to function as a body of federal/provincial/territorial (FPT) representatives from the law enforcement community to identify major trends and determine national policy priorities related to the issue of organized crime. FPT research fora and FPT health fora would need to be engaged if coordinated approaches are to be successful.

Record cannabis seizures, at least roughly, by type and quality

Specialized units for cannabis enforcement often have the knowledge necessary to identify the quality of cannabis seized and the cannabis strain, using visual and scent identification methods of common drug characteristics. However, frontline officers without specialized drug training reported that once they are required to consider cannabis grades—such as hemp or “ditchweed” versus seeded psychoactive cannabis with adhering leaves to flowers versus unseeded, trimmed psychoactive cannabis—they do not feel qualified to make an assessment, whereas such an officer could likely make an estimated classification of distinguishing between beer, wine, coolers or distilled liquor. As a result, cannabis seizure may be over-valued. Taking steps to ensure that cannabis reporting reflects cannabis strains would result in more reliable cannabis data that is intended for distribution within the drug market in Canada, and enable policymakers to more accurately target areas of concern. Without investing resources into specialized drug training, it may be possible for frontline officers to, at least roughly, identify the type and quality of cannabis seized. This could lead to more accurate metrics that would be useful when conducting research or policy work using seizure data.

Develop national empirical standards for calculating cannabis plant yield

When cannabis is seized as a plant, every plant is counted and reported. While this number reveals highly accurate data on the actual number of plants seized, measuring and valuing these seizures are challenging. Standard practice is to estimate \$1,000 per plant; however, plant yield can vary greatly depending on a number of factors. Plant maturity can vary significantly between

cannabis plants seized in the same seizure. Cannabis plant seedlings may yield an ounce of cannabis or less when mature or they could grow to become “Christmas tree”-sized plants producing pounds of cannabis. A seizure of cannabis in a grow-op where all the cannabis was grown for the same amount of time may vary according to the specific degree of lighting or moisture they received, or the strain of plant. Currently, plant seizures are counted in a generic and indiscriminate manner, without considering factors that impact plant yield and value. Developing national empirical standards for reporting cannabis plant seizures based on such factors would greatly improve the value of this metric, contextualizing the number of plants seized by their yield and impact in the cannabis market overall.

HC provides plant yield estimates in the ACMPR: 30 grams for indoor-grown cannabis and 250 grams for outdoor-grown cannabis (Department of Justice, 2016a). It should be noted that the methodology for these calculations is unclear, and should not be used when interpreting current cannabis seizures by enforcement authorities. Health and law enforcement standards may need to be different; the standards used for medical purposes may not be appropriate for enforcement authorities, and further study should be pursued.

Develop national enforcement standards for measuring seized cannabis products that do not include packaging or other seized materials

Despite recognition by partners that not all seized cannabis products should be treated equally, the weight of seized cannabis products is the primary method that is used to measure seized cannabis. Cannabis in wet form includes additional weight from the moisture in the drug, while dry cannabis does not. Cannabis is increasingly seized in the form of edible products. Often, the amount of cannabis is not readily identifiable unless the purchase includes official manufacturing packaging with details on the amount of cannabis included. Some details on a more accurate amount of cannabis in seized edible products may be gathered by questioning the individual, but this reported amount may be subject to falsification or subjectivity biases. Additional weight from other material is also included in the recorded weight of a cannabis seizure. The quantification of seized cannabis needs to be stabilized to account for differences across seizure occurrences and to have reliable data for analysis, such as the weight of wet, dry, or cannabis-infused products that can allow for accurate comparisons. Efforts to assess the quality of the seized cannabis may be made; however, a lack of enforcement standards may result in subjective assessments of “high” or “low” quality cannabis by enforcement authorities without specialized drug training. Any attempts to currently provide additional information are not done consistently. Additional information is recorded within the notes of the record, and not in the primary data fields that are usually pulled for analysis.

Using seizure data with other metrics to estimate market size

Having accurate data with which to construct production estimates is required to apply seizure data to the question of market size. Prior to 2010, seizure data was routinely used to estimate the volume and value of cannabis drug markets. Despite recognition that not all available cannabis in the market is seized by enforcement authorities, seizure data is still valuable in estimating the market size. While this data has certain limitations, it would, if properly measured, provide better estimates of the amount of cannabis that is supplied to the consumer market. As it stands, seizure data should still be interpreted with caution, or in conjunction with other metrics when possible.

Primarily, market size from cannabis seizures can be estimated using the value (\$) of cannabis within a given market. As discussed earlier, unless a seizure is valued by an expert, the data being collected in regards to cannabis value does not provide analysts with comparable data across

seizures or enforcement authorities. Market size of cannabis is also inferred from the amount (in kg, L, or #) of cannabis seized. Again, this data should be supplemented by other metrics when calculating market size.

Changes to the level of resources being committed to seizure activities or in certain areas will influence the amount of reported cannabis seized, as cannabis seizures and level of resources are positively correlated (UNODC, 2016). The amount (again, in kg, L, or #) of cannabis seizures is not necessarily useful on its own to indicate market size. Having regions of Canada that share borders with jurisdictions with U.S. states that have cannabis regimes that differ from our own has already led to increases in the number of cannabis seizures (CBSA Consultation, 2016). The imports of cannabis from legal to illegal markets are recorded as cannabis seizures, regardless of the intention of the individual. These seizures undoubtedly influence the data being used to estimate the size of the cannabis market in Canada, despite their unknown effect on market size at this time. The number of cannabis seizures is expected to increase significantly at Canadian ports of entry as more neighbouring jurisdictions adopt medical, regulated or legalized cannabis regimes.

Databases take into consideration both operational and policy needs

All experts consulted during this process referred to challenges in accessing seizure data necessary for their work. Data sharing is a cumbersome, time-consuming process which is generally informal and inconsistent. Potentially rich data sources, such as RCMP flowcharts, were identified but continue to exist in analogue form only. In instances where data is requested from another organization for intelligence or policy making, it is common for only digital information to be included. Thus, while some information is made available, there is a loss of data that is heightened by data recording practices, which presents a bias in the data available for research and policy.

The operational focus for the data collection of cannabis seizure metrics by organizations serves several functions: using a threshold of volume enables the triaging of more serious cases and subject matter experts; measurement practices are developed to minimize problems in maintaining the integrity of the chain of evidence; and operational capacity is maximized through expending resources on determining the most relevant intelligence information—the presence or absence of substances (and not the concentration or form of the substance). Numerous experts identified that research or policy questions would benefit from additional information that operational colleagues do not consider necessary to record. The data needs for policy work is not always congruent with the operations of the organization collecting the data. For analysts, this can lead to data gaps that leave certain questions unanswered or imprecise. Considering policy needs, while respecting the burden of data collection on the operations of the organization, should be considered in determining which data fields are most relevant in each database.

Structured databases to allow for data linkage

Due to the nature of cannabis enforcement in Canada, cannabis seizure data is collected by several partner organizations in separate databases across the government (see Figure 1). Operational and policy needs of each organization vary by their mandate, and the relevant seizure data needs are translated into each partner's databases. While there is a desire to access data from their partners, sophisticated operational and policy analysis requires that seizure databases be structured with a selection of identically formatted and frequently populated variables that would allow for data linkages. The ability to link datasets for thorough analysis may not address the limited ability for partners to access each other's data in the first place.

Formalize partnerships for regular data sharing that is not triggered by “need”

Often, analysis by each organization in respect to their mandate would benefit by a more complete picture of the cannabis market as a whole. Additional data is currently requested through informal mechanisms, and may result in differential access to information across or within partner organizations. Need-based requests may only be incorporated to fulfill the original data requirements and may not be accessible for additional analyses. Formal mechanisms that would allow for systematic data sharing on a regular and co-ordinated basis that would enable this information to be taken into account during routine analysis of the cannabis market.

Seizure reporting that tracks if a seized drug was licitly or illicitly produced or sourced at point of origin

Estimates of the cannabis market are complicated by a number of cannabis seizures that are inadvertent in nature, particularly as the number of bordering jurisdictions develop independent cannabis regimes. A legality of cannabis within the medical regime is complicated when possession, production of personal amounts of cannabis, and the distribution of cannabis between individuals or legal producers intersect with the illicit market. In addition to inadvertent seizures, better trends of the cannabis market can be developed if data is available on the point of origin of the seized cannabis. Distinguishing seizures that are intended for import and export may reveal relevant data for both policy and operational purposes.

In addition, a situation is emerging where multiple markets are emerging side-by-side for both illegal and legal cannabis. From the point of view of enforcement and policy, it is useful to know if seized cannabis originated: 1) in a licit manner then was diverted to an illegal market (making it “illicit cannabis”); 2) in an illegal market and was diverted into a legal market (making it “counterfeit cannabis”); or 3) in the illegal market and remained in the illegal market (making it “contraband cannabis”). The operational and policy issues emerging are similar to that now faced with regard to illicit tobacco.

Track seizures of non-standard cannabis products in as much detail as possible

In considering the most appropriate way to collect data that reflects reality, it is important that reporting provides adequate structure and flexibility to meet the needs of all parties. Cannabis is being seen in a number of new forms of cannabis-infused products (e.g. creams, oils, butters). While direction is needed when confronting emerging forms of cannabis consumption, it may be appropriate to consider to what degree flexibility should be incorporated within the existing fixed data categories. Currently, cannabis-infused products fall in a grey area that may be subject to interpretation. At the same time, providing structure through mechanisms such as fixed data templates with pre-determined options ensure that data is categorized within the established parameters and prevents data from becoming lost in “other” categories. As emerging forms of cannabis are increasingly exchanged in the drug market, there will be a need for further guidance to ensure that emerging threats are measured systematically across and within organizations.

Application to Other Metrics

The discussion in this report has thus far focused on how the metric of cannabis seizures is currently being measured, recorded and reported by law enforcement authorities in Canada. Some suggestions for improving the way the metric is currently being measured were offered. The next section of the paper addresses the issue of how the metric of cannabis seizures can contribute to an array of other metrics, if some of the improvements are introduced. The metrics presented below were discussed, to an extent, in Maslov et al. (2016). The discussion highlights the importance of collecting accurate information on cannabis seizures, as cannabis seizures play a crucial role as a root metric for other metrics.

Illegal Production and Cultivation

Cannabis is a plant that must be grown, cultivated and harvested either indoors or outdoors. The plant itself does not require much attention and can grow as a weed in many climatic and soil conditions. However, some knowledge and experience in running a grow-op is required when production is aimed at cultivating large quantities of higher potency psychoactive cannabis. Thus, the metric of illegal production and cultivation measures the number of cannabis plants cultivated and the amount (kg, L, or #) of cannabis products. Since the growth and production of cannabis is still an illegal and criminal activity in Canada, no producers will voluntarily submit the production numbers that are required to calculate this metric. There is no public database that would contain information on illegal production and cultivation. The only way this metric can be *directly* measured is through the recording and reporting of seizure information by law enforcement. This data originates from law enforcement reports on grow-op seizures, investigations, anecdotal material and some projections made by criminologists and economists using statistical modelling methods. The projections and estimates are examples of *indirect* measurements of illegal production and cultivation, which would include several assumptions that could drastically affect the estimates.

Bouchard (2008) estimated a mean rate of 1.9 ounces of marketable cannabis per plant, with a 0.4 standard deviation in a self-reported study of cannabis growers in the province of Quebec. This is consistent with productivity rates found in other studies (Hough et al., 2003; Toonen, Ribot, and Thissen, 2006; Wilkins et al., 2002) although few have actually measured productivity rates for outdoor plants in industrialized countries.

In 2013, cannabis production in Canada accounted for 96% of all illicit drug production reported by police (Cotter et al., 2015). About two-thirds (64%) occurred in a private home or surrounding structure (such as a garage or shed), while more than one-quarter (27%) occurred in an open area (areas of public access, parks, playgrounds, bodies of water, etc.) It is important to remember that this metric is only informed by cannabis data that is brought to the attention of police.

Other, somewhat older findings indicated that the number of marijuana grow operation cases that came to the attention of law enforcement in BC tripled from 1,489 in 1997 to 4,514 in 2003 (Garis, 2009). While statistics such as these do suggest a dramatic increase in the number of grow-ops, they are largely based on the number of tips that come to the attention of the police; they do not represent the actual number of founded cases (Plecas et al., 2005: 21). The number of cases that were founded was actually 1,250 in 1997 and 2,031 in 2003 (ibid: 21-22). Furthermore, increases in the number of tips that the police receives may depend on factors other than the sheer

number of grow-ops. These could include public awareness campaigns and the amount of media attention given to the issue (Carter, 2009).

Significant production and illicit commercial cultivation of cannabis has been identified primarily in BC, Ontario and Quebec (U.S. Department of State, 2014). The illicit commercial cultivation of cannabis in Canada produces mostly high-potency, indoor-grown marijuana for both domestic consumption and export to the United States. Because the majority of cannabis produced in Canada are grown indoors (in grow-ops), aerial images filming the outdoors grow-ops tend to miss about 75% of cannabis cultivation sites (Kalcska and Bouchard, 2011).

The illicit nature of the production and cultivation of cannabis means that these numbers are mostly estimates and, on their own, are limited in their usefulness. In order to make the illicit production and cultivation data more practical, it needs to be combined with other information, such as a measurement of the level of resourcing for enforcement, the approaches taken by enforcement, the number of founded cases and the prompt recording, reporting and linking of the seizure data by all levels of enforcement. By properly combining this metric with others, researchers can better analyze the overall cannabis market, what segment of the market is destined for domestic consumption or exportation, the extent of the involvement of organized crime in the cannabis market, how the crime operates within the market and the nature of the associated harms, and the contribution of the cannabis industry to Canada's licit and illicit economy.

Results from the CCJS consultation with selected police services indicate that most of the police services that were interviewed collect information on illegal production and cultivation. The information collected is for investigative work. It is impossible to know what information is actually collected due to its confidential nature. No data on the illegal production and cultivation of cannabis can be shared until the investigations are complete, and even then the process of sharing this information is far from straightforward.

Potency

Marijuana and cannabis products may contain psychoactive substances the consumption of which may produce the effect of “high” or psychotropic effects. The metric of potency measures the percentage of concentration of these substances, most commonly tetrahydrocannabinol (THC), but sometimes cannabidiol (CBD), in the cannabis product. The metric of cannabis potency appears frequently in public discussions on the harms and benefits of cannabis, driving under the influence of cannabis, or the police's impact on illicit cannabis-related activities.

The necessary data for this metric can be obtained by properly recording and reporting information on illicit cannabis seizures that are sent for analysis in HC's DAS. It may also come from independent lab analyses, or analyses conducted by health care practitioners or researchers. Regardless of the source of data, it is extremely difficult to obtain information on the potency of cannabis samples, especially if the data distribution needs to be representative of a jurisdiction, province or Canada. Not all of the seized cannabis is sent for analysis to DAS; only cannabis that is part of an investigation is examined in the lab environment to support the evidence required for the court. This data on potency is not shared publicly due to its confidential nature. Potency data that is collected by health care practitioners or researchers is usually part of a one-off study that answers a certain research question. It is not meant to—and cannot—support the calculation of general metrics of cannabis potency in Canada.

From the little information on cannabis potency that is available to researchers and policy makers, it may be said that the potency of illicit cannabis has been increasing since 1975 in the U.S. and Canada. The average percentage of THC increased from about 1% in 1975 to over 12% in 2013 in the U.S. (United States, 2014; Slade et al., 2012). Similarly, the average percentage of THC available in samples increased from about 1% prior to the early 1980s to 10.3% by 2006 in Canada (Slade et al., 2012).

Measuring the potency of cannabis is important for many reasons. First, the number of emergency room visits and hospitalizations in Colorado has increased since the legalized cannabis regime was introduced (Rocky Mountain, 2016). Although there have not been any formal studies of the issue, anecdotal evidence suggests that the increase could be attributed to an improper consumption of higher potency cannabis products such as edibles, especially among children (Mohney, 2016). Second, the potency of consumed cannabis will impact the user's psychomotor performance, which becomes especially important during activities like driving (Tchir, 2015). Third, the link between the price of cannabis and the potency has yet to be studied in the legal and illegal contexts, although there is some indication that the relationship could be negligible (Ben Lakhdar et al., 2016). Finally, the potency of cannabis may affect an array of other cannabis-related metrics such as mental health, cardiovascular diseases and cancer, respiratory effects, length of impairment, overdoses, etc. (for more discussion, see Maslov et al., 2016).

Canada does not currently have a standardized method for measuring the potency of cannabis in the fields of policing (seized illicit cannabis) or medical communities (licit medical marijuana). Appropriate seizure metrics and potency metrics are strongly interrelated. Without the potency metric, the seizures measured as number of plants could be quite meaningless because the seized plants could be of low potency. Furthermore, it is not appropriate to compare seizures to one another in either the amount of seized cannabis product or the number of plants, because the seized cannabis is likely of a varying potency. While it is unrealistic to expect a potency analysis from every seizure performed by law enforcement, it is conceivable to submit a sample of the seized cannabis to begin the proper collection of information for the potency metric. It would also be beneficial to begin releasing the information and analyzing the potency of cannabis that is already tested by DAS. This analysis could begin the process to supply the much needed data for the cannabis potency metric.

Results from the CCJS consultation with selected police services indicate that none of the police services interviewed collect information on the potency of cannabis. The majority indicated that it would be DAS that performs the potency analysis, which is very time-consuming and costly. The majority also indicated that it is not practical for law enforcement to collect such information.

Eradication of Illicit Cannabis

Whenever illicit cannabis or other drugs are seized by law enforcement, they need to be destroyed (eradicated) at the end of the judicial procedure. Sometimes they are kept at a secured facility as evidence or while the investigation is ongoing. If the amount of seized drugs is especially large or the facility does not allow for safeguarding the drugs, law enforcement would apply for authorization from HC to perform an emergency eradication.

In Canada, data that informs the metric of cannabis crop eradication is absent. In theory, law enforcement carries out the eradication, and HC, which issues the permission to eradicate seized

drugs, should be the main sources of the data. However, this information is strictly confidential because of its association with investigative work, and it cannot be shared publicly. The information could be released to the public or the media under the *Access to Information Privacy Act*, but these releases tend to be single stories or articles and should not be viewed as a nationally representative portrait of the situation on crop eradication. When the information becomes available to the public or the media, it is usually reported in the form of number of plants seized and destroyed (or raw weight of cannabis destroyed) by law enforcement.

By default, the metric of crop eradication only measures the eradication of cannabis that is: 1) based on information that came to the attention of law enforcement; 2) largely based on reactive approach to policing; and 3) only accounts for the seized cannabis products that were destroyed by law enforcement. It does not—and cannot—account for cannabis crops and products that were eradicated by jurisdictions other than law enforcement (i.e., the producers, users or anyone else other than law enforcement).

Perhaps not surprisingly, the eradication efforts of outdoor grow-ops have led to an increase in indoor grow-ops (Diplock, 2013). This follows the criminological theory of crime displacement as a result of crime prevention activities by law enforcement (see Bowers et al., 2011; Guerette and Bowers, 2009). The detection and policing of outdoor grow-ops is becoming somewhat easier with the development of surveillance technology than the indoor grow-ops. Marijuana plants grown outdoors for the purpose of drug production are more similar to “ditchweed” and hemp than cannabis grown indoors with regard to potency (Caulkins, 2010). In order to differentiate the lower potency plants from the ones with a higher potency, a lab analysis for the content of psychoactive ingredients would need to be conducted.

While law enforcement officers undergo rigorous training in drug detection, they too sometimes have difficulty differentiating between higher potency marijuana and “ditchweed” or hemp. Most of the time, seized cannabis plants are eradicated without laboratory analysis for the content of psychoactive ingredients, based on the suspicion or belief that they are cannabis plants.⁵ Thus, information on marijuana eradication efforts could be somewhat misleading because no proper differentiation between hemp, “ditchweed” and higher potency cannabis is being conducted, nor are low potency male plants distinguished from high potency female plants, even where this might be possible. Similar to the metric of illegal production and cultivation, it is impossible to compare eradication efforts across jurisdictions in Canada because, if reported, it only accounts for a number of plants or the amount of the eradicated product. However, as mentioned in Maslov et al. (2016: 17), “eradicating a hundred ‘ditchweed’ plants that are of no value to cannabis sellers or users is far from comparable to eradicating a hundred marijuana plants that are seized during a basement grow-op bust. What needs to be measured is the level of THC and other psychoactive ingredients that are being eradicated.” It is impossible to conduct a lab analysis on every batch of cannabis that is about to be eradicated. However, just like with the potency metric, the samples that are already analyzed by DAS could be shared with researchers and policy makers, and a random sample of seized cannabis that is not part of the investigation could be analyzed for potency in order to understand what exactly is being eradicated.

⁵ For an example of confusion between cannabis plants and hemp, see <http://www.cbc.ca/news/canada/saskatchewan/sask-rcmp-cut-down-3150-suspected-marijuana-plants-1.3213531> (retrieved on September 3, 2015).

An example of how the seizure and the subsequent eradication of seized marijuana could be misinterpreted can be seen in Kansas City in 2013. In that year, a 4,000% increase of marijuana seizures was reported compared to 2012 (Associated Press, 2013). A closer examination of the report reveals that this increase is largely based on two large-scale outdoor grow-ops busts that ended up being lower grade “ditchweed,” and not higher potency cannabis. The Drug Enforcement Agency in the U.S. reports on their eradication efforts of seized cannabis differentiating between “ditchweed” and cultivated plants, supposedly indoors.⁶ This is a good step towards differentiating between lower and higher potency cannabis that is being seized and eradicated by law enforcement.

A better approach for recording and reporting the seizure metric would make eradication metrics more useful and representative of the true portrait of eradication efforts. The number of eradicated plants carries little value unless differentiated by higher and lower potency plants, or fiber hemp, feral “ditchweed” and drug cannabis. Undifferentiated, raw data in the form of amount or number of plants is not easily comparable across jurisdictions in Canada and can result in false conclusions about the state of illicit cannabis in Canada.

Results from the CCJS consultation with selected police services indicate that about half of the police services interviewed collect information on illicit cannabis crop eradication. The information collected is for investigative and intelligence work. The data is somewhat limited in how it could be used beyond investigative work because the information is manually entered into the RMS and rarely analyzed post-investigation. The data could be shared with external partners upon request, again, for investigative purposes. No data on the eradication of illicit cannabis can be shared until the investigations are complete, and even then, the process of sharing this information is far from straightforward. If the police were to collect data on eradication efforts, changes such as more fields would need to be introduced in the RMS. However, the police believe that this is burdensome and would require additional resources.

Postal Services

One of the major ways to distribute cannabis—both licit and illicit—is through the mail. A simple Google search of terms “marijuana AND mail AND order AND Canada” will return numerous websites advertising their cannabis distribution services. These websites operate in a way that is very similar to online shopping websites such as Ebay.com or Amazon.com. The seller would post the picture and description of the product and the asking price. During a transaction, the website user (buyer) would accept the asking price and anonymously pay for the product, while the seller would mail the package containing the product to the buyer. Licensed medical cannabis producers and users are used to this kind of exchange, with Canada Post providing guidelines on how to properly ship marijuana product (Sanderson, 2016). But some illicit marijuana is traded much in the same way within Canadian jurisdictions and across national borders.

Information on the transfer of cannabis products through mail, either within Canada or internationally, does not exist in Canada. Within Canada, this is because under the *Canada Post*

⁶ See <http://www.drugscience.org/Archive/bcr2/DCESP.html> (retrieved on October 27, 2016).

Corporation Act, law enforcement does not have the authority to open packages until they have reached their final destination (Canadian Press, 2015). Police can obtain a warrant to seize packaged mail if there is a suspicion of a national security threat (Sanderson, 2016), which mailed marijuana packages would not pose. Furthermore, several law enforcement jurisdictions would need to cooperate in order to obtain a warrant to seize packages. This is time-consuming and labour intensive for the police to do, given the other multiple priorities they have. For international packages, the CBSA does not have the authority to open and inspect packages that weigh less than 30 grams (Canada Post, 2016). This allows for a more-or-less unimpeded transfer of up to an ounce of cannabis through international mail incoming to, or outgoing from, Canada. In early 2015, the CACP passed a resolution calling for a more streamlined process for the seizure of suspicious mail packages in order to better enforce laws (Canadian Association of Chiefs of Police, 2015: 24-26).

It is extremely difficult to obtain information on intercepted inland or international packages from the CBSA or RCMP. This information is confidential because of ongoing investigative work. It is only shared with the public as a result of an access to information request. The media could request such information to support a news story. For example, CBC reports that across the province of Quebec, the CBSA seized a total of 2,891 pieces of mail that contained illicit substances in 2015 (CBC, 2016, May 16).

Information from the state of Colorado, where the judicial system is somewhat different when it comes to mail, shows that there is an observable increase in seized packages that originated in Colorado and that were destined for other jurisdictions in the U.S. In 2009, there were no packages containing cannabis intercepted by the police. Since then, the number of seized packaged has been steadily rising, from 15 in 2010, to 207 in 2013, and to the highest of 581 in 2015 (Rocky Mountain, 2016: 127). The weight of seized packages containing cannabis products has also been rising from none in 2009, to 57.2 pounds in 2010, to 493.1 pounds in 2013, and to its highest of 1,246 pounds in 2015 (Rocky Mountain, 2016: 128). Finally, the number of U.S. states for which the parcels were destined has been rising from none in 2009, to 33 in 2013, and to its highest of 38 in 2014 (Rocky Mountain, 2016: 128).

Lack of data on the transfer of cannabis or other drugs through mail is problematic because multiple transfers occur through the mail, but none are (or can be) captured. No reports of transfers of cannabis through mail does not imply that no cannabis is being transferred. It also needs to be remembered that the number of seized packages, the amount of cannabis seized or the number of states for which the parcels were destined was not counted and recorded prior to 2009. It does not mean that the phenomenon did not exist, but that it was simply not recorded. Furthermore, similar to all other seizure-based metrics, increased vigilance in surveillance or proactive seizing activities will lead to increased numbers. Therefore, the enormous increases that are observed in the parcel services used for transfers in Colorado may be attributed, at least in part, to increased police activity in the area of seizures of parcels containing cannabis.

If legislative changes are introduced as per request from the CACP, and should the CBSA be authorized to seize mail or parcels that weigh less than 30 grams, it would be beneficial to begin collecting and promptly recording seizure data that feeds into the postal services metric. This data would provide valuable and much needed insight into the functioning of the cannabis market, both illicit and soon to become licit, should the respective legislation take place in the spring of 2017. The analysis of parcel data would greatly benefit from inclusion of a measurement of the

level of resourcing for enforcement; the approaches taken by enforcement; the overall volume of mail for the time period under analysis; and the proportion of the items that were screened. These parameters should be accounted for (controlled) in the analytical models in order to determine whether there was a substantial increase in the transfer of marijuana through the mail.

Results from the CCJS consultation with selected police services indicate that very few police services out of those interviewed collect information on the transfer of cannabis using postal services. It is impossible to know what information is actually collected due to its confidential nature. Some police jurisdictions indicated that while, in theory, it is possible to collect such information, changes to the RMS and UCR would need to be introduced.

Diversion between Markets

Diversion of cannabis may be occurring for several reasons, including avoidance of paying excise, avoidance of regulatory frameworks, or better profits when diverted outside the jurisdiction of origin. Another important dimension of the diversion of cannabis is that although Canada is projected to have some sort of a legalized cannabis regime, and some bordering US states will have legalized regimes, cannabis-associated trade may not be simple or even possible, due to US federal laws and/or international treaties.

Diversion of cannabis may be occurring in several forms. It could occur between: 1) markets segmented by regulation (i.e., medical and non-medical); 2) markets within a country segmented by political geography (i.e., by province); and 3) international markets segmented by political geography (i.e., by country, treaty or trade bloc). As such, the discussion of the metric of diversion will be divided into two parts: 1) diversion for the purpose of internal trade (i.e., within jurisdiction); and 2) diversion for the purpose of exportation.

Internal Trade

Cannabis that is grown and produced in one jurisdiction needs to be transported (diverted) to the next stage of the supply chain, possibly to another jurisdiction. The issue becomes even more evident when there are different cannabis regimes functioning in the same jurisdiction, such as the current differential provincial regulations of tobacco and alcohol. For example, Canada currently has a legalized medical marijuana regime, whereby the use of cannabis for any other purposes is illegal under the *Criminal Code*. A Supreme Court ruling in February, 2016, in *Allard v. Canada* paved the way for medical marijuana users who hold licences to grow their own cannabis at home. Some of the cannabis that is obtained through a medical licence or grown at home under the medical licence could, supposedly, be diverted, resold or shared for free with people who do not have a medical licence to use cannabis (Smitherman, 2016). In the U.S., where some of the states have a full legalized cannabis regime, some cannabis is being diverted to other states that do not have a legalized cannabis regime (Ellison and Spohn, 2016). The metric of diversion then measures the amount of cannabis that is diverted to other jurisdictions or from the medical license holders to people without such a licence.

No data exists on the diversion of cannabis between jurisdictions, or from medical cannabis licence holders to other people in Canada. Some anecdotal evidence on diversion from the medical marijuana market is mentioned in the media (see Barghout, 2016), but there are no nationally representative statistics available. Colorado, on the other hand, has been collecting comprehensive information on diversion of cannabis out of state since at least 2005. Seizures of

diverted cannabis, also called interdiction seizures, have seen an increase since the commercialization of the medical use of cannabis in 2009. In that year, there were 92 interdiction seizures executed by the police, rising to 321 in 2011, decreasing to 274 in 2012, and peaking at 394 in 2015 (Rocky Mountain, 2016: 110). The average weight of total interdiction seizures increased about 30% from the period 2005–08 to 2009–15, from 2,763 to 3,586 pounds (Rocky Mountain, 2016: 111). About two-thirds (65%) of diversion seizures originated in the city of Denver (Rocky Mountain, 2016: 112). Several case examples have illustrated how interdiction seizures are performed and their outcomes.

The Rocky Mountain (2016) report on cannabis metrics in Colorado is a good example of how the diversion of cannabis and several other seizure-based metrics can be collected, used and analyzed in a clear and concise manner. The process of data collection on the diversion of cannabis is neither easy, nor straightforward. It requires the prompt reporting and recording of police data that is confidential due to ongoing investigations. It also requires the police to report on this data to a central database or to researchers. Police jurisdictions would also need to communicate with each other in order to coordinate the data recording and reporting in order to avoid the double-counting of interdiction seizures. All these tasks are undoubtedly time-consuming and cumbersome. However, the end result shows the potential for a solid trend analysis in diversions of cannabis out of Colorado, which would in turn help policy makers and law enforcement make better decisions in terms of resource allocation and prioritization of activities. Furthermore, with the appropriate combination of metrics regarding cannabis price and seizure-based metrics, researchers can better study the overall functioning of the cannabis market.

As is the case with all other seizure-based metrics, it must be remembered that the diversion of cannabis to other jurisdictions is based solely on the number of seizures that are executed by the police. The number of seizures depends heavily on the resource allocation and prioritization that is allotted for drug enforcement activities.

Results from the CCJS consultation with selected police services indicate that none of the police services interviewed collect information, or plan to collect information in the future, on the diversion of cannabis to other jurisdictions. Respondents did not see the collection of this sort of data as a priority. The information that feeds into this metric would constitute investigative work. Some police jurisdictions indicated that in order to collect data on the diversion of cannabis to other jurisdictions, changes to the RMS and UCR would need to be introduced.

Exportation

Cannabis plants grown and cannabis products produced in Canada are exported outside of Canada and sold in international markets. UNODC (2016) reports that the amount of cannabis produced in Canada exceeds the domestic demand. The majority of cannabis products that are transported through the Canada–U.S. border are destined for the U.S. (Public Safety Canada, 2010: 6). Time magazine further reported in 2004 that about 90% of the commercially-grown cannabis in Canada ends up being distributed in the U.S. market, where its estimated street value was between \$5 and \$25 billion (Hamilton, 2004). No details on the calculation of the proportion of Canadian-grown cannabis or the street value of the exported cannabis products in the report were shared. The RCMP estimated that between 50% and 80% of cannabis grown in BC was destined for U.S. markets (Surrey, 2009). This estimate was supported by Larsen (2011), who estimated the proportion of BC-grown cannabis exported to the U.S. at 70%. No details were provided on the strains, potency or type of cannabis products that were exported from Canada to the U.S.

These statistics, while striking, represent an important gap in the data on the exportation of Canadian-produced cannabis outside of Canada. They appear to be one-time estimates, with little or no details provided on the source of the data or the methodology used to develop the estimates. In part, this is likely due to the confidential nature of the data and the lack of consistent reporting mechanism for the data on cannabis seizures at the border.

The CBSA is responsible for enforcing the law at the Canadian border and, in theory, could be collecting on the type of data that could be used to track the metric of exportation of cannabis out of Canada. However, the Office of the Auditor General of Canada (2015: 3) found that the CBSA “did not fully have what it needed to carry out its enforcement priorities, due to weaknesses in its export authorities, information, practices, and control.” Limited authority is partly responsible for the inadequate prevention of the export of illegal drugs from Canada. Illegal drugs were not identified as an organizational priority in the Auditor General’s report due to the CBSA’s authority constraints. The audit of the CBSA highlights problems using the data for the number of reported seizures of cannabis at the border, the capacity of organization at entry/exit points, and the variation of procedures by air, water transport and cargo (Office of the Auditor General, 2015). Caution is needed in using the metric of cannabis seizures by border patrol services, as it is likely to be underrepresented.

Additionally, it is common knowledge that when travelling to the U.S. from Canada in a private vehicle, the driver and the passengers would be greeted by the U.S. Customs and Border Protection officer at the border crossing point, not the CBSA. As such, seizures of the cannabis products that are exported from Canada to the U.S. would be carried out by the U.S. jurisdiction. Data on seizures at the border is shared between the U.S. and Canadian border jurisdictions to a limited extent. However, this data is confidential, not public, and can only be accessed through an access to information request.

Aside from actual statistics on cannabis seizures at the border, methods exist for estimating the amount of cannabis or other drugs exported out of Canada. Bouchard et al. (2012), for example, suggested a method for estimating the amount of methamphetamine and MDMA that is exported out of Canada through subtracting the amount of drugs consumed in Canada from the amount of drugs produced to estimate net exports. A similar method of estimating the size of the market for contraband tobacco in Canada, called the *Data Confrontation Method*, was proposed in Maslov and Boucher (2014). While in theory, this difference could be attributed to export of the drugs, there are too many other variables that need to be taken into account before concluding that the difference may be attributed solely to export. First, solid production and consumption rates for cannabis are not readily available in Canada; only estimates based on several assumptions exist. Second, the estimates for consumption of cannabis are likely underrepresented, as is the case with most illicit or socially undesirable activities, because they are usually based on self-reported rates (Bjerregaard and Becker, 2013; Fendrich et al., 2004; Hser, 1997; Mieczkowski, 1989; O’Malley et al., 1983). Finally, the importation of goods into Canada is rarely taken into account in these models, which would certainly skew the final estimates.

It is very important to measure the amount of cannabis exported from Canada because of its contribution to seizure-based and other metrics. All cannabis seized at the border will be destroyed, and the potency of the seized products could be determined—both of which are seizure-based metrics identified in this paper. Properly measuring the metric of cannabis at the border could also assist in understanding the size of the cannabis industry in Canada, both domestic and international. Law enforcement agencies’ investigative work on the extent of

involvement of organized crime in the cannabis and other drug industries in Canada could be greatly expanded using the cannabis exportation metric. As is the case of the metric of diversion to other jurisdictions, a combination of metrics measuring the use of cannabis, price and other seizure-based metrics, researchers can better study the overall functioning of the cannabis market. The limitation of law enforcements' priorities and resource allocation applies to the metric of exportation of cannabis, just like it does to all seizure-based metrics.

Market Estimates

The study of the cannabis consumer market could benefit from good cannabis seizure data. The classic approach to studying consumer markets is to assess the supply and the demand of consumer goods. In the example of cannabis, the demand side of the equation may be assessed by measuring the consumption of cannabis in the population under study through frequency, intensity and amount of cannabis consumed. The supply side of the equation may be assessed through tracking the price for which cannabis products are sold in a population.⁷ However, a proper measurement of cannabis seizures could be an excellent addition to the measurement of the supply of cannabis to the market. While it would have certain limitations such as the police resource allocation and prioritization, it would, if properly measured, provide the actual quantity of cannabis that is supplied to the consumer market.

The idea of measuring the supply side of the equation in cannabis market estimates is further exemplified by RAND economists (Kilmer et al., 2013). In their major paper on the overview of the state of the cannabis market in Washington state before the legalization of recreational use of cannabis, the researchers argue the importance of incorporating the seizure-based metrics in the economic equations of supply and demand (ibid: 3, 9). Bouchard and colleagues (2012) also used seizure-based metrics to estimate the size of the methamphetamine and MDMA market in Canada. There are other arguments whereby properly measuring seizure data as a supply-side indicator in drug markets will help “promote comprehensive understanding, to facilitate transfer of scientific findings to effective practices, and to strengthen the evaluative quality of drug policies” (Leone et al., 2012, p. 741).

However, one must have accurate data with which to construct production estimates in order to apply seizure data to the issue of market size. Prior to 2010, seizure data was routinely used to estimate the amount and value of cannabis drug markets. This was true of illicit domestic markets, as well as the development of global estimates, such as those disseminated by the UNODC in their annual World Drug Report. In the mid-2000s, the UNODC estimated the “interception rate” (i.e., volume of seizures/volume of production) for reporting countries to be an average 10 to 20% for herbal cannabis and plants, and at least 17% for cannabis resin products (UNODC, 2008). For many police, members of the media and policy makers, the lower bounded estimate of 10% came to be used as the “rule of thumb” when estimating the amount of domestic production, in the absence of any other data aside from seizure data. Therefore, in 2008, Canada was estimated to have produced 1,300 to 3,498 metric tonnes of cannabis; this was extrapolated directly from seizure data. There were a number of methodological difficulties with this approach

⁷ For a detailed discussion on different ways of measuring supply and demand in cannabis markets, see Boucher et al. (2013).

(UNODC, 2015). The first problem was that the data used to accurately estimate production volume was only available from certain countries, which did not include Canada and which did not share the same production and consumption characteristics as Canada. The second problem was that interception rates, and seizures, are closely related to law enforcement strategies and investments. Thus, it cannot be assumed that an expansion of seizures equates to an expansion in production, when it could be related to an expansion in enforcement efforts or effectiveness. Using this logic, if law enforcement stopped investigating cannabis offences, production would cease, too; which is patently absurd. The UNODC stopped using seizures to estimate the size of cannabis production in 2010, partly for these reasons. Since 2010, data to establish production estimates in many countries, including Canada, has not been available. Thus, while the UNODC can estimate the production of cocaine and opioids (UNODC, 2015), as of the 2016 World Drug Report, there is no solid estimate for global cannabis production.

Organized Crime

The role of organized crime in cannabis and other drug markets has been mentioned throughout this report. It is extremely hard to study the patterns of organized crime activities in a society due to its hidden nature. Researchers and policy makers often rely on estimates when it comes to scoping organized crime activity (see Bouchard et al., 2014; Munch and Silver, 2017). Because of law enforcements' investigative work and other estimates, it is understood that organized crime elements play a major role in the production, trafficking and selling of cannabis and other drugs in Canada. A search on Google using the terms “drug seizure AND organized crime” will result in dozens of media articles discussing police raids on drug production sites or the busting of a trafficking ring, the products seized and the value of the seized products, weapons and other properties.

The array of seizure-based cannabis metrics discussed throughout this paper could contribute immensely to the study of the scope of organized crime. Seizures of cannabis, especially in large quantities, could be, and usually are linked to investigative police work. These investigations often lead to discovering and disrupting an organized crime ring, which is the main approach of law enforcement in combatting organized crime (CISC, 2014). Media articles that appear as a result of a Google search are prime examples of these investigations. However, these investigations are the result of reactive policing, whereby police react to an already existing phenomenon. The root metric of cannabis seizures is a strategic disruption tool, and thus an important performance metric of the effectiveness of law enforcement in disrupting organized crime activity.

On the other hand, if cannabis seizure-based metrics could be properly collected, recorded and analyzed, researchers could build powerful predictive models that not only estimate the involvement of organized crime in the cannabis market, but also predict the scope and prospective activities of the criminal elements. There are already good examples of these models in the literature (see Buscaglia and van Dijk, 2003; Morselli, 2014; von Lampe, 2003); what is needed are good data on seizure-based metrics.

Conclusion

Information that could potentially contribute to the data needs for seizure-based cannabis metrics is currently collected under a number of different authorities in Canada. These include the CBSA, municipal and provincial police jurisdictions, the RCMP, and HC. Four major databases keep information on seizure-based metrics: 1) ICES (CBSA-administered); 2) CDS (HC-administered); 3) LIMS (HC-administered); and 4) RMS systems (municipal and provincial police jurisdictions and the RCMP).

This paper presented an overview and a critical assessment of the way cannabis seizure data is collected, recorded, reported and shared in Canada. A thorough literature review was conducted along with consultations with federal partners from the fields of operations, policy and education on the way they understand and execute seizures of illicit cannabis. Several strategic recommendations were provided as a result of the work conducted for this project. These include conceiving better ways to link seizure-based data; inter-operationalizing different systems of collecting seizure data (i.e. ensuring that the systems do not double-count or omit seizure data); creating a central point of contact to access the data; formalizing partnerships for a more straightforward data accessibility; and considering approaches for reconciling the data that is being transferred between partners. Several other suggestions for the enhanced counting of seized cannabis products and recording of seizure information were provided.

While Canada is undergoing a historic process of legalizing the recreational use of cannabis, it is important to remember that the illicit market for cannabis may not entirely disappear post-legalization. Illicit production and trafficking of cannabis may still exist after the legalization. Diversion to jurisdictions within Canada or internationally, where cannabis regimes would be different from the future one in Canada's provinces and territories, which may choose to design their own specific cannabis regime (e.g. times of sales, legal age for access, home growth, consumption in public, etc.) might still be occurring. Regulatory and criminal offences, such as the existing ones for tobacco and alcohol, will likely be occurring with legalized cannabis. All of these illicit cannabis-related activities could result in seizures of cannabis by law enforcement. As such, it is important to have a properly set up system of collection of seizure-based data, both pre- and post-legalization because good seizure-based cannabis metrics are one of the major elements required for studying the cannabis market in terms of use, diversion, grey and black markets, organized crime activity and econometric estimates. Having a solid system for collecting seizure data set up in Canada will fill the gap of baseline and trend seizure data. The case of Colorado (Rocky Mountain, 2016) is a good example of how seizure-based metrics can be reported and tracked for research and policy adjustments over time.

It will be important to consider the role cannabis seizure data will continue to play under a different regime in Canada. Existing data sources may not be adequate, as seizure metrics are captured in locations and by partners that are not regularly included. Current seizure metrics by existing partners may need to be adapted as we move from gathering baseline data towards understanding the impact and context over time. Data from sources outside of the current cannabis seizure enforcement model may need to be supplemented by data from administrative or regulatory sources, which will require new partnerships. This may introduce new concerns or highlight existing ones for data sharing. Moreover, differences between adjacent jurisdictions may emphasize discrepancies between cannabis regimes and will need to be taken into consideration when establishing and updating the framework of cannabis metrics that are needed by researchers and policymakers alike.

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Appendix A: *Controlled Drugs and Substances Act*, Schedule II

SCHEDULE II (Sections 2, 3, 4 to 7, 10, 29, 55 and 60)

1. Cannabis, its preparations and derivatives, including

- (1) Cannabis resin
 - (2) Cannabis (marihuana)
 - (3) Cannabidiol (2-[3-methyl-6-(1-methylethenyl)-2-cyclohexen-1-yl]-5-pentyl-1,3-benzenediol)
 - (4) Cannabinol (3-n-amy1-6,6,9-trimethyl-6-dibenzopyran-1-ol)
 - (5) and (6) [Repealed, SOR/2015-192, s. 1]
 - (7) Tetrahydrocannabinol (tetrahydro-6,6,9-trimethyl-3-pentyl-6H-dibenzo[b,d]pyran-1-ol)
 - (7.1) [Repealed, SOR/2015-192, s. 1]
- but not including
- (8) Non-viable Cannabis seed, with the exception of its derivatives
 - (9) Mature Cannabis stalks that do not include leaves, flowers, seeds or branches; and fiber derived from such stalks

Appendix B: Integrated Customs Enforcement System (ICES) Database Seizure Fields

- 1) Seizure number
- 2) Date and time of seizure start/end
- 3) Referral type (i.e. intelligence target)
- 4) Status of seizure (i.e. open, appealed, closed)
- 5) Location where seizure is made (port of entry, region)
- 6) Officers involved in seizure (names, badge numbers)
- 7) Contact information on individuals involved in the seizure (or importers/exporters as the case may be):
 - 8) Full name
 - 9) Date of birth
 - 10) Address
 - 11) Phone number
 - 12) Passport number
 - 13) Gender
 - 14) Country of origin
 - 15) Citizenship
 - 16) Country of birth
 - 17) Employment status
- 18) The substances seized separated by type, category
- 19) Quantities seized
- 20) Tariff codes
- 21) Estimated value
- 22) Vehicle type involved in the seizure (i.e. aircraft type, airline, car, tractor trailer)
- 23) Detection technology used in the seizure
- 24) Indicators that led to the seizure (i.e. nervousness in the traveller, smell)
- 25) A detailed seizure narrative on the proceedings (i.e. when rights were read to travellers, when they called a lawyer, when samples were sent to the lab, what the lab response was, etc.)

Appendix C: *Controlled Drugs and Substances Act* Database (CSDS) Seizure Fields

- 1) The case-id number
- 2) Police file number
- 3) Police rep number
- 4) Police name
- 5) Municipality
- 6) Province
- 7) Type (e.g., RCMP)
- 8) Date of the seizure
- 9) Drug generic name (e.g. Oxycodone)
- 10) Drug name (e.g. Oxycontin 5mg SRT)
- 11) Drug strength
- 12) Drug strength unit
- 13) Quantity
- 14) Seizure unit
- 15) Destruction confirmation date

Appendix D: Laboratory Information Management System (LIMS) Database Seizure Fields

- 1) Receiving lab (which lab received the exhibit)
- 2) Analyzing lab (which lab did the analysis)
- 3) Sample number
- 4) Police province
- 5) Received date (corresponds to the date first received by the lab, which is the same for the lab that received and lab that analyzed it)(date the laboratory received the exhibit)
- 6) Suspected drug code (what the law enforcement agency thinks the substance is)
- 7) Actual drug code⁸ (the substances found in the exhibit)
- 8) Drug Act code (whether it was CDSA, Food and Drug Act or other)
- 9) Drug schedule (which schedule of the CDSA it is under)

⁸ Corresponds to drug types used by the RCMP and CBSA

Appendix E: RCMP Records Management System (RMS) Seizure Fields

Tab 1: Drug

- 1) Type (e.g. cocaine)
- 2) Value
- 3) Common name
- 4) Quantity
- 5) Estimated quantity
- 6) Form
- 7) Remarks

Tab 2: Property involved in occurrence

- 1) The classification (Only seizures classified as “disposal approved”, “evidence”, “found”, “held”, “seized”, “seized with warrant”, and “other” will be included in the report)
- 2) The date the drug was seized (Effective from – this field is auto-generated)
- 3) ID # (optional)
- 4) The type of drug (if not prefilled through search function)
- 5) Remarks (optional)
- 6) Recovery time (optional)
- 7) Damage value (optional)
- 8) The quantity of the drug (the quantity can be changed from the default “1” by clicking on the field and typing the appropriate quantity)
- 9) The value of the drug (in Canadian dollars)
- 10) Common name (optional)
- 11) Estimated quantity (optional)
- 12) Form (optional)
- 13) Colour (optional)

Tab 3: Uniform Crime Reporting Survey (UCR)

- 1) Provincial code
- 2) Location code

Appendix F: Health Canada, Drug Offence and Disposition Report



DRUG OFFENCE AND DISPOSITION REPORT

(Instructions for completion on reverse)

Protected

Please select the section under which authorization of destruction is required under the Controlled Drugs and Substances Act.

Follow-up to previous request
 Correction to a previously form

You MUST check ONE of the following boxes to identify the purpose of the report being sent to Drug Analysis Service.

s. 24(4) Pursuant to court order
 s. 26 Security, health or safety hazard
 s. 28 Consent received
 s. 25 No application for return of controlled substance within 90 days
 s. 27 Pursuant to court order
 s. 29 Emergency Destruction of plants

1 Name and address of organization responsible for the seizure		<input type="checkbox"/> POLICE <input type="checkbox"/> CBSA	2 Date File Opened (yyyy/mm/ee)
Telephone No.		Fax No.	3a Police: File Reference No.
			3b CBSA: File Reference No.
			4 Police: Exhibit Report No.

DEFENDANT (Use a separate form for each defendant or "No Case Exhibit")

5 Name	6 Sex	7 Place of birth	8 Date of birth (yyyy/mm/ee)
9 Address	10 Province	11 Occupation	12 Citizenship
			13 FPS
14 Subject is known to use (list all drugs)			

OFFENCE AND DISPOSITION OF CHARGES

15(a) Act and section	16(a) Name of Drug	15(b) Act and section	16(b) Name of Drug
17(a) Date of arrest (yyyy/mm/ee)	18(a) Place of offence	17(b) Date of arrest (yyyy/mm/ee)	18(b) Place of offence
19(a) Date of trial (yyyy/mm/ee)	20(a) Place of trial	19(b) Date of trial (yyyy/mm/ee)	20(b) Place of trial
21(a) Act and section or C.C. (conviction)	22(a) Date of sentence (yyyy/mm/ee)	21(b) Act and section or C.C. (conviction)	22(b) Date of sentence (yyyy/mm/ee)
23(a) Disposition of charge	24(a) Sentence	23(b) Disposition of charge	24(b) Sentence

CONTROLLED SUBSTANCES TO BE DESTROYED

25 Item No.	26 Date seized (yyyy/mm/ee)	27 Drug analyzed as <input checked="" type="checkbox"/>	28 Drug suspected as <input checked="" type="checkbox"/>	29 Name of drug(s) and other item(s) seized	30 Stage of production (for plants)	31 Quantity	32 UNIT (g, mg, ml, plants)	33 Received by

34(a) Samples taken
 (b) Photos taken
 (c) Prosecutor notified
 (d) Prosecutors Name Telephone No. Fax No.

35 Outline of case (Police use only) SUB Status Zone Watch Date reported (yyyy/mm/ee)

36 Name and signature of first officer responsible Date (yyyy/mm/ee) Name and signature of second officer responsible Date (yyyy/mm/ee) Time reported

37 On behalf of the Minister of Health, I hereby authorize, pursuant to section _____ of the CDSA, the destruction of the controlled substances listed above, by incinerator or other appropriate means and in compliance with municipal, provincial and federal environmental regulations.

----- Signature ----- Date -----

POLICE SERVICE

38 Once local destruction has been effected, complete this section and forward a copy to:
 Office of Controlled Substances, National Compliance and Exemption Division
 150 Tunney's Pasture Drive, Ottawa, ON K1A 0K9
 Telephone No.: 613-946-1143, Fax No.: 613-941-4760, Email: drug_disposal@hc-sc.gc.ca

39 Name and address of Police Service responsible for destruction, if different from box 1 above.

40 Destruction Date (yyyy/mm/ee)

41 Witness 1

42 Witness 2

43 Facility location

44 Method of destruction

HC/SC 2815 (09-2007)



Appendix G: Canadian Police Knowledge Network (CPKN) Curriculum Outline

Report Writing

Upon completion of this course you will be able to:

- Evaluate your report writing and either list or make improvements
- Paraphrase the importance of writing clear and concise reports
- Explain the complexity of writing reports and the volume of writing officers complete on a daily basis
- Discuss how your investigative abilities are expressed through your report writing
- Recognize the link between your notes and your report writing
- Identify potential issues that pose an ethical issue
- Discuss the police report pathway
- Assess your investigation using the Evidence, Belief, Action (EBA) cycle
- Use the EBA cycle to analyze evidence, form your beliefs, and take the appropriate actions
- List all necessary information in your report
- List all charges, the count, criminal code section, date, time, and place
- Provide and describe any evidence to support your charge(s)
- List all persons involved (civilian and sworn)
- Describe the involvement of all persons listed (civilian and sworn)
- Complete an investigative summary by including information about who, what, where, why, and the elements of the charge
- Recall that reports are read and reviewed by others
- Evaluate your reports and determine whether or not they are complete
- Apply the Goals, Objectives, Strategies (GOS) model to report writing
- Recall that reports need to be concise, accurate, and logical
- Demonstrate the GOS model by writing quickly and include a lot of information in a way that is easy to understand
- Construct a clear and concise report that is chronological in order
- Construct a report that links the events to the charges
- Construct a report that describes the events in chronological order
- Construct a report that articulates the occurrence clearly for the reader
- Apply the Relevance, Structure, Precision (RSP) model
- Apply strategies to improve the quality of your report
- Apply grammatical strategies to improve the quality of your writing
- Use information in the module to further improve writing skills
- Use information to further develop investigative knowledge

Appendix H: Canadian Police College (CPC), Drug Investigative Techniques (DITC) Course

Drug investigations differ from traditional criminal investigations as they deal with crimes as they occur. In most cases, the suspects are already identified and the purpose of the investigation is to build a prosecutable case against the suspect, identify other members involved in the drug trafficking organization and seize as many drug-related assets as possible.

This ten-day course is aimed at officers with limited experience in drug offence investigations. The course content follows the natural progression of a drug investigation, which includes classroom lectures combined with exercises that imitate a drug investigation.

The course provides the participants with the knowledge and skills required to improve their capacity to successfully investigate drug files. It is also structured to help participants improve their interpersonal skills to facilitate work in a team environment focused on a common end result.

Selection Criteria

This course is open to:

- All law enforcement officers who have limited experience in drug investigations, whether they work in a plain clothes unit or are assigned to uniform duties.

Priority will be given to officers who have recently been transferred (or who will soon be transferred) to a unit whose main responsibility is to investigate drug offences.

Note to Unit Commanders / Supervisors

The DITC is a basic drug course. It is intended for officers who have limited experience in drug investigations. All officers are encouraged to apply for this course whether they work on a plain clothes unit or in uniform (patrol) duties.

This provides the opportunity to have trained drug investigators within your services who can be called upon to assist drug units when the need arises. The course can also contribute to minimize the transition period for those who transfer to drug units (“Hit the ground running” theory).

In the past, participants who have attended the DITC had a wide spectrum of experience, from junior officers with no knowledge of drug work to subject matter experts in drug investigations. This has caused two issues:

- Junior members were reluctant to fully participate in the course as they are intimidated by those who have more experience;
- Expenditures of resources (time and money) on experienced officers who received very little out of a three week long course.

The feedback received from course participants still supports that the DITC, as designed, continues to meet the needs of those with limited drug investigations experience.

Limited experience, what does that mean?

By limited experience we suggest:

- Officers, who have no knowledge, or who are starting to investigate drug offences;

- For those who are currently working in drug sections, we recommend that they have been doing so for under two years, and have not received any form of drug or covert investigative training i.e.: surveillance course, source and handling course;
- The amount of service is not important; therefore, senior officers are encouraged to apply for the DITC if they do not have any drug investigation experience.
- Each applicant will be assessed individually.

Course Objectives

By the end of this course, participants will be able to:

- demonstrate their ability to handle and recruit sources by applying principles learned through scenarios;
- recognize the involvement of organized crime in illegal drug activities;
- discuss ways to prepare for court;
- explore a variety of drug investigative practices and techniques;
- discuss how major case management principles can be applied during a drug investigation;
- explore different types of clandestine laboratories such as synthetic drugs and Marijuana grow operations; and
- examine the legal requirements for search and seizure.

Topics

- Human sources
- Clandestine laboratories overview
- Criminal organizations
- Search warrants
- Court preparation and testimony
- Officer safety
- Investigative techniques and practices
- Partners
- Major case management
- Proceeds of crime

Appendix I: Canadian Police College (CPC), Advanced Drug Investigative Techniques Course

Drug investigations continue to become more complex due to factors such as court decisions, technology advancement and the sophistication of organized crime groups.

The Advanced Drug Investigative Techniques Course is designed to provide current training in areas such as recent case law, agent led investigations, new drug trends, organized crime trends, assets investigations, and high risk operational planning.

This five day course is aimed at experienced officers who currently are involved in drug offence investigations. The course content will focus on three core components.

- Legal Applications
- Covert Operations
- Assets Investigations

Course participants will have the opportunity to identify their current challenges in these three areas by completing a pre-course questionnaire, and in a small group setting will have the opportunity to discuss their issues with a Subject Matter Expert, their issues, and collaboratively identify possible solutions.

Selection Criteria

- Experienced investigators who have not received any drug investigational training during the past three years;
- Priority will be given to officers who are currently involved in the expert witness program or who are working towards achieving that designation.
- Must have successfully completed their departments / forces recognized source management and surveillance training.

Course Objectives

By the end of this course, participants will be able to:

- demonstrate leadership skills required to positively impact both the outcome of an investigation and the work environment of a drug unit;
- articulate recent case law related to investigative techniques used in complex drug investigations;
- manage covert operations; and
- acquire functional knowledge in the area of Assets Investigations.

Topics

By the end of this course, participants will be able to:

- demonstrate leadership skills required to positively impact both the outcome of an investigation and the work environment of a drug unit;
- articulate recent case law related to investigative techniques used in complex drug investigations;
- manage covert operations; and
- acquire functional knowledge in the area of Assets Investigations.

Appendix J: Canadian Police College (CPC), Clandestine Laboratory Investigations (CLIC) Course

Clandestine laboratories present numerous hazards to law enforcement personnel, the public and the environment. Extreme potential for fires, explosions and exposure to hazardous chemicals and fumes are but a few of the possible dangers. This [eight]-day course provides participants with the skills, knowledge and investigative techniques essential to successfully investigate and safely dismantle clandestine laboratories. It also enhances the professional approach to clandestine drug investigation.

Selection Criteria

This course is open to:

- police officers who are or are going to be assigned to a full time specialized unit mandated to investigate drug offences or who are or are going to be involved in the investigation of clandestine laboratories.

Potential participants who have successfully completed CPC's Drug Investigative Techniques Course (DITC) are given preference.

Note: This course includes practical exercises that require physical exertion. Therefore, participants must be physically fit and exempt of any respiratory conditions that would preclude them from using respiratory equipment.

Prerequisite (optional): Potential participants who wish to familiarize themselves with CBRN (chemical, biological, radiological, nuclear) content and common terminology used when faced with a CBRN incident are invited to explore the following website:

<http://www.publicsafety.gc.ca> (Search Canadian Emergency Management College). Once on the Canadian Emergency Management College site, click "Programs" under "The College" heading, and click on "CBRN First Responder Training Program". The two courses recommended are:

- Awareness course
- Basic level course

Both of these courses are free of charge and available via e-learning.

Course Objectives

By the end of this course, participants will be able to:

- identify various types of clandestine laboratories and their related components;
- apply various investigative techniques associated with the investigation and dismantling of a clandestine laboratory;
- select the appropriate level of personal protective equipment required during the various stages of the clandestine laboratory processing operation;
- employ appropriate safety procedures associated with the investigation and dismantling of a clandestine laboratory;
- use investigative, legislative and prosecutorial tools available to investigate, secure and dismantle a clandestine laboratory; and
- apply dismantling techniques to properly and safely tear down, collect and preserve evidence from a clandestine laboratory.

Topics

- History and types of clandestine laboratories
- Incident Management Systems (IMS)
- Investigative techniques
- Officer safety
- Personal protective equipment
- Laboratory dismantling

Appendix K: Drug Analysis Service (DAS), Client Manual, “When to Submit Exhibits”

SECTION 1.2 WHEN TO SUBMIT EXHIBITS

In order to manage requests for analysis, the DAS asks for your assistance when submitting exhibits.

Here are some questions you should ask yourself before submitting exhibits. If you answer “No” to any of these statements, it would be better to reconsider sending the exhibits in question.

	Yes	No
➤ I need an analysis result to press charges	<input type="checkbox"/>	<input type="checkbox"/>
➤ The suspect enter a plea of not guilty	<input type="checkbox"/>	<input type="checkbox"/>
➤ Charges will be laid	<input type="checkbox"/>	<input type="checkbox"/>
➤ For samples from the same case, I have made a selection (depending on the quantity, nature...) of the samples to be analysed	<input type="checkbox"/>	<input type="checkbox"/>
➤ When it comes to tablets, I have eliminated the possibility that it is over the counter pharmaceutical tablets	<input type="checkbox"/>	<input type="checkbox"/>
➤ When the nature, quantity and chain of possession of a substance are admitted by the defense, it is still necessary to conduct the analysis	<input type="checkbox"/>	<input type="checkbox"/>
➤ For quantitative analysis, the request is well founded and supported by my supervisor	<input type="checkbox"/>	<input type="checkbox"/>

Submit your exhibits early enough to ensure they are analyzed in time for court.

If the analysis is urgent and results are required immediately, contact the laboratory to inform them and to ensure the analysis can be completed in time.

If a plea has been changed to guilty after exhibits are submitted, contact the laboratory and request that analysis be cancelled.