Methamphetamine

Key Points

- The prevalence of methamphetamine use in the Canadian population is low (~0.2%).
- The prevalence of use among Canadian students (grade 7–12) is 1.2%.
- A recent increase in drug offences and seizures involving methamphetamine, including a 590% increase in possession incidents between 2010 and 2017, suggests the availability of methamphetamine has been increasing in recent years.
- Several jurisdictions report at least a three-fold increase in the use of methamphetamine over the past five years among individuals accessing treatment or harm reduction services.

Introduction

Methamphetamine is a synthetic drug classified as a central nervous system (CNS) stimulant or psychostimulant. CNS stimulants cover a wide range of substances that act on the body by increasing the level of activity of the CNS and include caffeine, nicotine, amphetamine (e.g., Adderall®), methylphenidate (e.g., Ritalin®), MDMA ("ecstasy"), cocaine (including crack cocaine) and methamphetamine (including crystal meth).[1,2]

While both methamphetamine and amphetamine are psychostimulants and often grouped together, they are different drugs. A slight chemical modification of amphetamine produces methamphetamine, which has a different pharmacological profile that results in a larger release of certain neurochemicals in the brain and a stronger and more rapid physiological response. Some amphetamines are prescribed in Canada for attention-deficit hyperactivity disorder (ADHD) and narcolepsy (e.g., Adderall and Vyvanse®), but methamphetamine use is currently illegal.

Methamphetamine is often made in illegal, clandestine laboratories with commonly available, inexpensive chemicals, such as ephedrine and pseudoephedrine, found in medications, among other sources. The use of these medications as precursor chemicals for methamphetamine led to stricter regulations introduced in Canada in 2006, limiting access to them by requiring they be kept behind the counter of pharmacies.[3] Illegal production can be dangerous due to the toxicity of the chemicals used and the high risk of explosions.

The drug is sold either as a powder (sometimes crystalline) or tablets, or in rock-like chunks or crystals, and also in a diverse array of colors.[2,4] Depending on the form, methamphetamine can be snorted, injected, ingested or smoked. Street names for methamphetamine include:

- meth
- tina
- peach
- jib
- crystal meth
- crank
- pink
- pill
- crystal
- glass
- tweak
- blade
- ice
- chalk
- candy
- speed
- rock
- peanut

Effects of Methamphetamine

Short Term: Methamphetamine increases alertness, energy and self-confidence.[2,5] When smoked or injected, methamphetamine use also produces a state of euphoria accompanied by higher energy and less fatigue, called a "rush" or "flash." The high associated with methamphetamine use is mediated by increased levels of dopamine in the brain, a neurotransmitter associated with pleasure, movement and attention.[1] In contrast with cocaine, methamphetamine has a larger effect on dopamine levels in the brain, which results in stronger, more prolonged effects. Whereas 50% of cocaine is removed from the body within one hour, it takes 12 hours for 50% of methamphetamine to be removed from the body.[6]

Other physical effects of methamphetamine include decreased appetite, headache, dizziness, stomach pain, dry mouth and hyperthermia (elevated body temperature), and increased breathing, heart rate and blood pressure.[2,5] Depending on the route of administration, the high from methamphetamine can last up to 12 hours.[4]

Long Term: When methamphetamine is used regularly over a long period, there is an increased risk for developing psychosis or psychotic symptoms.[4] These symptoms include violent behaviour, paranoia, hallucinations and delusions, which pose risks and challenges to medical and healthcare professionals. People who use methamphetamine are prone to the sensation of insects crawling under or over their skin ("meth bugs") and intense itching can lead to skin sores and lesions from scratching. Other effects include mood swings, insomnia and memory loss.[5] Chronic methamphetamine use typically follows a "binge–crash" cycle where the drug is taken repeatedly for days (the binge) before withdrawal sets in (the crash). Symptoms of withdrawal from methamphetamine include fatigue, depression, anxiety and intense craving.[5]

In addition to neurological and behavioural effects, continued methamphetamine use is associated with physical effects from poor nutrition and lack of sleep, such as weight loss and respiratory diseases. Methamphetamine use during pregnancy is harmful to the fetus and increases risk for premature birth, low birth weight, and heart and brain abnormalities.[6]

Legal Status of Methamphetamine in Canada

Methamphetamine is not legally available in Canada. It is classified as a Schedule I drug under the *Controlled Drugs and Substances Act* (CDSA).[7] Possession of methamphetamine can result in up to seven years imprisonment. Trafficking, importing, exporting or producing methamphetamine can lead to life imprisonment. Driving while impaired by methamphetamine is also a criminal offence under the *Criminal Code* of Canada, and oral fluid drug screening devices can be used to test for the presence of methamphetamine.[8]

Self-reported Use

Overall self-reported use of methamphetamine in Canada is low compared to other illicit drugs and has remained steady in the most recent years where data is available. However, among certain sub-populations, self-reported use has been increasing.*

Past-year use in general population (age 15+): Data from the 2015 Canadian Tobacco, Alcohol and Drugs Survey (CTADS) show that approximately 0.2%† or 59,000 Canadians reported past-year use

* Past-year prevalence estimates are not available for each age category due to high sampling variability.

† This number should be interpreted with caution due to moderate sampling variability.

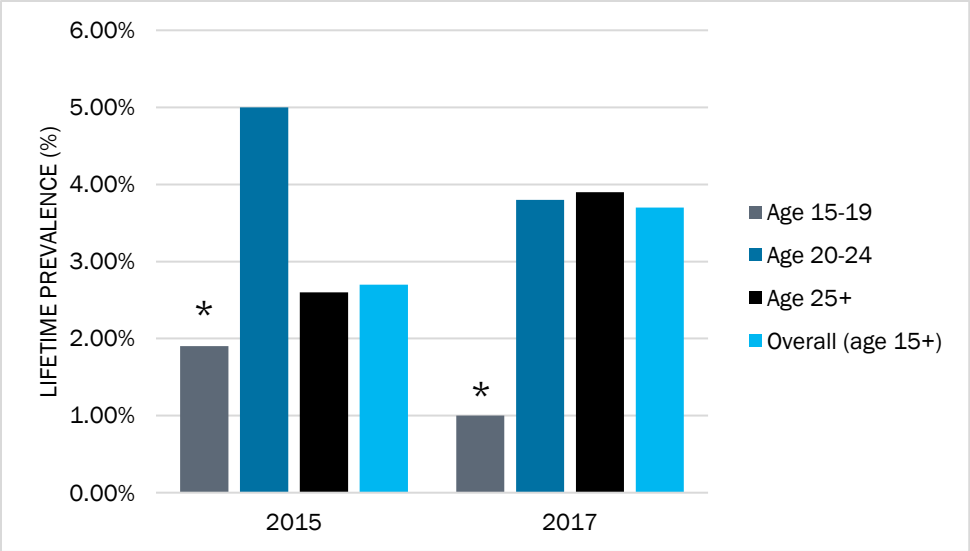
of methamphetamine.‡,[9] This number remains unchanged from the 2013 CTADS survey.[10] An estimate for 2017 is not available due to high sampling variability.[11]

Lifetime use in general population (age 15+): Data from the 2017 CTADS survey indicate that 3.7% of Canadians have used methamphetamine at least once in their lifetime (Figure 1).[11]

Lifetime use in adults (age 25+): Among Canadians 25 and older, 3.9% reported using methamphetamine at least once in their lifetime.[11]

Lifetime use in youth: In 2017, 1.0%† of youth aged 15–19 reported using methamphetamine‡ at least once in their lifetime.[11] The proportion of youth aged 20–24 reporting lifetime use of methamphetamine was 3.8%.

Figure 1. Prevalence of self-reported lifetime methamphetamine use among Canadians, by age category



Source: CTADS 2015, 2017.[9,11]
Note: Figures identified with an asterisk (*) should be interpreted with caution because of the small sample size.

Past-year use in students (grades 7–12): Data from the 2017 Canadian Student Tobacco, Alcohol and Drugs Survey (CSTADS) indicate that 1.2% of Canadian students in grades 7–12 reported past-year use of methamphetamine, unchanged from 2015.§,[12] Past-year prevalence for students in grades 10–12 (1.8%) was three times higher than students in grades 7–9 (0.6%).[12] In Ontario, past-year methamphetamine use in 2017 was 0.6% in grade 9–12 students, a significant decrease from 6.3% in 1999.[13]

Post-secondary students: Data from the spring 2016 National College Health Assessment Survey, which is drawn from a convenience sample of 41 Canadian post-secondary institutions and therefore not representative of all post-secondary students in Canada, indicates that 98.5% of post-secondary students had never used methamphetamine; 1.3% had used it, but not in the past 30 days; and 0.2% had used methamphetamine sometime in the past 30 days.[14]

Gender: Among the general population (age 15+) in 2017, the prevalence of lifetime methamphetamine use among males (5.4%%) was significantly higher than among females

‡ CTADS estimates prevalence of past-year and lifetime use for "speed/methamphetamine/crystal meth."
§ CSTADS estimates prevalence of past-year and lifetime use for "speed, ice, meth."

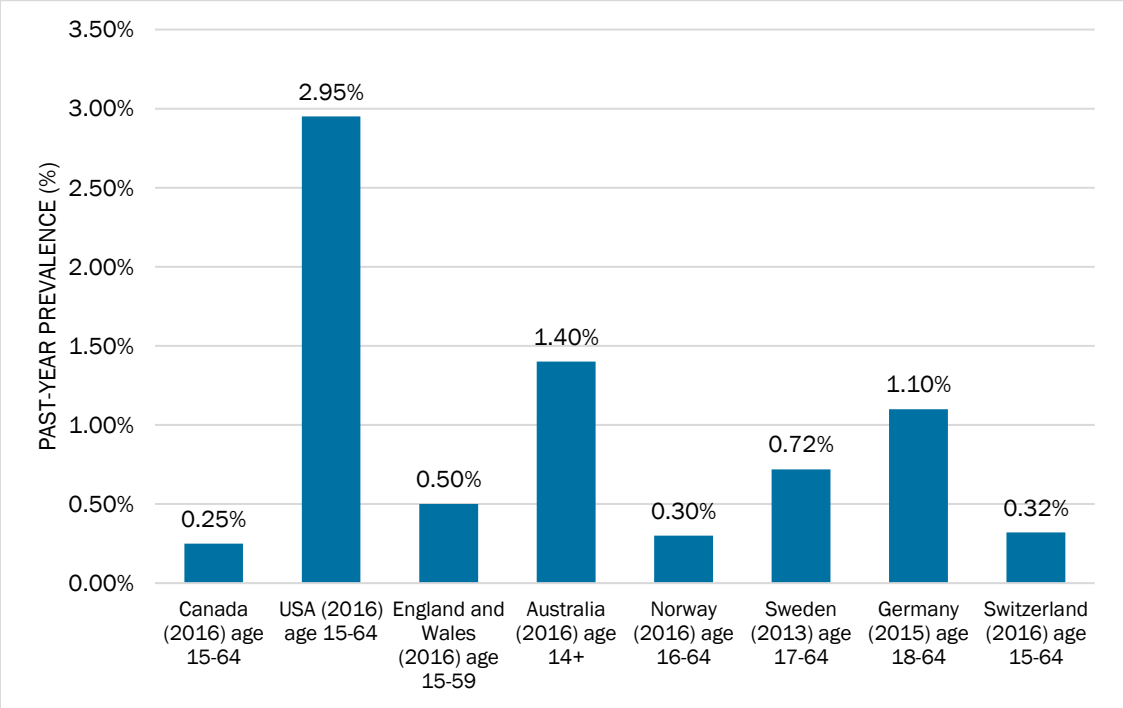
(2.2%†).[11] Among students (grades 7–12), the prevalence of past-year use among males in 2017 was also significantly higher (1.7%) compared to past-year use among females (0.7%).[12]

First Nations: Data from the National Report of the First Nations Regional Health Survey show that past-year use of methamphetamine/crystal meth among First Nations in 2015–2016 (age 18+) was approximately 1.2%.[15] Among First Nations youth aged 12–17, past-year use of methamphetamine/crystal meth in 2015–2016 was 0.6%.[15]

International Comparison

According to data obtained from the United Nations Office of Drugs and Crime, past-year prevalence of amphetamine (including methamphetamine) use in Canada was lower than that in other Western countries (Figure 2).[16]

Figure 2. Prevalence of self-reported past-year amphetamine and methamphetamine* use among the general population by country



Source: United Nations Office on Drugs and Crime 2018.[16]

*Prevalence estimates are for both amphetamine and methamphetamine with the exception of the USA, which also includes prescription stimulants.

Harms Associated with Use

Compared to other substances such as alcohol, there is limited data available specific to Canada on the harms associated with methamphetamine use.

† This number should be interpreted with caution due to moderate sampling variability.

Impaired Driving

There are no national Canadian estimates for the prevalence of methamphetamine use (detection in oral fluid or blood) while driving, but a U.S. roadside survey (n=1,991) in 2013–2014 reported an estimate of 0.3% among daytime drivers and 0.7% in night-time drivers.[17]

Morbidity

- In Manitoba, monthly emergency room visits by patients who are using methamphetamine increased 1,700% between 2013 and 2017.[18]
- In Vancouver, a prospective cohort study of 1,216 street-involved youth (aged 14–26) conducted from 2005 to 2016 did not find daily crystal meth use to be associated with increased hospitalization rates.[19]

Mortality

Currently, no national level statistics quantify the number of deaths attributable to methamphetamine in Canada. However, some provincial jurisdictions provide relevant statistics about methamphetamine-related deaths and highlight an increase in recent years:

- In British Columbia, the coroner's service reported that in 2016–2017 amphetamine and methamphetamine were the third most commonly detected drugs relevant to illicit drug overdose deaths at 32%, after fentanyl (74%) and cocaine (49%).[20]
- In Alberta, approximately 42% of all fentanyl-poisoning deaths in 2017 had methamphetamine listed as a contributing factor, compared to 32% for cocaine and 23% for heroin.[21] From 2014 to 2016, methamphetamine had the second largest increase (500%) after cocaine for the number of fentanyl-poisoning deaths involving additional substances (13 total in 2014, 48 total in 2016).[21] The proportion of fentanyl-poisonings involving methamphetamine was 2.6 times higher in 2017 compared to 2015 (16%).[21]
- In Manitoba, deaths that amphetamines (including methamphetamine) contributed to or caused increased from three total in 2014 to 25 total in 2016.[18] The total decreased to 17 in 2017.
- In Quebec, the proportion of fatally injured drivers with positive test results for methamphetamine rose from 2.5% in 2002 to 8.8% in 2013, corresponding to a statistically significant average annual increase of over 12.9%.[22]

Access to Treatment Services

The number of individuals accessing treatment or harm reduction services for methamphetamine use has increased recently in jurisdictions where data is available:

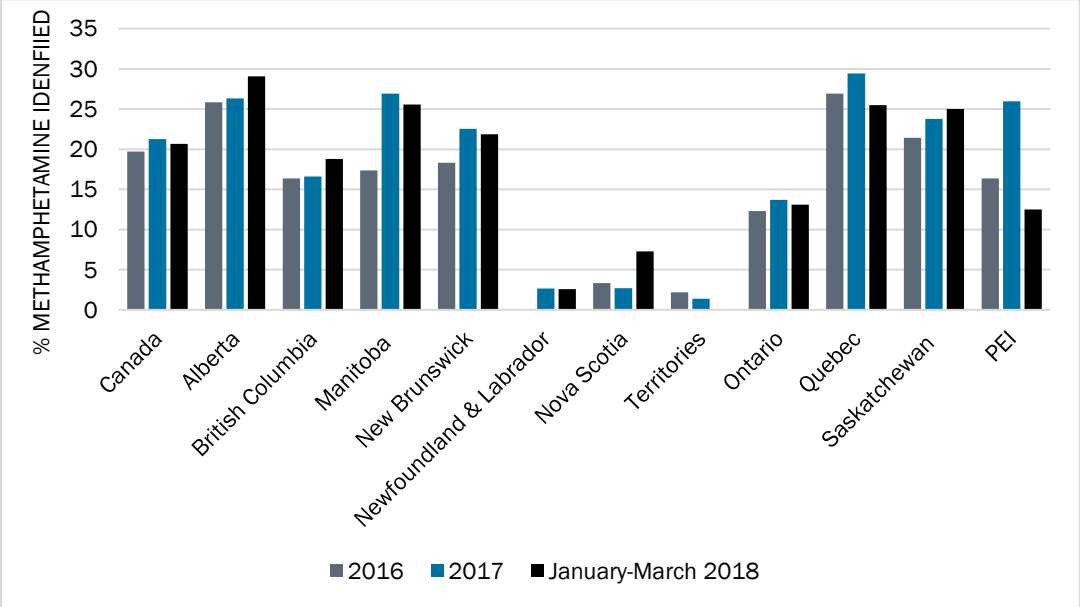
- A survey from the British Columbia Centre for Disease Control estimated substance use trends among harm reduction clients across the province (812 sites) and found that past seven-day use of crystal meth increased among respondents from 16.6% in 2012 to 47% in 2015.[23,24]
- In Saskatchewan, the prevalence of crystal meth usage reported at admission to addictions programs increased from 5% in 2012–2013 to 25% in 2015–2016.[25]

- In 2016–2017, methamphetamine replaced alcohol as the third most commonly used substance by harm-reduction clients in Ontario who accessed services from a variety of provincial, community-based and capacity-building programs.[26]
- The Drug and Alcohol Treatment Information System also reported an increase in the proportion of individuals seeking treatment for methamphetamine use in Ontario, from 2.9% in 2012–2013, to 8.3% in 2016–2017.[27]

Seizures

National: The United Nations Office on Drugs and Crime reported that in 2016, 547.7 kilograms of methamphetamine were seized in Canada, an increase of about 330% compared to the previous year, and an approximate 200% increase from 2014.[28] The Drug Analysis Service†† reported that in both 2017 and in the first three months of 2018, methamphetamine was the third most commonly identified substance seized by Canadian law enforcement agencies, following cannabis and cocaine.[29,30] In 2017, methamphetamine was identified in 23,152 seized drug samples, which accounts for about 21% of all total seized drug samples that were analyzed (Figure 3).[29]

Figure 3. Percent of methamphetamine present in top 10 controlled substances identified in samples



Source: Drug Analysis Service, 2017, 2018.[29,30]

Provincial and municipal jurisdictions: Increases in methamphetamine seizures have also been reported in other jurisdictions where data is available:

- The number of methamphetamine exhibits‡‡ seized by the Vancouver Police Department increased by 293% from 2011 to 2013 from a total of 258 to 757. The weight in overall grams of these seizures also increased from 1,356 in 2010 to 31,491 in 2013.[31]

†† The Drug Analysis Service analyzes suspected illegal drugs seized by Canadian law enforcement agencies. The drugs analyzed do not represent the total number of substances seized by law enforcement and should not be used to estimate the number or types of drugs available on the street. Note that a single sample may contain more than one substance.

‡‡ Drug samples seized by law enforcement agencies.

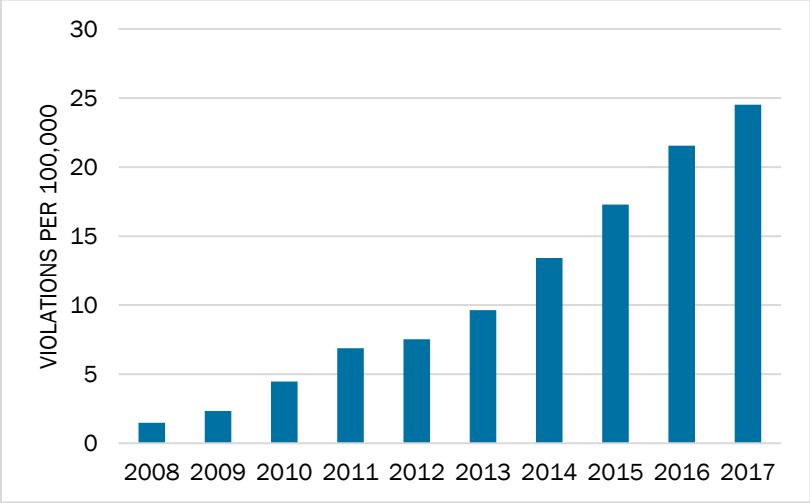
- The Alberta Law Enforcement Response Team reported that methamphetamine valued at $3,970,783 accounted for 40% of drugs seized by the team across the province in 2017–2018.[32] Methamphetamine seizures in Medicine Hat increased from 369 grams in 2015 to 3,207 grams in 2017, an increase of almost 870%.
- **International:** The 2018 *World Drug Report* indicated that global quantities of methamphetamine seized in 2016 increased for a fourth consecutive year at 12%.[16] Methamphetamine also made up 12% of global drug seizures in 2015–2016 and was the third most common drug category seized after cannabis herb and cannabis resin. Methamphetamine also accounted for the largest share of global quantities of seized amphetamine-type stimulants and 55% was seized in North America.

Criminal Justice Impacts

Frequent methamphetamine use can cause elevated aggressive and violent behaviours, paranoia and psychosis, which may contribute to increased risk for committing violent crime and increased crime-related costs.[34] Incident-based crime statistics provided by Statistics Canada highlight notable increases for possession, trafficking and production or distribution of methamphetamine violations reported in recent years.[35] Similar to other illicit drugs, the greatest proportion of offences were due to possession of methamphetamine. Higher rates of possession violations do not necessarily reflect higher rates of prevalence, and will depend on differential approaches to enforcement within a jurisdiction.

Possession: There were 8,996 incidents of methamphetamine possession in Canada in 2017, at a rate of 24.51 per 100,000, a 14% increase from 2016. Of these incidents, 6,144 (68%) resulted in a charge. Between 2010 and 2017, incidents of methamphetamine possession increased by approximately 590% (Figure 4).

Figure 4. Methamphetamine possession rates (violations per 100,000) in Canada from 2008 to 2017

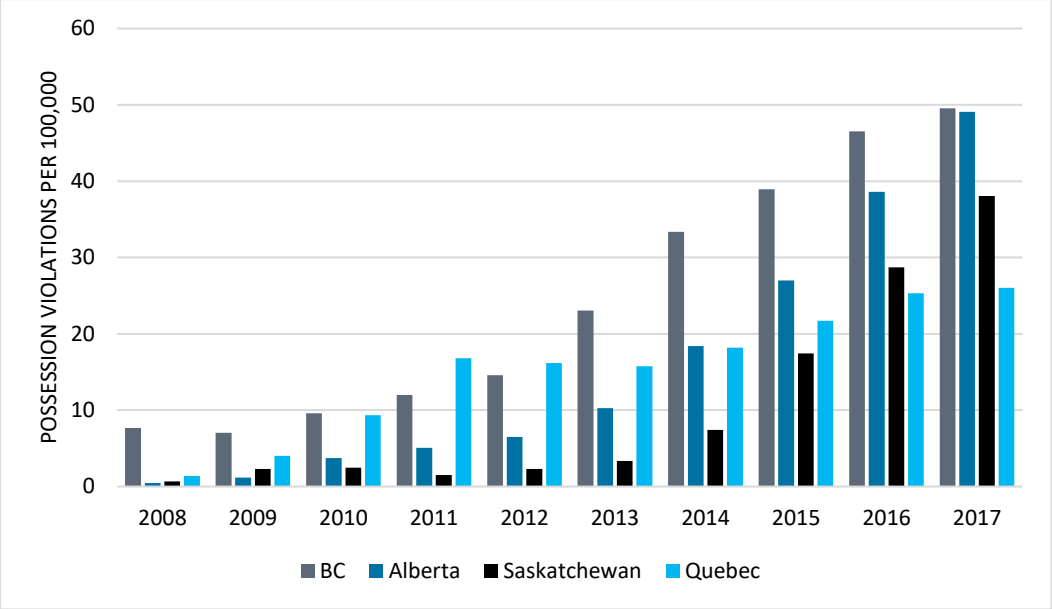


Source: Statistics Canada 2018.[35]

In 2017, British Columbia and Alberta had the highest rates of methamphetamine possession violations at approximately 50 per 100,000.[35] Saskatchewan and Quebec also had possession violation rates that were more than double the rate of other jurisdictions (Figure 5). Rates in Alberta

and Saskatchewan are approaching those in British Columbia in recent years, which has consistently had the highest rates of possession.

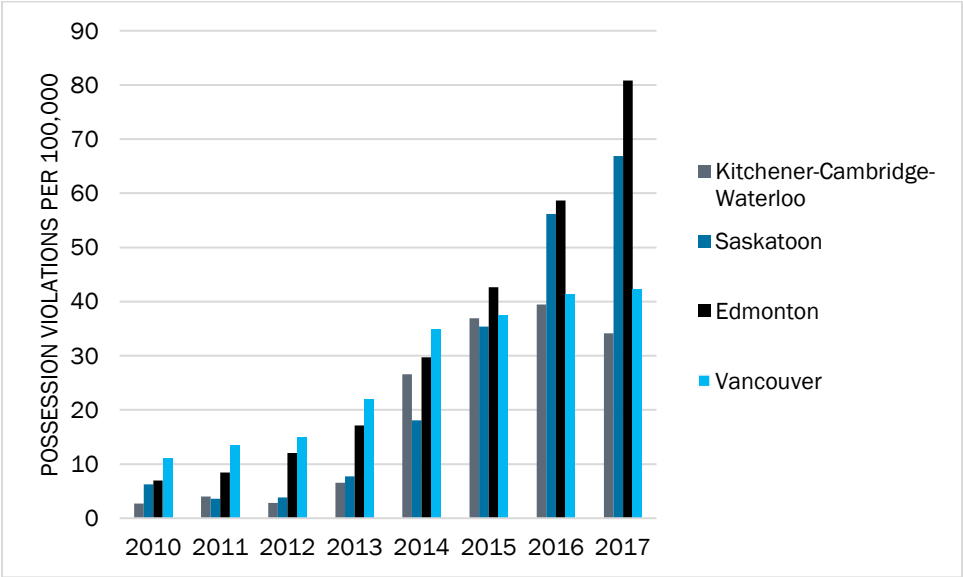
Figure 5. Methamphetamine possession rates (violations per 100,000) in top four Canadian jurisdictions, 2008–2017



Source: Statistics Canada 2018.[35]

Among major Canadian cities, methamphetamine possession rates in 2017 were the highest in Edmonton (80.82 per 100,000), Saskatoon (66.9 per 100,000), Vancouver (42.22 per 100,000) and Kitchener-Cambridge-Waterloo (34.12 per 100,000) (Figure 6).

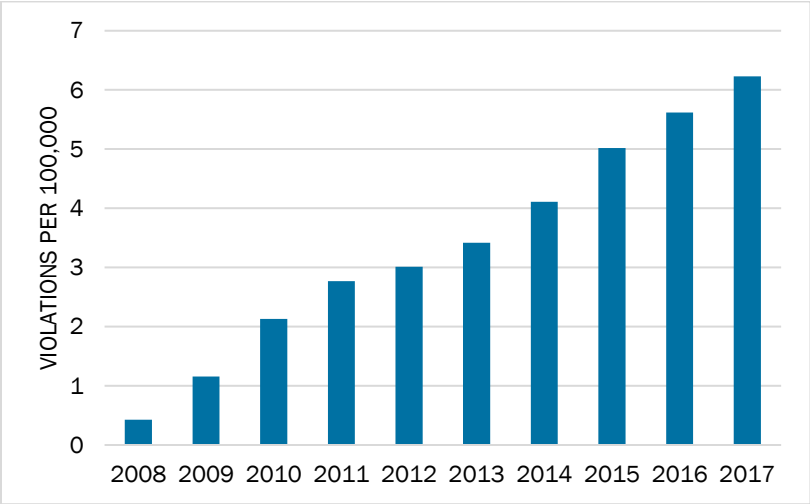
Figure 6. Methamphetamine possession rates (violations per 100,000) in top four Canadian cities where data are reported, 2010–2018



Source: Statistics Canada 2018.[35]

Trafficking: There were 2,287 incidents of methamphetamine trafficking in 2017, at a rate of 6.23 per 100,000, an 11% increase from 2016. Of these incidents, 2,237 (98%) resulted in a charge (Figure 7).

Figure 7. Methamphetamine trafficking rates (violations per 100,000) in Canada from 2008 to 2017



Source: Statistics Canada 2018.[35]

Importation and Exportation: There were 99 incidents of methamphetamine importation or exportation in 2017, at a rate of 0.27 per 100,000, a 17% increase from 2016.

Production: There were 47 incidents of methamphetamine production in 2017, resulting in 23 people charged, at a rate of 0.13 per 100,000, which has remained relatively constant since 2014.

Additional Resources

- Topic Summary: Ecstasy or Molly (MDMA)
- Topic Summary: Cocaine
- Topic Summary: Prescription Stimulants
- Topic Summary: Stimulants, Driving and Implications for Youth

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