CHAPTER 2

A Global Review of Cannabis Regulation Models

Abstract The international cannabis prohibition system appears to be fragmenting. This chapter aims to provide a global review of the current picture of ‘legalisation’ and ‘decriminalisation’ initiatives, mapping what is happening, where and with what impact. The first section reviews developments in the Americas, which has been the site of the most radical reform in the last decade. The next two sections review the situation in Europe and then in Oceania, Africa and Asia. The chapter then turns to examining the evidence on the impacts of the different regulatory approaches that have been implemented across the world. In conclusion, the chapter takes stock of the current global situation and considers the way forward.

Keywords Cannabis • Decriminalisation • Legalisation • Home cultivation • Cannabis Social Clubs • Regulation • Uruguay • Canada

INTRODUCTION

As already noted in the previous chapter, the global cannabis prohibition regime has come under intense and unprecedented pressure in recent years. In the last decade alone, two countries—Uruguay and Canada—have created a fully legal infrastructure for the cultivation, distribution and sale of cannabis, and in the United States, although federal prohibition remains in place, many states now have legal cannabis supply systems.
Although there is a much longer story of reform that can be traced back to the 1970s (see Eastwood et al. 2016), what we have seen in the last ten years has been a very significant acceleration and deepening of reform, albeit largely concentrated in the Americas. The international cannabis prohibition system appears to be fragmenting and this looks to be an important moment in the modern history of cannabis control. It may even prove to be the beginning of a global paradigm shift in how we regulate cannabis. Whether or not that happens, it is certainly timely to take stock of regulatory developments, and this is the goal of this chapter. It aims to provide a state-of-the-art review of current approaches to regulating cannabis in existence across the globe. In doing so, we focus mainly at the level of the models and approaches that have been implemented, rather than delving too deeply into the detailed nuts and bolts of how different systems have been constructed. We provide some signposts to the latter for interested readers. To aid exposition, for jurisdictions in which notable legalised and/or decriminalised recreational and/or medical cannabis markets exist, we present the regulatory approach using a basic model of a supply chain (see Fig. 2.1).

![Fig. 2.1 Supply chain](image-url)
The chapter is structured as follows. The first part traces the various regulatory approaches that have been adopted to date, beginning first with the widespread reforms that have taken place across the Americas. While the earliest experiments with cannabis reform occurred elsewhere, the regulatory revolution in the Americas over the last 10 years has provided the biggest shock to the cannabis prohibition system. Following this, reforms that have taken place across Europe are considered before addressing recent developments in Oceania—specifically Australia and New Zealand—and ending with a brief discussion of developments in Africa and Asia. Drawing on available evidence, the second part of the chapter reviews what we know about the impact of these regulatory models as they relate to different outcome domains: consumption, public health, criminal justice, and the economy. In conclusion, we summarise the state of play at the start of the 2020s and consider how we might move forward from here.

REGULATORY MODELS IN THE AMERICAS

It is within the Americas that the most radical reforms to cannabis laws have been taking place. The revolution has run all the way from Canada in the north, through states right across the United States, and down into Uruguay and its neighbours in the south. This section is structured as follows. To begin, efforts to decriminalise and then later legalise cannabis for both medical and recreational use in the United States are considered. Following this, attention turns to Uruguay as the first country in the world to legalise cannabis from seed to sale. Then, the reforms that have taken place in Canada are examined before discussing the smaller-scale reforms that have occurred in numerous South American countries.

United States

Despite its strong post-1945 prohibition stance, the United States has been at the forefront of recent reforms in cannabis regulation. The roots of cannabis prohibition in the United States are often traced back to the Mexican Revolution of 1910 when Mexican immigrants to the United States brought with them the recreational use of ‘marihuana’. Public and political concern about Mexican immigration and associated fears of the ‘Marijuana Menace’ resulted in 29 states banning cannabis by 1931. Six years later, the United States Congress passed the Marihuana Tax Act...
1937, effectively criminalising nationwide use of the drug. However, between 1973 and 1978—largely due to changing social attitudes during the 1960s—11 states decriminalised cannabis possession, with other states substantially reducing their criminal penalties. In light of these developments, during the 1970s, many believed that the federal government would soon legalise recreational cannabis (Caulkins et al. 2015: 2). However, this did not occur, and, from 1978 until 2001, no other state took the step to decriminalise recreational use of cannabis. An important development was the legalisation in California in 1996 of cannabis for medical use. This set off a steady succession of reform in other states.

It has been in the past decade that the scale of reforms in the United States has accelerated significantly. Beginning in Colorado and Washington in 2012, a total of 13 US jurisdictions have passed laws to legalise recreational cannabis, 11 of which have established commercial supply chains from ‘seed to sale’ while two other US jurisdictions—Vermont and the District of Columbia—have approved non-commercial supply models. In all states apart from Vermont and Illinois (which both legalised recreational cannabis through state legislature), cannabis legalisation has been the result of ballot initiative, demonstrating the growing public support for reforming cannabis laws. The scale of reforms is such that approximately 25 per cent of the US population now live in states that have legalised recreational cannabis use (EMCDDA 2020: 4). This figure looks set to increase in the near future, as a handful of other states have more recently begun the process of reform (see Pardo 2020).

As Kilmer and MacCoun (2017) note, it was the legalisation of medical cannabis in many states that smoothed the transition to recreational cannabis, through the creation of a visible and active cannabis industry with standalone medical dispensaries, along with revealing how federal government would allow the generation of tax revenues from the sale of cannabis (Kilmer and MacCoun 2017: 181). Indeed, in a number of states, including California, Colorado, Oregon and Washington, commercialised medical cannabis markets were already providing relatively easy access to cannabis as the requirements for obtaining a physician’s recommendation progressively loosened (Kilmer 2017b; Kilmer and MacCoun 2017; Pardo 2020).

As the following sections seek to illuminate, the regulatory controls on both medical and recreational cannabis in place across the United States differ to varying extents. With regard to medical cannabis laws, the approaches adopted in California and Colorado are perhaps most widely...
discussed due to the existence of bricks and mortar medical cannabis dispensaries and the expansive list of qualifying medical conditions, thus serving as more of a loophole for recreational users (Caulkins et al. 2015). As Caulkins et al. (2015: 2) note, however, this approach represents one end of a broad spectrum of medical cannabis regulation. Other states have implemented much more restrictive controls on access to medical cannabis, such as limiting the list of qualifying medical conditions, prohibiting home cultivation, or allowing only high cannabidiol (CBD) and low delta-9-tetrahydrocannabinol (THC) cannabis. The issue of regulating CBD/THC content remains contentious. Whilst there is much evidence that THC is the psychoactive component of the plant and CBD the therapeutic, some argue that there are more complex interactive effects.

In respect of recreational cannabis, in all but the state of Vermont and the District of Columbia (where cannabis is not available for retail sale), the regulatory model can be broadly described as a commercial enterprise, with private, for-profit firms licensed to cultivate, process, distribute and sell cannabis and cannabis products. The commercial recreational cannabis models adopted in the United States have largely been modelled on regulatory regimes for alcohol (Pardo 2014; Caulkins 2017; Hall 2017; Hall et al. 2019a). As Hall (2017) notes, the rationale for such an approach includes the similar social contexts in which cannabis and alcohol are used, along with similar motivations for consumption. The majority of states also allow home cultivation of cannabis and permit gifting and sharing of cannabis to others.

One of the key differences across US jurisdictions is whether vertical integration is mandated, encouraged or prohibited. Vertical integration is where a company has complete control over the supply chain, from manufacturing to final sale. For example, in Colorado during the first year of operation of the recreational cannabis market, vertical integration was mandated. Existing medical cannabis licence holders were favoured for recreational cannabis cultivation and distribution licences in an attempt to ease transition into the new market (Pardo 2020: 18–19). This stands in contrast to the approach adopted in Washington in the same year. As Rolles and Murkin (2016) note, rather than mandating for vertical integration, Washington sought to avoid the market becoming dominated by a few large enterprises with the capital to hold all necessary licences. Instead, licences were established for production, processing and retail, with producer and processor licence holders prohibited from also holding retail licences (Rolles and Murkin 2016: 36). Colorado has since dropped
the requirement for vertical integration with it remaining permitted. Thus, at the time of writing, vertical integration is permitted in Alaska, Illinois, Maine, Michigan, Nevada and Oregon. It remains prohibited in California (until 2023) and Washington. The only state now to require vertical integration is Massachusetts (Pardo 2020).

There are a number of advantages of vertical integration for both cannabis companies and regulators. For cannabis companies, vertical integration allows for better cost control and greater efficiency from production to retail (Carnevale et al. 2017). It also enables companies to avoid taxation that is applied in some states on the wholesale price of cannabis—an issue that might present itself in states that permit vertical integration but also impose an ad valorem tax (see below) on wholesale, such as Colorado (Pardo 2014). For regulators, limiting the number of businesses within the supply chain makes control of the market easier (Bewley-Taylor et al. 2014). However, vertical integration can lead to the formation of monopolies or oligopolies, as larger companies with greater economies of scale are able to dominate the market, creating barriers to entry for small businesses (Carnevale et al. 2017). In Washington, the issue of monopolisation served as justification for prohibiting vertical integration (Bewley-Taylor et al. 2014). Likewise, in California, large-scale cultivator licences are prohibited until 2023 to prevent companies monopolising the industry (Rolles and Murkin 2016).

Another key difference concerns the taxing of cannabis products as they move through the supply chain. In most states that allow recreational sale, excise tax is applied at the point of cultivation and/or wholesale, with sales tax also imposed at the point of retail. In some states, local sales taxes are also applied. That said, some states, such as Oregon, have opted not to impose excise taxes and to impose tax only at the point of retail sale. The approach adopted in Washington State is of note, as a 25 per cent tax was initially imposed at the point of cultivation, processing and sale, but this was replaced in 2015 by a 37 per cent tax at the point of sale. While not the only options at the disposal of legislators, states have opted to impose either an ad valorem tax, which is based on the assessed value of the product being sold, or a unit by weight of product tax. Some states have adopted a combination of ad valorem and tax by weight. For example, California imposes both an ad valorem tax at the point of sale (currently set at 15 per cent) as well as a specific tax based on the weight of the flower (currently set at $9.25 per ounce of flower) (Pardo 2020). Details of recreational cannabis tax, including types and rates, in each state can be found
in Hall et al. (2019a) and Pardo (2020). Pat Oglesby remains the sharpest commentator on tax issues (e.g. Oglesby 2017).

Determining the appropriate approach to taxation has important implications for the cannabis market. As Kilmer (2017b) notes, while a tax by weight to cannabis products is easy to implement, there is a risk that it will create incentives to sell higher THC products. An alternative approach would be to tax cannabis products on the basis of their potency, with higher THC products subject to higher rates of tax, with the aim of nudging consumers to lower potency products (Pardo 2014; Kilmer 2017a: 4). Moreover, with ad valorem taxes, as the cost of production and thus cost of cannabis product declines, so too will the amount of tax applied. As Pardo (2014: 733) argues, a tax should increase as prices decline in order to attempt to limit consumption.

As is the case with recreational cannabis, there is no universal approach adopted for taxing medical cannabis products. While medical cannabis can still be subject to tax—both excise and retail—not all states impose it. Some states, such as Florida and Massachusetts, impose neither an excise nor a sales tax on medical cannabis. Some states impose a sales tax but not an excise tax, while other states, such as Pennsylvania, impose an excise tax but not a sales tax. Where states tax medical cannabis, rates are generally lower than for recreational cannabis.

Seed-to-sale tracking systems are required in most states where medical and/or recreational cannabis has been legalised in order to track cannabis products as they move through the supply chain. Two market leaders offer tracking solutions for the majority of states: METRC, which supports, for example, the California Cannabis Track-and-Trace System, and BioTrackTHC, which is used in Washington State and other jurisdictions. Seed-to-sale tracking systems offer full traceability of cannabis throughout the supply chain, as well as allowing licensees to record information about product type, product name, test results, including potency and pesticide use, the chain of custody as cannabis products are distributed through the supply chain, and finally the sale of the product, including price, to medical patient or recreational customer (Caulkins et al. 2018; BioTrackTHC 2019). The use of seed-to-sale tracking systems help to prevent diversion to the illicit economy, thus allaying federal concerns (Carnevale et al. 2017), but also enable the easy identification and recall of products deemed unsafe following testing (BioTrackTHC 2019).
Cultivation licenses are often separated into tiers depending on the square footage of the cannabis farm and/or the maximum plant allowance. For example, in Washington State, licenses for cultivation are separated into three tiers: tier 1 grants up to 2000 square feet; tier 2 is for farms between 2000 and 10,000 square feet; and tier 3 is for 10,000 to 30,000 square feet (Washington State Liquor and Cannabis Board 2019c). With the exception of Nevada, all states that have established a commercial supply chain for recreational cannabis have imposed a maximum plant or canopy cap on production. While Nevada has not implemented a cap on cultivation, it has capped the number of license holders (Pardo 2020). Caps on cultivation are imposed primarily to protect against the smuggling of legal cannabis into other states either where cannabis is still prohibited or where legal cannabis retail prices are higher (Bewley-Taylor et al. 2014).

In states with existing, large medical cannabis markets, cultivation operations have been expanded to serve the recreational market. Regulatory bodies have sought to bring together the existing commercial medical cannabis market with the newly established recreational model, with existing medical cannabis cultivators, processors and retailers supplying the recreational market. This was the case in Colorado. In November 2013, the Colorado Department of Revenue (CDOR) began accepting applications for the first licenses for the cultivation of cannabis for retail sale (Pardo 2020). In the first year of operation, the CDOR gave preference to existing medical cannabis licensees to obtain licenses for the cultivation, processing and distribution of recreational cannabis (Pardo 2020). As Pardo (2020: 18) argues, the primary intention was to bring together the medical and recreational markets under the same system of regulation and encourage medical cannabis users toward the recreational market.

Commercially cultivated cannabis must be submitted for testing. Testing examines cannabis products for THC and other cannabinoid potency but also for evidence of mould and pesticide residue on products (Carnevale et al. 2017). The testing of cannabis-infused products (i.e. edibles) is particularly important as they can pose particular health risks to consumers due to the delay in users experiencing psychoactive effects as well as the potential for intensified levels of pesticides for products made using cannabis concentrates (Carnevale et al. 2017; Subritzky et al. 2017, 2020).
Regarding home cultivation, all but two of the states in which recreational cannabis has been legalised permit home cultivation for recreational use. Most states have implemented a cap of three in-flower (mature) plants per household (with an additional three immature plants); however, other states, such as Michigan and Massachusetts allow up to 12 plants per household. Only in the states of Illinois and Washington is home growing prohibited, although registered medical users are permitted to cultivate their own cannabis. Those states that have permitted home cultivation also allow for the sharing or gifting of cannabis up to the personal possession limit and without remuneration. In respect of medical cannabis, limits for home cultivation are generally higher, with states that permit home growing predominantly implementing limits of either six plants (three in flower) or 12 plants (six in flower). Some states, such as Florida, do not permit medical cannabis patients to cultivate their own cannabis. In Arizona, home cultivation is permitted only for registered patients who live more than 25 miles from a medical cannabis dispensary.

Processing/Packaging
Cannabis processor licences typically permit licensees to dry and cure raw cannabis, and to create products through extraction, such as concentrates, edibles and topicals. In accordance with state regulations, processors are also responsible for packaging and labelling useable cannabis, cannabis concentrates and cannabis-infused products (where permitted and/or available for purchase) for sale at wholesale to retailers or other processors (see, for example, Washington State Liquor and Cannabis Board 2019b). Strict guidelines on the packaging and labelling of cannabis products exist in all jurisdictions where sale of recreational and medical cannabis is permitted. Common packaging stipulations include the use of child-resistant and tamper-evident packaging, the use of opaque materials, the use of packaging that will protect the product from contamination, and the prohibition of packaging that is appealing to persons under 21 years of age or imagery that depicts a person under the legal age consuming cannabis. Labelling regulations can include a requirement to state the quantity of the product, the cannabinoid profile, including THC and CBD content, the expiration date, details of the producer, the batch number and harvest number, and a list of the use of all non-organic pesticides, fungicides and herbicides used during cultivation. The universal cannabis symbol must also be displayed on all cannabis products. With specific regard to edibles, requirements often include a statement of all
ingredients, the nutritional profile, a list of potential food allergens, as well as the serving size and activation time (the expected amount of time it will take for an individual to experience the psychoactive effects of the product). For medical cannabis products, regulations can also require the name of the recommending physician, the patient’s name and the dispensing date. (For detailed examples of packaging and labelling regulations, see Oregon Liquor Control Commission 2018; Washington State Liquor and Cannabis Board 2019a.)

Distribution
Distribution refers to the transport of cannabis and cannabis products between licensees: from cultivator and/or processor to retailer. This can also include the storage of cannabis products under set time limits. In some jurisdictions, cultivator, processor and retailer licence holders will be permitted to distribute their products between other licence holders, either as a permission within their existing licences or through the issuing of a separate distribution licence. However, in other jurisdictions, such as Colorado, third party companies are licensed to distribute cannabis through the supply chain. Distributors can hold contracts with multiple cultivation and/or processing companies.

The role of the distributor can also be more complex than simple transportation. For instance, distributors can also be responsible for arranging the testing of cannabis products, ensuring products are compliant with packaging and labelling regulations, and collecting taxes on behalf of the state. This is the case in California (see Bureau of Cannabis Control California 2019).

Retail
Of the 13 US jurisdictions that have legalised cannabis to date, 11 permit retail sale of cannabis. The standard retail cannabis transaction limit is 28.5 g of cannabis flower. This is adopted in all states that permit retail sale of cannabis with the exception of Maine and Michigan, which allow for retail sales of up to 71.25 g of cannabis flower (Hall et al. 2019a; Pardo 2020). Transaction limits for cannabis concentrates differ across jurisdictions, ranging from 3.5 g in Nevada to 8 g in California and Colorado (see Pardo 2020). With regard to cannabis edibles, states have implemented maximum THC limits of either 5 mg or 10 mg per serving. In the District of Columbia and Vermont, retail sales are not permitted, with residents
only able to possess cannabis that they have cultivated. Up to an ounce of home-cultivated cannabis can be gifted to other adults aged 21 and over.

In the majority of states, retail establishments or dispensaries are not permitted near schools, with some states also prohibiting establishments near to religious facilities, and prisons and other correctional facilities (Pardo 2020). Further, in the 11 states that have permitted retail sale, localities can prohibit retail establishments through bans and/or zoning requirements. Mosher and Akins (2020: 67) describe the situation in Washington State where, in 2016, six of Washington State’s 39 counties and 54 of 152 cities with populations above 3000 had implemented bans on retail cannabis sales meaning that approximately 30 per cent of the state’s population lived in areas without retail stores. One of the counties to initially implement a ban on retail stores was Pierce, which is Washington State’s second largest county by population. Washington State has also imposed a cap on the total number of retailer licences issued by the state. Initially, the cap was set at 334 but was increased in 2016 to 556.

Strict advertisement regulations are in place in all states that have legalised medical and/or recreational cannabis. A common stipulation is that advertisements must be restricted to media with no more than 30 per cent of the audience under the age of 21 (Pardo 2020). Advertisements are also often prohibited near schools and in other public places. Where signage at retail locations is permitted, this signage is often restricted in number and in size, such as in Alaska (Pardo 2020). There are also total bans on false advertisement, claims of untrue health benefits, and advertisements that could appeal to those under 21 (Pardo 2020).

For registered medical cannabis patients, purchase limits are sometimes higher, with many states permitting medical patients access up to 71.25 g (often over a 14-day period). In California, this is even higher, with patients able to purchase up to 228 g (8oz) of cannabis. In some states, limits are determined by physicians on a patient-to-patient basis. In New Jersey, for terminally ill patients, physicians can prescribe unlimited quantities of cannabis.

**Consumption**

With regard to consumption, there are three key issues to address: consumption of cannabis in public spaces; limits for personal possession; and consumption while driving. While specific regulations differ, public consumption of cannabis is outlawed. Exceptions can be made for the consumption of cannabis on the premises of retailers, but often with the
stipulation that consumption remains out of view of the public, and some state and local jurisdictions can waive consumption bans for public events (Pardo 2020). In addition, cannabis smoking laws are often aligned with laws on tobacco smoking, including prohibiting smoking cannabis in non-private indoor spaces. As Pacula et al. (2014) note, prohibiting public consumption of cannabis limits second-hand exposure to cannabis smoke and also serves to reduce the extent to which cannabis is visible to young people in the hope that this will decrease youth initiation. In states with recreational cannabis laws, public consumption of cannabis is considered a civil infraction and is punishable by way of a fine. In the District of Columbia, however, public consumption is considered a misdemeanour offence and the penalty can include up to 60 days’ jail time (Pardo 2020).

Personal possession limits reflect the retail transaction limits in states that have permitted sale of recreational cannabis. In the District of Columbia and Vermont where retail sales are prohibited, personal possession limits are 57 g and 28.5 g, respectively. Possession of more than the permitted amount of cannabis in public is considered an offence, with penalties ranging by state, but most often consisting of a limited fine.

All states prohibit driving while under the influence of cannabis. In addition, following alcohol laws, many states rule that if transporting cannabis in a vehicle, the cannabis must be in a sealed, unopened container that is not accessible while driving. These rules also apply in most states to vehicle passengers. Some, but not all, states have established legal limits of THC in blood. Both Colorado and Washington State imposed a limit of five nanograms per millilitre as measured in whole blood (as opposed to blood serum) when establishing their recreational cannabis markets (Pacula et al. 2014: 1025).

In states where cannabis has been decriminalised but not legalised, personal possession limits differ markedly. Some states, such as Virginia (with effect from 1 July 2020) and New York, stipulate that possession of up to an ounce (28.5 g) of cannabis is considered a civil violation, carrying a fine of just $25 and $50, respectively, while other states, such as Hawaii, determine that any more than 3 g is considered a misdemeanour and is punishable by up to 30 days incarceration and a $1000 fine.

**Uruguay**

While the use of cannabis—and all other psychoactive drugs for that matter—has been legal in Uruguay since the mid-1970s, production and sale
have, until recently, remained prohibited (Bewley-Taylor et al. 2014; Cruz et al. 2018; Queirolo 2020). In December 2013, Uruguay became the first country in the world to legally regulate the cannabis market, from cultivation to sale. The law was initially designed for recreational cannabis users, and it was not until 2015 that the Uruguayan government included regulations for medicinal users within their legislation (Queirolo et al. 2016). Uruguay has adopted a ‘middle-ground’, three-tier approach to regulation, opting for government monopoly at the retail stage and full state control through what is a relatively simple supply chain (Obradovic 2019; Bewley-Taylor et al. 2014; Cerdá and Kilmer 2017).

Unlike the activist-driven, voter-approved initiatives that have unfolded in most jurisdictions in the United States and Canada, Uruguay’s move to legally regulate cannabis was approved by politicians and passed in spite of popular opinion (Cerdá and Kilmer 2017; Queirolo 2020). Indeed, there was widespread opposition to the cannabis law reforms by Uruguayan residents, with approximately two-thirds voting against legal regulation in 2012–2013 (Walsh and Ramsey 2016). Moreover, in contrast to the developments in many US states, as outlined above, cannabis reform in Uruguay was not motivated by tax revenues (Cerdá and Kilmer 2017; Kilmer 2017b: 13). Instead, the wholesale legalisation was born out of concerns about the illicit distribution of cannabis and other drugs and driven by a desire to reduce the violent crime associated with Paraguayan distributors (Kilmer 2017b: 13; Cruz et al. 2018).

Following the reforms, residents aged 18 or over can register with the Uruguayan government and gain access to one of three, mutually exclusive means of obtaining the drug: home cultivation; joining a collective or CSC as seen elsewhere—known in Uruguay as a Uruguayan Cannabis Club (UCC)—or purchasing from pharmacies (Kilmer 2017b). To prevent individuals registering for more than one route of obtaining cannabis, registered users and their supply methods are tracked by the state’s Instituto de Regulación y Control del Cannabis (Institute for Regulation and Control of Cannabis; hereafter IRCCA). As of April 2020, there are 54,220 Uruguayan residents registered to obtain legal cannabis; 8278 individuals are registered as home growers, 4768 individuals are registered members of the 158 cannabis collectives and 41,174 users are registered to buy from one of the 17 pharmacies across Uruguay (IRCCA 2020). This figure represents just over 1.5 per cent of the general population of Uruguay but almost a quarter of all cannabis users in Uruguay, according to estimates (Queirolo 2020). Moreover, as Queirolo (2020) explains, the
number of Uruguayan growing their own cannabis is likely to be double the number registered with the IRCCA, yet it is not yet known why some have opted not to register.

*Cultivation*

In relation to pharmacy sales, the IRCCA has licensed five private companies (two having been initially licensed in 2015 and three licensed in 2019) to cultivate and supply recreational cannabis to be sold in pharmacies, and a further four suppliers to cultivate cannabis for medicinal use (IRCCA 2020). While these suppliers are private firms, they are tightly controlled by the Uruguayan government, permitted to cultivate only two brands and five varieties of cannabis with relatively low levels of THC, capped at 9 per cent, which are to be exclusively supplied to the government-owned pharmacies (Obradovic 2019).

As noted above, initially, just two companies—Simbiosis and ICCorp—were licensed to produce the cannabis to be sold in pharmacies. The companies were licensed to grow up to a maximum of two tonnes of cannabis each year (Ramsey 2016). As Ramsey (2016: 16) notes, while the cannabis produced by the two companies would fall short of the current cannabis market size, the intention was to proceed cautiously and avoid producing cannabis that the pharmacies may not be able to sell.

The IRCCA closely monitors the activities of pharmacies and can impose sanctions for breach of law and regulations. Premises used for the cultivation, storage and distribution or dispensing of cannabis are inspected to ensure they meet the required security regulations, and cannabis produced for retail sale is tested by the IRCCA to ensure it meets the regulatory requirements (Ramsey 2016).

With respect to UCCs, when registering a club with the IRCCA, organisers are required to submit a cultivation plan detailing where and how the cannabis for distribution within the club will be cultivated. UCCs are permitted to cultivate up to 99 flowering plants at any one time (Ramsey 2016). UCC premises must adhere to security regulations, including establishing surveillance on every entrance and opening of the property (Ramsey 2016). UCCs cannot be located within 150 metres of schools or drug rehabilitation centres (Ramsey 2016).

All Uruguayan residents aged 18 years and older can register with the IRCCA and grow their own cannabis at home. Home-growers are permitted to have no more than six in-flower plants at any time and an annual harvest of up to 480 g. Home cultivation is restricted to one per
household, regardless of the number of residents (Pardo 2014: 730). A licence for domestic cultivation must be obtained from the IRCCA, which must be renewed every three years (IRCCA n.d.-b). Under Uruguayan regulations, home growers can be requested to submit to the IRCCA information about the varieties of cannabis grown along with samples (IRCCA n.d.-b).

**Processing/Packaging**

Companies licensed to cultivate recreational cannabis to be sold in pharmacies are also responsible for the packaging and distribution to pharmacies. Cannabis sold in pharmacies comes in plain, unbranded, resealable packaging, displaying only necessary information, including the potency and regulations surrounding consumption (Davenport and Pardo 2016; Transform 2017). The cannabis sold in pharmacies cannot be pressed, and packaging used must be able to preserve the cannabis for no less than six months (Pardo 2014).

**Distribution**

Suppliers licensed by the IRCCA are responsible for transporting the cannabis they have cultivated to the pharmacies. The IRCCA inspect the vehicles used for transportation.

**Retail**

Despite cannabis legalisation taking place in 2013, it was not until 2017 that pharmacies began to sell cannabis, having faced a number of regulatory roadblocks. On the one hand, pharmacy owners were reluctant to sell cannabis within their stores. Some were fearful of losing traditional customers who might be opposed to cannabis sales while others feared risk of robberies or problems with illicit cannabis dealers. Others did not see cannabis as a profitable venture (Queirolo 2020). However, the most notable issue that impeded the pharmacy model was the opposition of the Uruguayan banking system to work with retailers (see Cruz et al. 2018)—an issue which has also extended to some US banks (Kilmer 2017a).

Uruguayans registering to purchase cannabis from pharmacies must submit their Uruguayan ID card and proof of address, along with registering their fingerprint, which will be used as proof of identity and to ensure anonymity when purchasing cannabis (IRCCA n.d.-a). At the point of purchase, the purchaser must scan their fingerprint, which will show only that the purchaser is registered for pharmacy dispensing and how much
they are permitted to purchase (IRCCA n.d.-a). Purchase limits are set at 40 g per month and a maximum of 10 g per week (Pardo 2014). Medical cannabis users are required to present prescriptions, which are valid for 30 days during which time accessing cannabis through any other legal method is forbidden (Ramsey 2016).

Initially, only two types of cannabis were available for purchase, both of which had THC content of 2 per cent, sold in five-gram containers at 187.04 Uruguayan pesos each (equivalent to approximately $1.30 per gram at the time), which was just below the average price paid on the illicit market (Transform 2017; Hudak et al. 2018). As noted above, higher potency cannabis has since been introduced into the pharmacies, although it is still capped at a moderate 9 per cent THC potency and priced slightly higher at 200 Uruguayan pesos for a five-gram container (Obradovic 2019; Hudak et al. 2018). Cannabis edibles or other cannabis-infused products are not available for sale in pharmacies (Transform 2017). All forms of advertisement, promotion and sponsorship are strictly prohibited (Rolles and Murkin 2016). With regard to taxation, while Uruguayan law stipulates that Value Added Tax (VAT) is applied to sales of cannabis, it does not specify a percentage and is instead taken into account in the sale price (Pardo 2014; Rolles and Murkin 2016). Taxes raised through cannabis sales are used to fund the IRCCA as well as a national campaign to educate the public about cannabis use (Rolles and Murkin 2016: 254).

If opting to obtain cannabis via UCC, individuals can only be registered at one club at a time, again tracked by the IRCCA. UCCs are tightly controlled by the IRCCA, with strict membership limits (a minimum of 15 and a maximum of 45 individuals registered at any time), a growing limit of 99 plants, along with regulations on opening times, height of plants, and distances from schools, drug treatment centres and other UCCs (Queirolo et al. 2016). For individuals registered to a UCC, purchase limits of 40 g a month or 10 g a week also apply (Pardo 2014). In the majority of cases, UCC members are not charged on the weight of the cannabis purchased but are instead charged a monthly fee that grants them access to up to the 40 g transaction limit (Decorte et al. 2017). UCCs differ in how they distribute cannabis to their members, with some distributing users’ amounts at the time of cultivation, some distributing on a monthly basis, and others distributing ad hoc upon request of its members (Queirolo et al. 2016; Decorte et al. 2017).

As Queirolo et al. (2016) point out, UCCs represent the first time that Cannabis Social Clubs (CSCs) have operated within a wholly legal
framework; however, membership to a UCC is—officially at least—the least popular method of obtaining cannabis in Uruguay, with the fewest registrations to the IRCCA (Queirolo et al. 2016; IRCCA 2020; Queirolo 2020). This is interesting when compared to other jurisdictions that have not adopted a legal framework but where CSCs have become widespread due to their ability to exist within a legal grey area, such as Spain (Queirolo et al. 2016).

Consumption
Consumption of cannabis is prohibited in indoor spaces where tobacco smoking is forbidden. It is also prohibited to smoke cannabis on school premises and hospital grounds. Driving under the influence is prohibited but no legal limit has been specified. Consequently, law enforcement in Uruguay has adopted a zero-tolerance approach with any drivers testing positive for cannabis in their system facing the possibility of six-month driving suspensions for a first offence and two-year suspensions or licence revocations for further offences (Ramsey 2016: 22).

Canada
In October 2018, Canada became the second country (after Uruguay) and the first G7 nation in the world to legalise the recreational cannabis market at the federal level through the enactment of the Cannabis Act. The aim of regulating the production, distribution and sale of recreational cannabis was threefold: to ‘keep cannabis out of the hands of youth’; to ‘keep profits out of the pockets of criminals’; and to ‘protect public health and safety by allowing adults access to legal cannabis’ (Government of Canada 2019c). There is a clear theme through the regulatory approach adopted in Canada concerned with protecting the health and safety of children and young people.

Regulatory oversight of recreational cannabis is shared between federal, provincial and territorial governments. With the passing of the Cannabis Act, federal government in Canada is responsible for setting strict requirements on cannabis growers, along with regulating the types of cannabis products available for sale, implementing rules on packaging, labelling, advertisement, serving sizes and potency of products, and prohibiting certain ingredients (Government of Canada 2019c). As is the case for other drugs and medicines, cannabis is the remit of Health Canada, the federal department responsible for the maintenance and improvement of health.
Beyond this, Canada has adopted a devolved system of regulation, with provinces and territories responsible for overseeing the distribution and sale of cannabis. Provincial and territorial governments are granted freedom to introduce their own restrictions on cultivation, supply and use of cannabis, including: raising the minimum age for possession; lowering the personal possession limit set by federal government; implementing greater controls on home cultivation; and establishing restrictions on where cannabis can be consumed (Government of Canada 2019c). As a result of the devolved system, cannabis regulation across the country resembles somewhat of a patchwork approach (Transform 2019: 1).

Along with Canada being the second country in the world to legalise recreational cannabis, it was also one of the first to allow access to cannabis for medicinal purposes. Legal cannabis for medicinal use was first permitted in 1999, albeit access had to be granted through Ministry of Health discretionary exceptions (Schlag 2020: 4). In 2013, the Canadian government went further and fully legalised medical cannabis production. The regulations imposed at this time have since been replaced by the regulations set out within the Cannabis Act 2018.

Companies operating within the legal supply chain must apply for a Health Canada licence. Broadly, a Health Canada licence authorises activities such as the cultivation of cannabis, the testing of cannabis, the sale of cannabis to other licence holders, and the sale and distribution of cannabis to a licence holder authorised to sell cannabis for medicinal purposes (Government of Canada 2019d, 2019l). A Health Canada licence is also a pre-requisite to apply for a Canada Revenue Agency (CRA) licence, which permits the sale of recreational cannabis (Government of Canada 2019l). Cultivation and processing licence holders must submit monthly reports to the Minister of Border Security and Organized Crime Reduction detailing their cannabis inventory. Retail licence holders are required to submit reports to the appropriate public body in their province or territory. These stipulations form part of the cannabis tracking system (Government of Canada 2019e, 2020b).

**Cultivation**

Commercial cultivation of cannabis is strictly regulated by the federal government, with all growers requiring a licence from Health Canada. There are three licence ‘subclasses’, each with its own authorised activities and associated restrictions: standard cultivation, micro-cultivation and nursery. In brief, a standard cultivation licence is required for grow operations
exceeding a plant surface area of 200 m²; a micro-cultivation licence permits a plant surface area of up to 200 m²; and a nursery licence is required for the production of starting materials (e.g. seeds) in areas of up to 50 m² (see Government of Canada 2019d, Appendix B). At present, a total of 301 cultivation licences have been issued by Health Canada.

With regard to pesticide use, all Health Canada and CRA licence holders must only use pesticides that have been approved by federal government and must ensure that any residues do not exceed specified residue limits for each pesticide product (Government of Canada 2019j). In January 2019, the federal government introduced requirements for mandatory testing of cannabis products following the use of unauthorised pest control products by some producers. It also conducts unannounced sampling and testing of cannabis products to provide assurances to consumers that their cannabis products are quality controlled (Government of Canada 2019j).

Home cultivation of up to four plants per household is permitted at federal level with a stipulation that seeds or seedlings must be purchased from a licensed supplier (Government of Canada 2019c). Beyond this, the devolved regulatory approach allows provinces and territories to implement further restrictions. All but two of the provinces have maintained the four-plant limit; Quebec and Manitoba have legislated to prohibit the personal cultivation of recreational cannabis with this decision based on health and safety considerations (Government of Manitoba 2018; Government of Québec 2019). However, in September 2019, the Quebec Superior Court deemed the prohibiting of personal cultivation to be unconstitutional—a decision that the Quebec Government are contesting. The Government of Nunavut had also initially planned to prohibit home cultivation but later reversed its decision and now states that its Cannabis Act ‘Allows for regulation of cannabis cultivation, but does not expressly forbid it’ (Government of Nunavut 2018). Of the 11 provinces and territories to permit home cultivation, some have introduced additional restrictions, such as prohibiting outdoor cultivation or requiring that plants be kept secured at all times.

Canadian residents with authorisation from their healthcare provider are permitted to cultivate a ‘limited amount of cannabis’ (dictated by their prescribed amount) for their own medicinal use or are able to designate someone to produce it on their behalf (Government of Canada 2020a).
Processing/Packaging
A processing licence from Health Canada is required for the production of cannabis products and/or the packaging and labelling of products for sale to the public (Government of Canada 2019d, 2019h). The federal government has imposed strict regulations on the packaging and labelling of cannabis across the country, detailing requirements for logos, colours, branding and the formatting of product information (Government of Canada 2019i). All packaging must be of a single uniform colour that contrasts with the yellow health warning message and the red standardised cannabis symbol; have a smooth texture; contain no hidden features, such as heat-activated ink, no images, no brand element; as well as a number of other stipulations (see Government of Canada 2019i). These packaging regulations are intended to protect against accidental consumption, prevent products appealing to young people, and give consumers information they need to make an informed choice to consume cannabis (Government of Canada 2019l).

In respect of taxation, producers are required to pay the higher of either a flat-rate excise duty (calculated on a per-gram or per-seed/vegetative plant basis) at the point that the cannabis products are packaged or an ad valorem duty at the time the cannabis products are delivered to a purchaser. The ad valorem duty is imposed on the sale price at a rate of 2.5 per cent (Government of Canada 2019a). All cannabis products produced for retail sale must display an excise stamp so that consumers can confirm they are purchasing legally produced cannabis (Government of Canada 2019g).

Distribution
There is no specific licence required for the distribution of cannabis within Canada. Instead, all federal licence holders are responsible for the transportation of cannabis products through the supply chain (Government of Canada 2019h).

Retail
Retail arrangements in the Canadian provinces and territories can be split broadly into two categories: government-operated stores and private-licensed stores. The majority of jurisdictions have adopted a model of private-licensed stores, with current licensing arrangements for alcohol (and in some cases tobacco and gambling) being extended to incorporate cannabis (Watson and Erickson 2019). Some provinces that initially
operated a government monopoly over supply have migrated to private supply (e.g. Yukon). Within most jurisdictions, regulations are in place that prohibit joint sale of cannabis, alcohol and tobacco.

In all provinces and two of the three territories, cannabis products can be purchased from both physical (bricks and mortar) and online stores. Only in Nunavut is there currently an absence of physical retail stores. Cannabis can be purchased online via the Nunavut Liquor and Cannabis Commission licensed retailers yet neither of the two currently licensed retailers have physical stores in Nunavut. Home delivery is available in some jurisdictions when purchased from an online store.

In October 2019, federal government also legalised the production and sale of cannabis edibles, extracts and topicals (Government of Canada 2019m). The Canadian government hope that providing Canadian residents with a broader range of cannabis products will help to achieve its aim of displacing the illicit market (Government of Canada 2019m).

Subject to provincial or territorial restrictions, Canadian residents are permitted to purchase up to 30 g of legal dried cannabis or its equivalent in non-dried form, with 1 g of dried cannabis equivalent to 5 g of fresh cannabis, 15 g of edibles, 70 g of liquid product, 0.25 g of concentrates, and 1 cannabis plant seed (Government of Canada 2019c). Medical cannabis patients are permitted to register with a licensed producer to obtain cannabis products. Purchase and possession limits are determined by what has been prescribed by the practitioner but cannot exceed 150 grams over a 30-day period.

At the time of writing, no province or territory has lowered the 30 g limit for recreational cannabis set by federal government; however, Alberta and Quebec are the only provinces to retain the minimum legal age of 18, with the remaining 11 jurisdictions raising this to 19 (Government of Canada 2019b). For all but the province of Manitoba, the legal age for cannabis is in line with the legal drinking age.

Promotion of cannabis is stringently regulated by federal law. With the exception of some limited authorisations, the Cannabis Act prohibits the promotion of cannabis, cannabis accessories or services related to cannabis (Government of Canada 2019k). In general, cannabis, cannabis accessories or cannabis-related services cannot be promoted by communicating information about price or distribution: in a way that would appeal to young people; in a way that evokes an image of glamour, excitement or risk; or by means of testimonial or endorsement (Government of Canada 2019k). Limited promotion is permitted at the point of sale, but such
promotion must not extend beyond an indication of the availability and/or price of products (Government of Canada 2019k). The strict promotion and advertisement regulations imposed by the Canadian government are deemed necessary to protect public health and prevent use by young people. As Watson and Erickson (2019: 3) note, however, it remains to be seen how it will be determined whether or not certain advertisements appeal to youth.

Goods and Services Tax (HST) or Harmonized Sales Tax (HST) is applied to cannabis products at the point of sale and varies between provinces and territories (5 per cent, 13 per cent or 15 per cent), with consumers in New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island paying most tax for their cannabis (Government of Canada 2019f).

Consumption
Restrictions on the consumption of cannabis differ across the provinces and territories. The majority of provinces adopt similar regulations to those already in place for tobacco smoking, though some greater restrictions are applied in some of these jurisdictions. For example, British Columbia has also prohibited the smoking and vaping of cannabis in areas where children commonly gather (Government of British Columbia 2019). At present, six provinces (Manitoba, Newfoundland and Labrador, Nova Scotia, New Brunswick, Saskatchewan, and Prince Edward Island) have prohibited the public consumption of cannabis.

Driving while under the influence of cannabis is strictly prohibited. The Department of Justice has established two prohibited levels for THC: 2–5 nanograms of THC per ml of blood; and 5 nanograms of THC or more per ml of blood. Penalties for violation of drug-driving laws range from a $1000 fine and a maximum of 10 years’ imprisonment (Department of Justice 2019). If travelling with cannabis, general rules across Canadian jurisdictions stipulate that it must be in an unopened container and not within easy access of the driver.

Jamaica
Despite its long-standing cultural association with cannabis—or ganja as it is colloquially termed—Jamaica has only recently reviewed its cannabis laws. Historically, cannabis laws in Jamaica have been rigorously enforced, with violations often attracting severe penalties and per capita arrests for
possession estimated to be more than double those in the United States (Davenport and Pardo 2016: 60–61). In 2015, a series of amendments were made to the Dangerous Drugs Act (DDA). Possession of up to two ounces was decriminalised and home cultivation for medicinal use or sacramental use (for those of Rastafari faith) was legalised. In addition to these amendments, a new, licensed industry for medical cannabis and hemp was established, regulated by the newly-created Cannabis Licencing Authority (CLA) (Davenport and Pardo 2016). The CLA is tasked with regulating Jamaica’s medical cannabis model, ensuring that all regulations adhere to Jamaica’s international treaty obligations (Jones et al. 2017).

The reform of cannabis laws in Jamaica has been driven by two key factors: economic interests, with the aim of increasing tourism and establishing a lucrative export industry; and social justice, by reducing arrests and convictions for cannabis possession, particularly as they disproportionately target members of the Rastafarian community (Davenport and Pardo 2016: 61). As Hanson (2020) explains, social commentary on cannabis policy in Jamaica from Rastafarian musicians like Bob Marley and Peter Tosh through to more recent commentators in popular culture became part of the political discourse and was influential in effecting change.

Cultivation
As is the case in many US states, a tiered cultivation licence system is in place in Jamaica based on the plant surface area, ranging from one acre for Tier 1 licences, one to five acres for Tier 2 licences and over five acres for Tier 3 licences (Jones et al. 2017). Fees and security regulations differ between Tier 1 and Tier 2 and 3 licences, with the former subject to lower application and licensing fees and less stringent security measures, such as not being required to install electronic surveillance systems that are required for Tier 2 and 3 licence holders (Davenport and Pardo 2016: 62). However, while initial application fees for Tier 1 licensees are lower—at US$300—licensees must still provide a security bond of $1000 and an annual licence fee of $2000. Although the CLA agreed to waive the upfront licence fee for Tier 1 licence holders in an attempt to encourage smaller farmers into the market, as Jones et al. (2017: 116) note, small farmers are often still priced out due to the cost of erecting a security fence around the farm perimeter, totalling upwards of $10,000.

Regarding home cultivation, as Davenport and Pardo (2016) note, the new law automatically classifies grow operations of five or fewer plants as
being for medicinal or therapeutic use, thereby effectively permitting anyone to grow up to five cannabis plants legally.

**Processing/Packaging**

Processors are also tiered by facility size: Tier 1 for a facility of up to 200 m² and Tier 2 for facilities of more than 200 m² (Davenport and Pardo 2016; Hanson 2020). There are currently no restrictions on the types of product that can be manufactured, such as edibles and concentrates. However, products cannot be geared towards children or at-risk adults (Cannabis Licensing Authority n.d.-a). Processing licensees must conform to Food and Drugs Act and Standards Act (Davenport and Pardo 2016).

**Distribution**

A transport licence is required to transport cannabis between two licensed premises (Cannabis Licensing Authority n.d.-c; Hanson 2020). The CLA has issued clear guidance for the transportation of cannabis, including the requirement for a sealed cargo compartment in all vehicles used for transportation and recommendations for the type of vehicle used (see Cannabis Licensing Authority n.d.-b).

**Retail**

To gain access to cannabis for medical use, the Dangerous Drugs Act Amendment stipulates that Jamaican residents are required to obtain a recommendation for cannabis from a local qualified health professional. However, aside from the explicit mention of cancer and terminal illness, it is not made clear which other conditions qualify patients for access to cannabis (Davenport and Pardo 2016).

Non-residents can also access cannabis legally in Jamaica, and without the need for a recommendation from a Jamaican health professional but simply by declaring that they have been recommended to use cannabis for medical purposes by a health professional in another country (Davenport and Pardo 2016).

**Consumption**

Public consumption of cannabis is prohibited. However, exceptions are made for Rastafarian-promoted or sponsored events (Davenport and Pardo 2016). Outside of these exceptions, cannabis must be consumed in private spaces, at licensed medical retail outlets (herb houses) where
immediate, on-site consumption has been granted by the CL, or at Rastafarian places of worship (Davenport and Pardo 2016).

**Additional Reforms in the Americas**

In addition to the jurisdictions detailed above, there are a significant number of other jurisdictions that have amended their cannabis laws to either decriminalise or legalise—both de jure (through changes to law) and de facto (through changes to the enforcement of law)—recreational and/or medical/religious use of cannabis. It is beyond the scope of this chapter to offer detailed insights into these approaches; instead, they are summarised in Table 2.1. For readers seeking more detailed accounts, Eastwood et al. (2016) provide an excellent summary.

**Regulatory Models in Europe**

Although the Netherlands was the first jurisdiction within Europe to implement significant changes to its cannabis laws, Europe has, more recently, been slow to reform its cannabis regulation. While Portugal took a lead in 2001 with its trailblazing decision to decriminalise the possession of all drugs for personal use, examples of recent significant reform are scarce. Notwithstanding this, over recent decades, a number of initially subtle changes to law have brought about more substantial reforms in practice. For example, decriminalisation of personal possession and cultivation of cannabis in Spain opened the door for the proliferation of Cannabis Social Clubs across the country, with a similar but smaller trend emerging in Belgium. There are also more recent, albeit more limited, reforms occurring elsewhere in Europe, including in the Czech Republic, Germany, Italy and the United Kingdom.

The following sections offer insight to the various regulatory models adopted across European jurisdictions, beginning first with the distinctive coffeeshop system introduced in the Netherlands, before turning attention to the CSCs in Spain and Belgium, and later the Portuguese decriminalisation model. To end, a brief summary of other reforms occurring in Europe is provided.
Table 2.1  Cannabis law reform initiatives elsewhere in the Americas

| Jurisdiction          | Recreational | Medical/Religious |
|-----------------------|--------------|-------------------|
| Antigua and Barbuda   |              | The Cannabis Act 2018 provides for the regulation and control of cannabis for medical use. Under the 2018 Act, individuals or organisations can apply for a licence to cultivate and distribute cannabis for religious purposes. It also permits the personal possession of up to 15 grams and home cultivation of up to four cannabis plants by ‘adherents of a religious body’. |
| Argentina             | A 2009 Supreme Court ruling, known as the Arriola decision, declared that criminalising drug possession is unconstitutional on the grounds of individual right to privacy and personal autonomy. While some lower courts have applied the Arriola decision, it is still not officially recognised through statutory legislation (Eastwood et al. 2016: 13). CSCs have been formed in Argentina following de facto decriminalisation (Bewley-Taylor et al. 2014) | Medical cannabis has been legal in Argentina since September 2017. A range of qualifying conditions have been listed. |
| Barbados              |              | The Medical Cannabis Industry Bill was passed in 2019 allowing for the establishment of a fully regulated medical cannabis supply chain. Regulatory oversight will be the responsibility of Barbados Medicinal Cannabis Licensing Authority, which will issue licences for each element of the supply chain (Lamers 2019a). In the same year, the Sacramental Cannabis Bill was also passed allowing for the cultivation of cannabis for religious purposes by those of Rastafarian faith (Lamers 2019a). |

(continued)
| Jurisdiction | Recreational | Medical/Religious |
|--------------|--------------|-------------------|
| Belize       | Possession of up to 10 grams of cannabis was decriminalised in 2017. | In 2018, the Government of Belize committed to the establishment of a regulated medical cannabis model. A draft bill with accompanying regulations was presented in 2019 (Government of Bermuda 2020). |
| Bermuda      | The Misuse of Drugs (Decriminalisation of Cannabis) Amendment Act 2017 decriminalised possession of up to 7 grams of cannabis (Government of Bermuda 2017). | Authorisations can be made on a case-by-case basis for the import of cannabis-based products for medicinal use (Pascual 2020). |
| Brazil       | Authorisations can be made on a case-by-case basis for the import of cannabis-based products for medicinal use (Pascual 2020). | Medical cannabis has been legal and available on prescription in Chile since 2015. |
| Chile        | Possession and cultivation of quantities of cannabis deemed for personal use has been decriminalised in Chile since 2005 (Eastwood et al. 2016). Informal CSCs are in existence (Bewley-Taylor et al. 2014). | Since 2016, medical cannabis has been fully regulated in Colombia, with over 300 licences having been issued for the cultivation and manufacture of psychoactive and non-psychoactive cannabis (see Rivera 2019). |
| Colombia     | The possession of up to 20 grams of cannabis has effectively been decriminalised in Colombia since 1994 (Eastwood et al. 2016). Informal CSCs are in existence (Bewley-Taylor et al. 2014). | |
| Costa Rica   | Possession of drugs deemed to be for personal use has been decriminalised in Costa Rica since 1988 (Eastwood et al. 2016). | |
| Ecuador      | Possession of up to 10 grams of cannabis has been decriminalised in Ecuador since 2013 (Eastwood et al. 2016). | |
Table 2.1  (continued)

| Jurisdiction          | Recreational                                                                 | Medical/Religious                                                                 |
|-----------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Mexico                | Possession of up to five grams of cannabis has been decriminalised in Mexico since 2009 (Eastwood et al. 2016). A series of Supreme Court rulings between 2015 and 2018 have held prohibition of personal possession to be unconstitutional. Legislative change is anticipated. |                                                                                   |
| Paraguay              | Possession of up to 10 grams of cannabis has been decriminalised in Paraguay since 1988 (Eastwood et al. 2016).                                                                 |                                                                                   |
| Peru                  | Possession of up to eight grams of cannabis has been decriminalised in Peru since 1991 (thresholds were established in 2003; Eastwood et al. 2016). In 2017, legislation was passed in Peru for the creation of a medical cannabis programme, with companies able to apply for licences for cultivation and supply since 2019 (Pascual 2019). |                                                                                   |
| Saint Kitts and Nevis | Since 2019, possession of up to 15 grams of cannabis has been decriminalised in Saint Kitts and Nevis (Serino 2019).                                                                 |                                                                                   |
| Saint Vincent and the Grenadines | Possession of up to two ounces of cannabis has been decriminalised since 2018. In 2018, legislation was passed in Saint Vincent and the Grenadines for the establishment of a fully regulated medical cannabis programme, under control of the Medical Cannabis Authority (MDA). The MDA has started to issue licences to private companies for the cultivation, processing, distribution and sale of medical cannabis (Lamers 2019b). |                                                                                   |
| Trinidad and Tobago   | The Dangerous Drugs (Amendment) Act 2019 decriminalised possession of up to 30 grams of cannabis and up to four cannabis plants.                                                                 |                                                                                   |
When considering cannabis policy, the Netherlands coffee shop system is perhaps the most well-known in Europe. In 1976, the Dutch government decriminalised cannabis use and possession, spurred largely by concerns over growing heroin use by young people in the early 1970s and the need to separate the markets of ‘soft’ (i.e. cannabis) and ‘hard’ (i.e. heroin) drugs (Korf 2020). The cannabis retail market in the Netherlands proceeded through three phases. In the early 1970s, the market was predominantly underground and used in a subcultural environment. Through the late 1970s, so-called ‘house dealers’ selling cannabis from youth centres began to be tolerated by Dutch authorities. Finally, in the 1980s, coffee shops were established, tolerated on the same grounds as house dealers providing they abided by a set of conditions, including: no hard drugs, no advertising, no underage customers, no nuisance, and no large quantities (Korf 2020: 287).

In the late 1980s, the number of coffee shops across the country expanded rapidly, largely as a consequence of the Schengen Agreement and influx of customers from neighbouring countries. Concerns soon developed over the increase in organised crime groups supplying cannabis to the coffee shops as well as a need to control the growing issues of public nuisance (Transform 2014; Korf 2020). In response to these concerns, the Dutch government ushered in increasing regulation of the coffee shop system, granting additional power to local municipalities to impose licensing conditions (Korf 2020).

In 2012, owing again to concerns over public nuisance and drug tourism, two further restrictions were imposed on the coffee shop system. Known as the ‘weitpas’—or ‘weed pass’—the Dutch government of the time ordered coffee shops to become private clubs with only Dutch nationals permitted to become members (Transform 2014; van Ooyen-Houben et al. 2016). Initially, three southern provinces were ordered to introduce the changes, with the remaining nine provinces to follow suit in 2013 (van Ooyen-Houben et al. 2016: 114). However, the weitpas system was short-lived, being amended significantly (to the point that it was effectively overturned) with the incoming coalition government at the end of 2012 (Transform 2014).

The Netherlands has also permitted legal access to medical cannabis since 2003. Doctors can prescribe cannabis flowers for a range of medical conditions, including symptomatic relief of pain caused by multiple
sclerosis and any other types of chronic pain, nausea and vomiting caused by chemotherapy or radiotherapy, and palliative cancer treatment (Krceski-Skvarc et al. 2018 cited in Schlag 2020: 3). The Dutch government established the Office for Medicinal Cannabis in 2000, responsible for the production and supply of medical cannabis to pharmacies. Qualifying medical patients are able to purchase cannabis from pharmacies rather than having to rely on the recreational market—as many had done prior to 2003—providing them access to quality-approved cannabis at lower prices than can be purchased in the Dutch coffeeshops (Schlag 2020: 4).

The following sections detail the supply chain of cannabis in the Netherlands, mainly as it applies to the coffeeshop system in existence today, but also offers some insight into the upcoming four-year experiment with a controlled supply of cannabis to coffeeshops (see below; Government of the Netherlands 2019, n.d.).

Cultivation

Cultivation of cannabis for sale in coffeeshops is not regulated. This is a perennial issue of the Dutch system and is referred to as the ‘backdoor problem’. That is, while sales of cannabis from coffeeshops is officially tolerated, the cultivation and supply of cannabis to the coffeeshops remains prohibited. As such, cannabis sold in the coffeeshops has been sourced from the illicit market, with some having been grown domestically and some imported (Rolles and Murkin 2016). This issue has been the subject of much debate, not least due to the ever-present concerns over organised crime being involved in the supply of cannabis (Transform 2014; Korf 2020).

This situation looks to be changing, however. In 2017, a bill was narrowly passed in Parliament for the regulated cultivation and sale of cannabis, with the coalition government pledging to set up an experiment (Government of the Netherlands n.d.; Kilmer 2017b). In 2019, the bill was adopted by Senate. The experiment consists of coffeeshops in 10 municipalities selling only legally cultivated cannabis. Cultivators are yet to be designated by the Dutch government, but current plans are to restrict the number of growers to just 10. The experiment is due to be in place for four years with a follow-up evaluation from which it will be decided whether or not the system is implemented nationally (Government of the Netherlands n.d.). Within the experimental system, while no limits are to be imposed on THC and CBD content, cultivators must have their
cannabis tested by a laboratory, which will require an exception under the Opium Act (Government of the Netherlands 2019: 14).

Outside of the coffeeshop system, personal cultivation of up to five cannabis plants is considered a low priority for prosecution (Rolles and Murkin 2016: 259).

**Processing/Packaging**

Again, the processing and packaging of cannabis products for sale in coffeeshops is not formally regulated. However, as Rolles and Murkin (2016) note, informal controls on labelling of cannabis products is in place, predominantly relating to THC content.

Within the controlled experiment, cultivators are to be responsible for the packaging and labelling of the products they produce. Requirements are to be specified at a later date but must state clearly the THC and CBD content along with including health warnings (Government of the Netherlands 2019).

**Distribution**

At present, the distribution of cannabis to the coffeeshops is unregulated. Within the experimental system, the licensed growers will be responsible for transporting their cultivated cannabis to the coffeeshops, and must use a licensed private secure transport company (Government of the Netherlands 2019).

**Retail**

As noted above, cannabis in the Netherlands can be purchased from coffeeshops without criminal sanction. While not existing within a legal framework, various conditions are placed on the coffeeshops. As noted above, municipalities have the power to decide whether or not to permit coffeeshops within their jurisdictions (Korf 2020). Where permitted, they are forbidden to be located within a 250 metre radius of schools and must not sell to persons under the age of 18 (Rolles and Murkin 2016).

Coffeeshops must not sell more than 5 grams per person per day and are not permitted to hold more than 500 g of cannabis at any one time (Bewley-Taylor et al. 2014; Rolles and Murkin 2016). In addition to cannabis flower, a range of other cannabis-based products can be purchased from the coffeeshops, including edibles and extracts (Rolles and Murkin 2016).
There are no limits on the potency of cannabis and cannabis-based products. The Dutch government had proposed a ban on the sale of products with more than 15 per cent THC, though it has not yet been implemented (Rolles and Murkin 2016). Within the experimental system, limits on THC have not been imposed either (Government of the Netherlands 2019).

As a result of the various restrictions imposed on the coffeeshops over the years, the number of shops has decreased significantly, from approximately 1500 in 1995 to 573 in 2016 (Bieleman et al. 2017 cited in Korf 2020: 191). While coffeeshops are not permitted to advertise, with external shop signage prohibited from any explicit reference to cannabis, imagery pertaining to cannabis is permitted thus making them easily identifiable (Rolles and Murkin 2016: 257).

Consumption
Public consumption of cannabis is—in theory—not tolerated within the Netherlands, and those caught contravening this rule can be subject to a fine. However, consumption of cannabis is permitted within the coffeeshops (Rolles and Murkin 2016).

Spain
The approach to cannabis regulation adopted in Spain is often described as legalisation without commercialisation (Murkin 2015), though this might now be becoming something of a misnomer. The possession of drugs for personal use has never attracted criminal penalties in Spain. Those found in possession of quantities of drugs deemed to be for personal use are typically subject to an administrative sanction (Eastwood et al. 2016), as is the case in other jurisdictions where possession has been decriminalised. With regard to cannabis, cultivation of the plant for personal use also falls outside of the criminal law, exempt from Article 368 of the Criminal Code (Eastwood et al. 2016). In the 1990s, the personal cultivation exemption was expanded to include the collective acquisition of cannabis for shared consumption, thus effectively permitting the establishment of Cannabis Social Clubs. Revisions to the Supreme Court ruling in 2001 and 2003 solidified this view by establishing that collective cultivation and possession of any amount of cannabis is not a criminal offence providing there is no evidence of trafficking intentions (Bewley-Taylor et al. 2014: 48; Pardo 2014).
CSCs in Spain are officially registered, not-for-profit associations that function to collectively cultivate cannabis on behalf of their members (Araña and Parés 2020). While attempts to set up CSCs in Spain occurred throughout the 1990s (see Bewley-Taylor et al. 2014), the first legally constituted CSC opened its doors in 2001. Since then, CSCs have proliferated across the country, particularly in the Basque Country and Catalonia (Bewley-Taylor et al. 2014; Marks 2015), with estimates suggesting that as many as 1000 CSCs have now been established (Araña and Parés 2020). In principle, CSCs operate on a strictly not-for-profit basis with a closed chain of cultivation, distribution and consumption. CSCs are free to operate in Spain providing they meet certain criteria to be in compliance with precedents set in case law (see Murkin 2015: 1–2). However, as Bewley-Taylor et al. (2014: 48) explain, the ambiguity of judicial rulings in Spain has resulted in continued and frequent police raids of cannabis cultivation sites only for courts to order the return of the cannabis plants to the owners.

As will be explicated in the following sections, while common characteristics and practices of CSCs have been observed across the country, the lack of formal regulation as well as differences in the number of members has resulted in a lack of uniformity of CSC practices.

**Cultivation**

As noted above, Spanish citizens are able to cultivate cannabis for personal use within their private residence without contravening the law. Federal decriminalisation does not, however, specify limits on the number of plants that can be cultivated; instead, it is at the discretion of authorities to determine if cannabis grown in a private residence has been cultivated with the intention of supply (Belackova et al. 2019).

In respect of CSCs, the amount of cannabis cultivated should be no more than required to serve members’ needs. Upon joining a CSC, individuals are asked to indicate the amount of cannabis they typically consume each month, allowing clubs to estimate the total amount of plants required to harvest in order to sufficiently meet the needs of members (Murkin 2015; Decorte et al. 2017). As Decorte et al. (2017) note, with some CSCs comprised of more than 5000 members, grow operations can be extensive, with some plantation sites growing more than 1000 plants.

The majority of CSCs cultivate their own cannabis for distribution to members. Growers are sometimes designated members of the club whereas others are formally hired as gardeners (Decorte et al. 2017). However, it has been established that not all CSCs cultivate their own cannabis, with
some purchasing from the illicit market (Decorte et al. 2017; Jansseune et al. 2019). Through observations and interview data, Jansseune et al. (2019) found that some clubs in Barcelona often purchase from the illicit economy, justified by an often lower cost of purchase in bulk compared to in-house cultivation and reduced risk of a less successful yield. CSCs maintain that purchasing from the illicit market is still permitted on the basis of collective cultivation and sharing as no profit is generated from the sale of the cannabis to club members (Decorte et al. 2017; Jansseune et al. 2019).

While members attest to benefitting from higher quality cannabis from CSCs (Belackova et al. 2016; discussed later in this chapter), few clubs submit their products for testing in specialised labs (Decorte et al. 2017). Where testing is conducted, it is predominantly focused on the potency and the presence of additives and contaminants (Decorte et al. 2017).

**Processing/Packaging**

As noted above, CSCs operate on a closed supply chain. Processing of cannabis and cannabis products is carried out by club members, either on a voluntary or paid basis. While clubs predominantly supply herbal cannabis, many clubs also produce edibles, extracts and cannabis oils (Decorte et al. 2017; see below).

**Distribution**

Transportation of cannabis from cultivation site to club premises (where not directly on-site) is typically carried out by paid members of clubs (Decorte et al. 2017).

**Retail**

Membership to CSCs is usually only granted through invitation from an existing member who can vouch that the person joining is already a regular cannabis user or through the presentation of a doctor’s note recommending the use of cannabis for medicinal purposes (Decorte et al. 2017).

There are no formal membership limits for CSCs. As noted above, this has resulted in some clubs amassing more than 5000 members. Annual fees are typically charged to members and range from €10–30. While CSCs do not usually admit non-residents, some clubs—especially in Barcelona—advertise to tourists, offering weekly memberships with low or sometimes no fees, without a waiting period, and without maximum transaction limits (Decorte et al. 2017; Jansseune et al. 2019). This issue will be picked up in the following section.
While again not formally regulated at the national level, some localities have developed municipal ordinances requiring that CSCs cannot be established within a certain distance of education centres, health facilities, or other CSCs. However, as Decorte et al. (2017) point out, the criteria of these ordinances are not standardised, with some specifying a minimum required distance of 1 km while others requesting just 100 m between CSCs. CSC members are permitted access to 3 g cannabis per day, or up to 90 g per month. As Murkin (2015) notes, strict limits are imposed on Spanish CSCs in an attempt to prevent cannabis being diverted to the illicit market. Most CSCs allow members to collect cannabis at any point during opening hours without the need for prior approval (Decorte et al. 2017).

The cannabis products available in CSCs varies substantially, with members able to access multiple strains of herbal cannabis, numerous forms of extractions and edibles, as well as cannabis-based products such as creams, oils and tinctures (Decorte et al. 2017: 50). Cost of cannabis and cannabis-based products differs markedly within and between CSCs, with herbal cannabis ranging from €4.50 to €15 per gram, and extractions costing anywhere from €15 to €80 per gram (Decorte et al. 2017: 51)

Consumption
Public consumption of cannabis is prohibited in Spain. However, cannabis can often be consumed on the premises of social clubs. While more research here is required (Decorte et al. 2017), it is known that some clubs also permit the consumption of alcohol.

Belgium
In Belgium, while the cultivation and trade of cannabis is prohibited, rules laid out in a 2005 Ministerial Guidance mean that the possession of small quantities (up to 3 grams or one plant) is effectively tolerated as it receives the lowest priority for prosecution providing there are no aggravating factors (Decorte 2015; Decorte et al. 2017; Pardal and Decorte 2018). Since 2006, a number of Cannabis Social Clubs have emerged in Belgium. Adopting a similar—albeit more tenuous—argument to the CSCs in Spain (see above), Belgian CSCs maintain that if personal cultivation of one plant is tolerated, then collective cultivation should also be permitted (Decorte 2015). However, in contrast to the more widely accepted existence of Spanish CSCs, the interpretation of the 2005 Guidance to the
establishment of Belgian CSCs remains disputed (Decorte et al. 2017; Pardal and Decorte 2018).

Medical cannabis can only be prescribed for the symptomatic relief of spasms associated with multiple sclerosis and is in the form of a cannabis-based mouth spray (Pardal and Bawin 2018). As a result of the restricted availability of cannabis for medical purposes, CSCs in Belgium also supply medical users (some doing so exclusively) who present for a range of physical and mental health needs (see Pardal and Bawin 2018).

The following offers a succinct overview of the informal supply chain of CSCs in Belgium. Readers looking for a more detailed insight are directed to the work of Decorte, Pardal and others, who have written extensively in this area (e.g. Decorte 2015; Decorte et al. 2017; Pardal and Bawin 2018; Pardal and Decorte 2018).

Cultivation
As noted above, while technically illegal, the cultivation of one cannabis plant is tolerated in Belgium. Taking advantage of this grey area in Belgian law, CSCs have been in existence in Belgium since 2006. Club members designate their one-plant growing limit to a grower who collectively cultivates cannabis for the club. In some clubs, designated growers are members of the club while others are not (Decorte 2015). As Decorte (2015) explains, larger clubs often require more than one producer, with one club employing as many as 12 growers to serve its members.

While not formally regulated, there are certain requirements in place for cultivators. The most important is that cultivators are restricted to growing one plant per member of the club. Cultivation sites must be private and enclosed spaces, inaccessible to third parties and must also be fireproof (Decorte 2015: 125). CSC members each sign a ‘grow card’, which the cultivator must attach to each plant grown to indicate ownership to club members (Decorte 2015; Decorte et al. 2017).

Processing/Packaging
As with CSCs in Spain, Belgian CSCs operate on a closed supply chain, with designated growers or club members responsible for processing and packaging cannabis.

Distribution
Club growers transport cannabis from their cultivation sites to clubs or to members’ houses (Decorte 2015).
Retail
There are believed to be approximately 5 to 10 CSCs across Belgium, with membership sizes ranging from as few as 10 to as many as 400. Members pay on average an annual fee of €25 to be a member of the club (Decorte et al. 2017). Members must be at least 18—and in some clubs 21—to join, they must be Belgian residents and must be existing cannabis users (Decorte et al. 2017; Pardal and Bawin 2018; Pardal and Decorte 2018).

Distribution of cannabis to club members is not uniform across clubs but typically takes place at ‘exchange fairs’ either every four to six weeks or every two to three months depending on production cycles (Decorte 2015; Decorte et al. 2017: 53). There are no universal limits on cannabis supply to members. As Decorte et al. (2017) note, some clubs supply up to 10 grams per member per month while others supply as much as 30 grams. Medical users are sometimes permitted access to larger quantities and have cannabis delivered to their homes if they are unable to travel to the club.

The majority of cannabis distributed by CSCs is herbal cannabis, although some CSC members have reported receiving edibles, oils and infusions from their clubs (Pardal and Decorte 2018). CSCs typically offer a number of strains, with varieties of cannabis dependent largely on growers’ preferences (Decorte et al. 2017). The price per gram ranges from €5 to €8.

Consumption
Officially, CSCs do not permit on-site consumption. In Belgium, it is a punishable offence to provide a location for consuming cannabis (and other prohibited substances; Decorte 2015). However, as some of the smallest clubs organise the distribution of cannabis in a member’s house, shared consumption of cannabis often takes place (Decorte 2015; Decorte et al. 2017).

Portugal
While not the first country to decriminalise drugs, Portugal stands out with its bold step in 2001 to decriminalise possession and use of all drugs, coupled with the introduction of a public health centred approach, which received significant financial investment from the state in areas of prevention, treatment, harm reduction and social reintegration (Bewley-Taylor et al. 2014; Murkin 2014; Eastwood et al. 2016). Within the public health
focused approach, individuals who are caught in possession of quantities of drugs deemed for personal use (defined as up to 10 days’ worth of an average daily dose) are met with an administrative rather than criminal sanction (Eastwood et al. 2016). Cases are referred to Commissions for the Dissuasion of Drug Addiction to determine an appropriate penalty, though, in reality, the majority of cases are suspended, effectively resulting in no penalty being applied (Murkin 2014; see Eastwood et al. 2016). While drug use and possession is decriminalised in Portugal, personal cultivation of any quantity of cannabis remains a criminal offence (Hughes 2018).

In addition to the decriminalisation of drugs in Portugal, medical cannabis was legalised in 2018, though the system itself is not yet fully established. Infarmed is the government agency responsible for regulatory oversight. It will take complete control of the supply chain, from cultivation to sale. Within the new system, doctors will be able to prescribe cannabis-based products to be purchased from pharmacies. No licences have yet been granted for the cultivation and supply of cannabis to pharmacies. For more information on the medical model in Portugal, see the Infarmed website (Infarmed n.d.).

**Additional Reforms in Europe**

In addition to the regulatory regimes described above, a number of other jurisdictions across Europe have either decriminalised (de facto or de jure) recreational cannabis use and/or legalised medical use. Again, while it is beyond the scope of this chapter to offer detailed insights into these approaches, they are summarised in Table 2.2.

**Regulatory Models in Oceania**

Within the region of Oceania, cannabis repeal efforts have occurred in Australia, New Zealand and Vanuatu. While the earliest reforms have occurred in Australia, it is New Zealand that, at present, appears to be taking the boldest of steps with the creation of its Medical Cannabis Scheme and its proposals to establish a fully regulated recreational cannabis supply chain. The following sections detail in varying depths the reforms that have occurred in these jurisdictions. Given the scale of its reforms (both enacted and proposed), attention turns first to New Zealand, with specific focus on the proposed recreational model, as presented through the model
Table 2.2  Cannabis law reform initiatives elsewhere in Europe

| Jurisdiction      | Recreational                                               | Medical                                                      |
|-------------------|-------------------------------------------------------------|--------------------------------------------------------------|
| Austria           | The prescribing of cannabis for medical use has been legal in Austria since 2008. |
| Croatia           | Possession of small quantities of cannabis has been decriminalised in Croatia since 2013. Possession is treated as a non-criminal offence and punishable by a fine of €650–2600 (Hughes 2018). | Medical use of cannabis has been legal in Croatia since 2015 (Hughes 2018). |
| Cyprus            | In 2019, law was enacted in Cyprus to legally regulate the cultivation, trade and use of medical cannabis (Taylor 2019). | In 2019, law was enacted in Cyprus to legally regulate the cultivation, trade and use of medical cannabis (Taylor 2019). |
| Czech Republic    | In 2010, possession of up to 15 grams and the cultivation of up to five cannabis plants was decriminalised in the Czech Republic (Eastwood et al. 2016). There is a much longer history of decriminalisation in the Czech Republic, however, and interested readers should see Eastwood et al. (2016) and Murkin (2016). | Medical cannabis has been legal in the Czech Republic since 2013. |
| Denmark           | In 2018, a four-year medical cannabis pilot programme was launched in Denmark. Licences have been issued for the cultivation, production and distribution of cannabis within the scheme (Danish Medicines Agency 2019). | In 2018, a four-year medical cannabis pilot programme was launched in Denmark. Licences have been issued for the cultivation, production and distribution of cannabis within the scheme (Danish Medicines Agency 2019). |
| Estonia           | Possession of small quantities of all illicit drugs was decriminalised in 2002 with those found in possession subject to fines or sentences of administrative, non-prison detention. Exact thresholds are not specified and is up to the discretion of the courts (Eastwood et al. 2016: 22). | (continued)
Table 2.2  (continued)

| Jurisdiction | Recreational | Medical |
|--------------|--------------|---------|
| Finland      | Since 2014, medical cannabis has been available under licence in Finland. |
| Georgia      | Cannabis possession and cultivation is de facto legalised in Georgia. In 2017, Constitutional Courts in Georgia deemed it unconstitutional to impose a custodial sentence for cannabis cultivation, setting a threshold of 20 cannabis plants (Belackova et al. 2019). | |
| Germany      | Germany legalised cannabis for medical use in 2017 making available for prescription 14 different types of cannabis flower to treat any medical condition if it is thought that no other treatment is available or side effects of alternative treatments are too severe (Schlag 2020: 2). |
| Greece       | In 2018, law was enacted in Greece to permit the cultivation and production of medical cannabis. |
| Ireland      | In 2019, legislation was signed to permit a five-year pilot of the Medical Cannabis Access Programme, which will make it possible to prescribe cannabis-based products in the treatment of multiple sclerosis, nausea and vomiting associated with chemotherapy and refractory epilepsy where other treatments have failed (Government of Ireland 2020). |
Table 2.2  (continued)

| Jurisdiction | Recreational | Medical |
|--------------|--------------|---------|
| Italy        | Cannabis decriminalisation policy has a long and chequered history in Italy, dating back to the early 1990s when custodial sentences for possession of drugs for personal use were abolished. Possession of cannabis deemed for personal use is met with administrative sanctions (Eastwood et al. 2016). More significantly, in December 2019, the Supreme Court in Italy declared it legal to grow small amounts of cannabis for personal use (Oppenheim 2019). | Access to medical cannabis has been legal in Italy since 2006 and was expanded in 2013. Cannabis can be prescribed for a range of medical conditions where other treatments have been unsuccessful (Schlag 2020: 3). |
| Lithuania    | Medical cannabis has been legal in Lithuania since 2019. In 2018, a pilot scheme was launched in Luxembourg to allow legal access to cannabis for medical use. In 2019, some patients could gain access to cannabis from a limited number of hospital pharmacies (Arnold 2019). |
| Luxembourg   | Possession of cannabis for personal use has been decriminalised in Luxembourg since 2001 (EMCDDA 2019). In 2019, the Health Minister announced plans to legally regulate the recreational cannabis supply chain (Boffey 2019). |
| Malta        | Since 2015, possession of cannabis has been decriminalised and can no longer be punished by a custodial sentence (Hughes 2018). |
| Moldova      | In Moldova, drug use is punished with administrative sanctions, though some dispute whether this can be considered a policy of decriminalisation (see Eastwood et al. 2016). |
| Norway       | Medical cannabis has been legal in Norway since 2014. Access to medical cannabis has been permitted in North Macedonia since 2016. |
| North Macedonia | (continued) |
of the supply chain. Following this, a summary of the reforms that have occurred in Australia is provided, including the most recent decision in the Australian Capital Territory (ACT) to permit the cultivation and possession of cannabis for recreational use.

| Jurisdiction | Recreational | Medical |
|--------------|--------------|---------|
| Poland       | Possession of small quantities of cannabis determined to be for personal use has been decriminalised in Poland since 2011 (Eastwood et al. 2016). | Medical cannabis has been available on prescription from pharmacies in Poland since 2019. |
| Slovenia     | In 2005, possession of small quantities of cannabis was decriminalised in Slovenia and those caught in possession cannot be subject to a custodial sentence (Hughes 2018). | Authorisations for the use of cannabis-based products for medical treatment has been possible in Switzerland since 2011. However, as Anderfuhren-Biget et al. (2020) note, the system is constrained by complex administrative procedures. |
| Switzerland  | Since 2013, a decriminalisation threshold has been established in Switzerland with possession of up to 10 grams of cannabis subject to administrative fines (Eastwood et al. 2016). | |
| United Kingdom | In 2018, the UK government legalised medical cannabis. However, access is highly restrictive, with fewer than 10 NHS prescriptions having been issued (Schlag 2020: 1). Only four main conditions have been identified for possible treatment with cannabis in the UK: chemotherapy-induced nausea and vomiting, Multiple Sclerosis (MS), and two severe treatment-resistant epilepsies (Schlag 2020: 2). | |
New Zealand

Medical cannabis has been legal in New Zealand since 2018 and, in 2020, the New Zealand Government launched its Medical Cannabis Scheme designed to fully regulate the medical cannabis supply chain and make access to medical cannabis products easier for patients. The Medical Cannabis Agency has been established to provide regulatory oversight of the Scheme. While licences have not yet been issued (applications were being accepted from 1 April 2020), the sections below detail the regulations that have been introduced.

In September 2020, New Zealanders will have the opportunity to vote in a referendum on whether recreational cannabis should be legalised. The Cannabis Legalisation and Control Bill outlines the government’s proposed approach to regulating the cannabis supply chain, from cultivation through to consumption. The key purpose of the legislation is to reduce cannabis-related harm, to be achieved, among other means, by providing access to quality controlled legal cannabis, eliminating the illicit market, and restricting young people’s access (New Zealand Government 2020). While the finer details are yet to be announced, the following sections also outline the proposed recreational cannabis regulations to be adopted.

Cultivation

Under the Medical Cannabis Scheme, a cultivation activity licence permits the production of cannabis for use in medical products along with the supply of cannabis plants or seeds to another medical cannabis licence holder (Ministry of Health 2020b). Only pesticides officially recognised and registered for use on cannabis can be used (Ministry of Health 2020c). Before applying for a licence, prospective cultivators must have secured a location for cultivation with appropriate security in place, which will be inspected by the Medical Cannabis Agency prior to issuing a licence (Ministry of Health 2020a).

For recreational cannabis, a tiered licensing system will be implemented for commercial cultivation, which includes micro-cultivation, cultivation and nursery. Each licence type will be subject to an annual cultivation cap, although the specifics of this are yet to be announced. Potency limits will also be enforced on cultivators. To prevent companies dominating the market, licence holders will not be permitted to hold more than 20 per cent of the overall production. Vertical integration will also be prohibited,
meaning that cultivation licence holders cannot simultaneously hold retail licences (New Zealand Government 2020).

Under the proposed recreational cannabis model, individuals aged 20 and older will be permitted to cultivate up to two cannabis plants, with up to four in a household (New Zealand Government 2020).

**Processing/Packaging**
With regard to the Medical Cannabis Scheme, a process for manufacture activity licence allows for the processing of dried cannabis, extraction of a cannabis-based ingredient, the manufacturing of a cannabis-based product, and the testing of products (Ministry of Health 2020b). Labelling must adhere to the requirements established for medical products, as detailed in the Medicines Regulations 1984 (Ministry of Health 2020c).

Under the proposed recreational model, cannabis processors will be responsible for the processing of cannabis products, including the production of cannabis edibles when authorised for sale (which must only be baked and do not require refrigeration or heating), the blending of cannabis products, and the packaging and labelling of cannabis products (New Zealand Government 2019). Cannabis cultivation licence holders can be permitted to hold processing authorisation licences allowing them to process the cannabis they produce (New Zealand Government 2019). Packaging should discourage consumption, such as the use of plain packaging and the inclusion of health warnings. Labels on products are required to display the amount of THC and CBD. An excise tax is applied to cannabis products following processing and packaging for retail sale. Interestingly, the New Zealand Government has proposed a tax based on potency, with higher potency products subject to higher rates of excise tax (New Zealand Government 2020).

**Distribution**
With regard to recreational cannabis reform, licences will be issued for the distribution of cannabis from producers to retail licence holders (New Zealand Government 2019).

**Retail**
Under the Medical Cannabis Scheme, those with a doctor’s prescription can access cannabis-based medicines from a pharmacy. Qualifying patients are permitted to access up to three months’ supply of CBD products and
up to one month’s supply of other cannabis products containing THC. Products can be in the form of dried cannabis, tablets, capsules or oral liquids. Cannabis products are available for vaporisation but must not be sold in smokable form.

Recreational cannabis will be available for purchase from licensed retail outlets. Individuals will be able to purchase up to 14 grams of dried cannabis or equivalent in other form. The products available for sale will be released in stages, beginning first with dried cannabis, fresh cannabis, cannabis plants and cannabis seeds. Additional products, such as cannabis concentrates and edibles will be approved for sale subject to further regulations. Potency limits will apply to all cannabis products available for sale. The sale of alcohol and tobacco will not be permitted within cannabis retail stores. Advertisement is prohibited, though businesses can label cannabis with their company name (New Zealand Government 2020).

Consumption
Public consumption of cannabis is and will remain strictly prohibited. Within the proposed recreational cannabis reforms, however, the government plans to establish official premises for consumption, where users could either bring their own cannabis or purchase and consume on retail premises (New Zealand Government 2020).

Australia
Cannabis law reform efforts in Australia have been occurring since 1987 when the state of South Australia made the decision to decriminalise possession and use of cannabis. Decriminalisation policies were also introduced in the Australian Capital Territory in 1993 and the Northern Territory in 1996. Each jurisdiction imposes different thresholds deemed for personal use (see Eastwood 2020). In 2004, Western Australia decriminalised cannabis but this was repealed in 2011 (Hughes 2020). In South Australia, cultivation of cannabis for personal use is also decriminalised and treated as a civil offence (Eastwood 2020).

Medical cannabis has been legal in numerous Australian states and territories since April 2016, with terminally ill patients living in Victoria the first to be granted access to medical cannabis treatments (Hughes 2020). In 2016, the Parliament of Australia also enacted the Narcotic Drug Amendment Act, which introduced a national licensing scheme for regulating the cultivation and supply of cannabis for medical and scientific
purposes (Hughes 2020). As Hughes (2020) explains, qualifying conditions vary by jurisdiction, with some states, such as Tasmania, allowing access to cannabis for the treatment of any condition, while other states are more restrictive, tending to reserve cannabis for patients for whom conventional treatments have failed.

Most recently, in January 2020, ACT introduced new regulations permitting the cultivation of up to two cannabis plants per individual (with a maximum of four plants in a household), the possession of up to 50 grams of dried cannabis or 150 grams of fresh cannabis, and the use of cannabis within private accommodation for those aged 18 and older (ACT Government 2020). Reform in ACT stopped short of establishing a regulated supply of cannabis, with sales of cannabis still prohibited. It is also an offence to smoke cannabis in public (ACT Government 2020).

**Vanuatu**

In 2019, Vanuatu approved the use of medical cannabis. However, at the time of writing, further details are yet to be announced and licences have not yet been issued.

**Regulatory Models in Africa**

Access to medical cannabis is now available in Ghana (since 2020), Malawi (since 2020), South Africa (since 2018), Zambia (since 2019) and Zimbabwe (since 2018). However, while medical access has been approved in each of these counties, there has been little progress in establishing a regulated supply. For example, while the law was changed in Zimbabwe in 2018, plans for the first cultivation site were only approved in May 2019 (Osborne 2019). Home cultivation of cannabis for recreational use is also de facto legalised in South Africa, following a decision of the Constitutional Court in 2018, providing that cultivation takes place in a private place and is for personal consumption, though no specific limits on the number of plants has been established (Belackova et al. 2019).
REGULATORY MODELS IN ASIA

In Asia, medical cannabis is legal in Israel (since 1995), Lebanon (since 2020), Sri Lanka (since 2018) and Thailand (since 2019). With the exception of Israel, which has been issuing licences for medical cannabis cultivation to individuals since the 1990s (see Kilmer et al. 2013; Schlag 2020), medical cannabis laws in these countries have only recently been passed and thus systems are yet to fully develop. That said, in Thailand in January 2020, the first medical cannabis clinic opened in Bangkok, offering a range of cannabis-based products with varying degrees of THC and CBD (Thai Medical News 2020).

With respect to recreational cannabis, since 2008, personal possession and non-commercial supply (i.e. sharing or gifting) of small quantities of drugs has been decriminalised in Armenia (Eastwood et al. 2016). In 2019, Israel also decriminalised possession of up to 15 grams of cannabis, with those found in possession subject to fines.

EVALUATING THE IMPACT OF CANNABIS LAW REFORM

The previous section has examined the various regulatory models that have been adopted in a growing number of jurisdictions across the world. This section reviews some of the available evidence concerning the impact of these reforms. While there are clear similarities in the approaches adopted—such as the commercial supply chains of most US states and jurisdictions of Canada—there are also key differences relating to retail policies, product availability and price, and regulations on home cultivation and sharing, which have the potential to result in differing outcomes. In particular, evidence will be reviewed as it pertains to the following key outcome domains: consumption, public health, criminal justice, and economy.

It must be noted at the outset that there is a lack of robust evidence relating to the above domains. Where evidence exists, it is often inconclusive and sometimes contradictory. Moreover, even for jurisdictions in which there now exists a significant evidence base, such as Portugal, this evidence is sometimes misinterpreted and often misrepresented (Murkin 2014). A discussion of such issues is returned to at the end of this section. Notwithstanding this, given the significance of the reforms across the Americas (both in terms of scale and speed), the ensuing discussion focuses predominantly on the legalisation efforts in the United States, Canada and
Uruguay, though the impact of other reforms, such as decriminalisation policies in the Netherlands and Portugal, and the establishment of CSCs in Spain and Belgium, are also considered. In addition, the majority of the evidence reviewed here relates to the impact of recreational cannabis reforms.

**Consumption**

Perhaps the most significant public health concern raised when debating cannabis law reform is the issue of increased consumption following repeal of prohibition laws (Murkin 2016). While cannabis consumed in moderation is not deemed to pose significant public health issues, issues arise over excessive or problematic consumption. With the pace of the reforms across the Americas, there has been a proliferation of analyses seeking to examine the impact that legalisation has had on consumption patterns, with a particular focus on adolescent cannabis use (Cerdá et al. 2017; Johnson et al. 2018; Rusby et al. 2018; Brooks-Russell et al. 2019; Smart and Pacula 2019; Mosher and Akins 2020). The resulting evidence is mixed.

In Colorado, Brooks-Russell et al. (2019) found no significant effect on cannabis consumption among high school students related to the introduction of commercial sale. This was also supported by Cerdá et al. (2017), who reported no change in cannabis consumption. Conversely, the authors report that past-month cannabis use increased, albeit marginally, among some age groups (13- to 14-year-olds and 15- to 16-year-olds) in Washington. In slight contrast to this, however, Johnson et al. (2018) found that cannabis use had decreased among 13- to 14-year-olds but had increased among 17- to 18-year-olds. It is important to recognise here the different timescales of research, with the former study considering data from 2010 to 2015 and the latter from 2004 to 2016, thus highlighting a further issue in comparing study findings. In Oregon, while legalisation of recreational cannabis does not appear to have increased use among youth who did not already use cannabis, use among existing users has increased (Rusby et al. 2018; Smart and Pacula 2019). In relation to adult use, Murkin (2016) reports evidence of a statistically significant increase in Colorado while Mosher and Akins (2020) report evidence of increased adult consumption in Washington.

In Uruguay, preliminary data show that both annual and lifetime cannabis use has increased following the reforms (Musto and Robaina 2018 cited in Queirolo 2020). However, it is not yet known whether this is a...
direct result of legalisation, as trends in cannabis use have been increasing since the millennium, and similar trends have been witnessed in cocaine use, which has remained prohibited by law (Musto and Robaina 2018 cited in Queirolo 2020).

Lack of conclusive evidence also exists in some jurisdictions that have decriminalised cannabis possession (Eastwood 2020). In Australia, for example, some states have witnessed slight increases in consumption while others have experienced slight decreases. However, Eastwood (2020) maintains that despite some discrepancies, it can be reasonably argued that decriminalisation efforts have not resulted in an explosion of use, either among adult or youth populations. This conclusion is also reached by Murkin (2016) when considering consumption of cannabis in Portugal following decriminalisation in 2001. While trends in lifetime drug consumption increased following reform in Portugal, this trend was also witnessed in other jurisdictions. Past-year and past-month consumption remained stable (Murkin 2016).

Regarding the impact of medical cannabis reforms in the United States, the evidence appears more conclusive. In their narrative review of quasi-experimental studies that have examined the impact of cannabis reforms on use, Smart and Pacula (2019) note that the introduction of medical cannabis laws in US jurisdictions are positively correlated with an increase in adult consumption but not adolescent use. These findings are also supported by Hall and Lynskey (2016).

Available evidence relating to Spanish CSCs suggests that cannabis consumption among members decreases as they join the social clubs. As Pardo (2014) and Murkin (2015) have argued, the non-commercial ethos of CSCs (both in Spain and in Belgium) prevents commercialisation and restricts profit motives to increase consumption among members or to initiate new users. This is further safeguarded by the relatively closed and tightly controlled membership system (Decorte 2015; Murkin 2015; Decorte et al. 2017). This view is supported by Belackova et al. (2016). Through focus groups with 94 CSC members in Spain, Belackova et al. (2016: 54) note that the majority of references in relation to consumption patterns suggested that CSC members had lowered their use of cannabis since joining the CSC along with adopting more responsible and regulated using behaviours. Belackova et al. (2016) report that limits on regular consumption of cannabis within Spanish CSCs—equivalent to between one and three grams per day—along with knowledge that cannabis is guaranteed at the clubs, contributed to members’ reductions in use.
However, while profit-making of CSCs is strictly prohibited, there is evidence that some clubs in Barcelona are turning away from the non-commercial ethos that is typically characteristic of CSCs by adopting less stringent membership policies and admitting tourists (Bewley-Taylor et al. 2014; Murkin 2015; Decorte et al. 2017; Jansseune et al. 2019). As Bewley-Taylor et al. (2014) argue, commercially-oriented clubs are expanding rapidly as entrepreneurs anticipate a legally regulated cannabis market in Spain and are keen to position themselves within it.

A well-known variable affecting levels of use is the cost at which cannabis can be purchased (Murkin 2016). Studies examining the relationship between price and consumption of alcohol and tobacco have consistently demonstrated that higher prices reduce use with lower prices resulting in increased use (Pacula et al. 2014; Hall and Lynskey 2016). It is highly probable that cannabis prices in a legally regulated market will—if allowed—fall substantially below the price of cannabis in the illicit market (Pacula et al. 2014; Hall and Lynskey 2016). In support of this, Caulkins (2017) reports that retail price of cannabis in Washington State has fallen by 25 per cent each year since outlets opened in 2014. Similarly, Hall and Lynskey (2016: 1766) report that cannabis prices in states with legal recreational and/or medical market are approximately 20 per cent cheaper than in states where cannabis is still prohibited.

A further key factor known to influence consumption patterns is the use of cannabis advertisement and promotion. D’Amico et al. (2015: 613) found that exposure to medical cannabis advertising was significantly associated with a higher probability of use by middle school students. A common theme across most of the regulatory approaches detailed earlier is the commitment to prohibiting or significantly restricting advertisement of cannabis products. However, there is currently little evidence to show whether or not this makes a significant difference or research on the impact of controls on different forms of advertising.

**Public Health**

With regard to public health, in addition to levels of consumption as examined above, key issues pertain to the potency of cannabis products, drug poisonings, cannabis-related road traffic accidents (RTAs), and access to cannabis for medical patients.

One of the primary intended outcomes of legalisation is to protect public health by providing potential consumers with access to better regulated
cannabis, both in terms of controlling THC-CBD content but also reducing contaminants (Hall et al. 2019b: 1585). In Uruguay, this aim appears to have been met with some success. A significant proportion of cannabis users in Uruguay are now using legally produced, quality-tested cannabis. Individuals registered with the IRCCA make up nearly a quarter of all estimated cannabis users. Moreover, as Queirolo (2020) notes, taking cannabis sharing into account, this figure is more likely to be above half of all total cannabis users, with home growers and UCC members likely to share their cannabis with at least two other people and those purchasing from pharmacies likely to share with one other person. While the sharing of legal cannabis among users can be interpreted as something of a success of the Uruguayan model, with fewer users buying from the illicit market, as will be discussed below, it has contributed to the emergence of a ‘grey market’ in Uruguay.

However, there are also some less successful outcomes concerning potency and issues with regulating contaminants. Issues are emerging from some legal markets in the United States concerning the potency of products. While most states have imposed limits on the potency of edible products, none of the US states have limited the potency of flower or extracts available for purchase (Kilmer 2017b). As a result, there has been a proliferation of high-potency products across the United States. For example, in Washington, the majority of flower sold is over 20 per cent THC and some concentrates exceed 75 per cent THC (Kilmer 2017b; Smart et al. 2017). Similarly, in Colorado, Subritzky et al. (2020: 40–42) note that since the inception of the recreational market, there have been simultaneous increases in high-potency products coupled with a decreasing price per gram. The health effects of consuming higher potency products are not yet known (Hall et al. 2019b: 1585).

Another issue here concerns the use of pesticides. As already noted, testing of cannabis products for residual pesticides is an important public health concern. In relation to the cannabis market in Colorado, Subritzky et al. (2017) report that a public safety threat emerged concerning the use of pesticides on cannabis flower and trim products, and particularly concerning intensified toxicity within cannabis concentrates. The significance of this issue is highlighted when considering that over 28,000 cannabis products were reported to have been recalled in Denver in 2017 due to pesticide contamination (see Subritzky et al. 2020). As cultivators are not insured against crops destroyed by pests—be that weeds, pathogens or insects—and with still-developing guidance on appropriate standards,
there is a risk that cultivators are increasing the risk to public health by using harmful levels of pesticides on their crops (Subritzky et al. 2017). We return to this issue in Chap. 3.

An anticipated issue that has emerged concerns increases in hospital admissions following legalisation of cannabis in the United States. Cao et al. (2016), Wang et al. (2016) and Monte et al. (2015) have all reported an increase in emergency room admissions since legalisation of medical and recreational cannabis, predominantly relating to edibles, including accidental ingestion by children and unpleasant psychological reactions in adults.

With regard to RTAs involving cannabis, evidence is again inconclusive. Evidence has pointed to an increase in cannabis-related RTAs in Colorado (see Subritzky et al. 2020) and other US states (see Hall et al. 2019b). However, rates of RTAs do not differ between states that have legalised cannabis and those that have not (Hall et al. 2019b), and, more importantly, changes in data collection and reporting since the establishment of legal markets render these findings unreliable (Subritzky et al. 2020).

An issue that is apparent in some medical cannabis programmes concerns the lack of or difficulty in accessing medical cannabis. As noted above, qualifying conditions vary markedly across the world, with many US jurisdictions providing wide access to medical cannabis through extensive qualifying conditions, whereas in the UK, the restrictive list of conditions has rendered cannabis inaccessible for many (Schlag 2020). Schlag (2020: 3) has also reported that despite Germany legalising medical cannabis in 2017 and making it available to treat a wide range of conditions, some doctors are still reluctant to prescribe cannabis to patients, either due to scepticism over its medical benefits but also due to the hurdles they face in its approval by health insurance companies. In Canada, the establishment of the recreational cannabis market has also had a negative impact on medical cannabis users with licensed producers diverting their supplies to the more lucrative recreational market and physicians advising patients to purchase from the recreational market thus incurring extra cost through taxes and tariffs (see Power 2020).

**Criminal Justice**

States that have legalised cannabis have seen a decrease in their illicit cannabis markets (Hall et al. 2019b). However, again, data here are mixed, and there is a counterargument to be made: the illicit cannabis market in
some jurisdictions of the United States (and in Canada) has remained, and in some cases expanded, post-legalisation (Fuller 2019a; Power 2020). In Northern California, for example, enforcement efforts have been scaled up to crack down on an illicit market that has expanded despite legalisation (Fuller 2019a). This is partly an issue with the patchwork approach to regulation that has been adopted in California. As noted earlier with regard to the medical cannabis market, California adopts a local-level rather than state-level approach to regulation, with cities and towns determining their own approaches. As a result, many local jurisdictions in California have chosen not to allow retail cannabis sales. As Fuller (2019a) explains, only 620 cannabis retail stores have been licensed in California compared to 562 stores in Colorado, which has a population one-sixth the size of California.

However, there is a much greater issue concerning the surplus of cannabis in California. The California Department for Food and Agriculture reported that the population of California is consuming 2.5 million pounds of legally produced cannabis (Macewan et al. 2017: 46). Yet estimated production of legal cannabis far exceeds this amount, equating to between 13 and 15.5 million pounds (Macewan et al. 2017: 30). Consequently, as Fuller (2019b) argues, vast amounts of legal cannabis are being diverted to the illicit economy, smuggled east of California to places like Illinois, Connecticut and Washington where the cost of legal cannabis is up to three times higher than in California. As such, despite the move to a legally regulated cannabis market, it appears that problems have increased in some jurisdictions. The above issue highlights the importance of getting right the quantities of cannabis to be produced. Quantities should be enough to serve the customer base while avoiding a surplus that could then be diverted to the illicit economy.

The opposite situation has unfolded in the Uruguayan cannabis market. One of the early roadblocks in implementing the pharmacy model was the reluctance of pharmacy owners to sell cannabis along with an issue of the banking system forbidding cannabis-selling pharmacies from operating bank accounts (Queirolo 2020). At present, only 17 pharmacies sell cannabis out of a total of more than 1200 across the country. As a result, 11 out of the 19 Uruguayan departments are without a pharmacy that sells cannabis (Queirolo 2020). With regard to supply, Queirolo (2020) explains that the amount of cannabis authorised for production for pharmacies has been below the level of demand, with pharmacies quickly selling out of stock and licenced cultivators slow to produce cannabis, have it
tested by the IRCCA and deliver it to pharmacies. As a result, those registered for pharmacy purchase have resorted to purchasing from the illicit market. In addition, the fixed limits on purchase and mandatory registration with the IRCCA that were imposed in an attempt to cap the consumption of cannabis have also resulted in the establishment of a ‘grey market’ with registered users sharing legal cannabis with non-registered users or with non-registered home growers continuing to supply (illegal) cannabis (Pardo 2014; Decorte et al. 2017; Queirolo 2020).

More recently, debate has also unfolded over the perceived success of the regulatory approach adopted in Canada, with critics citing the continued existence of an illicit cannabis market as evidence that regulatory reform has not been successful. Indeed, just over a quarter (29 per cent) of cannabis users purchase their cannabis from legal stores (Statistics Canada 2019). Critics have argued that the approach adopted in Canada is too restrictive, especially when compared to the regulatory approach adopted in a growing number of states across the US border. In particular, the Canadian government has been criticised for too heavily taxing cannabis products. While there is evidence to show that higher prices reduce consumption of products (e.g. tobacco, alcohol) (Gartner and Hall 2020; Stockwell et al. 2020), it is also known that, for regulation to work effectively, prices must not be set too high to exclude or divert people from the licit market. Research conducted by Statistics Canada (2018) found that the price of cannabis in Canada has increased since legalisation. The average price of dried cannabis purchased from legal sources was $9.99 per gram compared to an average price of $6.37 per gram from illegal sources (Statistics Canada 2018: 1). The regulatory challenge of finding the ‘sweet spot’ for cannabis taxation is significantly under-researched at the moment.

**Economy**

In respect of the economy, one of the primary arguments for legalisation, and thus a key driver in reforming laws, is the income that can be generated through cannabis retail sales. Within the United States, states that implemented commercial cannabis markets have generated significant—albeit differing—revenues through taxation of cannabis products. For example, in 2017, the Colorado government collected almost $250 million in fees and taxes associated with combined recreational and medical cannabis sales, with over 85 per cent of this revenue from the recreational
market (Subritzky et al. 2020: 40). In Oregon and Alaska, tax revenues in 2017 amounted to $70 million and $1.7 million, respectively (Pardo 2020).

In addition, within both legalisation and decriminalisation models, income can be generated (or clawed back) through criminal justice cost savings (Hall et al. 2019a; Decorte et al. 2020). Hall et al. (2019b) note that cannabis-related arrests have declined in US states that have legalised cannabis. However, it is difficult to determine whether the decline was a result of legalisation or occurred under decriminalisation policies that preceded full scale reform, thus suggesting that many jurisdictions will likely have already benefited from criminal justice cost savings (Carnevale et al. 2017; Hall et al. 2019b).

Issues with Analyses of Cannabis Reform

As the preceding discussion has shown, analyses of the impact of cannabis law reform initiatives have begun to illuminate some of the impacts of legalisation and decriminalisation efforts as they pertain to the outcome domains addressed in this section. However, such analyses must be treated with caution and there are a number of issues to consider.

First, comparing outcomes from different jurisdictions is problematic due to inconsistencies in the data and methods used (EMCDDA 2020). As the EMCDDA (2020: 4) note in relation to the United States, short-term evaluations should be treated with scepticism, and particularly those that make simplistic comparisons between legalisation and non-legalisation states, along with those that fail to account for the existence of commercial medical cannabis markets that predated recreational markets.

Second, as argued by Hammond et al. (2020), most studies that have attempted to examine the impact of legalisation have relied on cross-sectional surveys, which renders them unable to accurately assess whether changes to cannabis consumption patterns are attributable to legalisation or whether they are reflective of a longer trend of use that pre-dated reform. Indeed, concerning youth consumption, the argument has been made that in states with pre-existing medical cannabis markets, it is likely that increases in use among youth occurred following the establishment of the medical market, which might explain why data post-legalisation are not showing any conclusive increase in use among this cohort (Cerdá et al. 2017).

Third, the lack of historical data in many jurisdictions makes it hard to compare outcomes post-legalisation. In prohibitionist models, accurate
sales data do not exist, thus comparisons with post-legalisation retail sales are not possible. Additionally, while data exist in jurisdictions that have had pre-existing medical cannabis markets, it is difficult to interpret changes in these markets, and these data must now be read in relation to changes in the recreational cannabis market. One reason for this is that some of those accessing cannabis through the medical market might have switched to purchasing from the retail market since recreational cannabis sales commenced. Additionally, producers that have historically serviced the medical market have redirected their efforts and supplies into the more lucrative retail market in some jurisdictions (Power 2020).

Fourth, the timing of studies must be carefully considered, and early findings from jurisdictions that have legalised cannabis must be treated with caution. There is often a protracted period of delay between the passage of law and the actual establishment of the recreational cannabis market while regulatory bodies work to develop new protocols and to issue licenses for cultivation, processing, distribution and sale (see Pardo 2020). A key example comes from the two early adopter states in the United States. Whilst recreational cannabis was legalised in Washington and Colorado 2012, it was not until 2014 that retail sales commenced. More recently, in Maine, despite laws for recreational cannabis coming into effect in early 2017, there are still no regulated retail sales of cannabis. In March 2020, the first conditional licences were issued for cultivation, production and sale, but progress was halted with the outbreak of the COVID-19 pandemic (Mainebiz 2020). A further example of this is found in Uruguay. Despite the country legalising cannabis in 2013, it was not until 2017 that pharmacy sales commenced. Given the delay between legalisation and the establishment of the market, data collected on levels of use, while perhaps reflecting changes in public attitudes towards cannabis following the change in law, cannot be read as wholly a consequence of the regulatory model adopted.

Fifth, the extent to which data on key domains represent actual changes in cannabis-related behaviours can also be questioned. For example, it is not yet fully known whether perceived increases in consumption and/or harmful outcomes of cannabis use (such as drug poisonings) reflect actual changes in behaviour or are more reflective of increases in monitoring and reporting behaviours (Hammond et al. 2020). On the one hand, respondents in self-report surveys are more likely to respond truthfully following legalisation of cannabis (Reed 2016; Mosher and Akins 2020). Moreover, patients in emergency departments and poison control centres are more
inclined to report cannabis use due to the reduced stigma post legalisation (Reed 2016). Taken together, this suggests that recorded increases in cannabis use post-legalisation might more accurately reflect changes in responding and reporting behaviours rather than being indicative of actual increased use.

The above issues considered, one of the few points of consensus within the field at present is that it is still too soon to accurately assess the impact of cannabis reform initiatives (Murkin 2016; Hall et al. 2019b; Hammond et al. 2020; Mosher and Akins 2020; Pardo 2020; Wilkins et al. 2020). In Chap. 4, we return to the issue of a future research agenda.

**CONCLUSION**

The pace of change in cannabis law reform has rapidly increased in the last decade. This chapter has attempted to capture and take stock of the current state of play across the world by mapping the situation at the beginning of the 2020s and assessing what we know about the impacts of different regulatory models. The epicentre of the most radical reform has been the Americas: Uruguay, Canada and the United States, in particular, are now in effect experimental sites from which the whole world is learning. It is clear, however, that the evidence base at the moment is relatively weak and there are many quite fundamental questions to which we do not yet have proper answers. Nevertheless, it seems unlikely that the momentum for reform is going to lessen in the foreseeable future, and so the importance of continuing to test empirically what works is vital to the development of effective cannabis law and policy for the future.

A central premise of this book is that we need to broaden our vision if we are to develop approaches to regulating cannabis that are not only effective but also progressive (in the sense of protecting rights, enhancing justice and promoting well-being). It will not be enough just to leave the refinement of policy to the evaluation technicians, nor will it suffice to learn from comparisons solely with the alcohol and tobacco industries, important though those lessons are. Instead, we need to think of the cannabis trade as a business and the challenge of regulating cannabis as a specific instance of business regulation. This means that we can look for lessons further afield, for example, in how we regulate food systems and agricultural products. There is as much to learn from the coffee and cut-flowers sectors as there is from the wine and cigarette trades. This broadening out is the task of the next chapter.
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