The Effects of Cannabis Liberalization Laws on Health, Safety, and Socioeconomic Outcomes: An Evidence and Gap Map

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Declarations

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Authors have works that appear in the EGM

PROTOCOL

Campbell Collaboration WILEY

PROTOCOL: The effects of cannabis liberalization laws on health, safety, and socioeconomic outcomes: An evidence and gap map

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1 | BACKGROUND

1.1 | The problem, condition, or issue

Cannabis is one of the most commonly used psychoactive substances globally, with an estimated 3.9% of the world's population aged 15–64 reporting past-year use (United Nations, 2020). Many world regions report higher annual prevalence rates (e.g., North America, 14.6%; Australasia, 10.6%; Western; and Central Europe, 7.8%), with certain countries in these regions documenting significant increases in cannabis use over the last decade (United Nations, 2020). Cannabis dependence accounts for a small fraction (5.5%) of the overall global burden of disease attributable to alcohol and drugs, but this burden commonly surpasses that of amphetamines in world regions with high rates of cannabis use (Degenhardt et al., 2013).

Against this backdrop, many countries and US states have liberalized their cannabis laws over the past 25 years (Decorte et al., 2020). Between 1996 and year-end 2019, 33 US states plus the District of Columbia enacted medical marijuana laws granting authorized patients legal access to cannabis.[1] Moreover, since 2012, 11 states and the District of Columbia passed recreational marijuana laws legalizing adult use, including retail sales in nine states. These developments have led to a patchwork of state laws regulating access to cannabis through a variety of supply mechanisms, with state legislatures and citizen initiatives continuing to spur both new laws and amendments to existing laws (Chapman et al., 2016; Hoffmann & Weber, 2010; Klitzner et al., 2017; Williams et al., 2016). Indeed, voters in five US states will consider recreational or medical cannabis initiatives during the 2020 election. Dozens of other countries have also expanded legal access to cannabis under a variety of regulatory models, including decriminalization of home cultivation and the establishment of "cannabis social clubs" (Belackova et al., 2020; Decorte et al., 2017, 2020; Fischer et al., 2015; Rehm et al., 2019). Perhaps most notably, Uruguay became the first country to legalize recreational cannabis in 2013 (Queirolo, 2020), followed by Canada in 2018 (Fischer et al., 2020).

The empirical literature examining the effects of cannabis laws and policies is interdisciplinary and diverse. New research appears almost weekly, with studies examining a wide range of health, safety, and socioeconomic outcomes. Health outcomes measure physical and mental well-being or disease including cardiovascular disease (Abouk & Adams, 2018), opioid overdose (Chan et al., 2020), and suicide (Anderson et al., 2014; Chan et al., 2020). Safety outcomes measure security or risk of harm including crime (Morris et al., 2014), impaired driving (Sevigny, 2018), and vehicular accidents (Salomonsen-Sautel et al., 2014). Socioeconomic outcomes capture social and economic metrics including property values (Burkhardt & Flyr, 2019), labor supply (Nicholas & Maclean, 2019), and educational attainment

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[1]The term "marijuana" is American vernacular for cannabis plant material. Because it is a term that is used in US state liberalization statutes, we use this term to describe US state policies. The more general term "cannabis" will be used in all other instances.

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Background and Development

What Is this EGM About?

Objectives

Develop a conceptual framework linking cannabis liberalization policies to health, safety, and socioeconomic outcomes

Produce map and summary of research for policymakers, researchers, and other stakeholders

Identify areas of evidence concentration and gaps

Scope

Interventions: Laws and policies that expand legal access to cannabis

- Medical cannabis laws
- Recreational cannabis laws
- Industrial hemp laws
- Decriminalization of small-scale cannabis cultivation

Outcomes: Health, safety, and socioeconomic outcomes—including intermediate outcomes—that are responsive to cannabis liberalization

Conceptual Framework
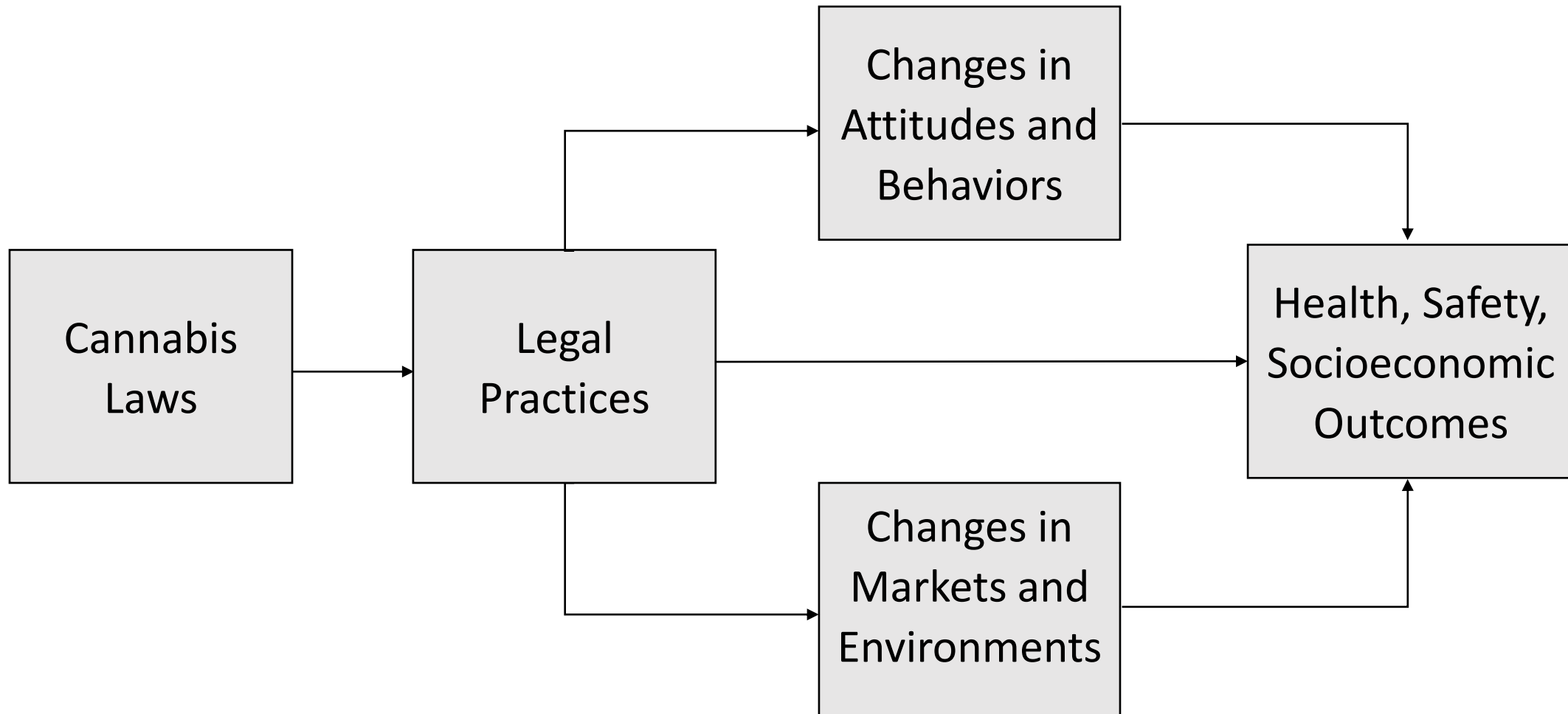
Methods

Study Inclusion Criteria

- *Types of interventions* – Policies that create or expand access to a legal or decriminalized supply of cannabis

- *Types of outcomes* – Health, safety, or socioeconomic outcomes, including intermediate outcomes on attitudes/behaviors and markets/environments

- *Types of populations* – We placed no *a priori* restrictions on study target or reference populations

- *Types of settings* – Any national or subnational jurisdiction that liberalized the supply of cannabis since 1970

- *Types of evidence* –Completed and ongoing English-language studies employing quasi-experimental designs or systematic review methods

Literature Search & Study Screening Strategy

Literature Search

- August 2020: searched 23 indexed academic databases and registries and 11 grey literature databases

- Augmented with studies from other sources

- Search terms included natural and controlled vocabulary across three domains: cannabis AND policy AND quantitative methods

Study Screening

- Titles and abstracts independently screened by two reviewers, with conflicts resolved by consensus

- Used DistillerSR's artificial intelligence tools to reduce screening burden and improve selection accuracy

- Full-text review of potentially eligible studies performed using similar dual screening procedures

Data Collection & Analysis Procedures
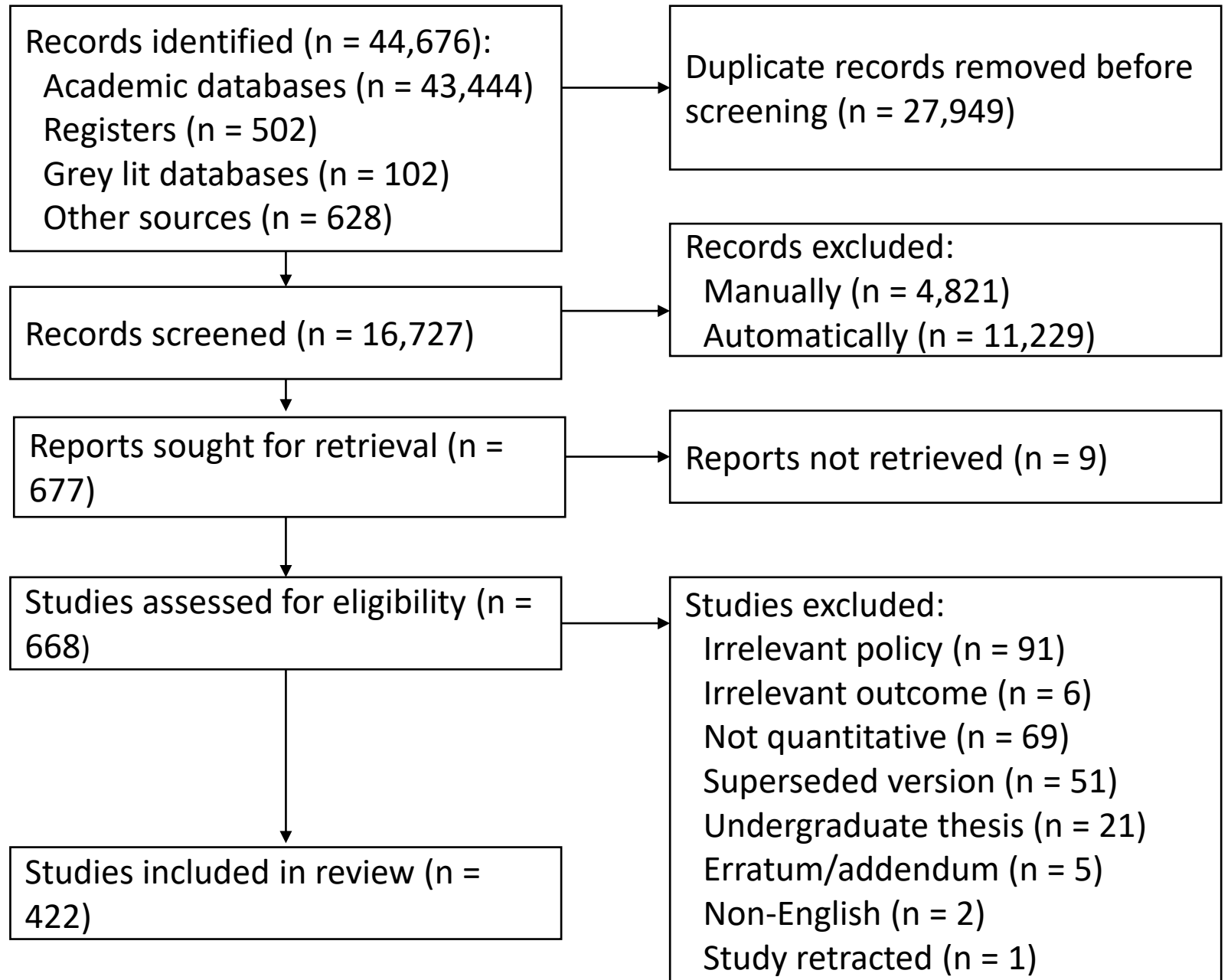
Data Extraction & Coding

- Dual data extraction with deconfliction by consensus
- Coded bibliographic information, study setting and features, publication type, funding information, policies and provisions, outcomes, study design, and study quality

Analysis & Presentation

- Quality appraisal: Modified Maryland Scientific Methods Scale used for primary studies and AMSTAR2 for systematic reviews
- Online access to results through EPPI Mapper and EPPI Visualizer, as well as non-interactively in OA article

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Results

Literature Search Results

Records identified (n = 44,676):
   Academic databases (n = 43,444)
   Registers (n = 502)
   Grey lit databases (n = 102)
   Other sources (n = 628)

→ Duplicate records removed before screening (n = 27,949)

↓

Records screened (n = 16,727)

→ Records excluded:
   Manually (n = 4,821)
   Automatically (n = 11,229)

↓

Reports sought for retrieval (n = 677)

→ Reports not retrieved (n = 9)

↓

Studies assessed for eligibility (n = 668)

→ Studies excluded:
   Irrelevant policy (n = 91)
   Irrelevant outcome (n = 6)
   Not quantitative (n = 69)
   Superseded version (n = 51)
   Undergraduate thesis (n = 21)
   Erratum/addendum (n = 5)
   Non-English (n = 2)
   Study retracted (n = 1)

↓

Studies included in review (n = 422)

Interactive Results Demonstration

[Evidence and Gap Map](#) (May take a minute to load in your browser!)

[Data Visualizer](#)

Limitations of EGM

- We included only English language studies

- Our quality appraisal approach for primary studies keyed on study designs but not quality of implementation

- The EGM does not capture the most recent published evidence, so it will need to be updated regularly

Conclusion and Implications

- Most studies examined effects of MCLs and RCLs, with dispensaries as the most examined policy provision; major gaps exist in understanding effects of other laws and provisions

- Modal study investigated effects on cannabis use, but significant knowledge gaps remain across other salient outcomes

- Existing research on cannabis liberalization policies is mostly from the US; research is desperately needed from other countries

- Most studies used DID-TWFE design, but advances in econometrics suggest potential for severe bias using TWFE, highlighting a critical need for replication using robust DID estimators

Thank you!

Please use these tools!

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