

Early evidence of the impact of cannabis legalization on cannabis use, cannabis use disorder, and the use of other substances

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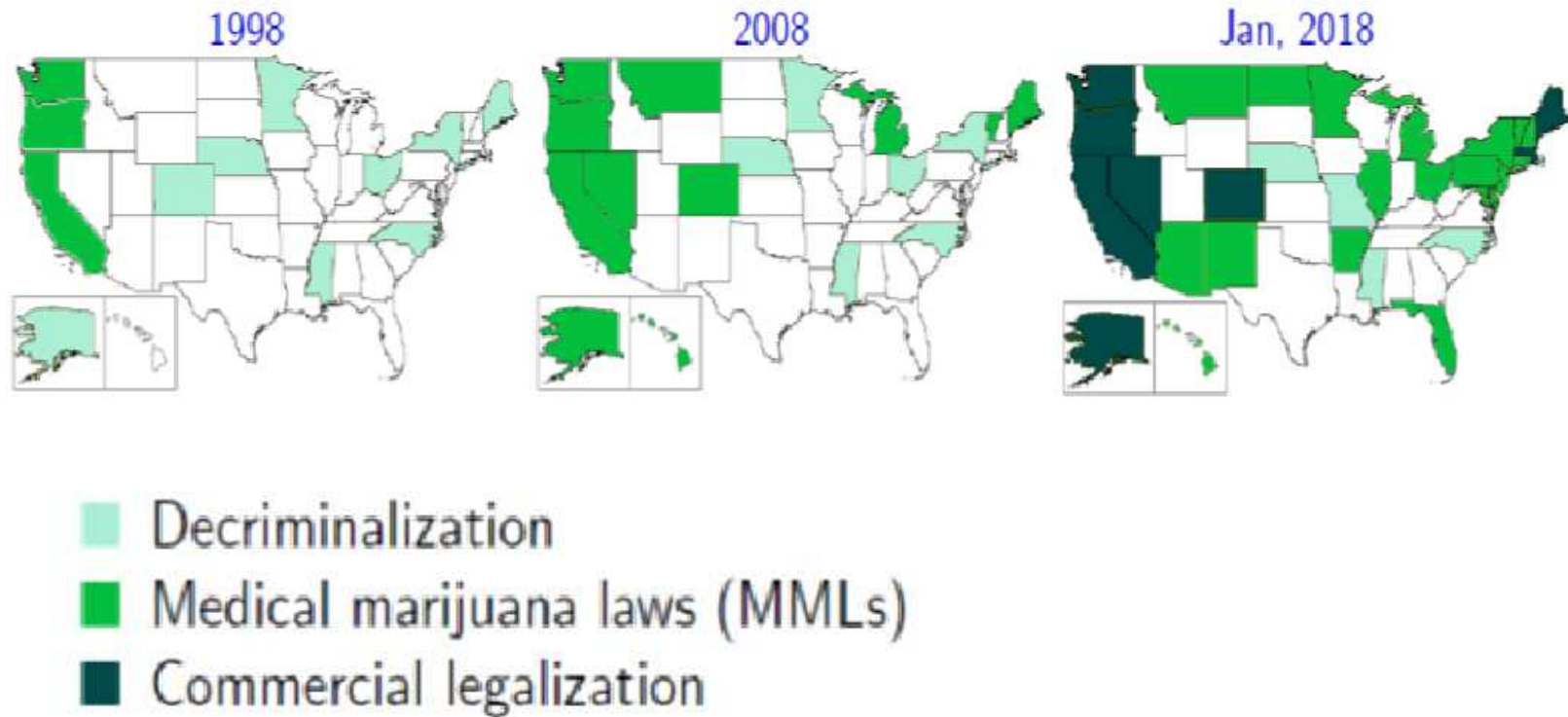
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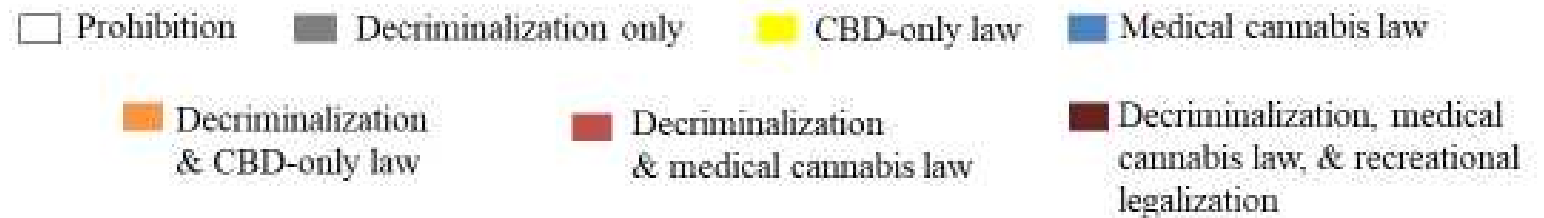
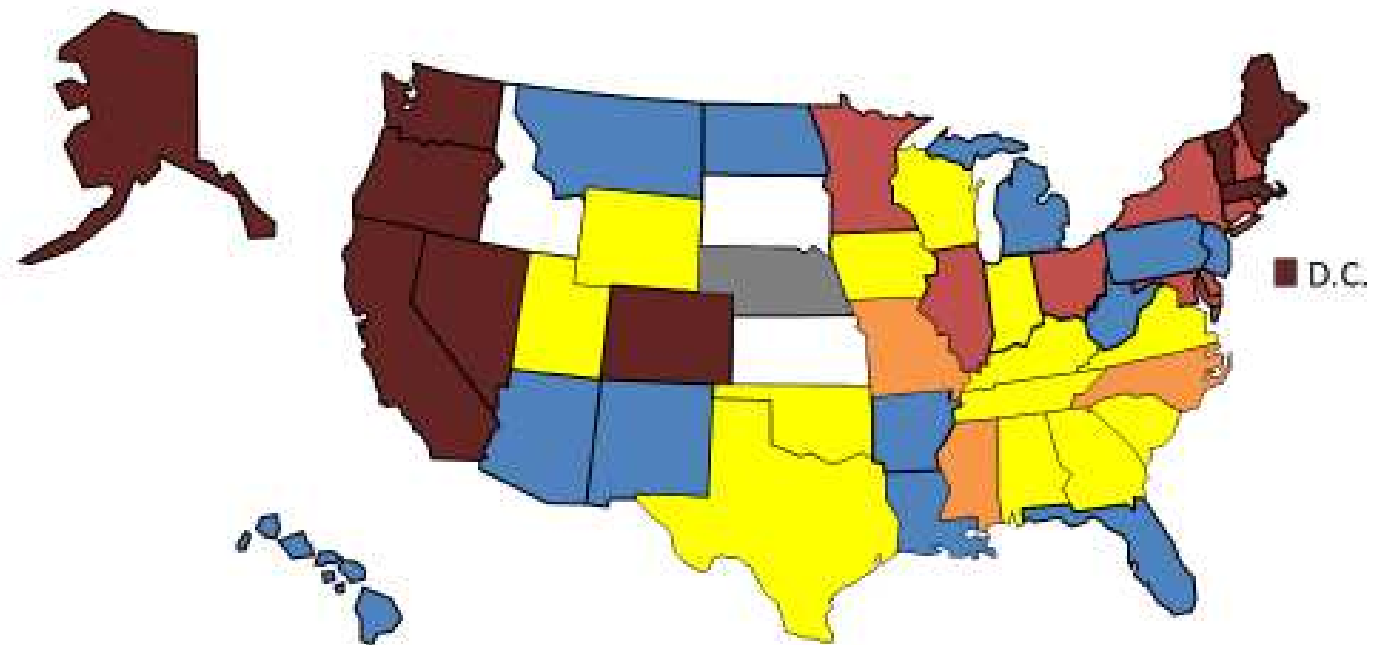
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There have been unprecedented changes in state cannabis laws in the U.S. in recent years



Cannabis Laws in the United States as of January 2018



Cannabis liberalization could influence consumption through several mechanisms

- **Change in social norms / social stigma**
- **Change in potential legal consequences**
- **Change in perceived harm**
- **Change in search costs of locating a supplier**
- **Change in price**

The degree to which a specific mechanism influences in consumption depends on:

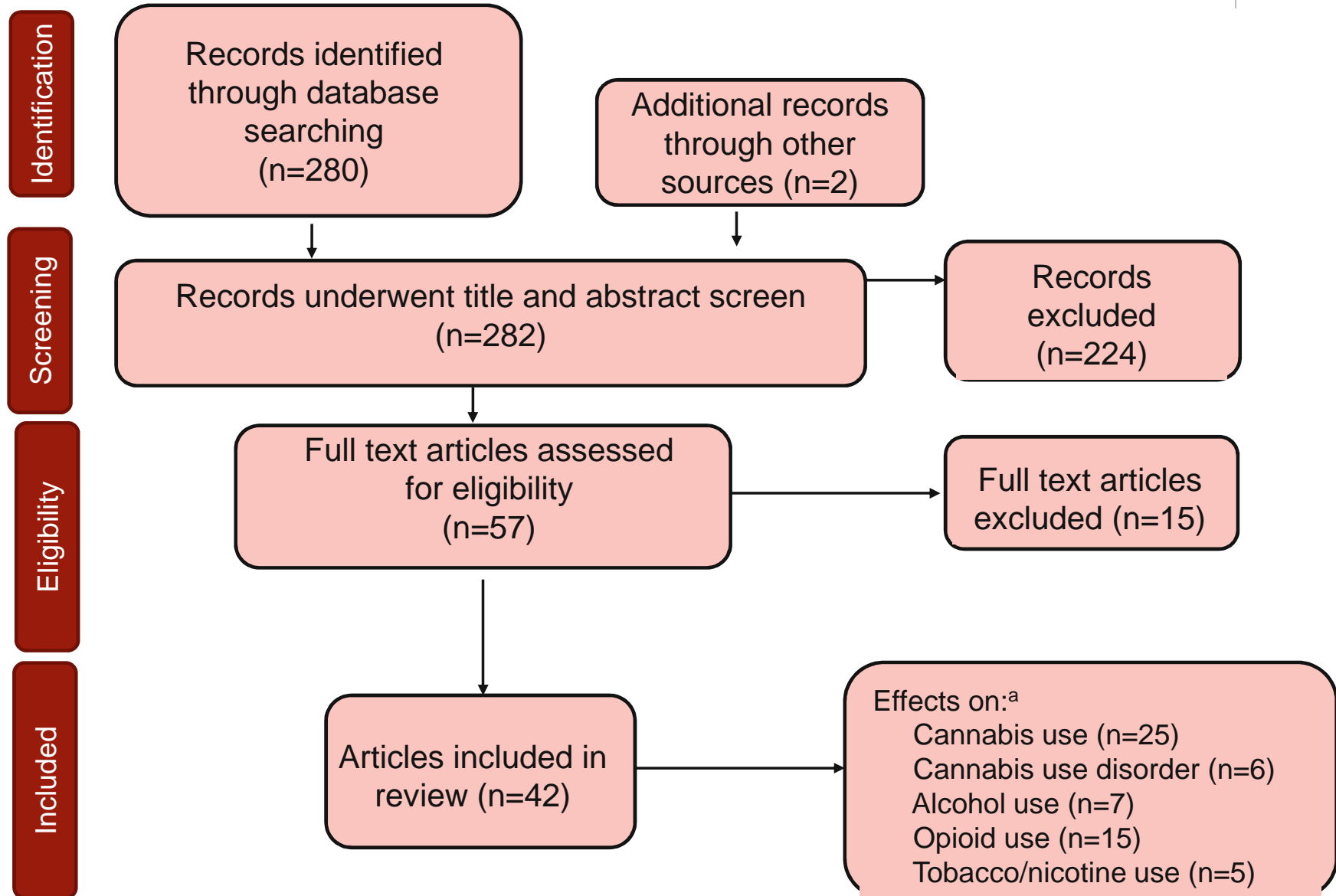
- 1) the provisions of the law (e.g. more or less restrictive)**
- 2) the amount of time it takes to set up the market**

Objectives of this paper

- **To review existing research on how U.S. state cannabis policy impacts substance use, emphasizing:**
 - Evidence from studies using methods for causal inference
 - Mechanisms through which policies impact use
- **Highlight gaps in our understanding of policy impacts on evolving cannabis markets.**

Methods

- **Searched four peer-reviewed databases for works published between January 2005 and February 2019**
 - PubMed, Embase, EconLit, and PsycInfo
- **Focused on works published in English examining U.S. policies**
- **Focused on evaluations using methods for causal inference:**
 - 1) **Use time-series, panel data**
 - 2) **Verify that policies preceded effects on outcomes**
 - 3) **Include a control or comparison group**



Summary of findings of impacts of MCL and RCL on cannabis use (N=22)

- Most studies (N=16) evaluated effects on adolescent use (prevalence)
- Fewer studies considered youths / young adults (6) or adults (7).
- Less than one third of studies (n=8) considered explicit cannabis policy provisions
- Less than one quarter of studies (n=5) considered lagged effects

This summary will focus on findings of effects of MCLs

Summary of findings of impacts of MCL on cannabis use among adolescents (ages 12- 18)

- **16 studies**
 - 7 studies use NSDUH (2002-forward)
 - 6 studies use YRBSS (1991-forward)
 - 3 use MTF (1991 forward)
- **Studies examining impact of MCL laws on adolescent prevalence of use generally show negative or insignificant effects**
 - Holds true generally when using policy provisions (n =5) and/or lags (n= 3), but models of lagged policy effects assume that implementation delays are homogenous across different policy designs

Summary of findings of impacts of MCL on cannabis use on youth and young adults (ages 12-20)

- 2 studies
- **General conclusion: no impact on prevalence of use**
- **Wen et al (2015), using NSDUH data (2002-forward), found that MCL passage was associated with significant impacts on cannabis initiation.**
- **Pacula et al. (2015), using NLSY data, found that frequency of use rose in response to MCL adoption.**

Summary of findings of impacts of MCL on cannabis use among adults

- **8 studies examining impacts on general use**
 - consistent evidence that MCL increases cannabis frequency of use and prevalence
 - Studies that have considered how lax or tight regulations are find that MCLs with more lax provisions have even larger effects on adult use.
- **7 studies examining impacts on CUD, CUD treatment admissions or CUD hospitalizations**
 - Mixed results depending on how (a) the policies are operationalized, (b) the outcome is measured, and (c) the time period analyzed.
 - When one focuses on differentiating lax from restrictive policies, there is a positive association between MCLs and CUD disorder and treatment.

Summary of findings of impacts of MCL on other substance use

- **Alcohol (N= 5)**
 - 2 studies evaluate impact on middle and high-school age students and find either a negative or no association with past-month alcohol use or binge drinking
 - 1 study looked at youth < 21 and found no association between MCLs and self-reported drinking prevalence, binge drinking or # of drinks in past month
 - 3 studies look at use among adults and find mixed evidence.
 - Most comprehensive study (Wen et al., 2014) shows that while there is no association with past month prevalence or frequency of use, there is a positive association with frequency of binge drinking and simultaneous use of cannabis and alcohol.

Summary of findings of impacts of MCL on other substance use

- **Opioids**
 - Opioid related mortality (N= 3) --- Negative association *
 - Adverse events (hospitalizations, treatment episodes, fatal car accidents) (n= 4) - Negative association (all through 2014)
 - Self-reported misuse (n= 2) – Positive association
 - Prescribing (n = 7) – Negative association

Limitations and cautions:

- **Our review was limited: Only 4 data bases, excluded grey literature, and non-English written papers, and limited publication window.**
- **While similar findings for adolescents across 16 studies may seem highly robust, the studies all draw evidence from the only 3 national data sets (2 school based, 1 home) evaluated largely over the same time periods.**
 - **Results from multiple studies using the same 3 sources over largely the same time period cannot be treated as independent samples.**
 - **Insufficient attention has been given to longer term effects, which some studies suggest may be important**
- **Most common analytic technique identifies effects using difference-in-difference framework, which embeds assumptions that have not been fully evaluated**

Main conclusions (in this paper)

- **Cannabis liberalization policies appear to be associated with:**
 - Higher adult use, and cannabis use disorder among adults
 - Less opioid mortality (** called into question since)
- **Cannabis liberalization policies have no association with**
 - Youth prevalence of cannabis use
- **Remains unclear as to whether cannabis liberalization policies are associated with more or less alcohol use**
- **ALL of these conclusions should be viewed as preliminary assessments of short-term effects!!**

Thank you!!

Smart, R., & Pacula, R. L. (2019). Early evidence of the impact of cannabis legalization on cannabis use, cannabis use disorder, and the use of other substances: Findings from state policy evaluations. *The American journal of drug and alcohol abuse*, 1-20.