The U.S. Cannabis Policy Scale:
Moving Beyond Dichotomous Measures to Evaluate Impacts of Liberalization Policies

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Background & Significance

- U.S. has experienced substantial variation in state cannabis laws over the past 25 years, while the government has (thus far) maintained prohibition

- As of June 30, 2021[1]

  - 26 states that have decriminalized cannabis
  - 34 states and D.C. have legalized comprehensive medical cannabis
  - 17 states and D.C. have legalized recreational cannabis

- General interest in understanding the impact of these laws on a variety of social and public health impacts, including cannabis use and cannabis-related harm

- Many have hypothesized that the most significant impact of cannabis policy changes are likely to happen to alcohol

- Research remains inconclusive of the effects of policy liberalization on alcohol misuse and harm, but many analyses fail to account for the full alcohol or cannabis policy environment.

[1] Our own review of legal state statutes.

Objectives of Project

1. Develop a comprehensive policy scale for cannabis that reflects variation across states in these policies with respect to access and use (similar to what has been done for alcohol)

2. Using comprehensive policy scales, relate cannabis policies to cannabis and alcohol use and harm.

Today, I'll be focusing on our work related to Aim 1.

I. Development of the Cannabis Policy Scale (CPS)

The CPS is modeled after the Alcohol Policy Scale (APS)

- Tim Naimi, Jason Blanchette and colleagues developed the Alcohol Policy Scale (APS) in early 2000s

- Aggregate measure of 29 policies that were aggregated in a fashion that considered both efficacy and implementation

- This APS scale has been shown to be protective for binge drinking, youth drinking, impaired driving, alcohol involvement in motor vehicle crash fatalities, cancer, homicide, suicide, remission from alcohol dependence

Four steps involved in development process of Cannabis Policy Scale (CPS)

- Step 1: Identify effective state-level cannabis control policies (18 identified, 17 included)

- Step 2: Rate relative policy efficacy – expert policy panelists

- Step 3: Develop implementation rating for each policy

- Step 4: Aggregate policy data for CPS scores

Cannabis Policies

- Definition: <u>laws</u>, <u>regulations</u>, and <u>practices</u> used to influence cannabis consumption which might include the presence or absence of supporting legislation, and/or operational aspects that reflect their implementation, enforcement, or resource allocation at the state level

Policies Identified for Cannabis Policy Scale

1. Advertising Restrictions
2. Cannabis Possession Limits
3. Clean Air and Smoke Free Laws
4. Cultivation and Manufacturing Operations Restrictions and Requirements
5. Delivery Restrictions of Recreational Cannabis to Consumers
6. Home Cultivation Restrictions
7. Impaired Driving Laws
8. Medical Cannabis Restrictions and Requirements
9. Packaging and Labeling Restrictions and Requirements
10. Penalties for Adults who Possess Cannabis for Personal Use
11. Physical Retail Availability Restrictions
12. Product Design Restrictions and Requirements
13. Retail Price Restrictions
14. Retail Operations
15. State Monopoly
16. Taxes
17. Track-and-trace Requirements
18. Youth Policies

Median Efficacy Ratings, Cannabis Policies

Median efficacy ratings for 18 state-level cannabis policies, ranked by median efficacy to reduce excessive use in the general population in a theoretical state with a legalized recreational cannabis market.

Policy	Median Efficacy Rating (Ranking)[b]		
	General Population rating (rank)	Youth rating (rank)	Impaired Driving rating (rank)
State Monopoly	5.0 (1)	5.0 (1)	4.0 (1)
Physical Retail Availability Restrictions	4.5 (2)	4.0 (3)	4.0 (1)
Taxes	4.5 (2)	4.5 (2)	3.5 (4)
Retail Price Restrictions[a]	4.0 (4)	4.0 (3)	3.5 (4)
Retail Operations Restrictions and Requirements	4.0 (4)	4.0 (3)	3.0 (6)
Product Design Restrictions and Requirements	3.5 (6)	3.5 (8)	3.0 (6)
Advertising Restrictions	3.5 (6)	4.0 (3)	2.5 (8)
Cultivation and Manufacturing Operations Restrictions and Requirements	3.0 (8)	2.5 (11)	1.5 (13)
Delivery Restrictions of Recreational Cannabis to Consumers	3.0 (8)	3.0 (9)	1.5 (13)
Penalties for Adults who Possess Cannabis for Personal Use	2.5 (10)	2.0 (13)	1.5 (13)
Clean Air and Smoke Free Laws	2.5 (10)	3.0 (9)	2.0 (11)
Packaging and Labeling Restrictions and Requirements	2.5 (10)	2.5 (11)	2.5 (8)
Cannabis Possession Limits	2.5 (10)	2.0 (13)	2.0 (11)
Impaired Driving Laws	2.0 (14)	2.0 (13)	4.0 (1)
Youth Policies	2.0 (14)	4.0 (3)	2.5 (8)
Home Cultivation Restrictions	2.0 (14)	2.0 (13)	1.5 (13)
Medical Marijuana Restrictions and Requirements	2.0 (14)	2.0 (13)	1.5 (13)
Track-and-trace Requirements	2.0 (14)	2.0 (13)	1.0 (18)

[a] Minimum unit pricing was excluded from the survey because of challenges with operationalizing the policy (i.e., establishing an ideal minimum unit price was not feasible for this project because of wide variation in prices between states and lack of research on price elasticity of demand for cannabis in legal markets). Government Prevention was excluded because of the lack of data for all states and years of the study period, challenges with operationalizing aspects of government prevention, and the national scope of some government prevention initiatives.

[b] Efficacy ratings were obtained for three outcomes: to reduce excessive cannabis use in the general population, to reduce any use among youth, and to reduce cannabis-impaired driving. Panelists rated the efficacy of each policy relative to one another from 1 = "Less effective" to 5 = "More effective."

Example Implementation Rating: Cannabis Possession Limits

Proposed final provisions VERSION 1 - JASON	Proposed score VERSION 1	
Possessing cannabis for personal use (<10 grams) is a criminal offense, either felony or misdemeanor	+0.3	
Jail is possible for possessing cannabis for personal use (<10 grams)	Any mandatory jail and/or maximum jail is greater than 6 months	+ 0.3
	Jail is possible but is not mandatory and maximum jail sentence is ≤ 6 months	+0.2
Fine for possessing cannabis for personal use (10 grams)	Maximum fine is greater than $300	+ 0.1
	Fine, but ≤ 300	+ 0.05
Legal possession for recreational use – Public possession limit is less than 2 ounces	+0.1	
Commercial purchase (sales) limit for recreational use is less than 2 ounces	+ 0.1	
Possession limit for medical patients is less than 3 ounces or is a 30-day supply as prescribed by a practitioner [nonmedical states get this score].	+ 0.1	

A stringent state policy criminalizes possession of even the smallest amts for personal use, allows for the imposition of jail sentences of greater than 1 year and fines of $1,000 or more, and has minimum jail sentences and fines.

Among states that decriminalize possession of cannabis for personal use, a stringent policy would decriminalize an amount not to exceed 10 grams

Example Implementation Rating: Track and Trace Requirements

Provisions		Score
Cannabis is not commercially available – Outlets are not active/operational for medical or rec, regardless of legality		= 1.0
State has commercial availability of both medical and rec cannabis but no track-and-trace requirement		= 0.0
State has commercial availability of medical cannabis but not rec cannabis, and has track-and-trace program for medical		+ 0.2, plus CTAT score below
State has commercial availability of medical and rec cannabis and track-and-trace requirement for both		+ 0.2, plus CTAT score below
State has commercial availability of medical and rec cannabis but track-and-trace program only for rec		+ 0.1, plus CTAT score below
State has commercial availability of medical and rec cannabis, but track-and-trace only for medical		+ 0.0, plus CTAT score below
Cannabis track-and-trace (CTAT) score		
Testing results are required to be reported into track-and-trace database by the licensed testing facility		+ 0.2
Businesses must report standardized unit (type of product), weight, and quantity.		+ 0.2
The state requires businesses to report price		+ 0.1
Transportation of cannabis products from cultivation and manufacturing facilities must be entered into track-and-trace database before leaving facilities AND a manifest printed from the track-and-trace database must accompany the transported cannabis products		+0.2
The point at which a new tracking number must be assigned	Seed	+0.1
	While plant is in cultivation stage (i.e., when plant reaches 8 inches)	+0.05
	Cutting/harvesting of plant or later (i.e., Transfer to next entity/business/point in supply chain)	+0.0

Blanchette et al., JSAD, 2022

Example Implementation Rating: Impaired Driving

Proposed provisions	Proposed score	
THC limit	Zero Tolerance: +0.2	
	Other limit: +0.1	
Illegal per se	+0.2	
Implied Consent law applies to drugs	+0.15	
Sobriety checkpoints permitted	+0.1	
Administrative license revocation for refusing implied consent chemical test and for failing the test (e.g., blood test results show impermissible amount of THC in blood) or DUID arrest	ALR for refusing chemical test	+ 0.1
	ALR for failing test (per se violation) or DUID arrest	+ 0.1
Open container prohibited	+0.05	
Anti-plea bargaining statute and/or mandatory adjudication	+0.05	
Test refusal is admissible as evidence	+0.05	

Calculating Cannabis Policy Scale (CPS) Scores

- Cannabis Policy Scale (APS) scores (state-year): sum present policies, after weighting each one by its efficacy rating and implementation rating

$$CPS\ score_{jh} = \sum_{k=1}^{17} \left(ER_k * IR_{kjh} \right)$$

where j = state; h = year; k = policy; ER = efficacy rating; and IR = implementation rating

- Normalize so that the scale goes from a range of 1 – 100, 1 = least restrictive; 100 = most restrictive

- Median CPS Scores, 2018: 76.5
    - Lowest (least restrictive): Nevada, **29.6**
    - Highest (most restrictive): Indiana, **96.2**

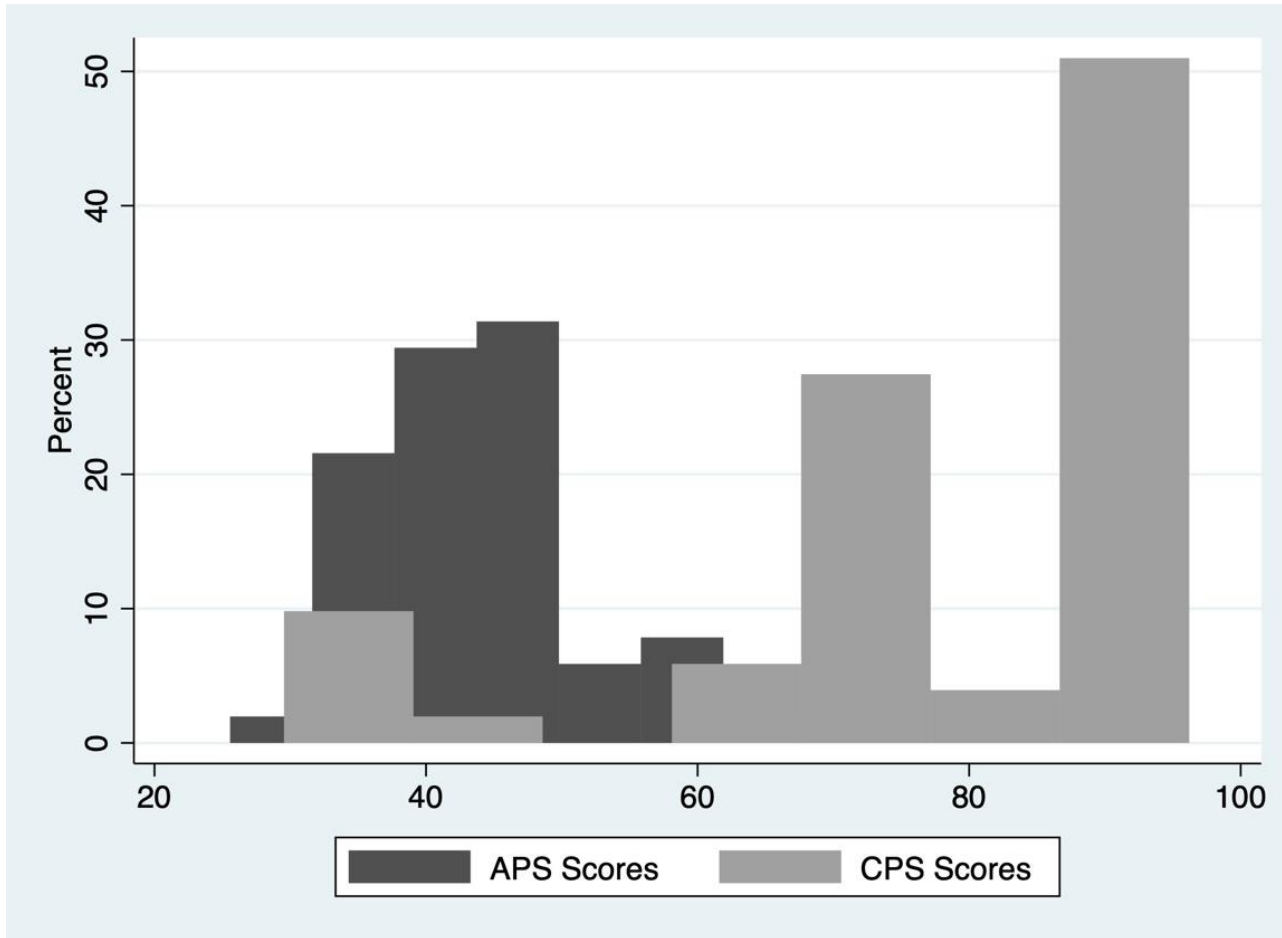# Ranking Cannabis Policies and Changes over Time, 2009 to 2019

Rankings of states based on the restrictiveness of cannabis policy environment characterized by Cannabis Policy Scale scores
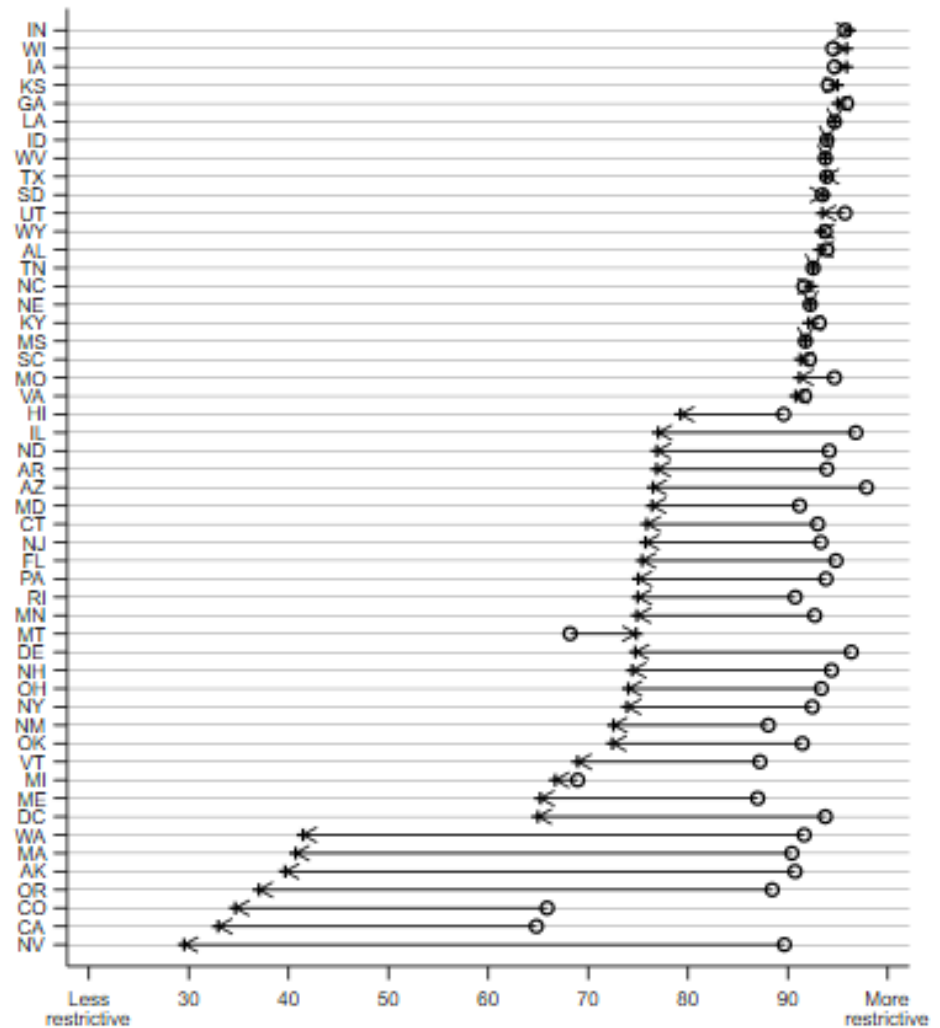
Cannabis Policy Scale (Excessive Use among General Population)

○ 2009   + 2019

Blanchette JG, et al. J Stud Alcohol Drugs. 2022.

Distribution of APS and CPS Scores, 2018

Mean CPS and APS scores, overall and among subgroups, 1999-2018

	Mean CPS Score (SD)	Mean APS Score (SD)
Overall	88.46 (10.47)	42.35 (8.45)
By Time Period		
1999-2004	91.48 (4.35)	40.59 (8.80)
2005-2009 (+)	91.02 (5.94)	42.64 (8.35)
2010-2014	87.82 (10.44)	43.31 (8.25)
2015-2019	81.50 (16.42)	43.45 (7.88)
By Census Region		
Northeast	86.89 (8.33)	45.61 (5.64)
Midwest (-)	92.04 (5.62)	38.46 (7.92)
South	92.00 (4.08)	43.67 (7.40)
West	81.60 (15.96)	41.96 (10.26)
By Cannabis Policy "Phenotype"[1]		
Prohibition	93.26 (1.47)	42.66 (9.37)
Decriminalization (+)	91.37 (0.86)	39.83 (4.31)
Medical Cannabis Permitted	80.75 (9.77)	42.36 (7.23)
Recreational Cannabis Permitted	51.08 (16.39)	42.75 (5.32)

Findings

1. CPS scores vary substantially across states in the United States today; the first states that adopted medical cannabis have the least restrictive scores even today.

2. CPS scores have decreased over time in the majority of states over time, but legalization alone is not sufficient for predicting state's CPS score.

3. For all states and years, there was no correlation between the restrictiveness of alcohol and cannabis policies
   - Some modest correlations among subgroups by region, cannabis policy "phenotype", and year

4. Ongoing work finds that the CPS score is negatively related to cannabis-impaired driving, but has no association with alcohol-impaired driving when the APS is included.

Thank you!

Questions?
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Additional IR Sheets

Example Implementation Rating:
Product Restrictions & Requirements

Proposed provisions	Proposed score	
Cannabis products are not commercially available to consumers (Outlets are not active/operational for medical or rec, regardless of legality)	= 1.0	
The only commercially available cannabis products are medical products (Only medical outlets are active; if rec outlets are active then disregard this section)	Only medical outlets are active (no active recreational outlets)	+ 0.75
	High potency concentrated cannabis (e.g., oils, waxes, extracts with THC content > 75%) products are banned or concentrated cannabis products are banned	+ 0.1
	High potency cannabis flower (with THC content > 25%) is banned	+ 0.1
	Cannabis packaging must be plain except that it may contain the business logo and an image of the product	+ 0.05
Recreational cannabis is commercially available (Rec outlets are active; If rec outlets are not active, then disregard this section)	High potency concentrated cannabis (e.g., oils, waxes, extracts with THC content > 75%) products are banned or concentrated cannabis products are banned	+ 0.25
	High potency cannabis flower (with THC content > 25%) is banned	+ 0.2
	Total quantity THC per package no greater than 50mg for recreational edibles	+ 0.1
	Recreational edibles cannabis products must be labeled with serving sizes no greater than 5mg and include information about total number of servings or total amount of THC per package.	+ 0.05
	Cannabis packaging must be plain except that it may contain the business logo and an image of the product	+ 0.1
	Cannabis vape cartridges must be labeled with cannabis symbol (or cannabis vape cartridges are banned) and edibles must be labeled with cannabis symbol	+ 0.05

Blanchette et al., JSAD, 2022

Example Implementation Rating:
Penalties for Adults who Possess for Personal Use

Proposed final provisions		Proposed score
Possessing cannabis for personal use is a criminal offense, either felony or misdemeanor	Any positive amount (all amounts > 0 grams) is criminalized	+ 0.3
	State has decriminalized possession of up to 10 grams but no more (i.e., above 10 grams is criminal)	+ 0.2
	State has decriminalized possession of more than 10 grams but has not decriminalized 1 ounce (i.e., 1 ounce or more is criminal).	+ 0.15
	State has decriminalized possession up to 1 ounce but has not decriminalized more than 1 ounce (i.e., more than 1 ounce is criminal).	+ 0.1
	No amount is criminalized (State has totally decriminalized all amounts for personal use)	+ 0.0
Jail is possible for possessing cannabis for personal use	Maximum jail is ≥ 1 year	+ 0.2
	Maximum jail is > 6 months, but < 1 year	+ 0.15
	Maximum jail is > 1 month, but ≤ 6 months	+ 0.1
	Maximum jail is ≤ 1 month	+ 0.05
Minimum jail time is specified in law, even for decrim amount		+ 0.1
Conditional discharge and/or diversion in lieu of jail is NOT provided in statute		+ 0.1
Fine for possessing cannabis for personal use	Maximum fine is > or = $1000	+ 0.3
	Maximum fine is > 300 & < $1000	+ 0.2
	Maximum fine is ≤ 300	+ 0.1
Minimum fine is specified in law, even for decrim amount		+ 0.1

Blanchette et al., JSAD, 2022