Mathematica
Progress Together

Helping States Make Data-Driven Decisions About Cannabis Legalization: Forecasting Impacts and Assessing Equity in Regulatory Practices

- Mathematica researchers conduct rigorous mixed-methods analyses to help states anticipate the impacts of cannabis legalization.

- Through simulation, we can give states plausible ranges for how much legalization will impact tax revenue, regulatory spending, and public health and public safety.

- To help states achieve an equitable cannabis market, we can assess the relationship between the regulatory environment, such as licensing schemes for cannabis businesses, and diversity among license holders.

As more states legalize retail marijuana (that is, marijuana for recreational or full "adult" use) through ballot initiatives or legislation, policymakers and stakeholders are looking to better understand the economic, public health, and public safety impacts of legalization. States legalizing retail cannabis use also need to decide how to license cannabis businesses in a way that is equitable. In states with legal retail cannabis markets, members of minorities tend to be underrepresented among license holders. Many states seek to award licenses to underrepresented minorities and especially members of communities that have been disproportionately burdened by the criminalization of cannabis. Working with the Massachusetts Department of Public Health (MDPH) and the Maryland Medical Cannabis Commission, Mathematica provided state policymakers with important insights into the impacts of legalizing retail cannabis to inform their decision making.

Predicting economic and fiscal effects

For the 2017–2018 Marijuana Baseline Health Study led by MDPH, Mathematica forecasted the economic and fiscal effects of adding a full adult-use marijuana program to the existing medical marijuana program in Massachusetts. We helped state and municipal agencies plan for the impact of legalization by estimating fiscal gains or spending, as well as other benefits or losses, in four areas:

- Tax revenue
- Public health
- Public safety
- Regulatory oversight

Our researchers analyzed marijuana-related data from national, state, and local sources; identified credible evidence and literature; and interviewed expert stakeholders about local conditions that affect the marijuana legalization. Specifically, we combined (1) impacts from studies that estimated the effects of legalization on a variety of outcomes with (2) analyses of secondary data on the number of cannabis consumers and other state-level outcomes. Using simulation, we estimated average impacts and plausible ranges that reflected uncertainty in some model inputs.

Assessing equity in licensing

Building on this work for Massachusetts, we partnered with the state of Maryland in 2020 to estimate the economic and fiscal impact of legalizing adult-use

cannabis in Maryland and to conduct a network adequacy analysis of the existing medical cannabis market. We updated the model we developed for Massachusetts using the most recent evidence on legalization impacts, and we collected baseline data on outcomes of interest (such as state tax revenue, cannabis-related arrests and incarcerations, prescription drug spending, worker productivity, and hotel occupancy related to out-of-state travel to purchase retail cannabis) for Maryland. For the network adequacy analysis, we considered the number and location of dispensaries and the amount of cannabis harvested, processed, and sold versus the number of patients and quantity of cannabis consumed.

We also assessed how different licensing schemes would affect diversity among cannabis business owners. To do this, we looked at states with recreational cannabis markets and collected data on licensing types and fee structures, social equity programs, regulatory environments, and the demographics of cannabis business owners. We investigated how licensee diversity varied based on different features of licensing programs. In most states with legal retail cannabis markets and available data, members of minorities were underrepresented among license holders. However, programs that preferentially allocated licenses to members of communities that have been disproportionately affected by the criminalization of cannabis were able to achieve more equitable licensing.

An interactive tool to project impacts

To translate our findings from these projects to states that have not yet legalized recreational cannabis, we developed an online Marijuana Tax Revenue and Cost Estimator, or mTRACE. This tool synthesizes state-level data on demographics, marijuana pricing, and marijuana use, retaining key components of the Massachusetts and Maryland models, to project short-term state sales and excise tax revenue, along with the major state costs of legalization. With a dynamic interface, the mTRACE enables users to easily see how revenues and costs vary when they enter different marijuana tax rates or fine-tune the estimated rates of marijuana use.

To read more about our research on marijuana legalization, see:

Marijuana Legalization: Public Health, Safety, and Economic Factors for States to Consider issue brief;

Implications of Legalized Cannabis in Health and Human Services white paper, produced with the Human Services Information Technology Advisory Group.

Let's Progress Together. To learn more about Mathematica's research on cannabis legalization or to see a demonstration of the mTRACE tool, please contact R. Vincent Pohl at vpohl@mathematica-mpr.com or Aparna Keshaviah at akeshaviah@mathematica-mpr.com.