

Indoor Cannabis Cultivation

December 2025

The model below was created during a project on unlicensed cultivation and detects indoor cannabis cultivation based on energy usage and estimates its prevalence across California. Indoor cultivation developed in response to cannabis prohibition and enforcement – it is often easier to hide. That said, it is expensive (e.g. energy, water, rent, security) and requires significant infrastructure.

So, how has unlicensed indoor cannabis cultivation evolved after legalization?

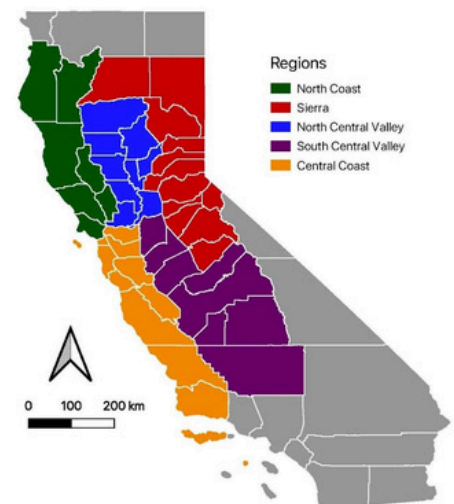
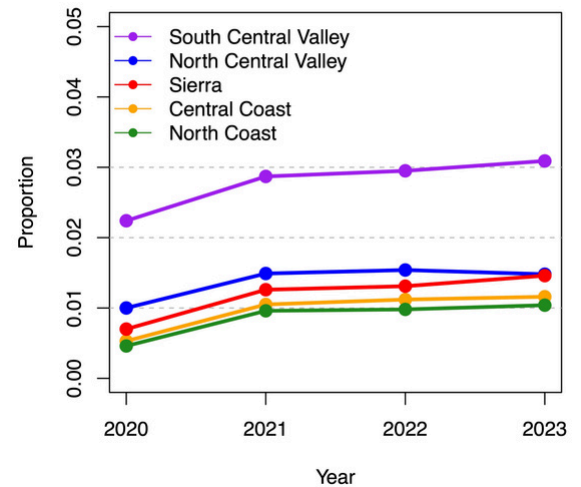
Methods

1. Acquired data from California’s Public Utility Companies for licensed and unlicensed indoor cultivation operations, as well as energy users not cultivating cannabis.
2. Developed a machine learning model trained to identify the energy use “signature” of indoor cannabis cultivation (e.g. regular on/off cycles, extended periods of high energy use).
3. Tested and modified model for reliability for predictive performance and accuracy.
4. Applied machine learning model to a large dataset of energy users (n=250,000) to detect likely indoor cultivation in residential and commercial facilities from 2020-23.

Results

- **Indoor cultivation increased most dramatically across PG&E coverage from 2020-21.**
- **South Central Valley exhibited the highest incidence and steady growth of indoor cultivation.**
- **North Coast had the lowest incidence.**
- **North Coast, North Central Valley, and Central Coast regions largely plateaued after 2021.**
- **The Sierra and South Central Valley regions exhibited steady growth in prevalence over the four year period.**

Estimated Prevalence of Indoor Cannabis Cultivation Among Energy Users



Sample energy signature for cannabis cultivation.