



Cannabis Data Science

Meetup

March 17, 2021

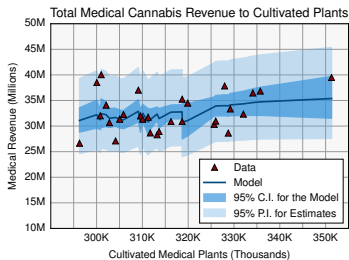
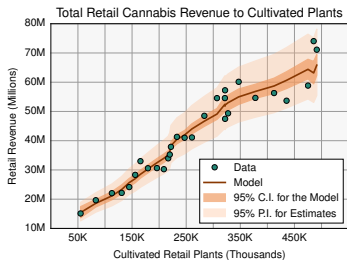
The 'licit-yet-illegal' status of the cannabis industry allows for land and finance owners to extract high risk-based rents from land and capital loans.

Polson, M. (2013), 'Land and Law in Marijuana Country: Clean Capital, Dirty Money, and the Drug War's Rentier Nexus', PoLAR: Political and Legal Anthropology Review 36(2), 215.

Suppose that the total amount of cannabis sold in a given period,  $y_t$ , is a simple function of the number of plants cultivated that period,  $k_t$ ,

$$y_t = Ak_t^\alpha e^{\varepsilon_t},$$

where  $A$  represents the state of cultivation technology and  $\varepsilon_t$  is a random production shock.



Economic theory suggests that the production function should have diminishing marginal returns, such that  $0 \leq \alpha < 1$ .

The production function can be estimated after a linear transformation

$$\ln y_t = \ln A + \alpha \ln k_t + \varepsilon_t.$$

You can use the approximated area of cannabis cultivation as a proxy for the amount of capital,  $k_t$ , in any given month.

The competitive rate of return on capital is equal to its marginal productivity minus depreciation

$$r_{K,t} = \alpha k_t^{\alpha-1} - \delta,$$

where  $\delta$  is the monthly depreciation rate of capital required in cannabis production.

The interest rates on money loans from financial lenders to cannabis business are typically higher than the market rates for comparable businesses, with interest rates usually between 7% and 15%.

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Thank you for coming.