I am a data scientist interested in using electronic health records and administrative data to research treatment access and effectiveness for patients with substance use disorders.

I earned my undergraduate degrees in Computer Science and Data Science from Carthage College, then I worked in business consulting helping clients with reputation management using natural language processing. I am currently pursuing a Ph.D. in Computational and Data Sciences at Washington University in St. Louis.

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State treatment center counts as a market response to substance use prevalence: investigating differences by profit status

**Introduction:**

The United States is in a drug overdose crisis, with drug fatalities increasing steadily this century. With the rise in overdose deaths, substance use disorders (SUDs) are more recognized and new treatment centers are emerging across the country. This study aims to reveal whether the number of SUD treatment centers is a market response to demand for treatment centers (as measured by substance use rates) in the United States from 2014 – 2019.

**Methods:**

The study was performed using several publicly available data sources from the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA). The National Survey on Substance Abuse Treatment Services (NSSATS) surveys treatment centers from all 50 United States and the District of Columbia. Additionally, SAMHSA’s National Survey on Drug Use and Health (NSDUH) surveys a sample of Americans about their experience with substances and mental health and aggregates to prevalence rates for two-year periods in each state. The NSDUH data from 2015-2016, 2016-2017, and 2017-2018 was used as a measure of SUD treatment demand. Control variables considered include state population, state healthcare spending, and state Medicaid enrollment from the Center for Medicaid and Medicare Services**.**

Treatment demand measures were lagged because administrative barriers limit a treatment center from responding to demand in the same year it emerges. A negative binomial distribution was chosen to model the count of treatment centers given overdispersion, with random effects for both state and year. Three separate models were fit with for-profit treatment center count, non-profit treatment center count, and government treatment center count.

**Preliminary Results:**

The number of for-profit treatment centers captured by NSSATS increased substantially from 2015 (n=4631) to 2019 (n=6307); non-profit treatment centers increased slightly from 2015 (n=7479) to 2019 (7976); and government treatment centers decreased slightly from 2015 (n=1608) to 2019 (n=1569).

States’ lagged cocaine and heroin use prevalence was significantly associated with an increase in for-profit treatment centers per state-year (coef=0.079;stderr=0.039;p=0.041), however alcohol use disorder prevalence was significantly associated with a decrease in the number of for-profit treatment centers per state-year (coef=-0.049;stderr=0.022;p=0.025) after controlling for population. Non-profit and government treatment centers revealed no significant association with substance use prevalence.

**Implications:**

This study reveals that for-profit, non-profit, and government SUD treatment center trends differ, and for-profit treatment center counts are associated with substance use trends. Additional work is required to understand subsequent treatment accessibility and quality implications for people with SUDs.