

## ABSTRACT

The Effects of Policy on Utilization and Regional Access Disparities in an Agent Based Simulation Model of Buprenorphine Treatment in the United States

Opioid dependence and opioid related deaths are a public health problem which the United States Centers of Disease Control (CDC) have declared an epidemic. While opioid agonist therapy (OAT) for opioid addiction has been accepted as the most effective treatment for opioid dependence among academics, and office based (OB) buprenorphine treatment has been available in the United States for over 10 years, OB buprenorphine faces many barriers to widespread adoption. Empirical data on the geographic distribution of physicians able to prescribe buprenorphine and the prescribing patterns of those physicians show considerable unevenness in access and utilization of treatment services.

Federal-level policies have recently been implemented to expand access to OAT, but the medium and long term impacts of these policy changes on individual outcomes, public health, and geographic access equity are not yet clear.

This dissertation compares two recent federal level policies on expanding access to buprenorphine treatment: raising the regulatory limit on the number of patients a provider can treat (implemented July, 2016), and extending prescribing privileges to nurse practitioners (NPs) and physician assistants (PAs, implemented February, 2017), using an empirically supported Agent Based Simulation model. Policies are assessed by a novel, at-a-glance, quantitative access equity metric, in addition to year-end treatment utilization, and the amount of illicit medication diversion.

In the simulation, expanding access by increasing the patient limit did not result in more equitable spatial access, while extending prescribing to NPs and PAs did, even at fairly low levels of adoption by these practitioners. This is likely due to empirically supported model assumptions that NPs and PAs providing primary care often serve in medically underserved areas including rural and remote regions, and that providers who take on large patient loads tend to be addiction medicine specialists who practice in urban areas.