Opioid Policy Evaluation in the United States

Ofosu Osei, Minling Zhou, Poojitha Balamurugan, John Coogan
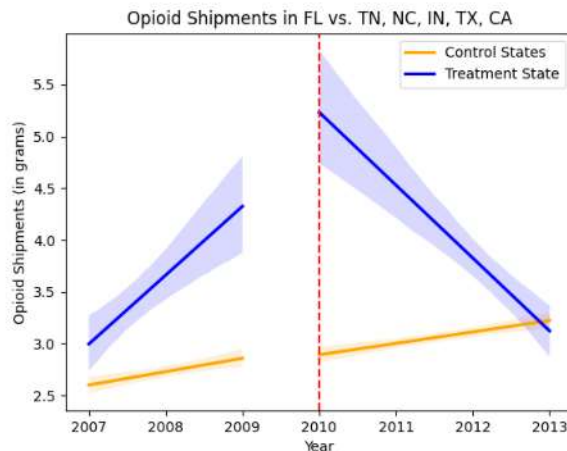
Executive Summary

The opioid epidemic is a public health crisis with a significant impact on society and which demands deliberate intervention at the State level to mitigate. The purpose of this report is to explore policies implemented at the state level to address the opioid epidemic and to determine which policies are most effective. To conduct this analysis we will look at two metrics: opioid overdose deaths per capita and gross opioid shipments as measured in grams via opioid conversions from the Drug Enforcement Agency (DEA). The specific policies we will investigate are from the states of Florida, Washington, and Texas where legislation was passed to enforce stronger due dilligence on the part of physicians and pharmacists when prescribing and dispensing opioids. The intuition behind these metrics are, principally, the direct evaluation of the policies which regulate the distribution of medical opioids. If physicians and pharmacists are dispensing lower quantities of opioids, the demand signal through the supply chain is assumed to decrease, and so the shipment rates should also decrease. Secondarily, we look at the opioid related deaths per capita as an assessment of critical secondary effects of the policies. More importantly, the secondary effect of opioid related deaths is what drove the policy changes in the first place and so the evaluation of this metric is crucial along with the intermediate assessment of supply chain trends.

In order to accurately investigate the impact of these policies, we have used a set of control states whose trends of opioid shipments and opioid related deaths remain relatively constant over the span of policy implementation. The states of interest, or treatment states, have policies that were implemented in 2007 (TX), 2010 (FL), and 2012 (WA). The control states were selected based on the similarity of their opioid shipment and opioid related death trends to the treatment states prior to the implementation of the policies. This allows us to conduct both a pre-post analysis of the treatment states in isolation as well as a difference-in-difference analysis of the treatment states relative to the control states which act as a proxy for the behavior of the treatment states in the absence of the policies.

We have taken data from US Vital Statistics and the DEA via the Washington Post to compile data for every county in the treatment and control states spanning three years prior and three years after the implementation of their respective policies. We then fit a linear regression or line of best fit through the county-year data before and after the policy implementation. The

slope of the line of best fit is used as a proxy for the trend of the data and the difference in slope between the pre and post policy implementation is used as a proxy for the impact of the policy.

An example difference-in-difference plot can be seen to the right and shows our results for Florida policy impact on opioid shipments. The blue line represents the trend of the treatment state (FL) and the red line represents the trend of the control states. The vertical line represents the year of policy implementation. We can see here that Florida had a positive trend in opioid shipments in excess of the control states (which were selected on their similarity to the treatment state prior to policy implementa-

tion). After the policy implementation, the trend of the treatment state decreased relative to the control states. This visually indicates the success of the policy in reducing opioid shipments.

A complete set of results is detailed further in the report but our assessment showed a similar decrease in opioid related deaths for Florida, indicating that the policy implemented in 2010 addressed both primary and secondary effects of the opioid epidemic. The results for Washington State indicated a policy implementation in 2012 which was both ineffective in reducing opioid shipments and which had negligible impact on opioid related deaths. Our data for Texas was prohibitive to an assessment for opioid shipments since the earliest data available was one year prior to the 2007 policy implementation. However, the data for opioid related deaths was less conclusive than for Florida but indicated that the policy had some positive impact. The policies implemented are largely similar in their approach of regulating the prescription of opioids with the key difference in Florida being the close cooperation with law enforcement to aggressively enforce the policy. This is illustrative of the importance of enforcement in the success of policy implementation.

The complete details of our analysis are included in the following report.