Drug decriminalization, the introduction of fentanyl to drug markets, and fatal overdose in Oregon

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Conflicts of Interest: None to declare
**Importance** - With the implementation of Measure 110 (M110), Oregon became the first state in the United States to decriminalize small amounts of any drugs for personal use. No analysis of the effect of this law on overdose mortality has fully accounted for the introduction of fentanyl to Oregon’s unregulated drug market, a substance known to drive fatal overdose rates.

**Objective** - To evaluate whether the decriminalization of drug possession in Oregon was associated with changes in fatal drug overdose rates after accounting for the rapid escalation of fentanyl in Oregon’s unregulated drug market.
Design, Setting, and Participants:

- The association between fatal drug overdose and M110 was analyzed using a synthetic control method.

- The control group consisted of the 48 US states and Washington DC.

- The rapid escalation of fentanyl in unregulated drug markets was determined using the state-level samples reported to the National Forensic Laboratory Information System.

- A changepoint analysis determined when each state experienced a rapid escalation of fentanyl.

- Mortality data were obtained from the Centers for Disease Control and Prevention from 2008-2022.
NFLIS-Drug
1,181,750 drug reports in 2022

Established in 1997, the National Forensic Laboratory Information System (NFLIS) is a program of the Drug Enforcement Administration (DEA), Diversion Control Division. The DEA's NFLIS-Drug data collection systematically collects drug identification results and associated information from drug cases submitted to and analyzed by participating Federal, State, and local forensic laboratories with drug chemistry sections. The 2022 NFLIS-Drug Annual Report showed that a total of 1,181,750 drug reports were identified by State and local forensic laboratories in the United States.
Drug Mortality Rates by Fentanyl Exposure (2008-2022)

Each point is a State half-year. Data sources are CDC Wonder Multiple Causes of Death and NFRIS Public Query System.
Drug mortality rate (biannual)

Fentanyl seizures (as a % of all seizures)
Figure 1: Geographical spread of the rapid escalation of fentanyl in the unregulated drug market by state.
A dashed horizontal line in Figure 1 indicates the date M110 took effect. The intersection in the figure of the time at which Oregon’s unregulated opioid market experienced a fentanyl supply shock and M110’s enactment indicates the two events occurred contemporaneously.
Difference-in-difference results replication and extension

Standard errors in parenthesis. * p < 0.05; ** p < 0.01

<table>
<thead>
<tr>
<th>Dep Var: Overdose Death Rate</th>
<th>Model 1</th>
<th>Model 2</th>
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<tbody>
<tr>
<td>Treatment Group</td>
<td>Oregon</td>
<td>Oregon</td>
</tr>
<tr>
<td>Decriminalization period</td>
<td>0.25** (0.07)</td>
<td>0.09 (0.11)</td>
</tr>
<tr>
<td>Fentanyl, % of Total Seizures</td>
<td></td>
<td>0.02** (0.008)</td>
</tr>
<tr>
<td>Observations</td>
<td>2,400</td>
<td>2,400</td>
</tr>
</tbody>
</table>

After factoring in the introduction of fentanyl in the drug supply, we observed no increases in the drug overdose mortality rate in Oregon following M110
Figure 3: Matrix Completion Oregon and Adjusted for Fentanyl Rapid Escalation.
**Figure 2: Difference-in-differences results:** Effect of drug decriminalization on overdose mortality unadjusted, and adjusted for the rapid escalation of fentanyl by state

After factoring in the introduction of fentanyl in the drug supply, **we observed no increases in the drug overdose mortality rate in Oregon following M110**
Does drug decriminalization increase unintentional drug overdose deaths?: Early evidence from Oregon Measure 110 *
Washington: ATT before, during, and after decriminalization

- Pre-Blake decision: (Drug criminalization in effect)
- Blake decision: decriminalizes drugs
- Drug (re-)criminalization takes effect

Change in overdose mortality (ATT) in Washington relative to rest of country

Timeline: 01-18 to 01-23
Conclusions and Relevance:

After adjusting for the rapid escalation of fentanyl, analysis found no association between M110 and fatal drug overdose rates.

Future evaluations of the health effects of drug policies should account for changes in the composition of unregulated drug markets.

Recriminalization in Washington State saw an increase in the fatal overdose rate.
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