Prescription Opioid Prevalence and Child Welfare

Robin Ghertner, Annette Waters, Gilbert Crouse, Laura Radel

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Summary

- Greater prevalence of Rx opioids predicts higher rates of foster care entries.
  - Effect is strongest in urban areas and areas with historically lower levels of opioids.

- Rx opioid prevalence has ambiguous relationship with reunification rates.
  - Nationally point estimate is positive but small.
  - Areas with higher levels of Rx opioids show a positive effect of opioids on reunification; opposite in areas with lower levels of opioids.
Hypotheses...

• **Rx opioids → higher caseloads and fewer reunifications:**
  – Opioid misuse and use disorder.
  – Opioid use is associated with disability, mental/behavioral health issues, and use of other substances.
  – Community/agency response is more aggressive in reporting and removals.

• **Rx opioids → lower caseloads and more reunifications:**
  – Attenuates disability and other health issues.
  – Community/agency response is overly aggressive in removals, leading to faster reunification of cases not needing removal.

**OR/AND**
Related Research Findings

• Ghertner et al. (Forthcoming): Strong relationship between substance use and child welfare caseloads, nationally, 2011-2016.

• Wolf et al. (2016): County-level positive association between hospital discharges involving Rx opioid overdose and those related to child maltreatment/injury in California, 2001-2011.


• Lynch et al. (2018): Neonatal Abstinence Syndrome likely led to higher caseloads in select states.
DESCRIPTIVE STATS

- **273,539** children entered foster care
- **670,353** children were determined to be victims of maltreatment
- **3.4 million** children were the subjects of “screened in” reports to state child protective services agencies
National Trends

Foster Care Entries

Rx Opioid Sales
(in Thousands KG Morphine Equivalents)
Change in Prescription Opioid Sales: 2006-2016
Rx Opioid Sales and Foster Care, 2016

Note: “Opioids high” refers to a rate above the median of 76; “Foster Care high” (AFCARS) refers to a rate above the median of 978.
Rx Opioid Sales and Foster Care, 2016
DATA AND METHODS
Data

• County-level, annual data from 2011-2016
  – Includes ≈ 2,800 counties
  – Removed where Rx Opioids==0, Foster Care Entries==0

• Child Welfare: ACF AFCARS
  – Foster care entries per 100,000 kids
  – Reunifications per 100,000 exits

• Opioids: DEA ARCOS; Medicare Part D Opioid Rx
  – Volume inventories per 100,000, in KG Morphine Equivalent
Measurement Error in ARCOS

• Likely has substantial measurement error:
  – Geographic coverage: Zip3 data converted to counties
  – Not all misused opioids included
  – Issues in timing of reports
  – Data collected for compliance purposes, not statistical purposes

• Instrumental variables method to account for measurement error (not causality)
Methods

• Fixed effects, instrumental variable models, robust standard errors
  – Log-linear foster care entries: coefficient=% change in foster care rates for % change in Rx opioids
  – Negative binomial for reunification rates (boostrapped SE): coefficient is incident rate ratio

• Population weighted

• Falsification test to assess exclusion restriction

• False discovery rate to adjust for multiple testing (Benjamini and Hochberg, 1995)
Control Variables

- Overdose death rates for any substance (CDC)
- Population, Race/ethnicity, Age profile (ACS)
- Median income (SAIPE)
- Unemployment (BLS)
- Uninsurance rates (SAHIE)
- Medicare recipients, disabled and aged (CMS)
- State child welfare expenditures (ACF)
- Prescription drug monitoring program, “pill mill” legislation (Mallatt, 2017)
- Total foster care entries (for reunification models)
- Year effects
Instrumental Variables Model

Instrument=Medicare Part D Opioid Rx MME Rate

Equation 1: $\arccos = \alpha_{Medicare} + X\gamma_1 + \lambda$

Equation 2: $child\ welfare = \beta\arccos + X\gamma_2 + \epsilon$

IV Requirements:
- $\text{Cov}(Medicare, \arccos) \neq 0$ (and is strong)
- Exclusion restriction: $\text{cov}(Medicare, \epsilon) = 0$
Instrumental Variables Model

ARCOS $\neq 0$ 

Medicare Rx $\neq 0$

Child Welfare $= 0$
Instrumental Variables Stats

• First stage coefficient: 0.496 (p=0.000)

• Falsification test:
  – Alternate outcome = Incarceration rates
  – Medicare coefficient=0.14, 95% CI=(-0.05, 0.34), p=0.153
RESULTS
## Rx Opioids and Foster Care Entry Rates

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<tr>
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<th>All Counties</th>
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<td>-0.01 (0.08)</td>
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<td>IV</td>
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<td>0.54* (0.01)</td>
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<sup>*p<0.001</sup>

<sup>a</sup> Low/High is Below/Above National Median in 2011
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Reunification Rates

Predicted effect of 10% increase in Rx Opioid Inventories Per Capita on foster care reunification rates

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<td>Negative binomial estimates</td>
<td>-0.7%***</td>
<td>-0.5% ***</td>
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<tr>
<td>IV Estimates</td>
<td>-0.5% ***</td>
<td>-2.6% ***</td>
<td>2.9% ***</td>
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<td>N</td>
<td>12,458</td>
<td>6,591</td>
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Limitations

- Lack of case-level data of substance use and child maltreatment.
- Many factors influence foster care placement and reunification, not all can be accounted for in a model.
- IV estimates remove measurement error but I am not confident they can be interpreted causally.
- Specific mechanisms are not well understood and may be differ by geography.
Discussion

• Rx opioids show the expected relationship with caseloads.
  – High Rx areas and Rural areas show weaker effect.

• Unexpected relationship with reunification rates. Why would areas with historically high opioids see shorter reunification rates when opioids decreased?
More work to be done...

• Case-level foster care data to tease apart case characteristics:
  – Age of children
  – Length of stay
  – Termination of parental rights
Thank You!

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