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.

OR/AND

• **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.
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.

- **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**

- Years: 2002 to 2016
- Values: 220,000 to 280,000

**Rx Opioid Sales**

- Years: 2006 to 2016
- Values: 50,000 to 350,000 (in Thousands KG Morphine Equivalents)

Pink shaded area indicates a rise in opioid sales from 2006 to 2012.
National Trends

Reunifications

Rx Opioid Sales
(in Thousands KG Morphine Equivalents)
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

[Map showing distribution of Rx Opioid Sales and Foster Care High, Other, and Missing Data across the United States.]
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: \( \arccos = a_{\text{Medicare}} + X\gamma_1 + \lambda \)
Equation 2: \( \text{child welfare} = \beta \arccos + X\gamma_2 + \epsilon \)

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

ARCOS ≠ 0 → Child Welfare

ARCOS ≠ 0 → Medicare Rx

Medicare Rx = 0 → Child Welfare
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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<td>-0.01 (0.08)</td>
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<tr>
<td><strong>IV</strong></td>
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<td>0.26* (0.04)</td>
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*<sup>p</sup><0.001  

<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>-0.7%***</td>
<td>-0.5% ***</td>
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<td>IV Estimates</td>
<td>-0.5% ***</td>
<td>-2.6% ***</td>
<td>2.9% ***</td>
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<tr>
<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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