

Effects of the Child Protection System on Parents

Marie-Pascale Grimon

Swedish Institute for Social Research (SOFI), Stockholm University

August 2022

This Paper...

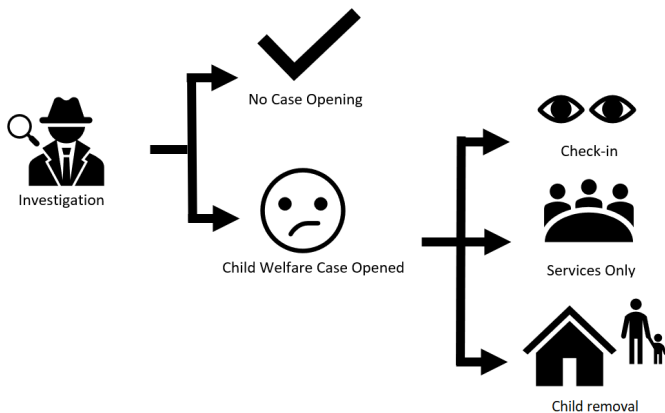
... is the first to study the *causal* effects of the child welfare system on parents.

- **Data:** administrative data for the universe of parents interacting with child welfare in a large American county from 2009-2018.
- **Identification:** novel combination of event-studies with tendency measures.

Key findings:

- i Child welfare interventions have a lasting impact on a broad set of mothers' use of public services.
- ii A marginal child removal increases mothers' odds of being in jail.
- iii A marginal child removal persistently increases both parents' but especially fathers' future child welfare involvement.

Child Welfare System



Administrative Data

Allegheny County, Pennsylvania (Pittsburgh)

Unique data features:

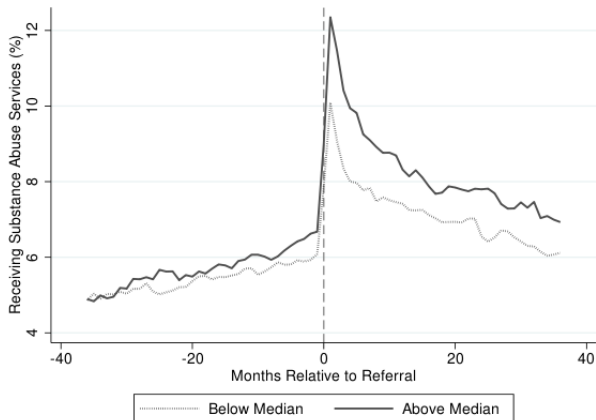
1. **Parents:** 94% of referred families list a mom and 87% list a dad.
N \approx 73,000 parent-referrals
2. **No expungement** for cases of alleged neglect
3. **Integrated** data across a range of services (health, justice, social services...)
 - *Health* - Medicaid, mental health, substance abuse
 - *Justice* - jail and courts
 - *Social Services* - food stamps, TANF, housing assistance
4. **High frequency** data: every month from 2008-2018.
N \approx 8.5M parent-referral-months

Sample Selection

Descriptive Statistics of Sample

Illustration of Methodology

Means of Mothers Use of Substance Abuse Services by Investigator Tendency to Open a Child Welfare Case



Crisis moments

Idea: Compare how parents tracks diverge *after* investigation depending on *to whom* assigned.

Assumptions

A few technical assumptions: **First Stage**, **Monotonicity**, exclusion restriction.

Key assumption: parents would have continued on *parallel trends* had they not been assigned to investigators with different tendencies.

- a) test that they were evolving on parallel trends before the referral to child welfare **Pre-trends Test**
- b) test that the event for which they are being referred is not different
→ I develop a novel **Post-trend Test** usable in settings with a lag between the incident and the start of the intervention.

General Empirical Specification

$$y_{i,r,j,t} = \alpha + \sum_{d=-n}^m \theta_d \mathbb{1}_d + \sum_{d=0}^m [\gamma_d \mathbb{1}_d \cdot TNR_{r,j}^* + \beta_d \mathbb{1}_d \cdot TR_{r,j}^*] + \mu_{i,r} + \lambda_t + \epsilon_{i,r,j,t}$$

where

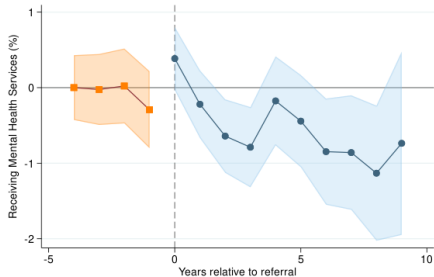
- $y_{i,r,j,t}$ the outcome for parent i listed on referral r investigated by investigator j in month-year t
- $\mathbb{1}_d$ is a dummy variable for whether this observation is d months before or after the referral: $\mathbb{1}_d = \mathbb{1}(t = t_r + d)$
- $TNR_{r,j}^*$ is the standardized leave-referral out tendency to open a case without child removal of investigator j assigned to referral r
- and $TR_{r,j}^*$ is the standardized leave-referral out tendency to open a case and remove a child of investigator j assigned to referral r .
- $\mu_{i,r}$ referral specific individual fixed effects
- λ_t month-year fixed effects

- ① Use of public services
 - mental health and substance abuse
 - TANF and housing assistance
- ② Welfare of parent and child
 - criminal justice involvement (county jail)
 - repeat child welfare interventions

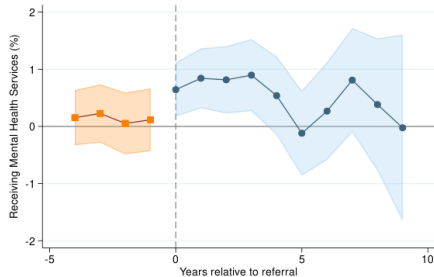
Mothers' Use of Mental Health Services (%)

Effects of being assigned an investigator who is 1SD more likely to...

(a) Open & No Removal



(b) Open & Removal



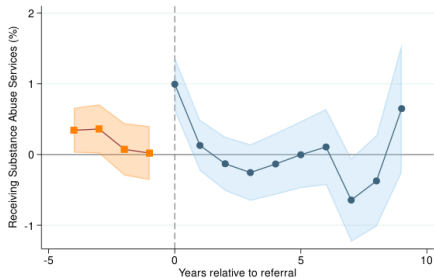
—■— Pre-trend coefficients —●— Treatment effects

Mean prior to referral: 24.6%

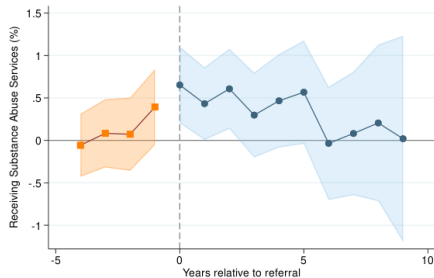
Mothers' Use of Substance Abuse Services (%)

Effects of being assigned an investigator who is 1SD more likely to...

(a) Open & No Removal



(b) Open & Removal

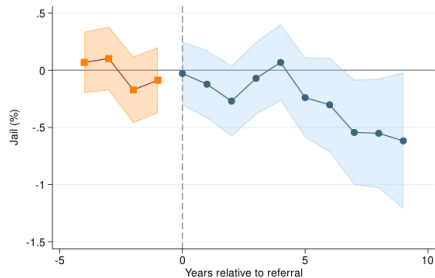


Mean prior to referral: 12%

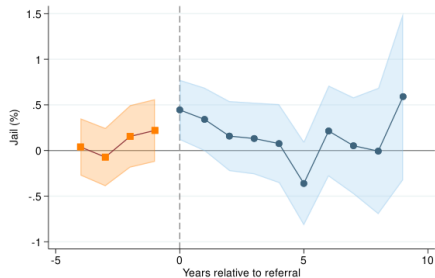
Mothers' Likelihood of being in Jail (%)

Effects of being assigned an investigator who is 1SD more likely to...

(a) Open & No Removal



(b) Open & Removal

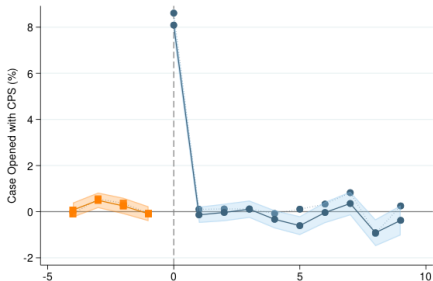


Mean prior to referral: 5.8%

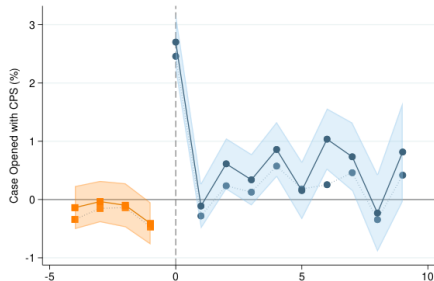
Re-Opening of Case (%)

Effects of being assigned an investigator who is 1SD more likely to...

(a) Open & No Removal



(b) Open & Removal



Mean prior to referral: 6.4% and 8.2% respectively for mothers and fathers

Short-Lived Decrease in Referrals

Summary of findings:

- i Mothers are more responsive to child welfare involvement.
- ii Effects of a child welfare intervention differ by whether a child is removed.
In the long run:
 - removals increase use of mental health services, use of substance abuse services, jail and repeat child welfare involvement. Removals decrease housing assistance and TANF enrollment.
 - interventions without a removal may decrease use of mental health services and jail.
- iii A marginal child removal increases the likelihood of future child welfare interventions especially for fathers.

Robustness

⇒ We should care about *the parents* interacting with child welfare.

Child Welfare. Doyle 2007, 2008, 2013; Warbuton et al 2014; Lindquist and Santavirta 2014; Bald, Chyn, Hastings and Machelett 2019; Robert 2019; Gross 2019.

My contributions are to study (1) parent outcomes, (2) investigations, opening a case and removals, (3) not just long-term but also immediate and temporary effects at the month level, as well as receipt of social services.

Leniency design and Event-Studies. Borusyak, Jaravel and Spiess 2021; Goodman-Bacon 2018; De Chaisemartin and D'Haultfoeuille 2020; Sun and Abraham 2021; Callaway and Sant'Anna 2021; Callaway, Goodman-Bacon and Sant'Anna 2021; Kling 2006.

Combine a leniency design with an event-study set-up.

Opioids. Quast et al., 2018; Radcliff et al., 2018; Buckles et al., 2020

I find persistent increases in participation for substance abuse treatment services.

Gender disparities in child-rearing. Jolly et al 2014; Kleven et al 2019.

Most of the effects of child with child welfare providing increased services to mothers.

Table: Number of Observations, May 2009 - Dec 2018

Restrictions	Adults	Unique Adults	Referrals
1. On Referrals	279244	113300	107931
2. Parents	232604	92998	106346
3. General Protective Services	194728	82347	88760
4. Outcomes	179699	71762	84281
5. Not Investigated	93193	49577	45769
6. Investigated	86506	46382	38512
7. Found Investigator	80597	45577	36072
8. New Assignment of Investigator	76199	45156	34192
9. Investigator with at Least 10 Investigations	73064	44030	32790

Panel A: Child Welfare Referrals

Investigated (%)	42
Opened a Child Welfare Case (%)	19
Child Removed within 3 months (%)	4
Child Removed within 1 year (%)	6
Number of Referrals per Parent	2.4 (2.2)
Number of Referrals	78559

Panel B: Most Frequent Allegations Listed on Referrals

Parent Struggling (%)	35
Parent Drug Abuse (%)	17
Failure to Protect Child (%)	19
Child Behavioral Problem (%)	17
Inadequate Housing (%)	11

Panel C: Investigators

Number of Investigations	60.9 (84.7)
Number of Investigators	519
Number of Office specific Investigators	547

Table: Investigated Parent Characteristics for...

	<i>Moms</i>	<i>Dads</i>
Age	34.0 (9.3)	36.5 (9.5)
Black American (%)	36	52
Race Missing (%)	17	8
Teen parent (%)	32	16
Unknown if Teen Parent (%)	24	22
Ever on Food Stamps (%)	77	51
Ever on Medicaid (%)	82	49
Ever in Jail (%)	19	43
Observations	31350	41714

Crisis Moments when Called into Child Welfare

For mothers:

- 30% increase in use of mental health services
- 91% increase in substance abuse services
- 40% increase in housing assistance
- 111% more likely to be in jail

For fathers:

- 21% increase in substance abuse services
- 17% more likely to be in jail.

[Back](#)

Basic Empirical Specification

$$y_{i,r,j,t} = \alpha + \sum_{d=-n}^m \theta_d \mathbb{1}_d + \sum_{d=0}^m \phi_d \mathbb{1}_d \cdot TO_{r,j}^* + \mu_{i,r} + \lambda_t + \epsilon_{i,r,j,t}$$

with

- $y_{i,r,j,t}$ the outcome for parent i listed on referral r investigated by investigator j in month-year t
- $\mathbb{1}_d$ is a dummy variable for whether this observation is d months before or after the referral: $\mathbb{1}_d = \mathbb{1}(t = t_r + d)$
- $TO_{r,j}^*$ standardized the leave-referral out propensity to open a case of investigator j assigned to referral r
- $\mu_{i,r}$ referral specific individual fixed effects
- λ_t month-year fixed effects
- $\epsilon_{i,r,j,t}$ error term

Construction of Propensity Instruments

Taking the example of removals:

- **Step 1 - Construct Instruments.** For parent i on referral r which arrived in year y_r and was assigned to investigator j working in office o , I construct a leave-case out removal propensity of the investigator that was assigned.

$$Z_{r,j,o} = \frac{\sum_{f \neq r} R_{f,j,o}}{N_{j,o} - 1}$$

- where $N_{j,o}$ is the number of referrals investigated by investigator j in office o
- and $R_{f,j,o}$ is a DV indicating whether any child was removed in referral f assigned to investigator j in office o .

- **Step 2 - Residualize.**

$$Z_{r,j,o}^* = Z_{r,j,o} - \delta_{o,y_r}$$

- **Step 3 - Standardize.**

Addressing Issues of TWFE Specifications

For most of the now-known issues with conventional pre-trends test, I follow Borusyak, Jaravel & Spiess 2021 (BJS) proposed solutions:

- *underidentification* of event studies because conflating assumptions and goals (Borusyak & Jaravel 2017)
→ resolved by separating testing for pre-trends from estimation goal (BJS).
- leads contaminated by treatment effect heterogeneity (Sun & Abraham 2021) bias from testing for pre-trends Roth (2021)
→ use only untreated or pre-treated observations, which resolves issues at least in certain cases (BJS).
- placebo tests that treatment happened k periods earlier may result in a power loss
→ BJS recommend testing for pre-trends for a subset k of time periods before the event using time periods before $k-1$ as the reference group.
- key assumption is that the groups would have evolved on parallel trends *after* the event (Kahn-Lang & Lang 2020)
→ Test for *post-trend* for subset of observations where investigation started in calendar month following referral month

Propensity to Open a Case

Density and Density of Residual Variation

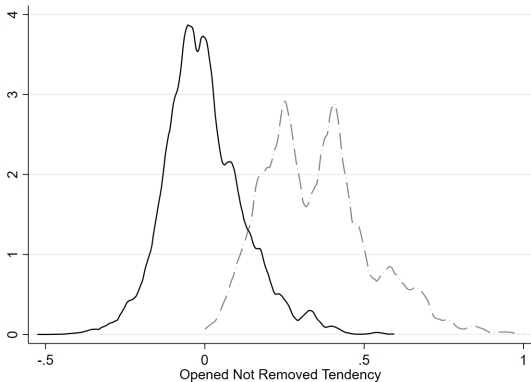


Notes: Dashed gray lines are the raw propensity distributions. Solid black line are the propensity distributions residualized for office-year fixed effects. Restricted to referrals assigned to an investigator overseeing at least 10 referrals.

[Back](#)

Propensity to Open a Case without a Removal

Density and Density of Residual Variation

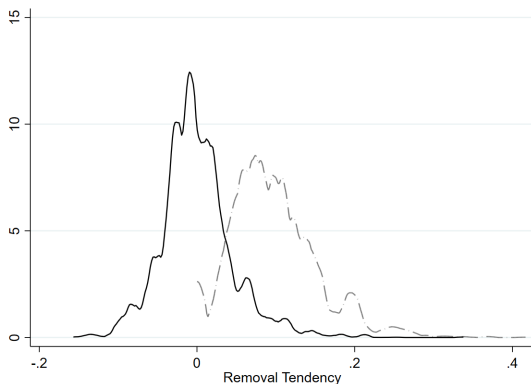


Notes: Dashed gray lines are the raw propensity distributions. Solid black line are the propensity distributions residualized for office-year fixed effects. Restricted to referrals assigned to an investigator overseeing at least 10 referrals.

[Back](#)

Propensity to Open a Case and Remove

Density and Density of Residual Variation



Notes: Dashed gray lines are the raw propensity distributions. Solid black line are the propensity distributions residualized for office-year fixed effects. Restricted to referrals assigned to an investigator overseeing at least 10 referrals.

[Back](#)

Table: First Stage

	(1) Case Opening	(2) Open & No Removal	(3) Open & Removal
Case Opening Tendency	0.701*** [0.028]		
Tendency to Open without a Removal		0.693*** [0.032]	0.033** [0.014]
Tendency to Open with a Removal		0.255*** [0.052]	0.288*** [0.053]
Number of investigators Observations	519 73064	519 73064	519 73064

Monotonicity (1/3)

Three tests:

- 1 run first stage on subgroups: all coefficients are positive and statistically significant.
- 2 reverse sample first stage: construct tendency for sample outside your subgroup and run first stage. All coefficients are positive and statistically significant (for large enough subgroups).
- 3 local linear regressions: monotonically increasing except at extreme values.

[Back](#)

Monotonicity (2/3)

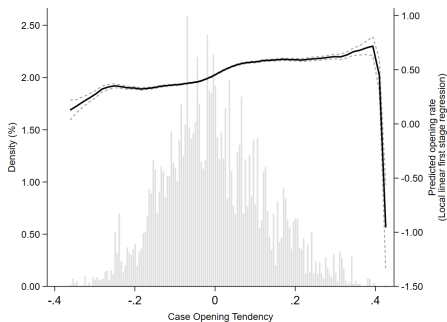
	(1) First Stage	(2) Reverse Sample First Stage
Whites	0.689*** [0.028]	0.623*** [0.032]
Non-whites	0.685*** [0.031]	0.643*** [0.032]
Mothers	0.707*** [0.025]	0.838*** [0.019]
Fathers	0.696*** [0.028]	0.879*** [0.021]
Mandated Reporter	0.708*** [0.030]	0.486*** [0.039]
Not a Mandated Reporter	0.677*** [0.039]	0.603*** [0.042]
Used Substance Abuse Services in year prior	0.718*** [0.049]	0.809*** [0.047]
No Substance Abuse Services in year prior	0.698*** [0.027]	0.552*** [0.041]
Used Mental Health Services in year prior	0.700*** [0.033]	0.793*** [0.030]
No Mental Health Services in year prior	0.701*** [0.027]	0.656*** [0.031]

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ Standard errors are clustered at the investigator level. Year and regional office fixed effects are included throughout. The sample is restricted to investigators overseeing at least ten referrals.

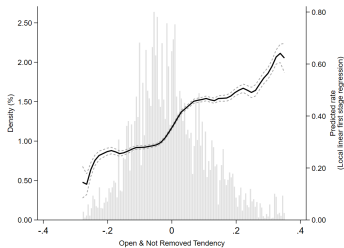
Monotonicity (3/3)

Local Linear First Stage Regression with Density in Background

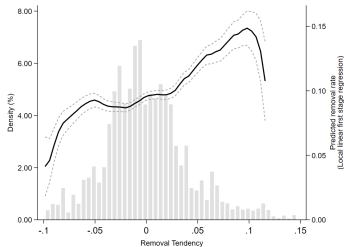
(a) Open a Case



(b) Open a Case without Removal



(c) Open a Case with Removal



Back

Pre-trends Test

P-values of F tests

	Health			Justice		Social Services		
	(1) Medicaid	(2) MH	(3) SA	(4) Courts	(5) Jail	(6) TANF	(7) SNAP	(8) Housing
<i>Panel A: Mothers in 12 months Prior</i>								
Case Opening Tendency	.15	.07	.77	.12	.94	.47	.1	.28
Opened Not Removed Tendency	.56	.08	.58	.14	.98	.32	.82	.24
Removal Tendency	.29	.73	.45	.16	.24	.46	.43	.04
<i>Panel B: Mothers in 4 Years Prior</i>								
Case Opening Tendency	.28	.83	.33	.01	.86	.67	.4	.5
Opened Not Removed Tendency	.54	.78	.23	.01	.61	.71	.33	.4
Removal Tendency	.31	.95	.49	.88	.73	.83	.75	.74
<i>Panel C: Fathers in 12 Months Prior</i>								
Case Opening Tendency	.94	.96	.62	.33	.72	.04	.54	.79
Opened Not Removed Tendency	.94	.92	.42	.52	.74	.1	.57	.61
Removal Tendency	.38	.53	.55	.54	.65	.43	.33	.07
<i>Panel E: Fathers in 4 Years Prior</i>								
Case Opening Tendency	.23	.75	.95	.1	.8	.8	.52	.25
Opened Not Removed Tendency	.1	.48	.73	.43	.78	.86	.36	.41
Removal Tendency	.61	.19	.32	.15	.96	.89	.12	.5

Post-trends Test

P-values of t test

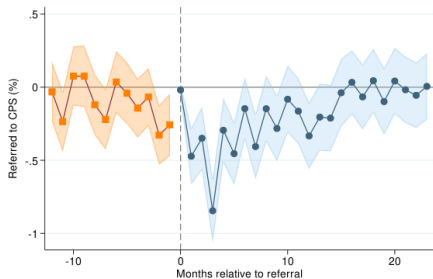
	Health			Justice		Social Services		
	(1) Medicaid	(2) MH	(3) SA	(4) Courts	(5) Jail	(6) TANF	(7) SNAP	(8) Housing
<i>Panel A: Mothers' Test of Post-trend</i>								
Case Opening Tendency	.08	.25	.69	.1	.52	.95	.32	.52
Opened Not Removed Tendency	.04	.72	.98	.12	.15	.99	.75	.38
Removal Tendency	.55	.06	.25	.76	.04	.88	.13	.76
<i>Panel B: Fathers' Test of Post-trend</i>								
Case Opening Tendency	.87	.74	.04	.52	.87	.94	.43	.85
Opened Not Removed Tendency	.96	.70	.04	.62	.53	.83	.86	.37
Removal Tendency	.57	.92	.76	.67	.36	.78	.14	.04

[Back](#)

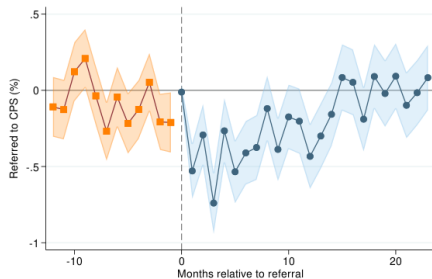
Re-Referrals in the Months following (%)

Effects of being assigned an investigator who is 1SD more likely to Open a Case for...

(a) Mothers



(b) Fathers



[Back](#)

Robustness Checks

- 1 Permutation Test [show](#)
- 2 Selective attrition out of county [show](#)
- 3 Truncate Tendency
- 4 First Referral Only
- 5 Excluding data after implementation of one caseworker model
- 6 Controlling for Allegation Tendencies
- 7 Controlling for Imbalanced Characteristics
- 8 Control for Risk and Safety Levels After
- 9 Less Noisy Tendency
- 10 Excluding your Re-referrals in Tendency
- 11 Excluding your Year in Tendency
- 12 Tendency Residualized on all Characteristics

[show 3-11](#)

Permutation Test, 3-6 years after referral relative to prior

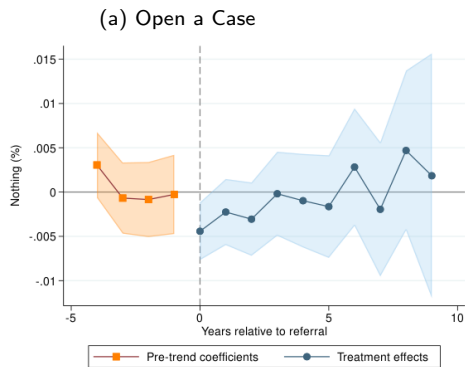
1,000 permutations of which years are after the referral

	Health			Justice		Social Services		
	(1) Medicaid	(2) MH	(3) SA	(4) Courts	(5) Jail	(6) TANF	(7) SNAP	(8) Housing
Opened no Removal Tendency	-0.03	-0.54**	-0.13	0.09	-0.18	-0.38	-0.23	0.39
	[0.31]	[0.26]	[0.19]	[0.31]	[0.14]	[0.33]	[0.33]	[0.39]
<i>Permutation Test P-value</i>	0.41	<0.01	0.09	0.28	0.02	<0.01	0.07	<0.01
Opened and Removal Tendency	-0.13	0.60**	0.48**	0.41	0.15	-0.73*	0.10	-0.70*
	[0.35]	[0.30]	[0.24]	[0.37]	[0.18]	[0.38]	[0.39]	[0.41]
<i>Permutation Test P-value</i>	0.19	<0.01	<0.01	<0.01	0.09	<0.01	0.29	<0.01
Prior Mean	66.3	24.6	12.0	33.5	5.81	27.0	59.1	7.27
Observations	832446	832446	832446	832446	805579	753179	832446	338557

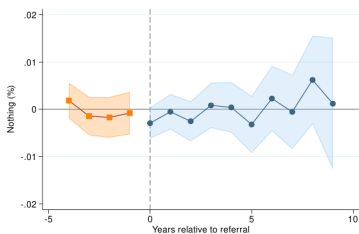
[Back](#)

Attrition

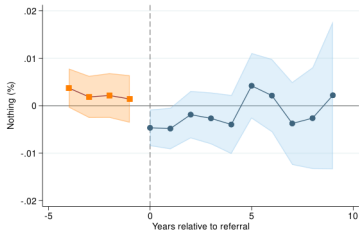
Effect of an Investigator 1SD more likely to open a case on Receiving No Services



(b) Open a Case without Removal



(c) Open a Case with Removal



Back

Other Robustness Checks

	Open & No Removal		Open & Removal		
	(1) MH	(2) MH	(3) SA	(4) TANF	(5) Housing
1. Original Specification	-0.54** [0.26]	0.60** [0.30]	0.48** [0.24]	-0.73* [0.38]	-0.70* [0.41]
2. Controlling for Allegation Tendencies	-0.70** [0.28]	0.56* [0.34]	0.36 [0.27]	-0.52 [0.42]	-0.85* [0.45]
3. Keeping only First Referral	-0.49 [0.32]	0.16 [0.40]	0.32 [0.31]	-0.63 [0.52]	-1.07* [0.56]
4. Before One Caseworker Model	-0.65** [0.28]	0.60* [0.33]	0.49* [0.26]	-0.71* [0.42]	-1.25** [0.53]
5. Control for Imbalanced Characteristics After	-0.48* [0.26]	0.58* [0.30]	0.41* [0.24]	-0.72* [0.38]	-0.69* [0.41]
6. Control for Risk and Safety Levels After	-0.53** [0.26]	0.54* [0.30]	0.41* [0.24]	-0.74* [0.38]	-0.69* [0.41]
7. Truncate Tendency	-0.51** [0.26]	0.53 [0.34]	0.52** [0.26]	-0.76* [0.41]	-0.72 [0.48]
8. Less Noisy Tendency (75+ investigations)	-0.52 [0.38]	-0.17 [0.49]	0.40 [0.38]	-1.20** [0.57]	-1.12 [0.74]
9. Excluding you always in Tendency	-0.57** [0.26]	0.47 [0.29]	0.44* [0.23]	-0.77** [0.37]	-0.58 [0.40]
10. Excluding your year in Tendency	-0.36 [0.25]	0.25 [0.26]	0.19 [0.20]	-0.14 [0.32]	-0.70* [0.42]
11. Tendency Residualized	-0.50* [0.26]	0.46 [0.30]	0.43* [0.23]	-0.71* [0.37]	-0.53 [0.40]

[Back](#)