The Effects of Parental and Sibling Incarceration: Evidence from Ohio

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Introduction

Over 2 million current prisoners in the US

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- Important cost-benefit input

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Ambiguous direction of spillover

- *Harm*: Trauma from separation; less income; divorce
- *Help*: Transition to more stable home environment; remove criminogenic influence; deterrence

Today's talk

- Data from three largest counties in Ohio $\boxed{\text{Comparison to other states}}$
- Random judge assignment $\rightarrow$ exogenous variation in incarceration
- Use birth certificates to reconstruct families
- Outcomes: criminal, academic, adult SES

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Preview of results:

- Parental incarceration:
  - *Less* criminal activity
  - *Higher* adult SES
  - No effect on academics
- Mechanisms:
  - Limited short-run effects
  - Medium-term improvement in family environment
- Sibling incarceration $\rightarrow$ less criminal activity

Data and empirical strategy

- Court records (1990s-2017)
    - Adult records from all counties, juvenile records from one county
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Empirical specification:

$$(1) \qquad y_{ijct} = \phi Incar_{ijct} + X_{ijc}\beta + \gamma_{ct} + \varepsilon_{ijct}$$

$$(2) \qquad Incar_{ijct} = \lambda z_{(i)j} + X_{ijc}\alpha + \mu_{ct} + e_{ijct}$$

for individual i, judge j, court c, and time t

- $z_{(i)j}$ is judge's mean incarceration rate over other defendants
- Instrument uncorrelated with case/defendant characteristics `Tables`
- First stage F-stat of 1580 `Figure` `Subgroup FS` `Monotonicity`

Parental incarceration reduces juvenile incarceration

	OLS		IV			All
	All	All	All	Boys	Girls	All
Parent Incar	-0.000 (0.002)		-0.034*** (0.013)	-0.039* (0.021)	-0.018 (0.013)	
Mother Incar		-0.010** (0.004)				-0.050* (0.029)
Father Incar		0.007*** (0.003)				-0.028** (0.014)
Dependent mean	0.05	0.05	0.05	0.09	0.02	0.05
Observations	58394	58379	58381	28653	26619	58366

Standard errors two-way clustered on court-month and defendant. Includes court-month FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Parental incarceration on adult incarceration

	OLS		IV			All
	All	All	All	Boys	Girls	All
Parent Incar	0.009***		-0.023	-0.023	-0.018	
	(0.002)		(0.015)	(0.026)	(0.012)	
Mother Incar		-0.001				-0.031
		(0.004)				(0.029)
Father Incar		0.019***				-0.016
		(0.002)				(0.017)
Dependent mean	0.09	0.09	0.09	0.15	0.03	0.09
Observations	143423	143362	143410	70684	65609	143349

Standard errors two-way clustered on court-month and defendant. Includes court-month FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Parental incarceration on ever incarcerated

| | OLS | | IV | | | |
	All	All	All	Boys	Girls	All
Parent Incar	0.009***		-0.032**	-0.035	-0.022	
	(0.002)		(0.016)	(0.026)	(0.015)	
Mother Incar		-0.003				-0.037
		(0.004)				(0.031)
Father Incar		0.019***				-0.027
		(0.002)				(0.018)
Dependent mean	0.10	0.10	0.10	0.16	0.04	0.10
Observations	143423	143362	143410	70684	65609	143349

Standard errors two-way clustered on court-month and defendant. Includes court-month FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Heterogeneity

- Effects almost entirely from those born in poorest areas Tables

- Weak interaction with age of child at incarceration Figure

- Inconsistent interactions with race of child Tables

Educational outcomes (Cleveland only)

Table: School test scores and absenteeism on parental incarceration

	(1) Incar	(2) Math	(3) Read	(4) PCA	(5) Absent	(6) Repeated Grade
Judge severity	1.078*** (0.0768)					
Parent incarcerated (=1)		0.0335 (0.114)	0.0874 (0.114)	0.0580 (0.117)	-0.125 (1.699)	0.00209 (0.0190)
Dependent mean	.26	-.099	-.1	-.11	19	.11
Observations	37,392	37,392	37,690	36,853	91,875	73,919

Controls include court-month fixed effects, student race, student age, student gender, and time relative to court date. Standard errors in parentheses and clustered at the court-month and defendant level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Long-run neighborhood SES

- Adult SES measured by voter registration address (75% coverage)
- Registration unrelated to instrument `Tables`

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SES percentile rank of neighborhood on parental incarceration

	All	Boys	Girls	All
Parent incarcerated (=1)	0.048**	0.016	0.080***	
	(0.021)	(0.030)	(0.031)	
Mother incarcerated (=1)				0.018
				(0.036)
Father incarcerated (=1)				0.053*
				(0.028)
Dependent mean	0.34	0.35	0.34	0.34
Observations	56284	26176	27843	56208

Why is parental incarceration a net positive?

No evidence of lower resources:

- No effect on evictions of non-incarcerated parent `Tables`
- No effect on SES of non-incarcerated parent `Tables`

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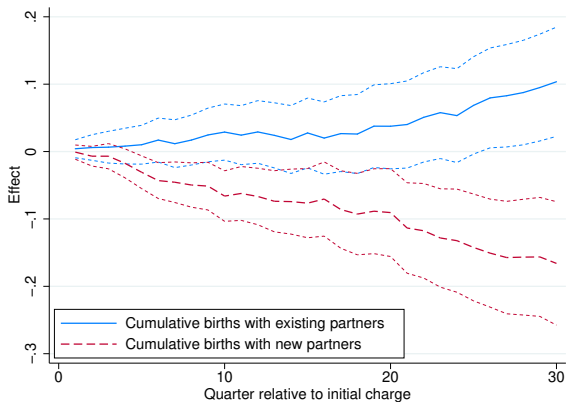
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Changes to defendant behavior:

- Incapacitation, no further changes in criminality (Tables)
- For men, more devotion to existing family (Tables)

More devotion to existing family

Figure: Cumulative number of children, male defendants

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Rehabilitation of co-parent?
- Decrease in criminal activity of co-parent `Figure`

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Deterrence via increased salience:
- Effects concentrated among shorter expected sentences Tables

Evidence for direct or deterrence effects

Table: Effect of sibling incarceration on adult incarceration

	OLS	IV		
	All	All	Boys	Girls
Sibling incarcerated ($=1$)	0.036***	-0.067**	-0.121**	-0.026
	(0.003)	(0.033)	(0.061)	(0.025)
Dependent Mean	0.10	0.10	0.17	0.03
Observations	69569	69564	34942	34349

Standard errors two-way clustered on court-month and defendant. Includes court-month FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Conclusion

First causal evidence on family spillovers of incarceration in US

- Parental incarceration leads to neutral to positive economic outcomes
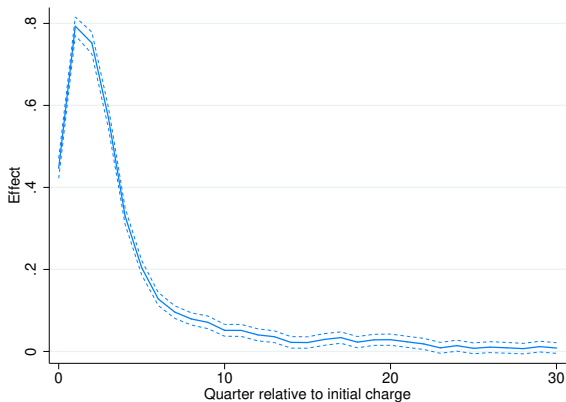
Policy take-aways:

- Important input into net cost-benefit of incarceration, runs contrary to conventional wisdom
- Highlights importance of family inputs for criminal behavior

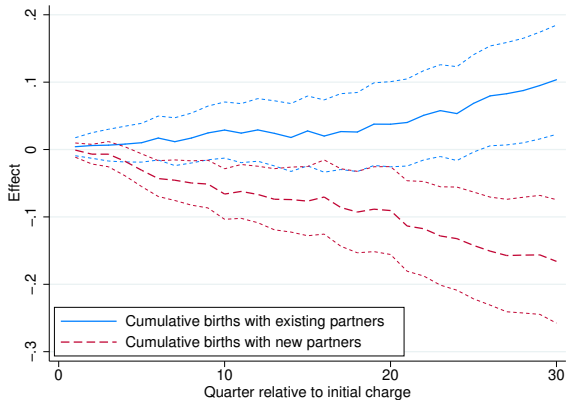# Effect of incarceration on cumulative charges
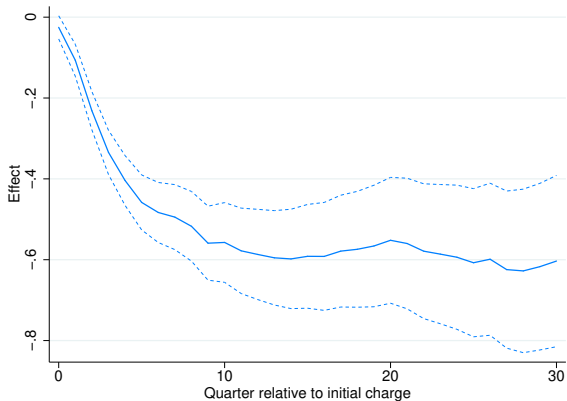
Effect of incarceration on currently incarcerated
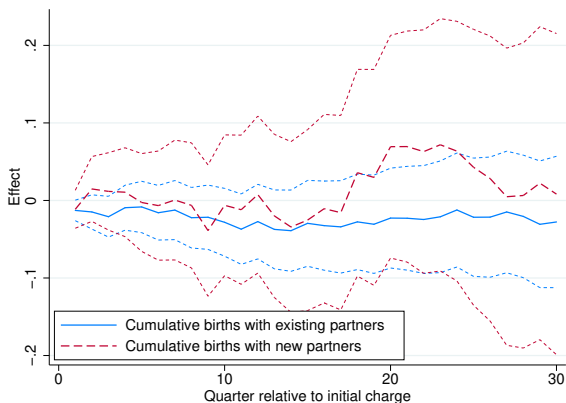
Figure: Incarcerated (=1)
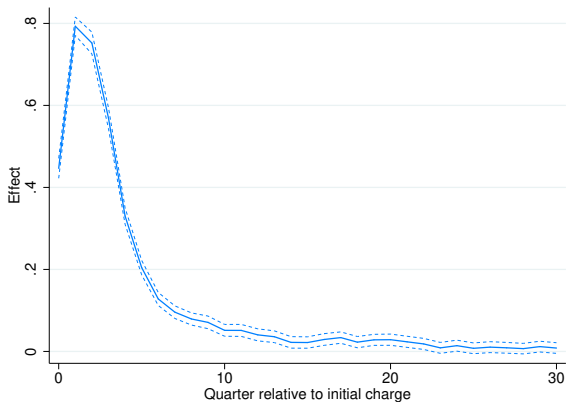
Cumulative number of children, male defendants

Legend:
- Cumulative births with existing partners
- Cumulative births with new partners

X-axis: Quarter relative to initial charge
Y-axis: Effect

Cumulative number of children, female defendants
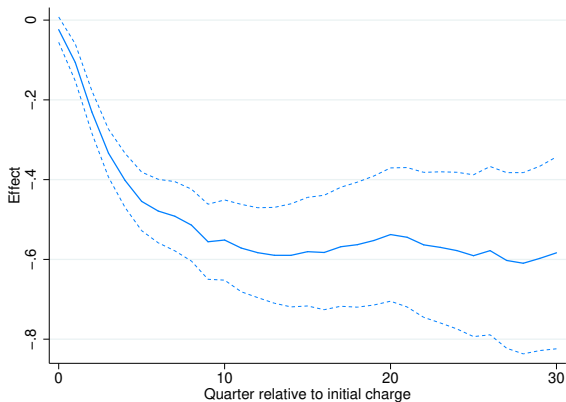

Return

Parental separation

Figure: Incarceration on judge instrument, quarters since charged
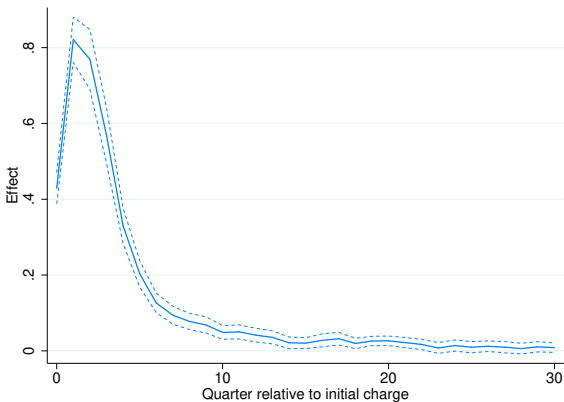

By type

Immediate effects of incarceration on defendant

Figure: Effect of incarceration on cumulative new charges
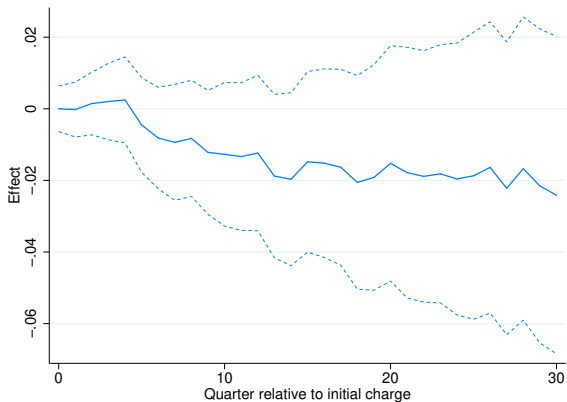
Immediate effects of incarceration on defendant

Figure: Incarcerated (=1)

Return
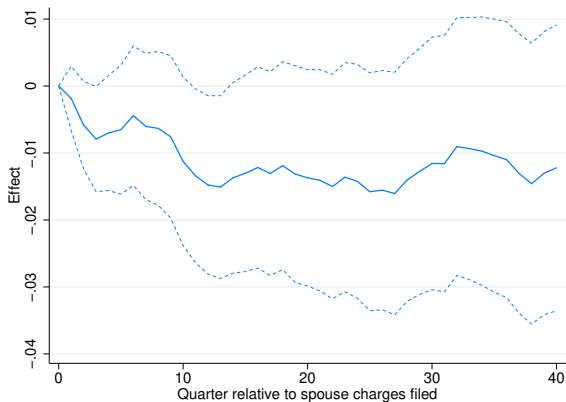
Fertility Effects

Figure: Cumulative number of children

Effects on Spouse

Figure: Spouse ever incarcerated on defendant judge severity

Complier shares

Table: First stage for group versus overall, leave-out judge severity

	(1) All	(2) Parent	(3) Mother	(4) Father	(5) Black	(6) Drugs	(7) Age ≤ 30	(8) Age ≥ 30	(9) Severity tercile 1	(10) Severity tercile 2	(11) Severity tercile 3
Judge severity	0.986***	1.032***	0.948***	1.080***	1.008***	1.047***	0.978***	0.992***	0.700***	1.198***	0.961***
	(0.0109)	(0.0260)	(0.0411)	(0.0328)	(0.0134)	(0.0188)	(0.0142)	(0.0144)	(0.0235)	(0.0203)	(0.0151)
Observations	830,740	106,403	39,003	66,886	476,504	231,741	422,798	407,937	271,874	278,440	265,421
F-statistic	8,227	1,580	531	1,087	5,619	3,116	4,742	4,770	885	3,497	4,068
Complier share		1.047*	.961	1.096**	1.023	1.062**	.993	1.007	.71**	1.216**	.975
		(.029)	(.043)	(.035)	(.018)	(.022)	(.018)	(.018)	(.025)	(.025)	(.019)

Sample restriction in header. Controls include month-court fixed effects. Standard errors two-way clustered at the month-court and defendant level. Ratio standard erorrs calculated via the delta method. Ratio tested with null hypothesis of 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Back

Reverse sample instrument

Table: Reverse-sample test of monotonicity, by crime type

	Drugs	Family	Other	Property	Violent	Sex
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Baseline Instrument						
Full Sample Instrument	1.030***	1.035***	1.007***	0.935***	0.946***	0.956***
	(0.022)	(0.045)	(0.019)	(0.021)	(0.031)	(0.048)
Dependent mean	0.304	0.236	0.274	0.374	0.288	0.462
Observations	182873	70141	230583	203245	106873	36829
Panel B: Reverse-Sample Instrument						
Reverse Sample Instrument	1.095***	0.753***	1.050***	0.842***	0.878***	0.857***
	(0.025)	(0.043)	(0.023)	(0.020)	(0.032)	(0.055)
Dependent mean	0.304	0.236	0.274	0.374	0.288	0.462
Observations	153178	62626	180589	194015	101875	28290

Each column estimates the first stage of defendant incarceration on a reverse-sample instrument for the category of interest The reverse sample instrument is created excluding all cases within the category listed in the column. All specifications include month X court fixed effects, as well as controls for child's date of birth, child's age at filing of charges, defendant's gender, defendant's previous court appearances, and defendant's previous incarcerations. Standard errors two-way clustered on month X court and defendant. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Back

Reverse sample instrument

Table: Reverse-sample test of monotonicity, by defendant characteristics

	First-Arrest	Low-Poverty	High-Poverty	Parent	Mother	Father
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Baseline Instrument						
Full Sample Instrument	0.870***	1.012***	0.956***	1.003***	0.881***	1.057***
	(0.015)	(0.015)	(0.015)	(0.018)	(0.031)	(0.022)
Dependent mean	0.214	0.339	0.286	0.279	0.204	0.313
Observations	386971	343530	342455	244087	76167	167003
Panel B: Reverse-Sample Instrument						
Reverse Sample Instrument	0.726***	1.031***	0.909***	1.016***	0.902***	1.077***
	(0.016)	(0.018)	(0.017)	(0.021)	(0.035)	(0.026)
Dependent mean	0.214	0.339	0.286	0.279	0.204	0.313
Observations	290535	270309	273322	197416	62270	135783

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Reverse sample instrument

Table: Reverse-sample test of monotonicity, by parental status

	Parent	Non-Parent	Mother	Father
	(1)	(2)	(3)	(4)
Panel A: Baseline Instrument				
Leave-out mean	1.004***	0.981***	0.882***	1.058***
	(0.018)	(0.012)	(0.031)	(0.022)
Dependent mean	0.279	0.325	0.204	0.313
Observations	244103	586578	76171	167013
Panel B: Reverse-Sample Instrument				
Reverse Sample Instrument	1.016***	0.912***	0.902***	1.077***
	(0.021)	(0.014)	(0.035)	(0.026)
Dependent mean	0.279	0.325	0.204	0.313
Observations	197416	444943	62270	135783

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Juvenile incarceration and poverty

	All	Boys	Girls	Fathers	Mothers
Incarcerated X Bottom Quartile	-0.042**	-0.058**	-0.023	-0.033*	-0.054*
	(0.017)	(0.027)	(0.018)	(0.019)	(0.032)
Incarcerated X Top 3 Quartiles	-0.011	-0.012	0.005	-0.012	0.003
	(0.020)	(0.036)	(0.019)	(0.019)	(0.059)
Dependent Mean	0.05	0.08	0.02	0.04	0.07
Observations	56993	27931	25984	34258	22704

All specifications include birth SES X month X court fixed effects, as well as controls for child's date of birth, child's age at filing of charges, defendant's previous court appearances, and defendant's previous incarcerations. Standard errors clustered by court-month and defendant. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Adult incarceration and poverty

	All	Boys	Girls	Fathers	Mothers
Incarcerated X Bottom Quartile	-0.040**	-0.044	-0.040**	-0.038	-0.035
	(0.020)	(0.035)	(0.017)	(0.024)	(0.036)
Incarcerated X Top 3 Quartiles	0.012	0.009	0.025	0.014	0.009
	(0.020)	(0.035)	(0.019)	(0.022)	(0.045)
Dependent Mean	0.09	0.14	0.03	0.07	0.11
Observations	138083	67908	63104	83309	54595

All specifications include birth SES X month X court fixed effects, as well as controls for child's date of birth, child's age at filing of charges, defendant's previous court appearances, and defendant's previous incarcerations. Standard errors clustered by court-month and defendant. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
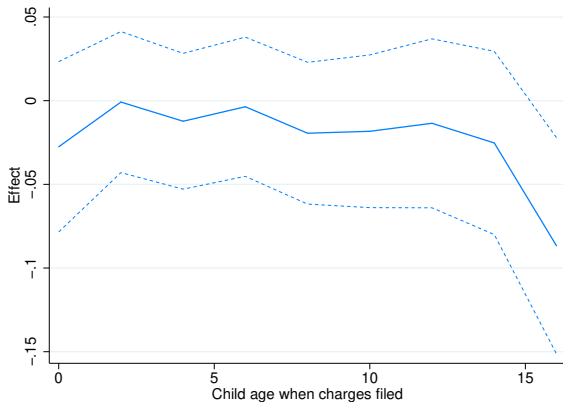
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Age of child at incarceration

Figure: Child ever incarcerated on parental incarceration, by child age

Effects by race

Table: Effect of incarceration on child outcomes, by parent race

	Adult incarceration			Juvenile incarceration			Teen pregnancy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Incarcerated X White	0.007	-0.008	0.026	-0.037*	-0.042	-0.012	0.013	0.017	0.010
	(0.021)	(0.036)	(0.024)	(0.020)	(0.033)	(0.018)	(0.019)	(0.018)	(0.033)
Incarcerated X Black	-0.041**	-0.041	-0.045***	-0.030*	-0.039	-0.010	0.010	-0.014	0.048
	(0.020)	(0.037)	(0.015)	(0.017)	(0.031)	(0.018)	(0.014)	(0.010)	(0.030)
Dependent mean	0.094	0.150	0.034	0.055	0.086	0.023	0.044	0.013	0.080
Observations	133,371	65,659	60,825	54,995	26,973	25,071	113,013	53,082	53,029

Incarceration instrumented by judge leave-out incarceration rate. All specifications include race X court-month fixed effects, as well as controls for child's date of birth, child's age at filing of charges, defendant's gender, defendant's previous court appearances, defendant's previous incarcerations, and parent's race. Standard errors two-way clustered by court-month and defendant. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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Length of sentence

	All	Boys	Girls	Fathers	Mothers
	(1)	(2)	(3)	(4)	(5)
Panel A: Adult incarceration					
Parental incar (< 1 year)	-0.023	-0.015	-0.022	-0.034**	0.001
	(0.014)	(0.026)	(0.015)	(0.017)	(0.030)
Parental incar (≥ 1 year)	-0.014	-0.006	-0.012	0.017	-0.073*
	(0.020)	(0.034)	(0.016)	(0.020)	(0.038)
Dependent mean	0.094	0.152	0.034	0.078	0.119
Observations	146,628	71,969	67,008	89,029	57,592
Panel B: Juvenile incarceration					
Parental incar (< 1 year)	-0.052***	-0.063*	-0.033**	-0.034**	-0.082**
	(0.019)	(0.033)	(0.014)	(0.016)	(0.033)
Parental incar (≥ 1 year)	-0.001	0.012	-0.000	-0.000	-0.006
	(0.013)	(0.026)	(0.015)	(0.016)	(0.025)
Dependent mean	0.054	0.085	0.023	0.043	0.070
Observations	63,541	31,026	28,952	38,551	24,980

Standard errors two-way clustered on court-month and defendant.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Return

Likelihood of eviction

Table: Effect of incarceration on evictions

	Own eviction		Spouse eviction		All evictions	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Eviction case filed						
Incarcerated (=1)	-0.023***	-0.026***	0.015	0.012	-0.017*	-0.021**
	(0.009)	(0.009)	(0.014)	(0.014)	(0.009)	(0.009)
Dependent mean	0.061	0.060	0.035	0.035	0.067	0.067
Observations	223,216	221,405	59,869	59,437	223,217	221,405
Panel B: Evicted						
Incarcerated (=1)	-0.015**	-0.018**	0.015	0.012	-0.011	-0.013*
	(0.007)	(0.007)	(0.012)	(0.012)	(0.008)	(0.008)
Controls	No	Yes	No	Yes	No	Yes
Dependent mean	0.042	0.041	0.023	0.023	0.046	0.046
Observations	223,216	221,405	59,869	59,437	223,217	221,405

Incarceration instrumented by judge leave-out incarceration rate. All specifications include month X court fixed effects. Controls include defendant age and gender, as well as previous eviction cases and evictions. Spouse regression includes spouse case history. Standard errors clustered at the defendant and court-month level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Neighborhood wealth percentile of other parent

Table: Voting outcomes on spouse incarceration

	Voted		Poverty percentile (voters only)	
	(1)	(2)	(3)	(4)
Incarcerated	0.0152	0.0155	-0.00344	0.00968
	(0.0198)	(0.0198)	(0.0175)	(0.0183)
Spouse age and poverty controls	No	Yes	No	Yes
Observations	166058	165800	85273	72603

Outcome in header. Controls include month-court fixed effects. Standard errors in parentheses and clustered at the judge level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
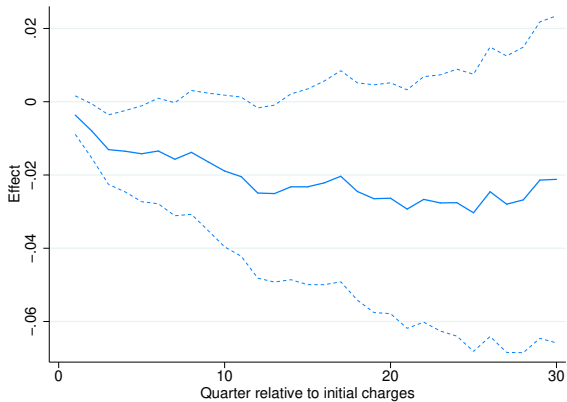
Effect on coparent cumulative charges
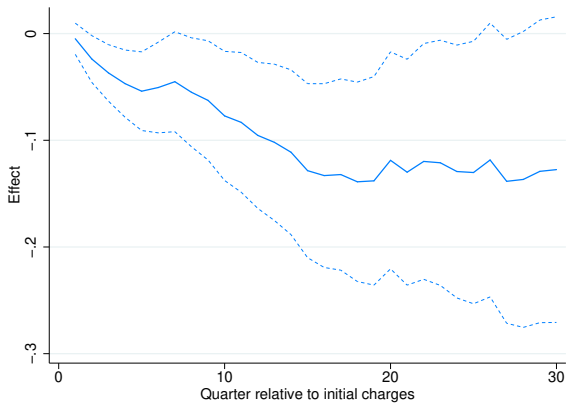
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Effect on coparent cumulative incarcerations

Sibling heterogeneity

	Birth quartile		Relation	
	Bottom	Top 3	Older	Younger
Sibling incarcerated	-0.060	-0.038	-0.040	-0.074
	(0.038)	(0.063)	(0.033)	(0.056)
Dependent Mean	0.11	0.07	0.11	0.11
Observations	16735	7192	28132	13118

Standard errors two-way clustered on judge and defendant. Includes yearXcourt FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Effect of sibling incarceration by poverty

	Expected sentence		Previously in court	
	< 1 year	≥ 1 year	No	Yes
Sibling incarcerated	-0.060	-0.021	-0.036	-0.049
	(0.042)	(0.047)	(0.049)	(0.038)
Dependent Mean	0.11	0.12	0.10	0.12
Observations	21360	18292	18303	22949

Standard errors two-way clustered on judge and defendant. Includes yearXcourt FEs and baseline controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

No evidence of differential migration

	All	Boys	Girls	All
	(1)	(2)	(3)	(4)
Panel A: Registered voter in Ohio				
Parent incarcerated (=1)	0.019	0.014	0.013	
	(0.023)	(0.031)	(0.032)	
Mother incarcerated (=1)				-0.005
				(0.037)
Father incarcerated (=1)				0.029
				(0.029)
Dependent mean	0.687	0.642	0.738	0.687
Observations	143,615	70,754	65,732	143,554
Panel B: Registered voter in study counties				
Parent incarcerated (=1)	0.005	0.045	-0.045	
	(0.026)	(0.035)	(0.037)	
Mother incarcerated (=1)				-0.025
				(0.045)
Father incarcerated (=1)				0.023
				(0.032)
Dependent mean	0.530	0.492	0.564	0.530
Observations	143,615	70,754	65,732	143,554

Exclusion: alternative punishments and child outcomes

	First Stage	Adult Incarceration	Juvenile Incarceration	Teen Pregnancy
	(1)	(2)	(3)	(4)
Panel A: Baseline Specification				
Parent incarcerated (=1)		-0.018	-0.032***	0.019
		(0.015)	(0.012)	(0.021)
F-stat (instr)	1270.3			
Observations	143,615	143,615	58,376	62,033
Panel B: Include Controls for Alternative Sentencing				
Parent incarcerated (=1)		-0.015	-0.031**	0.008
		(0.016)	(0.013)	(0.022)
F-stat (instr)	1143.9			
Observations	143,615	143,615	58,376	62,033
Panel C: IV Model with Three Decision Margins *Incarceration, Alternative Sentencing, and Not Guilty*				
Parent incarcerated (=1)		-0.015	-0.031**	0.008
		(0.016)	(0.014)	(0.022)
Alternative Punishment (=1)		0.007	0.003	-0.024
		(0.012)	(0.016)	(0.017)
F-stat (instr)	1143.9			
Observations	143,615	143,615	58,376	62,033

Return to additional

Placebo test of case characteristics

|	N	Variable Mean	Judge Severity
Drug crime	830,023	.28	-.013
			(.01)
Violent crime	830,023	.17	.0022
			(.01)
Property crime	830,023	.28	.0053
			(.01)
Charge sentence	815,937	96.58	-1.4
			(3.87)
Ln charge sentence	805,754	2.76	-.0036
			(.02)
Number of previous charges	830,647	2.49	.12
			(.08)
Joint p-value			.68

Controls include court-month fixed effects. Standard errors two-way clustered at the court-month and defendant level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Placebo test of defendant characteristics

	N	Variable Mean	Judge Severity
Male	823,762	.77	.0096
			(.01)
White	830,244	.38	-.019*
			(.01)
Age	830,647	31.78	-.15
			(.23)
Neighborhood SNAP Perc	687,748	.32	.0014
			(.00)
Neighborhood Median Income	661,966	35362.48	-93
			(471.47)
Number of Children, t-1	830,647	.35	.021
			(.02)
Joint p-value			.38

Controls include court-month fixed effects. Standard errors two-way clustered at the court-month and defendant level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
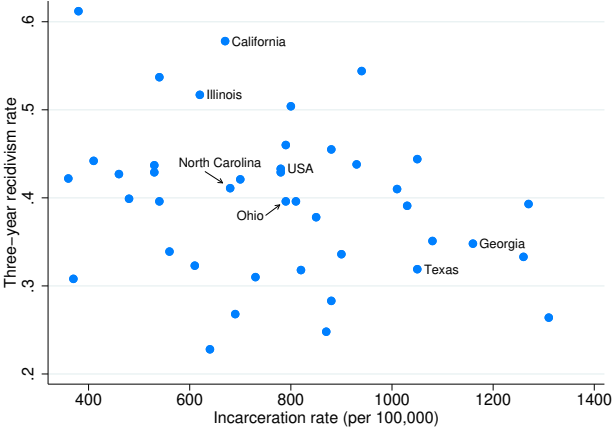
First stage of incarceration on judge instrument
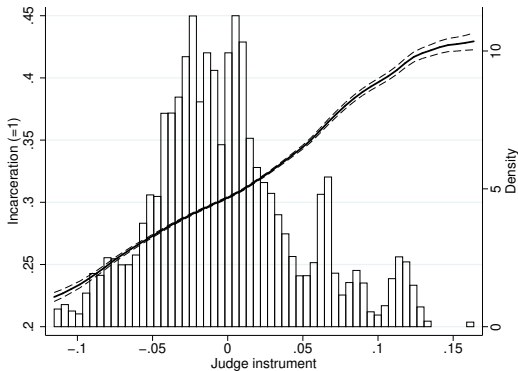
Ohio compared to other states

Figure: Recidivism and incarceration rates

Ohio compared to other states

Figure: Violent and property crime