

Mandatory Minimum Sentences and Plea Bargaining Outcomes

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Introduction

Motivation:

- The 6th Amendment guarantees the right to a speedy trial.
- And yet, less than 3% of federal criminal cases go to trial.
- Instead, the vast majority of cases are decided via plea bargaining.

Common Explanation: Prosecutors are thought to offer more lenient deals to defendants who are willing to plead guilty.

Research Question: Does the threat of extreme (mandatory) criminal penalties at trial increase prosecutor leverage to secure (a) guilty pleas, and/or (b) defendant cooperation?

Mandatory Minimum Sentences

Definition: Legally binding minimum prison sentences for specific crimes.

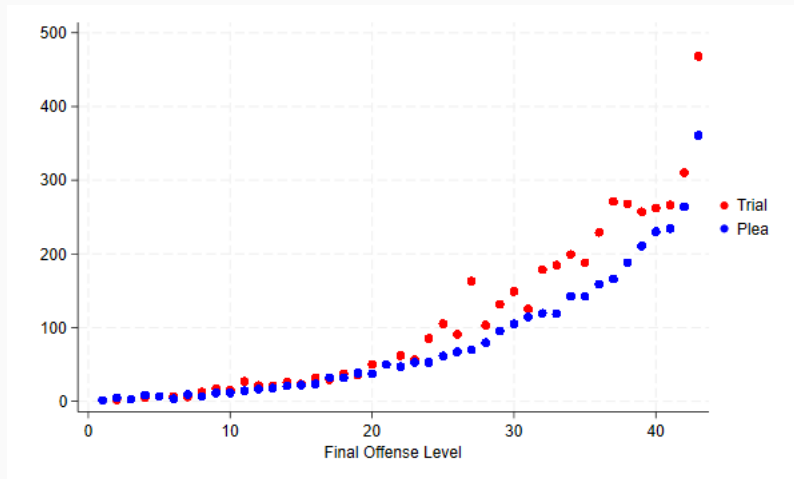
Common sentiment:

“Mandatory minimum penalties provide prosecutors the tools to secure the cooperation of criminals to dismantle criminal enterprises, gangs and other organizations. Without such a penalty, for example, gang members will not cooperate with law enforcement. They will simply turn their back on cooperation, do the time, and gang violence will continue to expand and threaten our communities.”

- Rep. Randy Forbes (R-VA), 2007.

Descriptive Evidence - The Trial Penalty

Figure 1: Trial Penalty



Note: Data from the U.S Department of Justice, Bureau of Justice Statistics, 2017-2018.

Mandatory Minimum Sentences

Table 1. Quantity Thresholds Triggering Mandatory Minimum Penalties for Common Controlled Substances under 21 U.S.C. §§ 841(b)(1) and 960(b)

Controlled Substance	5 Year Minimum	10 Year Minimum
Heroin	100 g	1 kg
Cocaine	500 g	5 kg
Cocaine base ⁷	28 g	280 g
Methamphetamine (actual)	5 g	50 g
Methamphetamine (mixture)	50 g	500 g
Fentanyl ⁸	40 g	400 g
Fentanyl analogue/ Fentanyl-related substance	10 g	100 g
Marijuana	100 kg	1,000 kg

Source: U.S Sentencing Commission, 2025.

Note: Minimums typically DOUBLE following one prior felony drug offense.

Plea Bargaining

Overview:

- Plea deals can dictate charges and/or sentencing decisions.
- Take place at ANY POINT between charging and sentencing decisions.
- Negotiation between defense and prosecution.
- Judges must approve deals, but generally follow recommendations.

Criminal Court Proceedings:

1. Arrest / booking / arraignment / charging decision by prosecution.
2. Defendant enters plea (guilty / not guilty / no contest).
3. Pre-trial and trial proceedings, as necessary.
4. Sentencing.

Existing Literature - Mandatory Minimums

Recent empirical evidence is mixed:

- La Casse and Payne (1999): Find no effect on negotiated sentences, and effects at trial vary widely based on judge tendencies.
- Bjerk (2017): Finds no discernible change in sentencing outcomes following the 2010 Fair Sentencing Act.
- Craigie and Zapryanova (2021): Find no systematic change in sentence lengths (or racial discrepancies) following state reforms.
- Silveira (2017): Simulations - lower minimums may reduce incarceration time but increase conviction rates.
- Abrams (2012): Finds a significant *deterrence* effect of increased minimum sentences on gun crime.

Challenges:

1. Criminal actors may adjust behavior in response to new penalties *prior to arrest* / plea bargaining.
2. Defendants may adjust legal strategy in response to impending changes to mandatory minimums.

The First Step Act of 2018

Key Features:

- **“Safety Valve” Expansion:** Broadens the set of defendants who can be sentenced without regard to mandatory minimums.
- **Retroactive:** Applies to any defendant *currently awaiting* final disposition.
- **Abrupt:** Federal sentencing reform was introduced < 1 month prior to the Act’s passage.
- **Clear Eligibility:** Applies to defendants with...
 1. < 5 criminal history points (excluding 1 point offenses).
 2. No prior 3 point offenses.
 3. No serious violent offenses.

Upshot: Generates sharp changes in mandatory minimums based on the precise timing of court disposition.

Table 1: Summary Statistics by Safety Valve Eligibility (Baseline)

	Always Eligible	Newly Eligible
Criminal History Points	0.168 (0.00263)	4.296 (0.0217)
Safety Valve	0.673 (0.00330)	0.0320 (0.00235)
Trial	0.0262 (0.00112)	0.0209 (0.00191)
Prison Sentence (Months)	55.52 (0.376)	74.65 (0.824)
Age	34.84 (0.0788)	33.44 (0.124)
White	0.800 (0.00282)	0.681 (0.00623)
H.S. Degree	0.217 (0.00290)	0.218 (0.00552)
U.S. Citizen	0.553 (0.00350)	0.834 (0.00497)
Observations	20185	5599

Data: Drug trafficking convictions secured prior to the First Step Act.
 U.S Department of Justice, Bureau of Justice Statistics, 2017-2018.

Identification Strategy

Baseline Regression:

$$Y_{it} = \beta \text{Eligible}_i \times \text{Post}_{it} + \gamma \text{Eligible}_i + \alpha_d + \lambda_t + \epsilon_{it}$$

Where:

- Eligible_i is a binary variable equal to 1 if defendant i is newly eligible for the expanded Safety Valve provision, and 0 if previously eligible.
- Post_{it} is a binary variable equal to 1 if a disposition is reached for defendant i after the passage of the Act.
- α_d capture federal court district fixed effects.
- λ_t capture month fixed effects.

Primary Sample: Drug trafficking charges filed *before* the Act's passage.

Identification Strategy

Baseline Regression:

$$Y_{it} = \beta Eligible_i \times Post_{it} + \gamma Eligible_i + \alpha_d + \lambda_t + \epsilon_{it}$$

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- α_d capture federal court district fixed effects.
- λ_t capture month fixed effects.

Identifying Assumption: Parallel trends in potential outcomes between newly and previously-eligible defendants.

Safety Valve Expansion

Table 2: Safety Valve

	(1)	(2)	(3)
Qualify=1 × Post=1	0.311*** (0.0191)	0.279*** (0.0183)	0.278*** (0.0185)
Constant	0.611*** (0.00208)	0.631*** (0.00580)	0.627*** (0.00581)
Baseline Mean	0.0317	0.0317	0.0317
District FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Time to Disposition	No	No	Yes
Observations	50434	50263	49410
R-squared	0.199	0.551	0.560

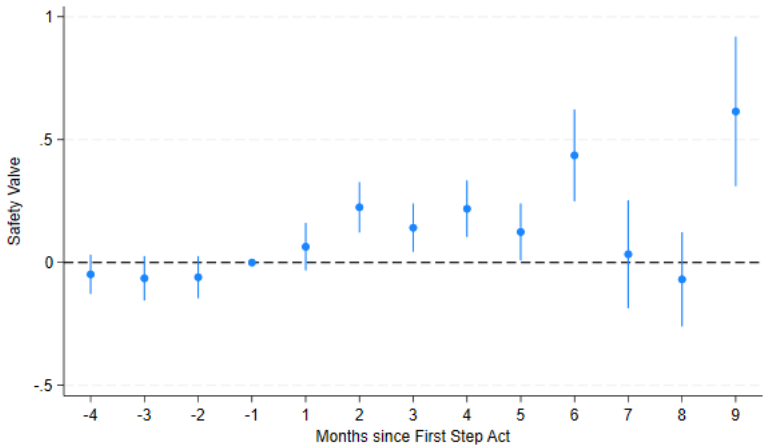
Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: Controls capture defendant age, race, education, criminal history, citizenship status, and legal representation. “Time to Disposition” measures time between case filing and disposition.

Safety Valve Expansion

Figure 2: Event Study - Safety Valve



Mandatory Minimum Sentences

Table 3: Mandatory Minimum Sentences

	(1)	(2)	(3)
Qualify=1 × Post=1	-0.113*** (0.0198)	-0.100*** (0.0197)	-0.100*** (0.0199)
Constant	0.201*** (0.00212)	0.268*** (0.00725)	0.270*** (0.00731)
Baseline Mean	0.361	0.361	0.361
District FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Time to Disposition	No	No	Yes
Observations	50248	50074	49234
R-squared	0.0969	0.171	0.175

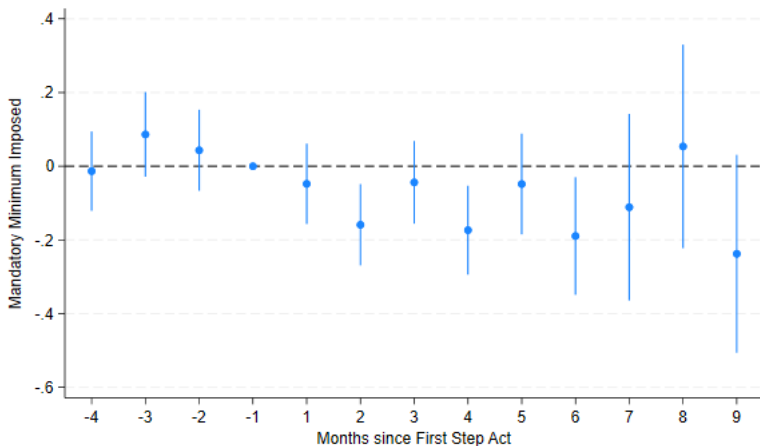
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Notes: Controls capture defendant age, race, education, criminal history, citizenship status, and legal representation. “Time to Disposition” measures time between case filing and disposition.

Mandatory Minimum Sentences

Figure 3: Event Study - Mandatory Minimums



Reduced Sentences

Table 4: Sentence Length

	(1)	(2)	(3)
Qualify=1 × Post=1	-8.015*** (2.320)	-5.510** (2.239)	-5.364** (2.236)
Constant	79.54*** (0.319)	71.95*** (1.000)	74.10*** (0.991)
Baseline Mean	74.40	74.40	74.40
District FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Time to Disposition	No	No	Yes
Observations	49166	48992	48183
R-squared	0.137	0.252	0.276

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: Controls capture defendant age, race, education, criminal history, citizenship status, and legal representation. “Time to Disposition” measures time between case filing and disposition.

Table 5: Trial Rates

	(1)	(2)	(3)
Qualify=1 $\times$ Post=1	-0.000180 (0.00583)	0.000645 (0.00587)	0.00245 (0.00601)
Constant	0.0298*** (0.000799)	0.00469 (0.00295)	0.00952*** (0.00294)
Baseline Mean	0.0201	0.0201	0.0201
District FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Time to Disposition	No	No	Yes
Observations	51449	51267	50401
R-squared	0.0131	0.0223	0.0423

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: Controls capture defendant age, race, education, criminal history, citizenship status, and legal representation. “Time to Disposition” measures time between case filing and disposition.

Charge + Final Offense Severity

Table 6: Charging and Case Outcomes

	(1)	(2)	(3)	(4)
	Base Offense Level	Final Offense Level	Guideline Min	Guideline Max
Qualify=1 × Post=1	0.284 (0.298)	0.110 (0.310)	-35.92** (15.35)	-41.15 (42.10)
Constant	27.44*** (0.0317)	25.02*** (0.0337)	168.2*** (3.888)	288.6*** (6.078)
Baseline Mean	26.69	24.72	151.8	258.3
District FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	51409	51423	51423	51423
R-squared	0.128	0.112	0.00977	0.0139

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Substantial Assistance

Table 7: Substantial Assistance

	(1)	(2)	(3)
Qualify=1 × Post=1	-0.0325*** (0.0121)	-0.0327*** (0.0121)	-0.0382*** (0.0119)
Constant	0.0938*** (0.00135)	0.0854*** (0.00487)	0.0874*** (0.00489)
Baseline Mean	0.134	0.134	0.134
District FE	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Controls	No	Yes	Yes
Time to Disposition	No	No	Yes
Observations	50248	50074	49234
R-squared	0.0651	0.0773	0.0799

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: “Substantial Assistance” captures defendant assistance in prosecuting other individuals. Controls capture defendant age, race, education, criminal history, citizenship status, and legal representation. “Time to Disposition” measures time between case filing and disposition.

Eligibility as an Instrument

Table 8: Local Average Treatment Effects

	(1)	(2)	(3)	(4)
	M.M. Imposed	Sentence Length	Trial	Substantial Assistance
Safety Valve	-0.391*** (0.0601)	-27.50*** (7.252)	-0.00320 (0.0191)	-0.105** (0.0411)
Constant	0.182*** (0.0554)	95.82*** (10.46)	0.118*** (0.0323)	0.284*** (0.0462)
Baseline Mean	0.439	95.39	0.0408	0.112
District FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	49272	48272	50434	49272
R-squared	0.223	0.217	0.0148	0.0415

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: First stage instruments for safety valve using the “Baseline Regression” above. “Sentence Length” is measured in months. “Substantial Assistance” captures defendant assistance in prosecuting other defendants.

Table 9: 2017 Placebo

	(1)	(2)	(3)	(4)
	M.M Imposed	Sentence Length	Trial	Substantial Assistance
Qualify=1 × Post 2017=1	0.0207 (0.0173)	-1.278 (2.264)	-0.00229 (0.00606)	0.0121 (0.0122)
Constant	0.214*** (0.00244)	80.28*** (0.380)	0.0331*** (0.000972)	0.0951*** (0.00158)
Baseline Mean	0.331	73.12	0.0197	0.131
District FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	37327	36419	38222	37327
R-squared	0.0993	0.134	0.0175	0.0676

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: “Sentence Length” is measured in months. “Substantial Assistance” captures defendant assistance in prosecuting other defendants.

Table 10: Non-Drug Placebo

	(1)	(2)	(3)	(4)
	M.M Imposed	Sentence Length	Trial	Substantial Assistance
Qualify=1 × Post=1	-0.0115 (0.00785)	-0.339 (1.670)	-0.00258 (0.00415)	0.000498 (0.00264)
Constant	0.0930*** (0.000892)	41.49*** (0.254)	0.0304*** (0.000532)	0.00688*** (0.000261)
Baseline Mean	0.0832	29.13	0.0132	0.0174
District FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	116299	107104	119389	116299
R-squared	0.0691	0.0808	0.0230	0.0155

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: “Sentence Length” is measured in months. “Substantial Assistance” captures defendant assistance in prosecuting other defendants.

Conclusion + Future Work

Results suggest that:

- Removing mandatory minimums:
 1. Lowers defendant sentences.
 2. Does not change trial rates.
 3. Reduces defendant cooperation.
- Prosecutors appear to use the threat of mandatory minimum sentences as leverage to secure defendant cooperation.

In progress:

1. Incorporating guilt as an outcome.
2. Exploring additional bargaining outcomes.
3. Testing for changes in *prosecutor charging* decisions. (Invert sample, consider defendants arrested but not yet charged prior to act...)

Thank You!

Robustness - Parallel Trends

Table 11: Defendant Characteristics through the Act's Passage

	(1) Age	(2) Public Def.	(3) H.S. Deg.	(4) Citizen	(5) White
Qualify=1 $\times$ Post=1	-0.347 (0.406)	0.000930 (0.0174)	-0.00683 (0.0175)	-0.00514 (0.0148)	0.00808 (0.0180)
Constant	36.16*** (0.0481)	0.254*** (0.00202)	0.199*** (0.00188)	0.750*** (0.00188)	0.674*** (0.00196)
Baseline Mean	33.46	0.209	0.221	0.839	0.676
District FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
Observations	51449	51449	51330	51376	51449
R-squared	0.0440	0.0369	0.0115	0.145	0.219

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$