

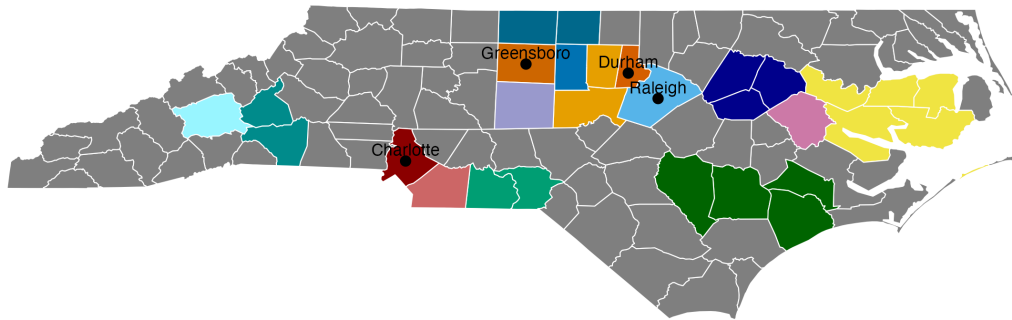
Supplemental Appendix

Prediction Errors, Incarceration, & Violent Crime: Evidence from Linking Prosecutor Surveys to Court Records

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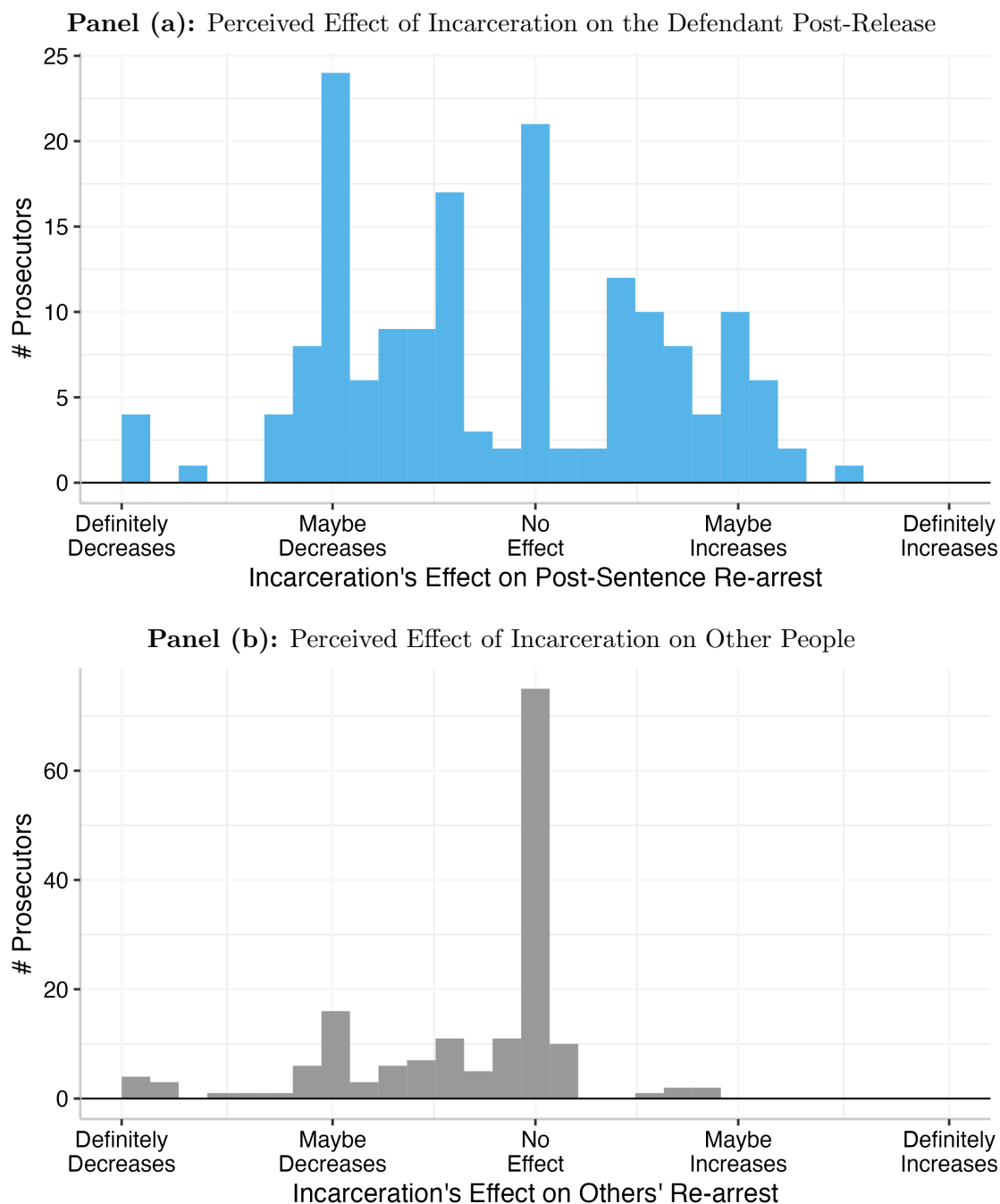
SUPPLEMENTARY FIGURES

Figure A.1. : Map of Participating Offices



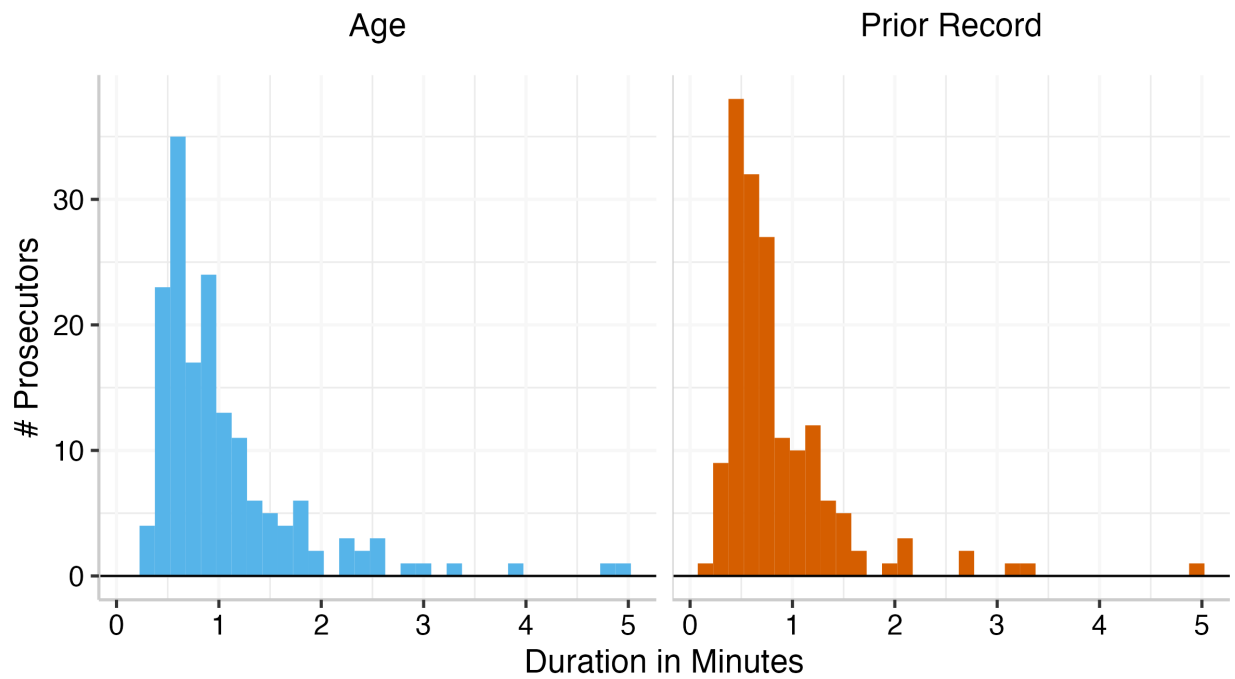
Notes: This map illustrates the North Carolina prosecutor offices that participated in our survey. Each color represents a different prosecutor office, some of which span multiple counties. The four largest cities — Charlotte, Raleigh, Greensboro, and Durham — are highlighted.

Figure A.2. : Prosecutors' Beliefs about Non-Incapacitation Effects of Incarceration on Violent Re-arrest



Notes: This figure illustrates the variation in prosecutors' beliefs about the effects of incarceration on (a) the defendant's violent re-arrest after he has served his sentence and (b) others' propensity to commit crimes. In panel (a), some prosecutors believe that incarceration may decrease future crime (specific deterrence). Others think that incarceration likely has a criminogenic effect. However, most prosecutors are unsure about incarceration's lasting effects, and many believe that it has no long-term impact. In Panel (b), most prosecutors believe that incarceration has no effect on others' behavior, implying that general deterrence is limited.

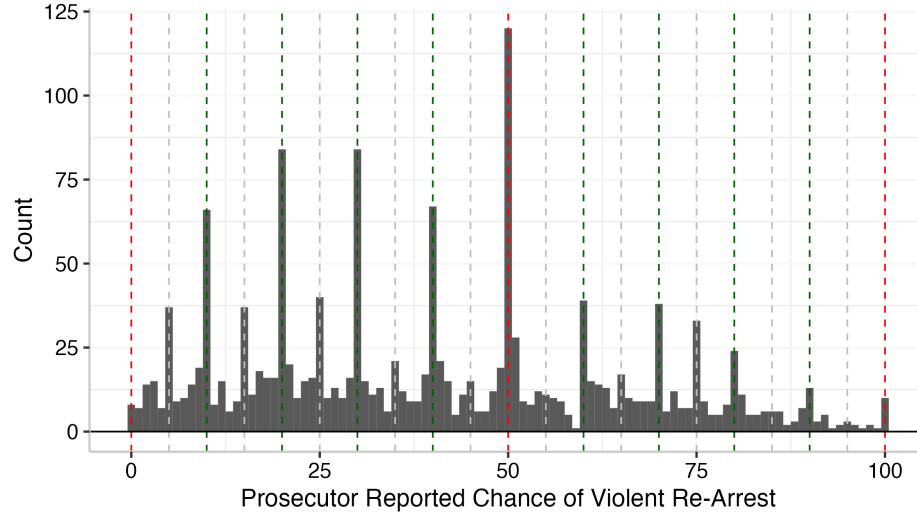
Figure A.3. : Distribution of Time Spent on Prediction Questions



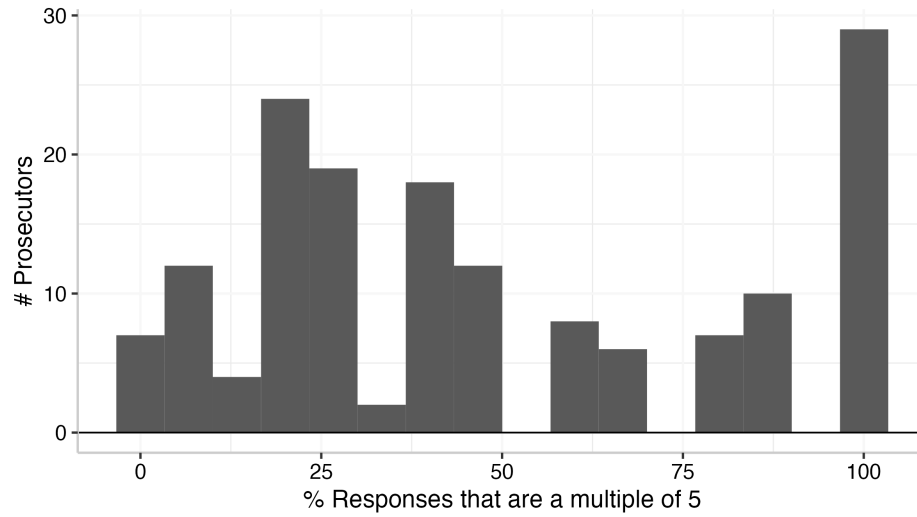
Notes: This figure shows the distribution of time that prosecutors spent on the two prediction questions, shown in Figure 1. Response times were winsorized at 5 minutes since longer times likely reflected breaks to, for example, go to the restroom or answer a phone call.

Figure A.4. : Rounding in Prosecutors' Elicited Subjective Expectations

Panel (a): Histogram of Prosecutors' Reported Rates of Violent Re-Arrest

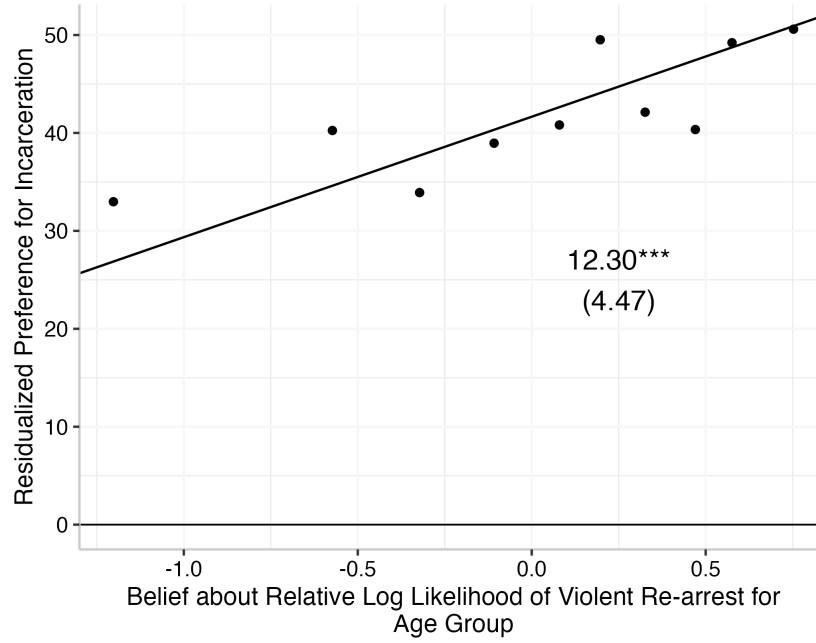


Panel (b): Histograms of Prosecutors' Rounding Tendencies



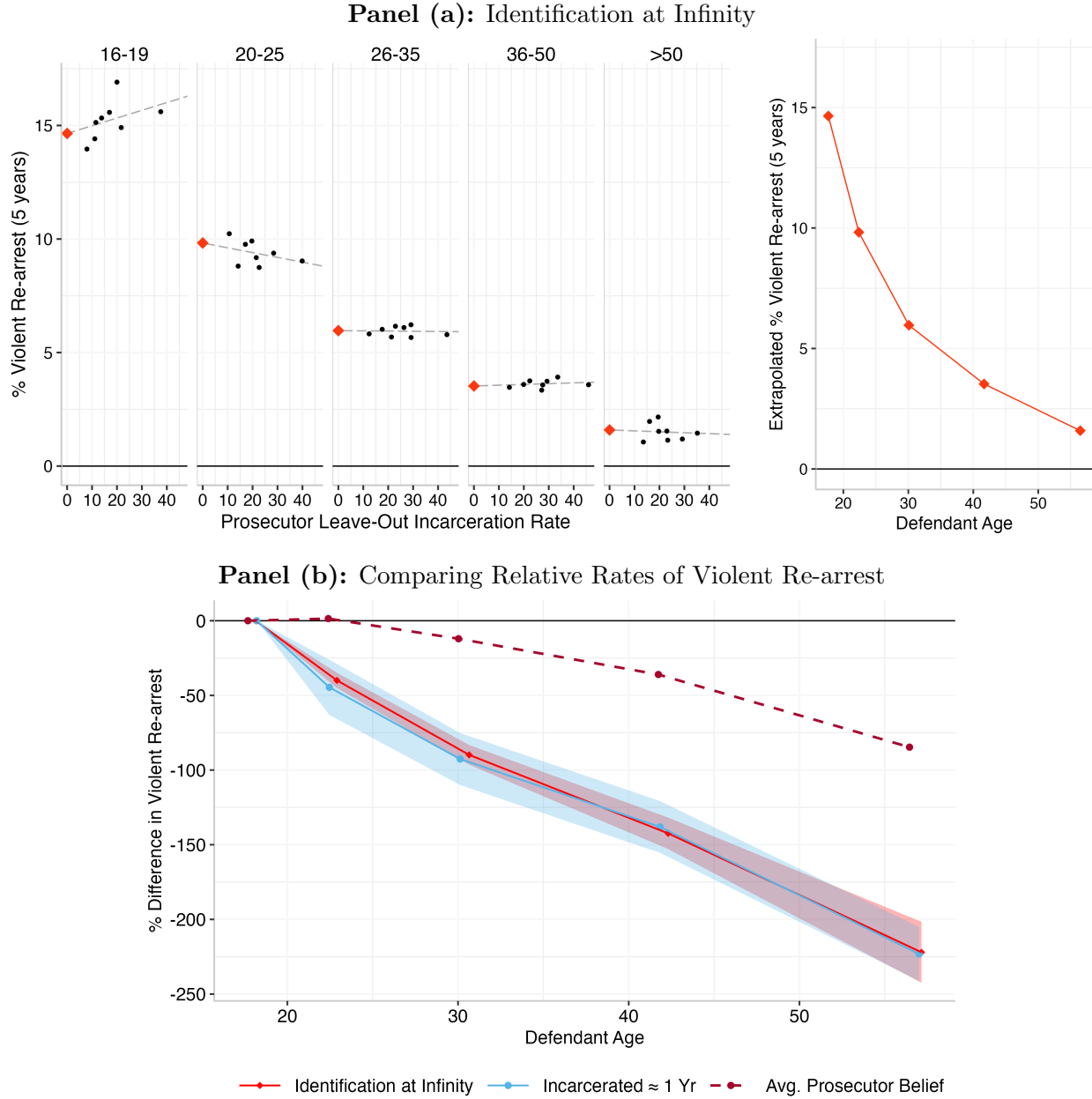
Notes: This figure shows the extent to which prosecutors reported rates of violent re-arrest in increments of five, ten, and fifty. Panel (a) shows the histogram of prosecutors' reported rates, with multiples of fifty highlighted in red, other multiples of ten highlighted in green, and other multiples of five highlighted in grey. Each observation represents a reported belief. Panel (b) shows prosecutors' apparent rounding tendencies, summarized by the share of their responses that were a multiple of five. Each observation represents a prosecutor.

Figure A.5. : Prosecutors' Re-Arrest Beliefs and Incarceration Choices in Survey Experiment



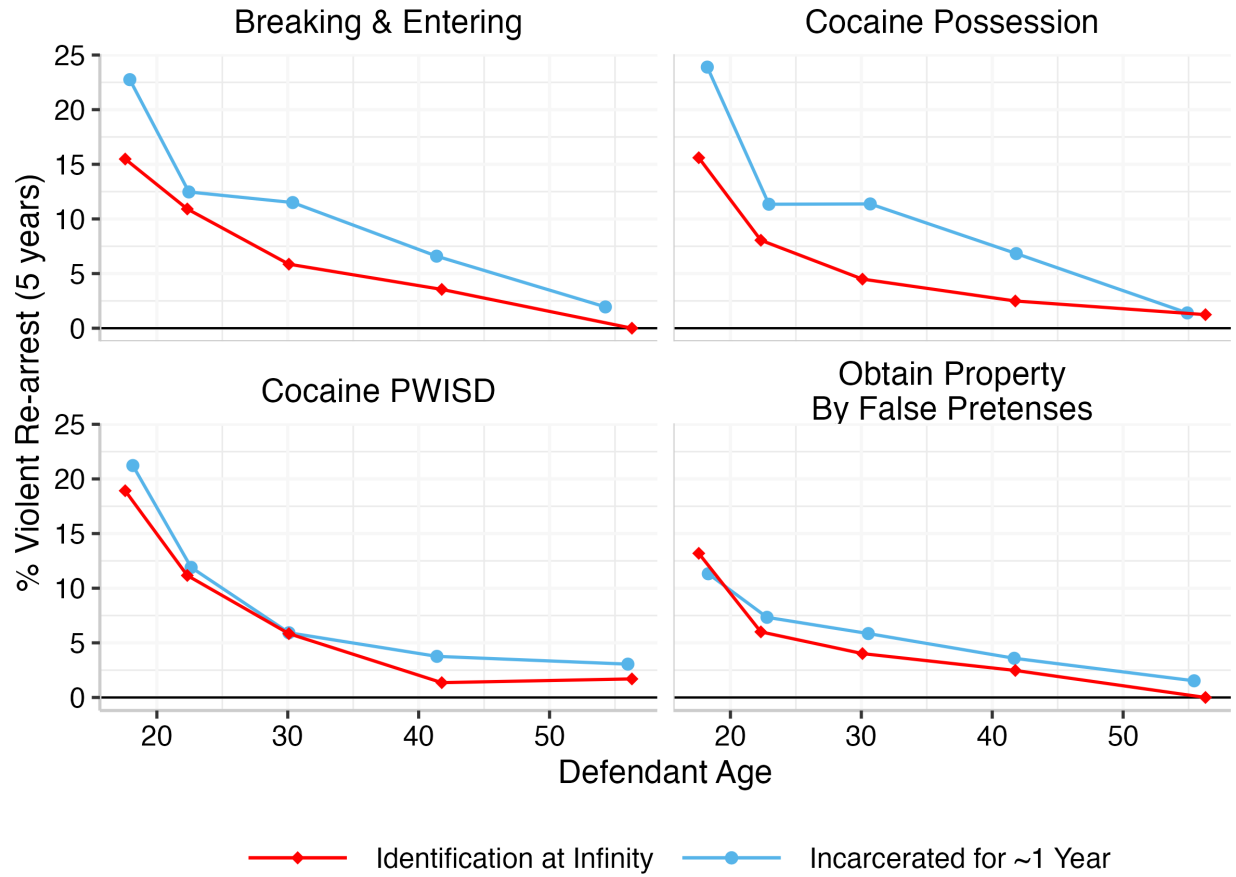
Notes: This figure illustrates the relationship between prosecutors' beliefs about re-arrest and the incarceration choices in the survey experiment. The binscatter residualizes by prosecutor, vignette, and age fixed effects (Column 1 in Table A.9). The y-axis represents the residualized rate at which prosecutors say that they would press for an incarceration sentence in their plea deal in a hypothetical case. This plot is based on 183 prosecutors who responded to 725 hypothetical assault cases: results are similar when limiting to prosecutors who linked to the court records (Column 2 in Table A.9). The means are added back to the residuals for ease of interpretation. Standard errors are clustered by prosecutor. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Figure A.6. : Age-Out Patterns Using “Identification at Infinity”



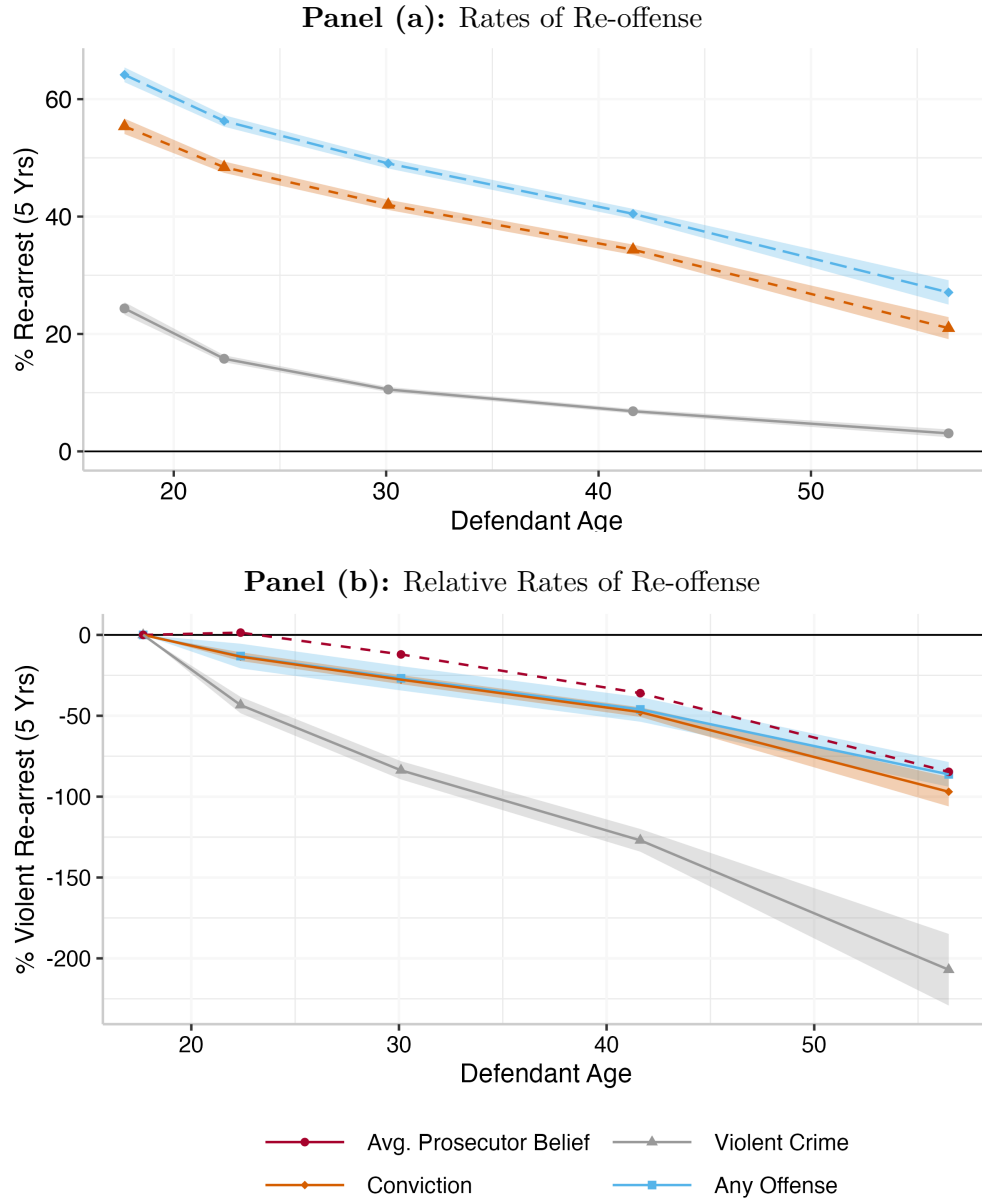
Notes: This figure shows the stability of age-out patterns using the identification at infinity strategy from Arnold et al. [2022]. Panel (a) illustrates the identification strategy, which leverages the fact that certain prosecutors release almost all defendants within each age-group. In the left plot, the prosecutor’s leave-out incarceration rate for a given age group is on the x-axis and the re-arrest rate in their cases is on the y-axis. We use linear fits to extrapolate to the re-arrest rate at a 0% incarceration rate, or equivalently a 100% release rate (the red diamonds). The right figure plots these estimated intercepts for each age group. Panel (b) shows the percent change in violent re-arrest rates relative to the reference group of 16–19 year-olds: it compares these patterns using the identification at infinity strategy (in red diamonds), the subsample of defendants who are incarcerated for about a year (in blue circles), and prosecutors’ elicited beliefs (in maroon circles). The error ribbons show 95% confidence intervals, with standard errors clustered by prosecutor and, in panel (b), computed using the delta method.

Figure A.7. : Age-Out Patterns Using “Identification at Infinity” for Separate Charges



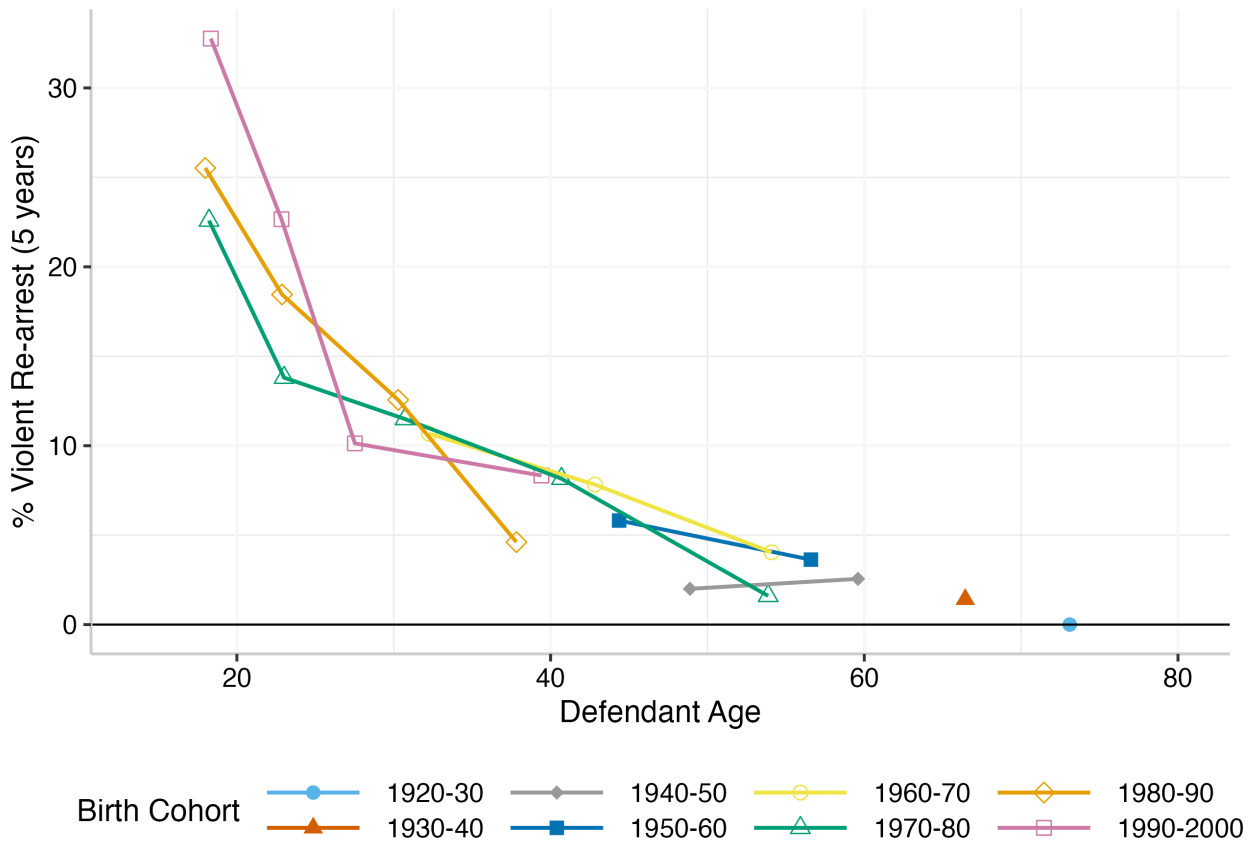
Notes: This figure shows the stability of age-out patterns using the identification at infinity strategy in Figure A.6 but separately for the four most common charges.

Figure A.8. : Stability of Age Out across Kinds of Re-Offense



Notes: This figure shows the stability of age-out patterns for different kinds of re-offense. Panel (a) shows unconditional means of re-offense rates for defendants in our focal age-groups (16–19, 20–25, 26–35, 36–50, and over 50). Panel (b) shows the percent change in re-offense rates relative to the reference group of 16–19 year-olds, contrasted with prosecutors’ reported beliefs. The error ribbons represent 95% confidence intervals, with standard errors clustered by prosecutor and computed using the delta method. Each panel considers defendants who were incarcerated for about one year (6–18 months) and then measures re-offense in the five years after release from prison. The grey circles show re-arrest rates for a violent offense, including felony assaults, murder, manslaughter, serious sex offenses, robbery, burglary, kidnapping, and arson. The orange triangles show re-conviction rates, including new felony convictions and probation violations that are severe enough to lead to prison sentences. The blue diamonds show re-arrest rates for any misconduct, including probation violations.

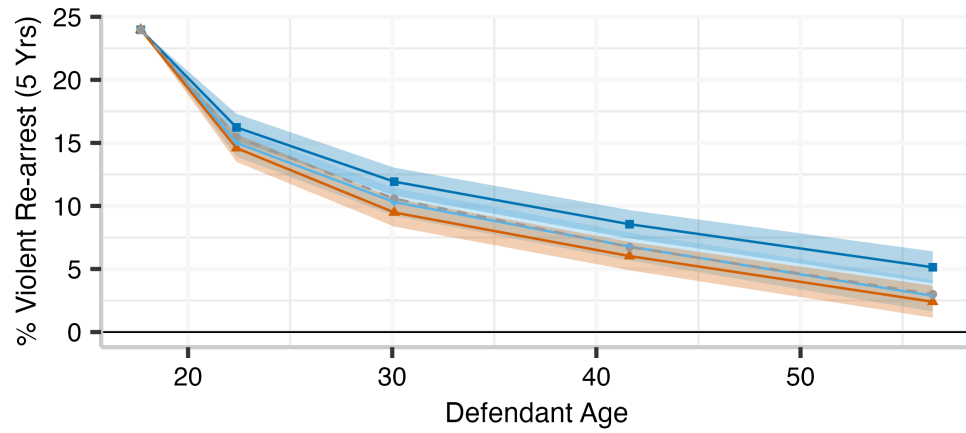
Figure A.9. : Stability of Age Out Across Birth Cohorts



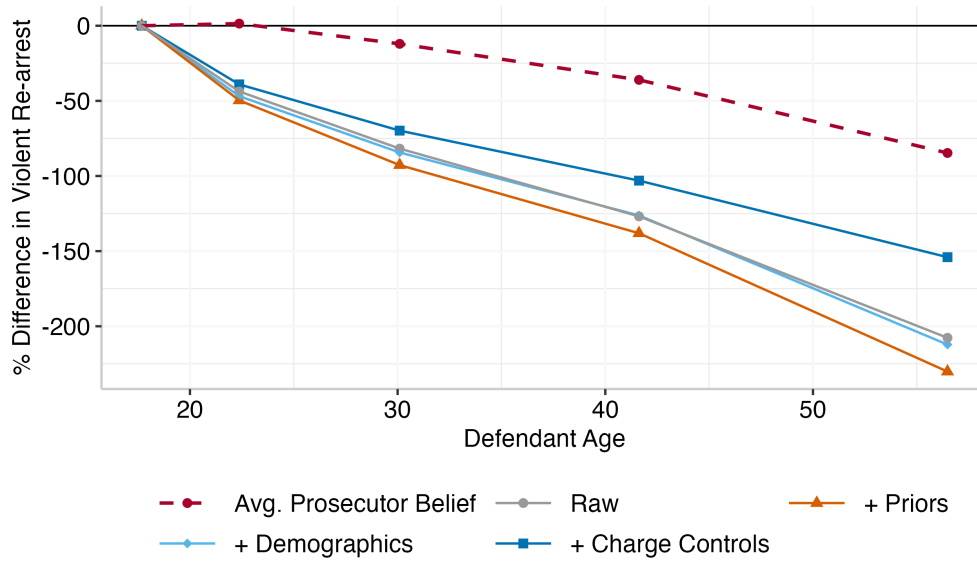
Notes: This figure shows the stability of age-out patterns across birth cohorts. It shows violent re-arrest rates for defendants in our focal age-groups (16–19, 20–25, 26–35, 36–50, and over 50). Re-arrest outcomes are measured in the five years after the defendant finishes his prison sentence. Because the sample of cases for which we can observe re-arrest covers 1995 to 2015, defendants in certain birth cohorts cannot be in certain age groups (for instance, defendants born in 1995 must be between 16 and 20, and so are missing from all other ages groups).

Figure A.10. : Stability of Age Out Conditional on Defendant Characteristics

Panel (a): Rates of Violent Re-arrest



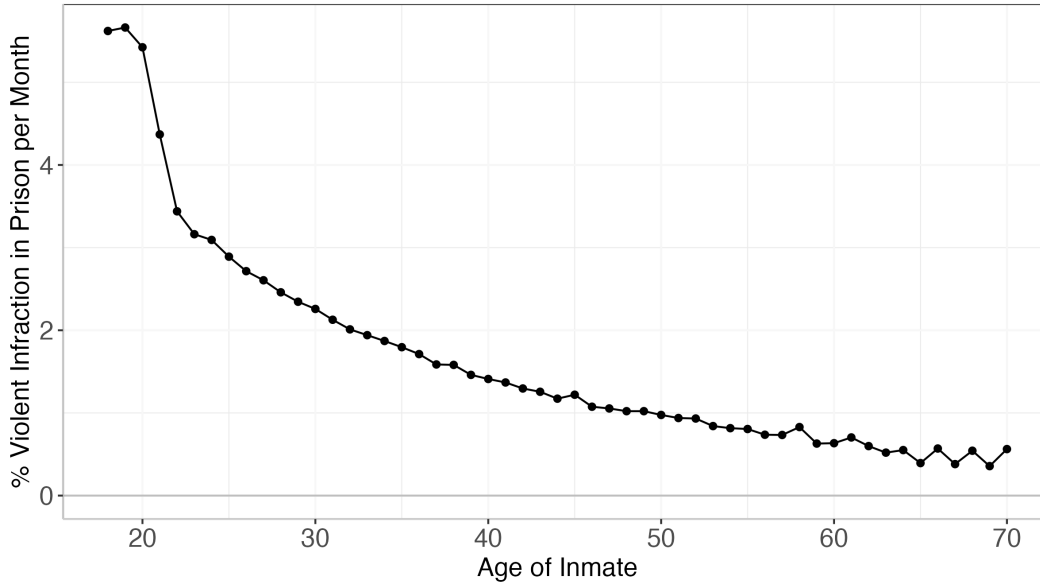
Panel (b): Relative Rates of Violent Re-arrest



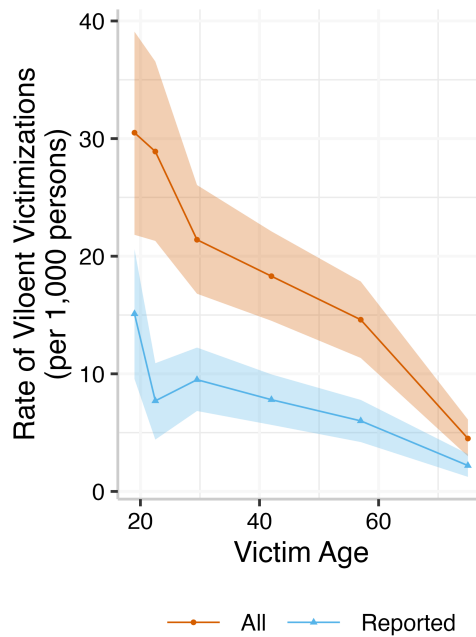
Notes: This figure shows the stability of age-out patterns to controlling for various observable defendant characteristics. Panel (a) shows violent re-arrest rates for defendants in our focal age-groups (16–19, 20–25, 26–35, 36–50, and over 50). Panel (b) shows the percent change in violent re-arrest rates relative to the reference group of 16–19 year-olds and contrasts these age-out patterns with prosecutors’ reported beliefs on the survey. Each panel considers defendants who were incarcerated for about one year (between six months and eighteen months) in order to match the subgroup of defendants targeted by the survey question. Re-arrest outcomes are measured in the five years after the defendant finishes his prison sentence. Unconditional re-arrest rates are shown in grey circles. Each set of controls is cumulatively added — fixed effects for criminal-record prior points (in orange triangles); defendants’ gender, race, and ethnicity (in light blue diamonds), and fixed effects for the crime type interacted with the offense class severity of the defendant’s lead arresting charge (in dark blue squares).

Figure A.11. : Age Out in Prison & Victimization

Panel (a): Violent Disciplinary Infractions in Prison

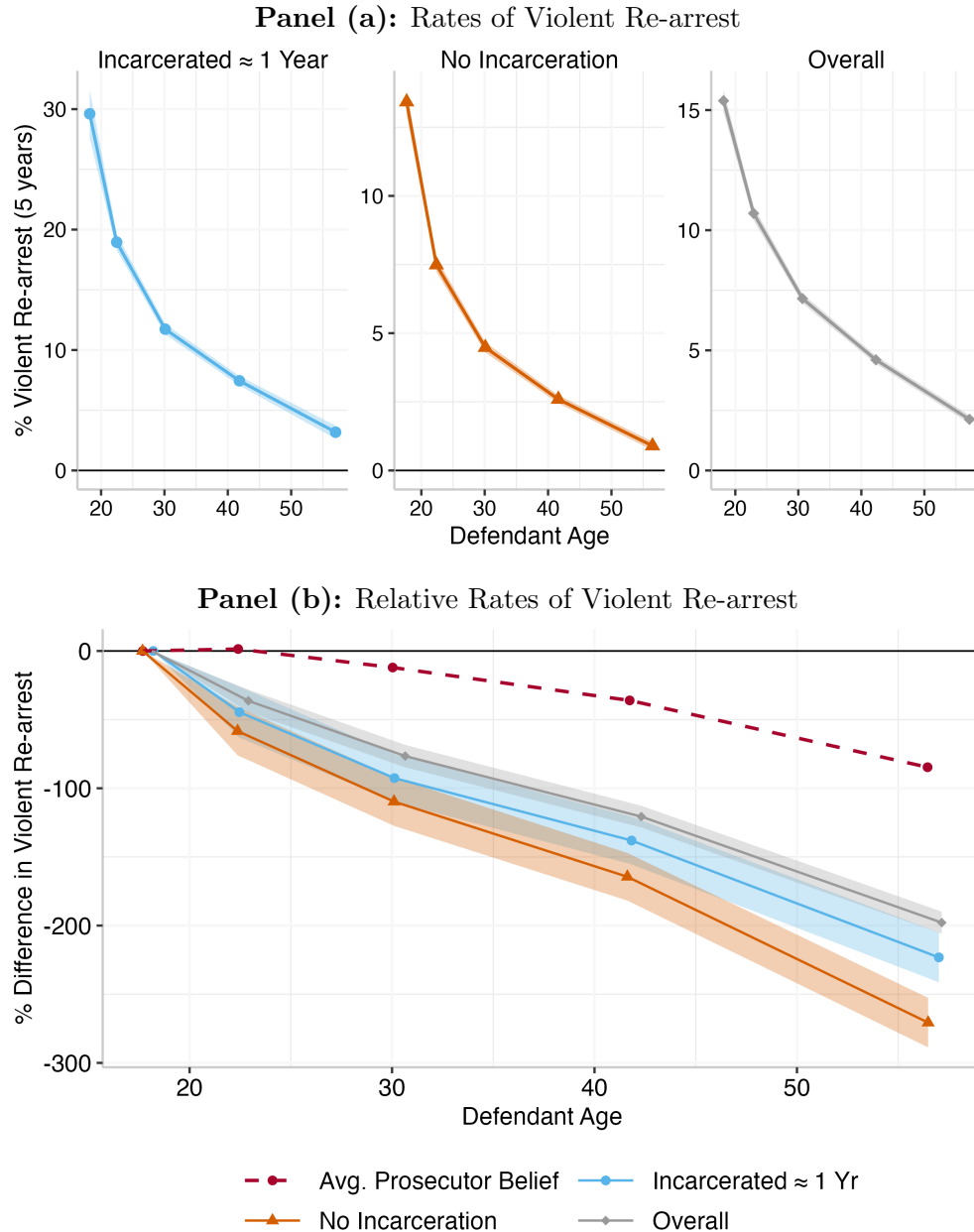


Panel (b): Victimization by Victim Age



Notes: This figure investigates age out of violence using measures of violence that may be less sensitive to reporting. Panel (a) plots violent disciplinary infraction in prison by inmate age. Data is from the North Carolina Department of Corrections from 1995 to 2019. The y-axis plots the percent of inmates in each age group who have violent infractions each month. Violent infractions are defined as sexual acts, assaults, threats, fighting, or possessing/using a weapon. Panel (b) plots violent victimization rates by victim age. The data comes from the 2020 National Crime Victimization Survey [Bureau of Justice Statistics, 2020]. Rates are shown for all victimization incidents (red) and for those that were reported to police (blue). Violent victimization is defined as rape/sexual assault, robbery, aggravated assault, and simple assault. The ribbons represent 95% confidence intervals.

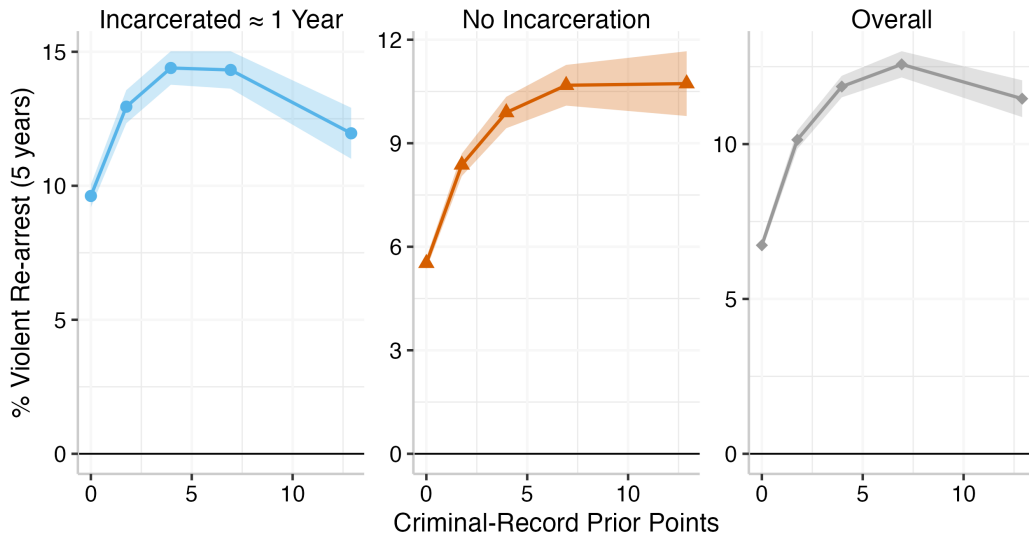
Figure A.12. : Stability of Age-Out Patterns With Different Samples



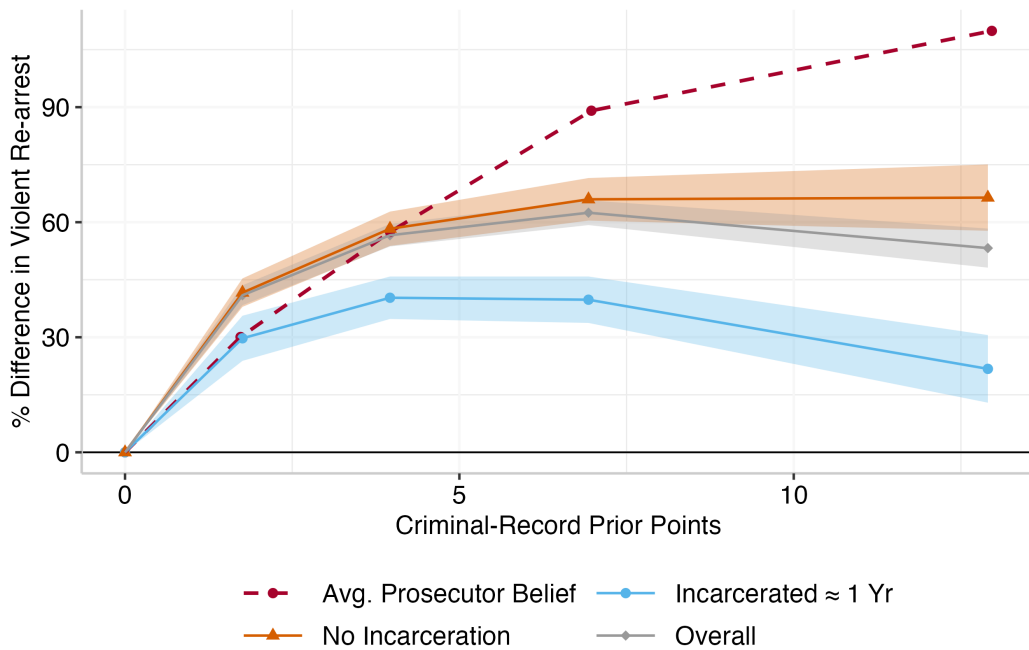
Notes: This figure shows the stability of age-out patterns across different samples of defendants. Panel (a) shows unconditional means of violent re-arrest rates. Panel (b) shows the percent change in violent re-arrest rates relative to the reference group of 16–19 year-olds, contrasted with prosecutors’ reported beliefs. The first sample of defendants includes those who were incarcerated for about one year (6–18 months), which approximates the survey question. For these defendants, re-arrest is measured in the five years after their release from prison. The second sample include defendants who did not receive an incarceration sentence. For these defendants, re-arrest is measured in the five years after the resolution of their case. The third sample includes all defendants. For incarcerated defendants, re-arrest is measured from the date of release from prison, and for non-incarcerated defendants, from the date of their case’s resolution. The error ribbons show 95% confidence intervals, with standard errors clustered by prosecutor and, in panel (b), computed using the delta method.

Figure A.13. : Stability of Priors-In Patterns With Different Samples

Panel (a): Rates of Violent Re-arrest

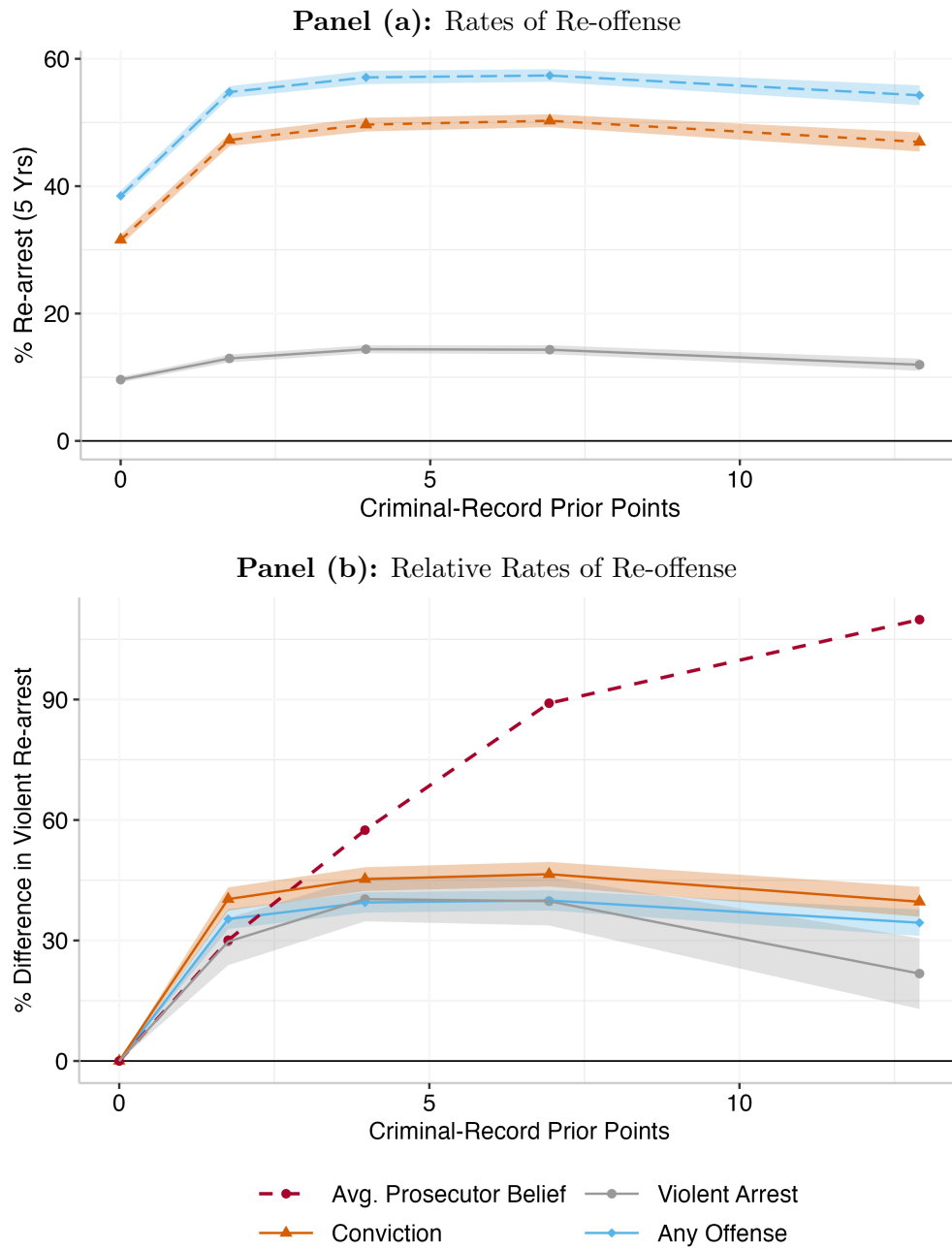


Panel (b): Relative Rates of Violent Re-arrest



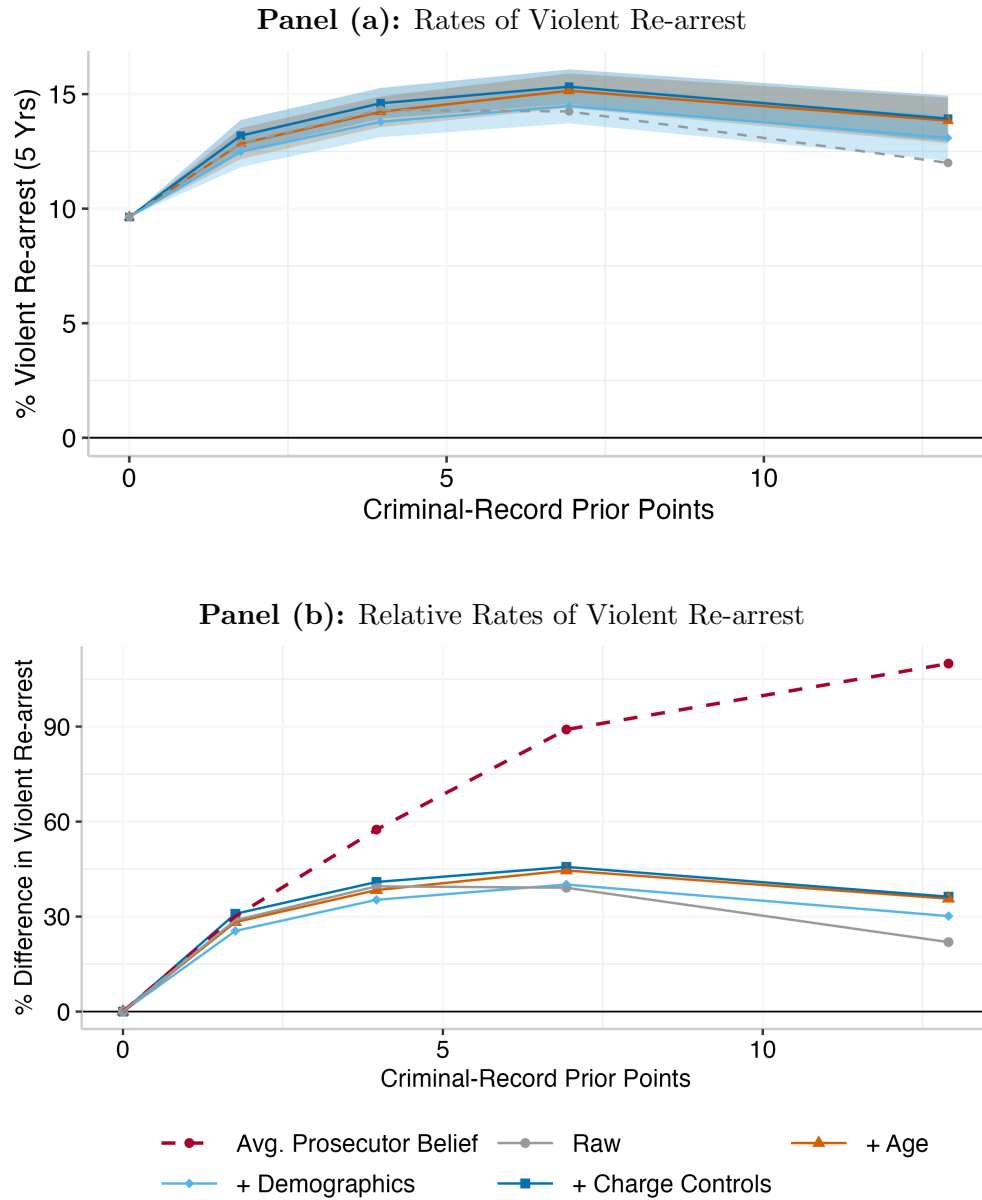
Notes: This figure shows the stability of the relationship between a defendant's criminal-record length and his likelihood of violent re-arrest across different samples of defendants. This figure replicates Figure A.12 for our focal criminal-record groups — defendants who have prior points of 0, 1–2, 3–5, 6–9, and ≥ 10 .

Figure A.14. : Stability of Priors-In for Different Definitions of Re-Offense



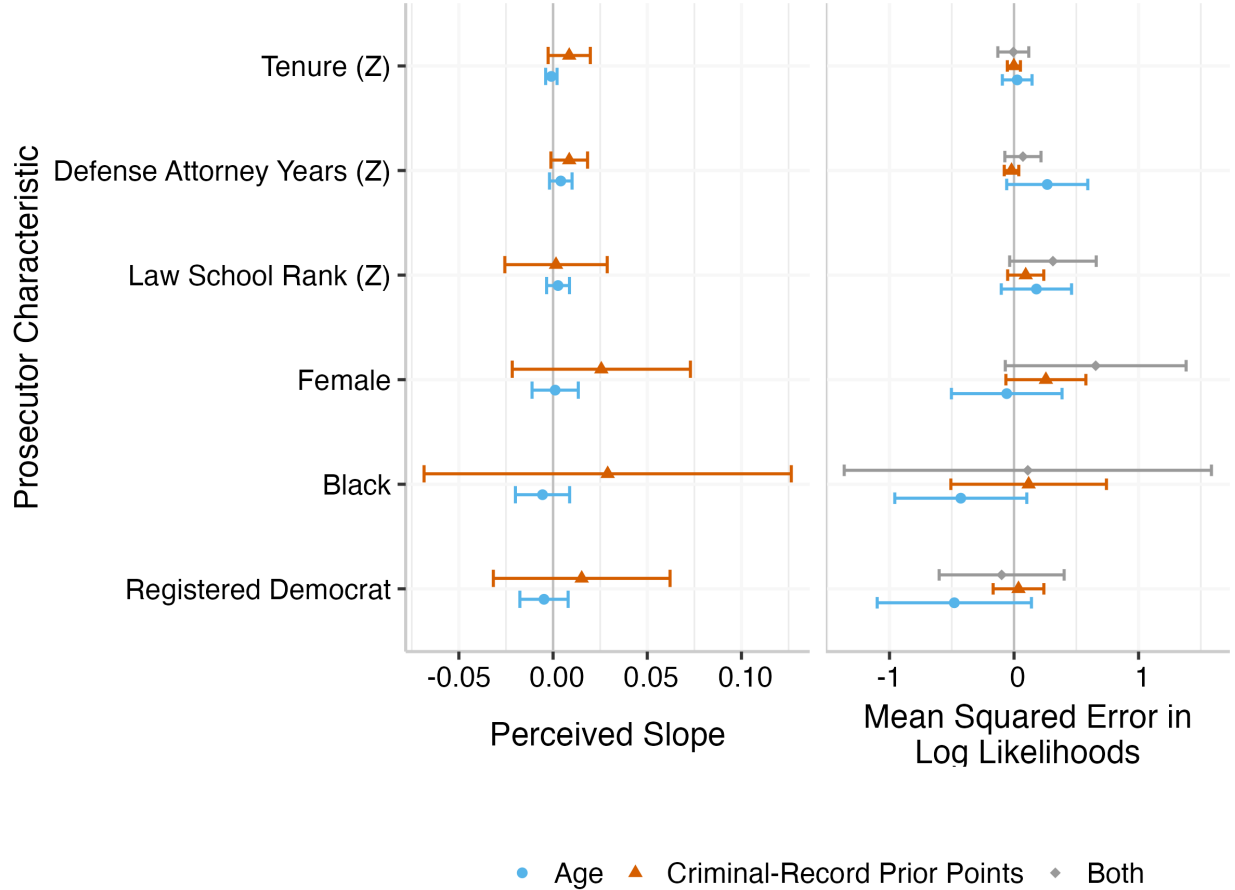
Notes: This figure shows the stability of the relationship between a defendant's criminal-record length and his likelihood of re-offense using different definitions of re-offense. It replicates A.8 for our focal criminal-record groups — defendants who have prior points of 0, 1–2, 3–5, 6–9, and ≥ 10 .

Figure A.15. : Stability of Priors-In Conditional on Defendant Characteristics



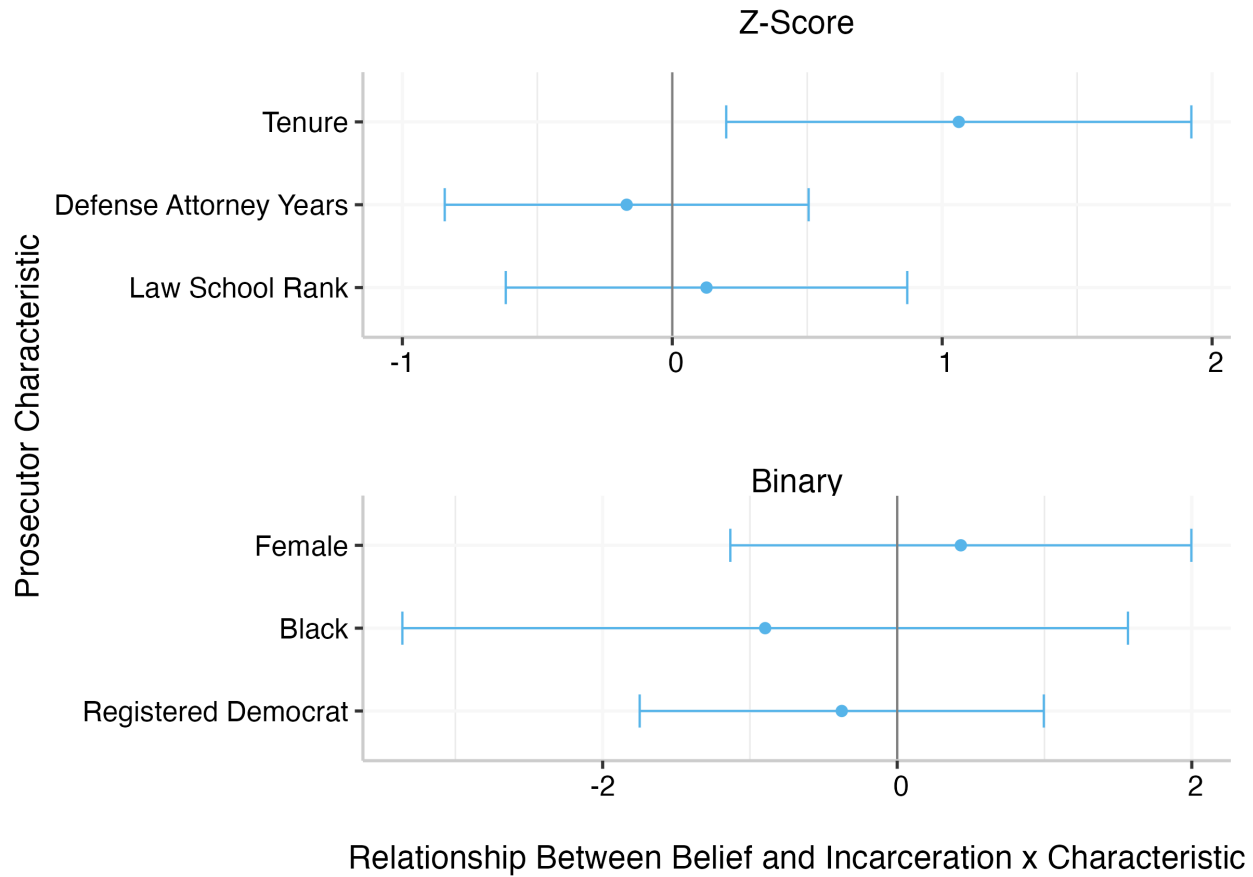
Notes: This figure shows the stability of the relationship between a defendant's criminal-record length and his likelihood of violent re-arrest after controlling for various observable defendant characteristics. It replicates A.10 for our focal criminal-record groups — defendants who have prior points of 0, 1–2, 3–5, 6–9, and ≥ 10 .

Figure A.16. : Correlates of Prosecutors' Re-Arrest Predictions



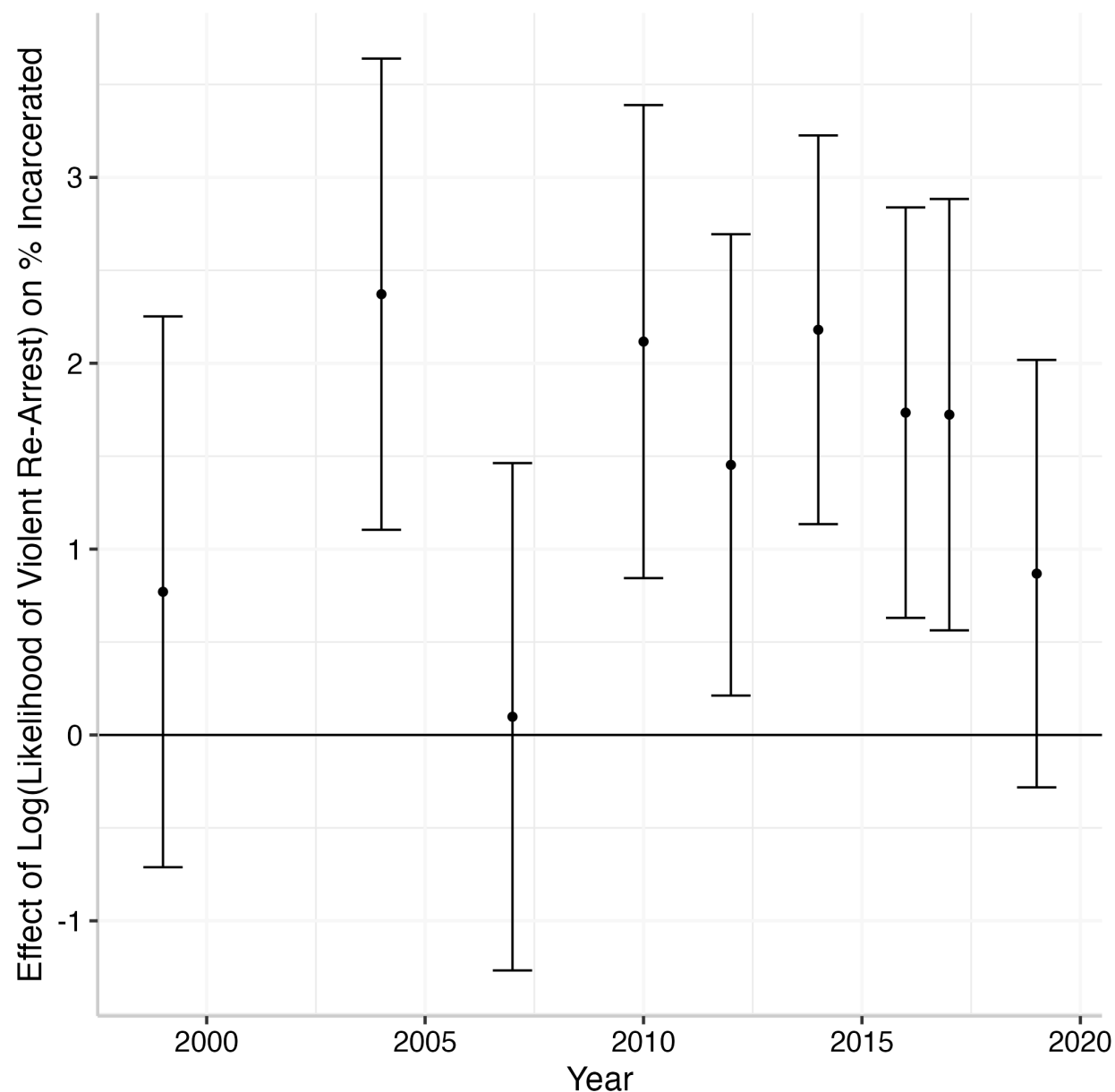
Notes: This figure summarizes the correlates of prosecutors' beliefs about how violent re-arrest varies across defendant age-groups and criminal-record categories. The left plot summarizes prosecutors' beliefs as a linear slope: i.e., percentage change in the likelihood of violent re-arrest for each additional year of age (or each additional criminal-record prior point). The right plot summarizes the mean squared error of prosecutors' beliefs (Equation 6). Each point comes from a separate regression of the belief measure on the prosecutor characteristic with office fixed effects to characterize the correlates of beliefs within office. The error bars represent 95 percent confidence intervals with standard errors clustered by prosecutor. The survey records prosecutors' self-identified gender, race, prosecutorial tenure, previous experience as a defense attorney, and law school rank (see Appendix E for the questions). Whether a prosecutor is a registered Democrat comes from linking North Carolina Voter Records, with missing values imputed from the survey question about political ideology. One prosecutor does not have any political affiliation information.

Figure A.17. : Heterogeneity in Link Between Re-arrest Beliefs and Incarceration Outcomes



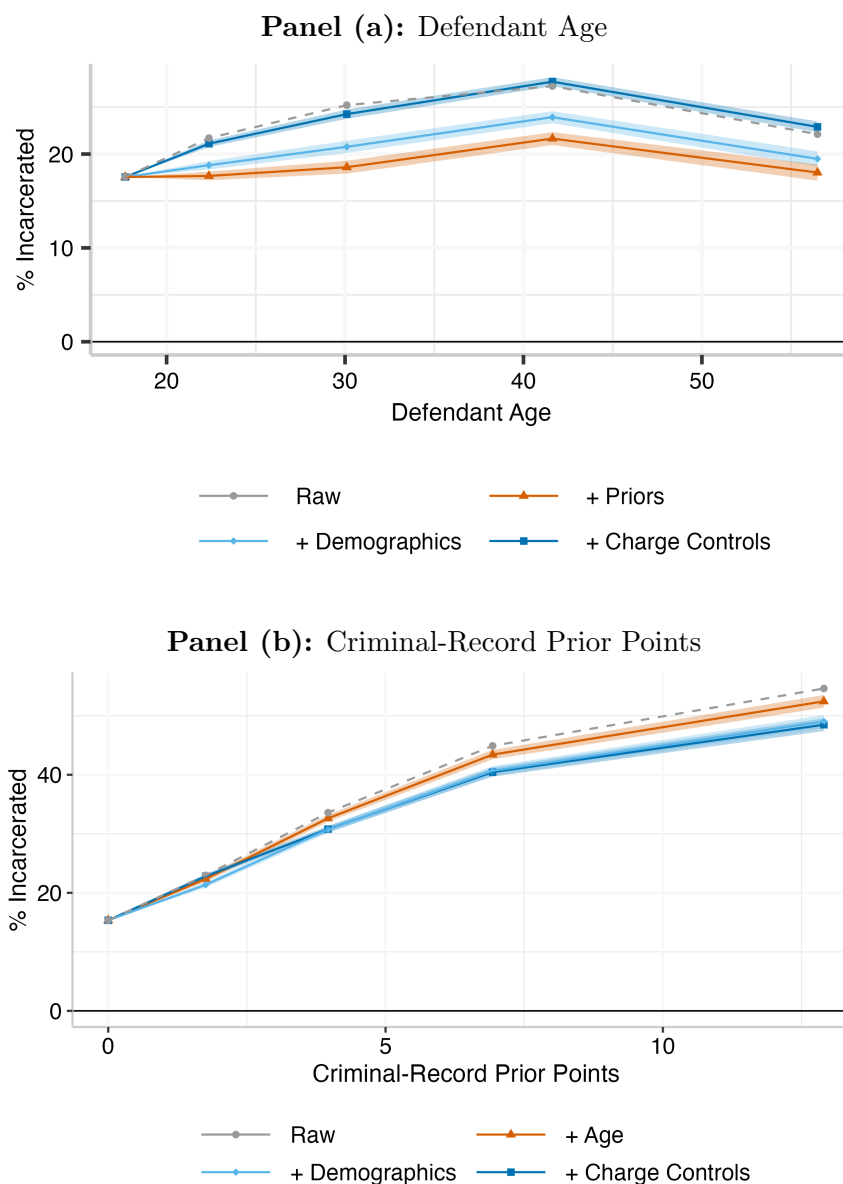
Notes: This figure considers how the link between prosecutors' beliefs and incarceration outcomes differ by prosecutor observable characteristics. Each blue circle shows the estimated link interacted with each prosecutor characteristic (e.g., the differential link for Black versus non-Black prosecutors), which extends Equation 5. The error bars represent 95 percent confidence intervals. Standard errors are clustered by prosecutor. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Figure A.18. : Prosecutors' Beliefs about Predictors of Re-Arrest and the Incarceration Outcomes in their Cases Over Time



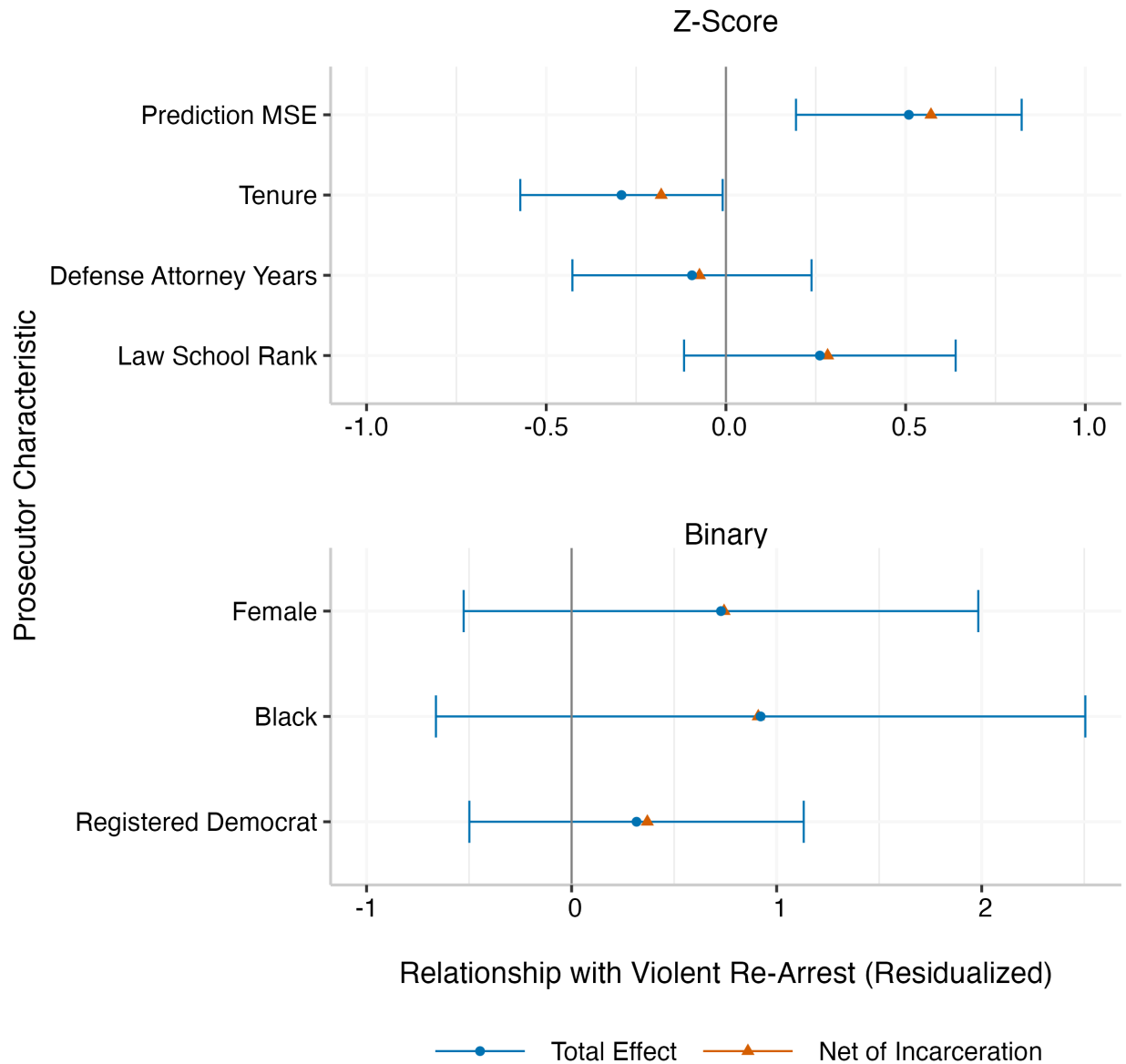
Notes: This figures shows the relationship between prosecutors' beliefs about re-arrest and the incarceration outcomes of their cases over time. The x-axis represents the year in which the case was disposed. The y-axis plots the estimated link between incarceration and the prosecutor's perceived log likelihood that the defendant will be re-arrested for a violent crime (given his age-group or criminal-record category) as in Equation 5. Each time-period (or decile of cases) is allowed to have a different link between prosecutors' beliefs and incarceration. The error bars represent 95 percent confidence intervals, with standard errors clustered by prosecutor.

Figure A.19. : Predictors of Incarceration Conditional on Defendant and Case Characteristics



Notes: This figure plots incarceration rates by (a) age and (b) criminal record. Unconditional incarceration rates are shown in grey circles, and each set of controls is cumulatively added — fixed effects for criminal-record prior points (in orange triangles); defendants’ gender, race, and ethnicity (in light blue diamonds), and fixed effects for the crime type interacted with the offense class severity of the defendant’s lead arresting charge (in dark blue squares). All relationships are normalized to the average value observed in the raw data for defendants in youngest age group (16 to 19 year-olds) in Panel a and defendants with no criminal-record prior points in Panel b. The shaded areas show 95% confidence intervals for incarceration rates relative to the baseline groups. Standard errors are clustered by prosecutor.

Figure A.20. : The Relationship between Prosecutors' Characteristics and Their Estimated Effects on Violent Re-arrest



Notes: This figure illustrates the pairwise relationships between prosecutors' observed characteristics and their estimated effects on violent re-arrest rates. These regressions use the full set of case controls (Column 6 in Table 5). When estimating the relationship between prosecutor tenure and violent re-arrest, the specification excludes prosecutor tenure from the controls. The error bars represent 95% confidence intervals with standard errors clustered by prosecutor.

SUPPLEMENTARY TABLES

Table A.1—: Prosecutors' Re-Arrest Beliefs and Incarceration Outcomes: Robustness to Alternative Sample Selections

	% Incarcerated (≥ 6 mo)				
	(1)	(2)	(3)	(4)	(5)
Log(Likelihood of Violent Re-arrest)	1.18*** (0.43)	1.19*** (0.43)	1.25*** (0.42)	1.36*** (0.45)	1.33*** (0.45)
Dependent Mean	23.53	22.62	21.94	21.59	20.54
Percentage Effect	5.02% (1.81)	5.28% (1.90)	5.72% (1.89)	6.30% (2.07)	6.49% (2.21)
Std. in Beliefs	0.27	0.27	0.27	0.27	0.27
Percentage Effect of Std.	1.38% (0.50)	1.44% (0.52)	1.56% (0.52)	1.72% (0.57)	1.78% (0.61)
Excluding Murder Cases		✓	✓	✓	✓
Excluding Rape Cases			✓	✓	✓
Excluding DUI Cases				✓	✓
Excluding Drug Trafficking					✓
Prosecutor FE	✓	✓	✓	✓	✓
Jurisdiction x Group FE	✓	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓	✓
# Observations	244,473	239,858	235,268	233,722	219,469
# Cases	123,157	120,837	118,537	117,763	110,592
# Prosecutors	162	162	162	162	162
R ²	0.27	0.25	0.24	0.24	0.24
Adjusted R ²	0.25	0.23	0.22	0.22	0.23

Notes: This table shows the relationship between prosecutors' beliefs about re-arrest and the incarceration outcomes of their cases for different samples. Each column estimates Equation 5. Column 1 includes the full set of new felony cases. Column 2 excludes murder cases; Column 3, rape; Column 4, driving while under the influence (which are often handled by the lower courts); Column 5, drug trafficking cases (which are often handled by federal courts). Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.2—: Prediction Errors and Effects on Violent Re-Arrest and Incarceration: Robustness to Alternative Sample Selections

	(1)	(2)	(3)	(4)	(5)
% Violent Re-Arrest (5 Years)					
Prosecutor Prediction Error (MSE Z-Score)	0.46*** (0.10)	0.50*** (0.10)	0.52*** (0.12)	0.55*** (0.13)	0.52*** (0.13)
Dependent Mean	8.27	8.31	8.38	8.42	8.78
Percentage Effect	5.52% (1.21)	6.05% (1.20)	6.25% (1.49)	6.51% (1.51)	5.94% (1.48)
R ²	0.11	0.11	0.11	0.11	0.11
Adjusted R ²	0.01	0.01	0.01	0.01	0.01
% Incarcerated					
Prosecutor Prediction Error (MSE Z-Score)	0.73** (0.32)	0.69** (0.34)	0.75*** (0.28)	0.72** (0.29)	0.86*** (0.30)
Dependent Mean	23.49	22.58	21.89	21.55	20.64
Percentage Effect	3.10% (1.36)	3.06% (1.48)	3.42% (1.30)	3.33% (1.36)	4.18% (1.46)
Excluding Murder Cases		✓	✓	✓	✓
Excluding Rape Cases			✓	✓	✓
Excluding DUI Cases				✓	✓
Excluding Drug Trafficking					✓
# Cases	76,305	74,935	73,516	72,940	68,675
# Prosecutors	112	112	112	112	111
R ²	0.27	0.26	0.26	0.26	0.26
Adjusted R ²	0.19	0.18	0.19	0.18	0.18

Notes: This table considers the relationship between a prosecutor’s prediction errors and her effects on violent re-arrest and incarceration for alternative sample selections. Each column replicates the design in Column 4 of Table 5 in alternative samples. The first column includes the full set of new felony cases handled by surveyed prosecutors in North Carolina between 1995 and 2014. The second column excludes murder cases. The third column excludes rape. The fourth column excludes driving while under the influence cases that are often handled in lower (District) court. The fifth column excludes drug trafficking cases that are often handled by the federal system. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.3—: Prosecutors' Prediction Errors and Case Outcomes: Alternative Measures of (In)Accuracy

Panel (a): Impacts on Violent Re-Arrest and Incarceration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Percent Re-Arrested for Violent Offense (in 5 Years)							
Prosecutor Prediction Error (MSE Z-Score)	0.67*** (0.21)	0.35*** (0.14)	0.46*** (0.14)	0.55*** (0.14)	0.52*** (0.14)	0.49*** (0.15)	0.59*** (0.13)
R ²	0.01	0.04	0.05	0.12	0.14	0.15	0.15
Dependent Mean	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Percentage Effect	7.55%	3.97%	5.18%	6.16%	5.84%	5.57%	6.63%
Percent Incarcerated							
Prosecutor Prediction Error (MSE Z-Score)	1.31** (0.66)	1.51*** (0.54)	0.71** (0.31)	0.79*** (0.30)	0.74** (0.29)	0.70** (0.30)	0.66** (0.32)
R ²	0.01	0.09	0.12	0.26	0.27	0.30	0.30
Dependent Mean	20.64	20.64	20.64	20.64	20.64	20.64	20.78
Percentage Effect	6.37%	7.31%	3.46%	3.83%	3.58%	3.42%	3.17%
# Prosecutors	111	111	111	111	111	111	111
# Cases	67,806	67,806	67,806	67,806	67,806	67,806	63,711
<u>Case Assignment Controls</u>							
Office	✓	✓	✓	✓	✓	✓	✓
Crime-Unit		✓	✓	✓	✓	✓	✓
Prosecutor Tenure			✓	✓	✓	✓	✓
Case Severity				✓	✓	✓	✓
<u>Additional Controls</u>							
Defendant Demographics					✓	✓	✓
Charge FE						✓	✓
Prosecutor Characteristics							✓

Panel (b): Impacts on Incarceration Disparities

	(1)	(2)	(3)	(4)	(5)	(6)
Percent Incarcerated						
	Black	Non-Black	All	Black	Non-Black	All
Prosecutor Prediction Error (Z)	1.29 (0.79)	1.38*** (0.42)	1.32*** (0.46)	0.91*** (0.31)	0.61 (0.43)	0.54 (0.47)
Prosecutor Prediction Error (Z) x Black			-0.01 (0.61)			0.42 (0.46)
Dependent Mean	22.38	17.73	20.64	22.38	17.73	20.64
Office FE	✓	✓	✓			
Office, Crime, Tenure, & Case Severity				✓	✓	✓
# Cases	68,093	40,756	108,849	68,093	40,756	108,849

Notes: This table replicates Table 5 using an alternative empirical benchmark to evaluate the (in)accuracy of prosecutors' beliefs. Instead of using re-arrest patterns for the subsample of defendants who are incarcerated and then released (as specified in the survey question), we use the full sample of defendants. For a defendant who is not incarcerated, we measure violent re-arrest in the five years after case disposition, and for a defendant who is incarcerated, we measure violent re-arrest in the five years after he has finished serving his prison sentence. Figures A.12 and A.13 illustrate the differences between these empirical benchmarks. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.4—: Beliefs to Incarceration: Robustness to Limiting to Prosecutors who Report Rotational Assignment

	% Incarcerated (≥ 6 mo)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(Likelihood of Re-arrest by Age)	1.11* (0.59)						
Log(Likelihood of Re-arrest by Criminal Record)		2.53** (0.97)					
Log(Likelihood of Violent Re-arrest)			1.89*** (0.57)	1.72*** (0.48)	1.64*** (0.48)	1.68*** (0.46)	1.79*** (0.49)
Dependent Mean	20.08	20.23	20.15	20.15	20.15	20.15	20.15
Percentage Effect	5.54% (2.91)	12.49% (4.81)	9.39% (2.84)	8.52% (2.40)	8.12% (2.38)	8.32% (2.28)	8.87% (2.41)
Std. in Beliefs	0.25	0.28	0.26	0.26	0.26	0.26	0.26
Percentage Effect of Std. Change in Beliefs	1.37% (0.72)	3.46% (1.33)	2.47% (0.75)	2.24% (0.63)	2.13% (0.63)	2.19% (0.60)	2.33% (0.63)
Prosecutor FE	✓	✓	✓	✓	✓	✓	✓
Office x Group FE	✓	✓	✓	✓	✓	✓	✓
Sentencing Guidelines FE				✓	✓	✓	✓
Demographics					✓	✓	✓
Charge FE						✓	✓
Prosecutor x Demographics and Charge							✓
# Observations	81,119	80,360	161,479	161,479	161,479	161,479	161,479
# Cases	81,119	80,360	81,119	81,119	81,119	81,119	81,119
# Prosecutors	106	103	106	106	106	106	106
R ²	0.05	0.14	0.09	0.25	0.26	0.28	0.39
Adjusted R ²	0.04	0.13	0.09	0.23	0.24	0.26	0.28

Notes: This table replicates Table 3, limiting to prosecutors who reported that cases were assigned to them quasi-randomly based on a rotation system within their office crime-unit. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.5—: Beliefs to Incarceration: Robustness to Excluding Prosecutors who Rounded their Responses

	% Incarcerated (≥ 6 mo)				
	(1)	(2)	(3)	(4)	(5)
Log(Likelihood of Violent Re-arrest)	1.33*** (0.45)	1.63*** (0.39)	1.62*** (0.42)	1.80*** (0.56)	2.05*** (0.61)
Dependent Mean	20.55	20.70	20.63	20.24	20.19
Percentage Effect	6.47% (2.21)	7.88% (1.90)	7.88% (2.02)	8.91% (2.76)	10.13% (3.04)
Std. in Beliefs	0.27	0.26	0.23	0.28	0.28
Percentage Effect of Std.	1.78% (0.61)	2.08% (0.50)	1.85% (0.47)	2.46% (0.76)	2.81% (0.84)
<u>Excluded Prosecutors</u>					
Reported 0 or 100		✓	✓		
Reported Multiple 50			✓		
Majority Multiple of 10				✓	✓
Majority Multiple of 5					✓
Prosecutor FE	✓	✓	✓	✓	✓
Jurisdiction x Group FE	✓	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓	✓
# Observations	219,410	203,013	194,700	150,295	126,944
# Prosecutors	162	160	154	128	107
R ²	0.24	0.25	0.25	0.26	0.26
Adjusted R ²	0.23	0.23	0.23	0.23	0.24

Notes: This table probes robustness of the estimated relationship between prosecutors' re-arrest beliefs and their incarceration outcomes to excluding prosecutors who rounded their reported beliefs more than most. Column 1 repeats our preferred specification in the full sample (Column 4 of Table 3). Column 2 excludes prosecutors' responses if they state that any age or criminal-record group had either a zero or one hundred percent chance of re-arrest. Column 3 excludes prosecutors' responses if they also reported more than one response of fifty. Column 4 excludes prosecutors' responses if they reported responses in multiples of ten more than half of the time. Column 5 excludes prosecutors' responses if they reported responses in multiples of five more than half of the time. The standard deviation of each belief residualizes by prosecutor and office-by-group effects. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.6—: Balance in Case Characteristics by Prosecutor Observable Characteristics

	<u>Defendant Characteristic</u>			
	% Female	Age (Yrs)	% Black	% Hispanic
Prosecutor Age	-0.032 (0.069)	0.008 (0.014)	-0.022 (0.072)	0.053** (0.026)
Years as Defense Attorney	0.037 (0.096)	-0.016 (0.027)	-0.13 (0.18)	0.011 (0.059)
Law School Rank (Z-Score)	-0.46 (0.34)	0.113 (0.098)	0.89** (0.37)	0.044 (0.18)
Registered Democrat	0.37 (0.60)	0.433*** (0.153)	-0.30 (0.79)	0.23 (0.30)
Prosecutor Black	-1.16 (1.05)	0.369** (0.164)	0.39 (1.12)	0.15 (0.61)
Prosecutor Female	-1.74*** (0.67)	0.271 (0.206)	-1.33 (0.92)	0.15 (0.34)
Dependent Mean	17.07	30.05	61.98	4.00
# Observations	108,849	108,849	108,849	108,849
# Prosecutors	158	158	158	158

Notes: This table tests the balance of defendant characteristics across prosecutors who differ in their observable characteristics. Each coefficient comes from a separate regression of the dependent variable of the defendant characteristic on the prosecutor attribute, conditional on our preferred case-assignment controls (which interact office with crime-type, year, prosecutor tenure group, and case severity as reflected by the initial sentencing guidelines recommendation). Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.7—: Prediction Errors and Effects on Violent Re-arrest and Incarceration: Conditional on Time Spent on Predictions and Rounding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
% Violent Re-Arrest (5 Year)							
Prosecutor Prediction Error (MSE Z-Score)	0.57*** (0.15)	0.53*** (0.14)	0.53*** (0.18)	0.54*** (0.14)	0.51*** (0.15)	0.49*** (0.17)	0.48*** (0.18)
Avg. Duration on Predictions in Minutes		-0.61** (0.25)		-0.58** (0.25)	-0.58** (0.28)	-0.58** (0.27)	-0.17 (0.47)
% Prediction Responses at 0 or 100				0.01 (0.03)	0.01 (0.03)	0.02 (0.03)	0.02 (0.03)
% Prediction Responses at 50					-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
% Prediction Responses Multiple of 10						-0.002 (0.01)	-0.0004 (0.01)
% Prediction Responses Other Multiple of 5							-0.02 (0.02)
Quartic in Duration			✓				
Dependent Mean	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Percentage Effect	6.42% (1.66)	5.94% (1.61)	5.99% (2.00)	6.12% (1.62)	5.77% (1.69)	5.59% (1.93)	5.46% (2.03)
% Incarcerated							
Prosecutor Prediction Error (MSE Z-Score)	0.86*** (0.30)	0.91*** (0.29)	0.98*** (0.25)	0.86*** (0.28)	0.93*** (0.31)	0.56* (0.32)	0.52 (0.33)
Avg. Time Spent on Predictions (in Min.)		1.15 (0.80)		0.97 (0.81)	1.06 (0.76)	1.52** (0.66)	2.17*** (0.76)
% Prediction Responses at 0 or 100				-0.07 (0.09)	-0.07 (0.08)	0.02 (0.08)	0.01 (0.08)
% Prediction Responses at 50					0.08** (0.03)	0.13*** (0.03)	0.13*** (0.03)
% Prediction Responses Multiple of 10						-0.05*** (0.01)	-0.04*** (0.01)
% Prediction Responses Other Multiple of 5							-0.04* (0.02)
Quartic in Duration			✓				
Dependent Mean	20.64	20.64	20.64	20.64	20.64	20.64	20.64
Percentage Effect	4.18% (1.46)	4.40% (1.39)	4.74% (1.23)	4.16% (1.36)	4.51% (1.50)	2.72% (1.56)	2.54% (1.58)
# Cases	67,806	67,806	67,806	67,806	67,806	67,806	67,806
# Prosecutors	111	111	111	111	111	111	111

Notes: This table considers the relationship between prosecutors' prediction mistakes and their effects on violent re-arrest and incarceration controlling for the time that prosecutors spent answering the prediction questions and controlling for how frequently prosecutors rounded their responses. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.8—: Prosecutors’ Re-Arrest Beliefs and the Re-Arrest Outcomes in their Cases

	% Re-arrested for a Violent Crime in 5 Years					
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Likelihood of Re-arrest for Age Group)	−0.38 (0.42)					
Log(Likelihood of Re-arrest for Criminal-Record Group)		0.70 (0.79)				
Log(Likelihood of Violent Re-arrest)			0.22 (0.49)	0.13 (0.45)	−0.005 (0.45)	0.05 (0.42)
Dependent Mean	9.12	9.13	9.12	9.12	9.12	9.12
Percentage Effect	−4.20% (4.65)	7.69% (8.60)	2.45% (5.36)	1.44% (4.99)	−0.05% (4.98)	0.54% (4.64)
Std. in Beliefs	0.25	0.30	0.27	0.27	0.27	0.27
Percentage Effect of Std. Change	−1.05% (1.16)	2.28% (2.56)	0.67% (1.47)	0.40% (1.37)	−0.01% (1.37)	0.15% (1.27)
Prosecutor FE	✓	✓	✓	✓	✓	✓
Office x Group FE	✓	✓	✓	✓	✓	✓
Sentencing Guidelines FE				✓	✓	✓
Demographics					✓	✓
Charge FE						✓
# Observations	65,881	65,588	131,469	131,469	131,469	131,469
# Cases	65,881	65,588	66,104	66,104	66,104	66,104
# Prosecutors	112	111	113	113	113	113
R ²	0.05	0.02	0.03	0.07	0.09	0.10
Adjusted R ²	0.03	0.01	0.02	0.05	0.07	0.07

Notes: This table shows the relationship between prosecutors’ beliefs about re-arrest and the re-arrest outcomes of their cases. Column 1 considers the relationship between a prosecutor’s belief about the re-arrest likelihood of defendants in a given age-group and the re-arrest outcomes of defendants in that age-group in the prosecutors’ cases (as in Equation 3). Column 2 considers the analogue for criminal-record categories (Equation 4). Column 3 stacks these specifications (Equation 5). Column 3 introduces fixed effects for where defendants started in the state’s sentencing guidelines based on the severity of their criminal records (summarised by criminal-record prior points) and of their arresting charge (summarised by offense class). Column 4 introduces demographic controls (for race, gender, and age). Column 5 includes fixed effects for the defendant’s lead arresting charge (with the highest offense class or, if there are ties, the highest incarceration rate). Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.9—: Prosecutors’ Beliefs about Age Out and their Sentencing Preferences in Hypothetical Cases with Defendants of Different Ages

	% Incarcerated		Incarceration Months		Incarceration Months — Any Incar.	
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Likelihood of Violent Re-arrest)	12.30*** (4.47)	12.02** (4.77)	0.05 (0.51)	0.08 (0.55)	0.40 (1.06)	0.003 (1.11)
Older Defendant (36 years-old)	8.84** (4.14)	5.13 (4.37)	0.34 (0.53)	0.17 (0.58)	−1.63 (1.23)	−1.64 (1.28)
Dependent Mean	41.66	44.23	2.93	3.00	6.10	6.04
Percentage Effect	29.53% (10.74)	27.18% (10.78)	1.68% (17.47)	2.77% (18.28)	6.58% (17.42)	0.06% (18.31)
Std. in Beliefs	0.32	0.32	0.32	0.32	0.32	0.32
Percentage Effect of Std.	9.51% (3.46)	8.72% (3.46)	0.54% (5.63)	0.89% (5.86)	2.12% (5.61)	0.02% (5.87)
Limited to Merged Prosecutors		✓		✓		✓
Prosecutor FE	✓	✓	✓	✓	✓	✓
Vignette FE	✓	✓	✓	✓	✓	✓
Age FE	✓	✓	✓	✓	✓	✓
# Observations	725	633	720	630	346	313
# Prosecutors	183	160	183	160	136	122
R ²	0.59	0.59	0.50	0.52	0.68	0.68
Adjusted R ²	0.45	0.44	0.33	0.35	0.45	0.45

Notes: This table shows the relationship between prosecutors’ beliefs about violent re-arrest and their sentencing preferences in hypothetical cases. Each column considers the relationship between a prosecutor’s belief about the re-arrest likelihood of defendants in a given age-group and the preferred punishment in the hypothetical case (as in Equation D1). The odd columns include all prosecutors who completed the survey; the even columns limit to the sample of Superior Court prosecutors who merged to the court records and responded to the hypothetical cases. Columns 1–2 consider the prosecutor’s response about whether she would press for incarceration in a plea deal in the hypothetical case. Columns 3–4 consider the prosecutor’s preferred incarceration length. Columns 5–6 consider the prosecutor’s preferred incarceration length conditional on pressing for an incarceration sentence. The text of hypotheticals can be found in Appendix D. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.10—: Prosecutors' Beliefs about the Risks of Age Groups and their Incarceration Outcomes

	% Incarcerated ($\geq 6\text{mo}$)					
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Likelihood of Re-arrest by Age)	1.78*** (0.64)	1.83*** (0.64)	1.17** (0.56)	0.85* (0.44)	0.82* (0.43)	0.75* (0.44)
Age 20-25 (vs. 16-19)	3.24*** (0.47)					
Age 26-35 (vs. 16-19)	6.55*** (0.49)					
Age 36-50 (vs. 16-19)	10.24*** (0.69)					
Age ≥ 50 (vs. 16-19)	8.82*** (1.12)					
Dependent Mean	20.53	20.53	20.53	20.53	20.53	20.53
Percentage Effect	8.65% (3.10)	8.89% (3.13)	5.70% (2.73)	4.13% (2.12)	3.98% (2.10)	3.65% (2.15)
Std. in Beliefs	0.25	0.25	0.25	0.25	0.25	0.25
Percentage Effect of Std. Change in Beliefs	2.16% (0.78)	2.23% (0.78)	1.43% (0.68)	1.03% (0.53)	1.00% (0.53)	0.91% (0.54)
Prosecutor FE	✓	✓	✓	✓	✓	✓
Age FE		✓	✓	✓	✓	✓
Office x Age FE			✓	✓	✓	✓
Sentencing Guidelines FE				✓	✓	✓
Demographics					✓	✓
Charge FE						✓
# Observations	109,608	109,608	109,608	109,608	109,608	109,608
# Cases	109,608	109,608	109,608	109,608	109,608	109,608
# Prosecutors	161	161	161	161	161	161
R ²	0.04	0.04	0.05	0.25	0.25	0.27
Adjusted R ²	0.04	0.04	0.04	0.22	0.22	0.24

Notes: This table shows the relationship between prosecutors' beliefs about the relationship between age and re-arrest and the incarceration outcomes of their cases. Each column estimates Equation 3. Column 4 introduces fixed effects for where defendants started in the state's sentencing guidelines based on the severity of their criminal records (summarised by criminal-record prior points) and of their arresting charge (summarised by offense class). Column 5 introduces demographic controls (for race, gender, and age). Column 6 includes fixed effects for the defendant's lead arresting charge (with the highest offense class or, if there are ties, the highest incarceration rate). The standard deviation of beliefs residualizes by prosecutor and office-by-group effects to consider the conditional variation in beliefs. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.11—: Prosecutors’ Beliefs about the Risks of Criminal-Record Groups and their Incarceration Outcomes

	% Incarcerated (≥ 6 mo)					
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Likelihood of Re-arrest by Criminal Record)	0.45 (1.00)	0.61 (0.99)	1.60* (0.88)	1.76** (0.80)	1.72** (0.78)	1.78** (0.75)
1-2 Points (vs. No Record)	7.48*** (0.79)					
3-5 Points (vs. No Record)	17.32*** (1.16)					
6-9 Points (vs. No Record)	28.16*** (1.71)					
≥ 10 Points (vs. No Record)	38.67*** (2.36)					
Dependent Mean	20.56	20.56	20.56	20.56	20.56	20.56
Percentage Effect	2.19% (4.87)	2.98% (4.83)	7.77% (4.30)	8.58% (3.91)	8.37% (3.81)	8.65% (3.63)
Std. in Beliefs	0.30	0.30	0.30	0.30	0.30	0.30
Percentage Effect of Std. Change in Beliefs	0.65% (1.45)	0.88% (1.43)	2.31% (1.28)	2.55% (1.16)	2.49% (1.13)	2.57% (1.08)
Prosecutor FE	✓	✓	✓	✓	✓	✓
Prior Point FE		✓	✓	✓	✓	✓
Office x Prior Point FE			✓	✓	✓	✓
Sentencing Guidelines FE				✓	✓	✓
Demographics					✓	✓
Charge FE						✓
# Observations	109,802	109,802	109,802	109,802	109,802	109,802
# Cases	109,802	109,802	109,802	109,802	109,802	109,802
# Prosecutors	159	159	159	159	159	159
R ²	0.12	0.13	0.14	0.24	0.25	0.27
Adjusted R ²	0.12	0.12	0.13	0.22	0.23	0.24

Notes: This table shows the relationship between prosecutors’ beliefs about the relationship between criminal records and re-arrest and the incarceration outcomes of their cases. Each column estimates Equation 4. Defendants’ criminal records are summarized using the prior-points formula under North Carolina state law, where, for example, a conviction for a misdemeanor (e.g., possession of drug paraphernalia) adds one point while a mid-level felony (e.g., cocaine sales) adds four points. Column 4 introduces fixed effects for where defendants started in the state’s sentencing guidelines based on their criminal-record prior points and the severity of their arresting charge (summarised by offense class). Column 5 introduces demographic controls (for race, gender, and age). Column 6 includes fixed effects for the defendant’s lead arresting charge (with the highest offense class or, if there are ties, the highest incarceration rate). The standard deviation of beliefs residualizes by prosecutor and office-by-group effects to consider the conditional variation in beliefs. Standard errors are clustered by prosecutor. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table A.12—: Prosecutors' Beliefs about Violent Re-Arrest and the Sentencing Outcomes in their Cases

	% Incarcerated (≥6mo) (1)	Incarceration Months (2)	Incarceration Months— Any Incar. (3)	Pre-Trial Detention Months (4)	% Trial (5)
Log(Likelihood of Violent Re-arrest)	1.33*** (0.45)	0.41** (0.18)	0.62** (0.30)	0.03 (0.03)	0.07 (0.10)
Dependent Mean	20.55	5.58	14.01	1.44	2.04
Percentage Effect	6.47% (2.21)	7.39% (3.18)	4.46% (2.13)	1.85% (1.98)	3.19% (4.80)
Std. in Beliefs	0.27	0.27	0.27	0.27	0.27
Percentage Effect of Std.	1.78% (0.61)	2.03% (0.87)	1.22% (0.59)	0.51% (0.54)	0.88% (1.32)
Prosecutor FE	✓	✓	✓	✓	✓
Jurisdiction x Group FE	✓	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓	✓
# Observations	219,410	219,410	87,364	219,410	219,410
# Cases	110,561	110,561	43,942	110,561	110,561
# Prosecutors	162	162	162	162	162
R ²	0.24	0.27	0.35	0.17	0.08
Adjusted R ²	0.23	0.26	0.32	0.15	0.06

Notes: This table shows the relationship between prosecutors' beliefs about re-arrest and the sentencing outcomes of their cases. Each column estimates Equation 5. Column 1 considers our primary sentencing outcome of incarceration for at least six months, which is typically served in state prison rather than county jail. Column 2 considers the number of months of incarceration. Column 3 considers the number of months of incarceration conditional on any incarceration time. Column 4 considers months served pre-trial. Column 5 considers the percent of cases that go to trial. The standard deviation of beliefs residualizes by prosecutor and office-by-group effects to consider the conditional variation in beliefs. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.13—: Beliefs to Incarceration: Alternative Parameterizations

	% Incarcerated ($\geq 6\text{mo}$)			
	(1)	(2)	(3)	(4)
Log(Likelihood of Violent Re-arrest)	1.33*** (0.45)			
Log(Likelihood of Violent Re-arrest, Unwinsorized)		1.44*** (0.37)		
Inverse Hyperbolic Sine(Likelihood of Violent Re-arrest, Unwinsorized)			0.97** (0.41)	
Likelihood of Violent Re-arrest				2.68* (1.61)
Dependent Mean	20.55	20.70	20.55	20.55
Percentage Effect	6.47% (2.21)	6.95% (1.79)	4.70% (2.02)	13.06% (7.82)
Std. in Beliefs	0.27	0.28	0.28	0.07
Percentage Effect of Std. Change in Beliefs	1.78% (0.61)	1.93% (0.50)	1.29% (0.56)	0.91% (0.55)
Prosecutor FE	✓	✓	✓	✓
Office x Group FE	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓
# Observations	219,410	203,013	219,410	219,410
# Cases	110,561	109,556	110,561	110,561
# Prosecutors	162	160	162	162
R ²	0.24	0.25	0.24	0.24
Adjusted R ²	0.23	0.23	0.23	0.23

Notes: This table shows the relationship between prosecutors' re-arrest beliefs and the incarceration outcomes for specific groups of defendants. Column 1 is our preferred parameterization, with winsorizing at the 5th and 95th percentiles. Column 2 excludes prosecutors' response if they state that any group had either a zero or one hundred percent chance of re-arrest. Column 3 uses the inverse hyperbolic sine transformation. Column 4 uses the level of prosecutors' beliefs, with winsorizing at the 5th and 95th percentiles. The standard deviation of each belief residualizes by prosecutor and office-by-group effects. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.14—: Prosecutors’ Re-Arrest Beliefs and the Incarceration Outcomes in their Cases, Conditional on Other Prosecutor Traits

	% Incarcerated (≥ 6 mo)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(Likelihood of Violent Re-arrest)	1.61*** (0.38)	1.74*** (0.40)	1.23*** (0.38)	1.37*** (0.42)	2.01*** (0.46)	1.48*** (0.46)	1.29*** (0.46)
Dependent Mean	20.55	20.56	20.55	20.55	20.56	20.55	20.56
Percentage Effect	7.82% (1.87)	8.47% (1.93)	5.99% (1.84)	6.67% (2.04)	9.75% (2.23)	7.21% (2.24)	6.29% (2.25)
Prosecutor Trait	Female	Black	Democrat	Tenure	Def. Att. Yrs	Supervisor	Top 30 Law
Prosecutor FE	✓	✓	✓	✓	✓	✓	✓
Trait x Jurisdiction x Group FE	✓	✓	✓	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓	✓	✓	✓
# Observations	219,410	219,166	219,398	219,410	219,166	219,410	219,166
# Cases	110,561	110,317	110,555	110,561	110,317	110,561	110,317
# Prosecutors	162	160	161	162	160	162	160
R ²	0.25	0.25	0.25	0.33	0.26	0.25	0.25
Adjusted R ²	0.23	0.23	0.23	0.25	0.23	0.23	0.23

Notes: This table shows the relationship between prosecutors’ beliefs about re-arrest and the incarceration outcomes of their cases conditional on other prosecutor traits. Each column estimates Equation 5, with fixed effects for where defendants started in the state’s sentencing guidelines based on the severity of their criminal records (summarised by criminal-record prior points) and of their arresting charge (summarised by offense class). Each column allows prosecutors with different observable characteristics to have different incarceration tendencies for defendants in different age-groups and prior criminal-record categories. The survey collected prosecutors’ self-reported gender, race, age, prosecutorial tenure, previous experience as a defense attorney, and law school rank, as well as whether they were in a supervisory role (either as the elected District Attorney or the appointed chief prosecutor). Whether a prosecutor is a registered Democrat comes from linking North Carolina Voter Records, with missing values imputed from the survey question about political ideology. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.15—: Beliefs to Incarceration: Robustness to Limiting to Prosecutors who Spent Time on Belief Elicitations

	% Incarcerated ($\geq 6\text{mo}$)			
	(1)	(2)	(3)	(4)
Log(Likelihood of Violent Re-arrest)	1.33*** (0.45)	1.27** (0.49)	2.04** (0.86)	4.54*** (1.08)
Dependent Mean	20.55	20.81	21.68	23.67
Percentage Effect	6.47% (2.21)	6.09% (2.34)	9.41% (3.96)	19.18% (4.56)
Std. in Beliefs	0.27	0.28	0.20	0.13
Percentage Effect of Std.	1.78% (0.61)	1.69% (0.65)	1.89% (0.80)	2.45% (0.58)
<u>Prosecutor Sample</u>				
At Least 30 Seconds		✓	✓	✓
At Least 1 Minute			✓	✓
At Least 2 Minutes				✓
Prosecutor FE	✓	✓	✓	✓
Jurisdiction x Group FE	✓	✓	✓	✓
Sentencing Guidelines FE	✓	✓	✓	✓
# Observations	219,410	169,215	74,364	16,686
# Prosecutors	162	151	73	22
R ²	0.24	0.25	0.29	0.39
Adjusted R ²	0.23	0.23	0.26	0.29

Notes: This table probes the robustness of the estimated relationship between prosecutors' re-arrest beliefs and their incarceration outcomes to limiting to prosecutors who took more than thirty seconds on the the prediction questions. Column 1 repeats our preferred specification in the full sample (Column 4 of Table 3). Columns 2, 3, and 4 exclude prosecutors' responses if they spent less than thirty seconds, one minute, and two minutes on the question, respectively. The standard deviation of each belief residualizes by prosecutor and office-by-group effects. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.16—: Prediction Errors & Prosecutors' Re-Arrest Rates for Alternative Definitions

	% Re-Arrest in 5 Years			\$ Cost of Crime		
	New Offense	Any Violation	High Cost Crime		IHS	Log(Cost + 1)
	(1)	(2)	(3)	(4)	(5)	(6)
Prosecutor Prediction Error (MSE Z-Score)	1.00*** (0.28)	0.72 (0.44)	0.81*** (0.21)	619.80 (1,581.00)	0.07*** (0.02)	0.07*** (0.02)
Dependent Mean	34.20	39.39	15.97	16525.07	1.72	1.58
Percentage Effect	2.92% (0.81)	1.83% (1.11)	5.05% (1.34)	3.75% (9.57)	4.09% (1.16)	4.13% (1.16)
Preferred Controls	✓	✓	✓	✓	✓	✓
# Observations	67,806	67,806	67,806	67,806	67,806	67,806
# Prosecutors	111	111	111	111	111	111
R ²	0.14	0.16	0.14	0.10	0.14	0.14
Adjusted R ²	0.04	0.06	0.03	-0.01	0.04	0.04

Notes: This table replicates our preferred design (Column 4 of Table 5(a)) for alternative measures of the incidence of future crime in the prosecutors' cases. Crime costs come from Miller [1996]. Column 1 includes all new offenses. Column 2 includes all new offenses and all probation violations. Column 3 defines a high cost crime as all those with costs over \$1,000. In addition to the violent and threatening offenses in our usual measure, this includes breaking and entering into buildings or motor vehicles. Column 4 uses the raw dollar costs. Given the long tail of offense costs, Column 5 uses the inverse hyperbolic sine (IHS) of offense costs, and Column 6 uses the log transformation. Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.17—: Prosecutors' Prediction Errors and Case Outcomes for Prosecutors who Report Quasi-Random Case Assignment

Panel (a): Impacts on Violent Re-Arrest and Incarceration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Percent Re-Arrested for Violent Offense (in 5 Years)						
Prosecutor Prediction Error (MSE Z-Score)	0.59** (0.29)	0.19 (0.14)	0.39** (0.19)	0.59*** (0.22)	0.46** (0.21)	0.44** (0.21)	0.45** (0.23)
R ²	0.01	0.04	0.05	0.11	0.14	0.16	0.15
Dependent Mean	9.19	9.19	9.19	9.19	9.19	9.19	9.22
Percentage Effect	6.38%	2.08%	4.29%	6.37%	5.04%	4.81%	4.91%
	Percent Incarcerated						
Prosecutor Prediction Error (MSE Z-Score)	1.71* (0.97)	2.31*** (0.69)	1.26** (0.50)	1.40*** (0.43)	1.36*** (0.43)	1.25*** (0.45)	1.30** (0.52)
R ²	0.01	0.09	0.12	0.26	0.27	0.29	0.29
Dependent Mean	20.23	20.23	20.23	20.23	20.23	20.23	20.32
Percentage Effect	8.47%	11.41%	6.24%	6.92%	6.74%	6.17%	6.41%
# Prosecutors	73	73	73	73	73	73	61
# Cases	51,965	51,965	51,965	51,965	51,965	51,965	48,440
<u>Case Assignment Controls</u>							
Office	✓	✓	✓	✓	✓	✓	✓
Crime-Unit		✓	✓	✓	✓	✓	✓
Prosecutor Tenure			✓	✓	✓	✓	✓
Case Severity				✓	✓	✓	✓
<u>Additional Controls</u>							
Defendant Demographics					✓	✓	✓
Charge FE						✓	✓
Prosecutor Characteristics							✓

Panel (b): Impacts on Incarceration Disparities

	(1)	(2)	(3)	(4)	(5)	(6)
	Percent Incarcerated (≥ 6mos)					
	Black	Non-Black	All	Black	Non-Black	All
Prosecutor Prediction Error (Z)	1.94* (1.06)	1.99*** (0.54)	1.99*** (0.54)	1.65*** (0.53)	2.23*** (0.45)	2.23*** (0.44)
Prosecutor Prediction Error (Z) x Black			-0.05 (0.65)			-0.57 (0.55)
R ²	0.01	0.02	0.01	0.29	0.36	0.32
Dependent Mean	23.01	18.02	21.19	23.01	18.02	21.19
Prediction Error in Percentage Terms	8.41%	11.04%	9.39%	7.19%	12.37%	10.52%
Office FE	✓	✓	✓			
Office, Crime, Tenure, & Case Severity				✓	✓	✓
# Prosecutors	103	103	103	103	103	103
# Cases	48,022	27,547	75,569	48,022	27,547	75,569

Notes: This table replicates Table 5 for the subset of surveyed prosecutors who reported that cases were assigned to them quasi-randomly (e.g., based on a rotation system). Standard errors are clustered by prosecutor. *p<0.1; **p<0.05; ***p<0.01.

Table A.18—: Prosecutors’ Prediction Errors and their Possibility Frontiers

	Panel (a): Violent Re-Arrest				
	Violent Re-Arrest	% Incarcerated (≥6mo)	Violent Re-Arrest	Net Violent Re-Arrest	Incarcerated Holding Fixed Violent Re-Arrest
Prosecutor Prediction Error (MSE Z-Score)	0.57*** (0.15) [0.26] [-0.12, 0.90]	0.86*** (0.30) [0.52] [-0.26, 1.80]		0.64** [0.27] [-0.13, 1.03]	7.90** [3.81] [-1.57, 14.44]
Instrumented Incarceration, $\tilde{\psi}_{p, \text{Incarceration}}$			-0.081*** [0.017] [-0.12, -0.052]		
Dependent Mean	8.85	20.64	7.82	8.85	20.64
Percentage Effect	6.42%	4.18%	-1.03%	7.20%	38.29%
	Panel (b): Any Re-Arrest				
	Violent Re-Arrest	% Incarcerated (≥6mo)	Violent Re-Arrest	Net Violent Re-Arrest	Incarcerated Holding Fixed Violent Re-Arrest
Prosecutor Prediction Error (MSE Z-Score)	1.00*** (0.28) [0.59] [0.084, 2.29]	0.86*** (0.30) [0.52] [-0.26, 1.80]		1.14** [0.60] [0.20, 2.50]	6.98** [4.36] [1.15, 18.20]
Instrumented Incarceration, $\tilde{\psi}_{p, \text{Incarceration}}$			-0.16*** [0.033] [-0.22, -0.094]		
Dependent Mean	34.20	20.64	31.66	34.20	20.64
Percentage Effect	2.92%	4.18%	-0.52%	3.34%	33.82%
# Prosecutors	111	111	1,952	111	111
# Cases	67,806	67,806	789,840	67,806	67,806

Notes: This table analyzes the relationship between a prosecutor’s prediction error on the survey (using Equation 6) and her effects on re-arrest in her real-world cases. Panel (a) considers violent re-arrest (felony assault, murder, manslaughter, serious sex offenses, robbery, burglary, kidnapping, and arson). Panel (b) considers any arrest for new felonies. Re-arrest is measured in the five years after disposition, so the sample is limited to cases disposed before 2015 to allow for five full years of post-disposition data to observe re-arrest. Column 1 shows the relationship between a prosecutor’s prediction error and her total impact on re-arrest (Equation 8): these estimated re-arrest effects condition on the office crime-unit, the prosecutor’s seniority, and the case’s severity (using the sentencing guidelines recommended punishment). Column 2 shows the analogue for incarceration (Equation 7). Column 3 and 4 aim to evaluate a prosecutor’s re-arrest effect net of her impact on incarceration. Column 3 presents the average relationship between a prosecutor’s incarceration and re-arrest effect estimated in independent samples (Equation F3). Similar results are obtained replicating Rose and Shem-Tov [2021]’s discontinuity design (see Appendix F). Column 4 uses the estimate in Column 3 to evaluate the relationship between a prosecutor’s prediction error and her effect on re-arrest net of her effect on incarceration (Equation 9). Column 5 instead uses this estimate to evaluate how much less accurate prosecutors would have to increase their incarceration rates to hold re-arrest rates constant. Analytical standard errors that cluster by prosecutors are in parentheses. Block-bootstrapped standard errors that sample by prosecutors are in brackets. The bracketed ranges represent 95% confidence intervals from the 1,000 bootstrap replications. *p<0.1; **p<0.05; ***p<0.01.

Table A.19—: Prosecutors’ Prediction Mistakes and Re-Arrest Outcomes

	Panel (a): Violent Re-Arrest			
	Violent Re-Arrest	Incarceration Years	Violent Re-Arrest	Net Violent Re-Arrest
Prosecutor Prediction Error (MSE Z-Score)	0.57** [0.26] (0.15)	3.84 [5.19] (2.86)		0.61** [0.25]
Instrumented Incarceration Length, $\tilde{\psi}_{p,\text{Incarceration}}$			-0.010*** [0.002]	
Dependent Mean	8.85	137.17	7.82	8.85
Percentage Effect	6.42% [2.89]	2.80% [3.79]	-0.13% [0.02]	6.84% [2.85]
	Panel (b): Any Re-Arrest			
	Any Re-Arrest	Incarceration Years	Any Re-Arrest	Net Any Re-Arrest
Prosecutor Prediction Error (MSE Z-Score)	1.00** [0.59] (0.28)	3.84 [5.19] (2.86)		1.09** [0.60]
Instrumented Incarceration Length, $\tilde{\psi}_{p,\text{Incarceration}}$			-0.024*** [0.004]	
Dependent Mean	34.20	137.17	31.66	34.20
Percentage Effect	2.92% [1.72]	2.80% [3.79]	-0.08% [0.01]	3.20% [1.76]
# Prosecutors	111	111	1,952	111
# Cases	67,806	67,806	789,840	67,806

Notes: This table analyzes the relationship between a prosecutor’s prediction mistakes on the survey and her effects of re-arrest in her real-world cases, net of her effect on incarceration lengths — measured in the three years after disposition. This table replicates Columns 1–4 of Table A.18 but accounts for differences in incarceration length rather than incarceration rates across prosecutors. Analytical clustered standard errors are in parentheses. Block-bootstrapped errors that sample by prosecutors are in brackets. Bracketed intervals represent 95% confidence intervals from the 1,000 bootstrap replications. *p<0.1; **p<0.05; ***p<0.01.

In the North Carolina court records, there are two features of the raw data that might confound analyses of prosecutorial discretion. First, the data typically records the prosecutor assigned to the case but lacks a consistent identifier for each prosecutor. Second, the unit of observation — the “docket” — does not always reflect the unit at which decisions are made because multiple dockets are often handled together in a single “case”.⁴⁸ Identifying the “case” helps us better identify the sequence of discretionary choices, as we can track the most serious charge on the case at each juncture of the process and how this charging choice interacts with the mandates of North Carolina’s sentencing guidelines.

C.1. Constructing Prosecutor Identifiers

The court records start with a set of strings that inconsistently identify prosecutors. For example, Emma K. Harrington might also be recorded as Attorney E Harrington or EKH. We first strip off generic designators (like attorney) and parsed names into first, middle, and last names or initials based on the punctuation of the name. Second, within jurisdictions, we create all possible pairs of names and use string distance algorithms to link together distinct names that we believe reflect the same prosecutors. This generates a refined set of prosecutor names.⁴⁹ Third, we link prosecutor identifiers that only have initials to the refined prosecutor names. Fourth, we link prosecutors with similar names across jurisdictions by hand, looking up prosecutors with common matching names or similar but not identical names in different offices to see if they likely were the same individual. We also looked up by hand all women with the same first name to see if there was evidence of a marriage that resulted in a name change.

C.2. Constructing Case Identifiers

We use two rules to determine whether dockets are consolidated into cases: (1) we combine dockets that are flagged in the court records as “consolidated for judgment” for sentencing and (2) we combine dockets when the timing of the dockets are proximate or overlapping. Specifically, we consolidate dockets when the charging or disposition dates occur in the same week or the charges in the later docket occur before those in the earlier docket were resolved. If either of these timing conditions are met and the same prosecutor handles both dockets, we join the dockets into a single case. We always consider dockets handled by two different prosecutors as separate cases, even if the dates are proximate or the date ranges are overlapping.

Consolidated for judgment: We use the “consolidated for judgment” fields to join dockets that have been combined at sentencing for a single judgment. Of all offenses in the court records, 15% are consolidated with another offense at sentencing, and 37% of initial dockets have at least one consolidated offense.

Overlapping date ranges: When docket date ranges are proximate or overlapping, we join dockets with the same defendant that are handled by a single prosecutor. We consolidate 19.1% of all cases using common disposition weeks across dockets. We consolidate an additional 10.8% of cases using the case filing week. We consolidate an additional 2.14% of cases using the week the case was charged.

Organizing dockets into cases allows us to more accurately assess the time-line of cases and the decisions of prosecutors. In each case, the most severe lead charge determines the punishment

⁴⁸For some defendants, multiple charges are brought at the same time but filed under different docket numbers. For other defendants, multiple charges enter the court system separately but are resolved together in a final judgment.

⁴⁹To classify the last name as matching, we require both last names to be populated and then either (i) a near perfect match on the last names, (ii) a high-quality match on the last names with the first letter of the first name matching, (iii) a high-quality match on the last name and a near perfect match on the non-missing first names, or (iv) a good match on the last names with the first letter of the first name matching and a near perfect match on the first names. After applying these rules we then further require that there is some way that the first letter of the first-name matches, either based on the names or the initials (since some people go by their middle names, the first and middle names sometimes didn’t line up in predictable ways).

under the state sentencing guidelines. The lead charge at arrest determines where defendants start in the sentencing guidelines and the lead charge at conviction determines where defendants land in the sentencing guidelines after the prosecutor has exercised her discretion. Organizing dockets into cases allows us to identify the lead charge at each stage and, thus, more accurately assess the time-line for each case and the prosecutor’s decisions about whether or not to reduce the lead charge. Finally, since the punishments are served concurrently unless noted otherwise, organizing dockets into cases allows us to more accurately assess the punishment on each case.

A Note about Records of Probation Violations: In the North Carolina court records, violations of probation are typically recorded on the docket of the initial offense that led to the probation sentence. We split these probation violations into their own cases based on the first date that a probation violation appears on the docket. These violations amount to 11.8% of all charges. Probation violations are excluded from our analyses since prosecutors are rarely involved in these cases in North Carolina. Breaking off these probation violations from the initial offense is necessary to correctly date the case according to when it was first resolved. This is also essential for accurately assessing the initial punishment rather than the ultimate punishment that might be triggered by a probation violation.

C.3. Linking to Voter Records

We uniquely match the prosecutor to a voter record file in 88 percent of cases. We find a strong concordance with the survey information. Among prosecutors who identify as liberal on the survey, only 2 percent are registered Republicans. Similarly, only two prosecutors (1.5 percent) reported a different racial identity on the survey than in the voter records.

For the match of prosecutor identifiers to the North Carolina voter records, we require an exact match on the last name and first letter of the first name. We then use the rest of the first name, the middle initial/name, the suffix (if applicable), and the county to try to identify unique, high-quality matches. Finally, we use the voter’s age and the prosecutor’s years working in the voter records to identify unique, high-quality matches who would be active as prosecutors between the ages of 24 (after plausible law school graduation) and 64 (before retirement). Using this information, we identify a unique, high-quality match in 88 percent of cases and 93 percent of cases with a named prosecutor.

HYPOTHETICAL VIGNETTES

Our survey presents prosecutors with a series of hypothetical cases that randomize the defendant’s age. After presenting the facts of each case, prosecutors were asked to report their ideal punishment for the defendant. We test whether prosecutors’ reported beliefs about age out predict their hypothetical punishment choices for older versus younger defendants in these case randomizations.

D.1. Hypothetical Cases

Prosecutors responded to full hypothetical cases or “vignettes” in which we randomized the defendant’s age to be 36 instead of a randomly chosen baseline of 19, 20, or 21.⁵⁰ In each vignette, we mimicked the information that prosecutors would receive in their initial case files, including a mock police report and details on the defendant’s criminal record (see Section D.D.4 below for the text of the hypothetical questions). We randomized the pairing of the defendant age’s to the vignettes and the order in which prosecutors saw the vignettes. For each vignette, we asked prosecutors to report their preferred type of sentence (prison, probation, or neither) and the duration of the preferred sentence in months.

⁵⁰There were a total of eight hypothetical cases — four drug-related and four assault cases — with six treatment arms. This paper focuses on the assault vignettes where age was randomly varied. The other randomizations were about procedural rules and police behavior, not relevant to this paper. We randomized the baseline defendant age across the vignettes so that it would seem more natural that defendant age was not identical across them.

Priming: Prosecutors’ beliefs about re-arrest were elicited after they responded to the hypothetical cases, raising concerns that priming could cause reverse causality. However, we find that randomly pairing more serious vignettes with older defendants had no detectable impact on prosecutors’ stated beliefs about the relative likelihood of violent re-arrest among older defendants at the end of the survey.⁵¹

D.2. Design

For defendant i with randomly chosen age a , we estimate the relationship between prosecutor p ’s elicited re-arrest belief about age-group a ($\widetilde{\text{Violent Re-Arrest}}_{p(i),a(i)}$) and whether she says that she would press for incarceration (Incarceration_i):

$$(D1) \quad \text{Incarceration}_i = \gamma_{\text{age}} \text{Log}(\widetilde{\text{Violent Re-Arrest}}_{p(i),a(i)}) + \mu_{p(i)} + \mu_{a(i)} + \mu_{v(i)} + u_i,$$

where v denotes the fact-pattern of the hypothetical case. Including prosecutor fixed effects, $\mu_{p(i)}$, allows us to focus on within-prosecutor comparisons and estimate how a prosecutor’s hypothetical choices for the older versus younger defendants track her reported beliefs about these groups’ relative risks. Including age fixed effects, $\mu_{a(i)}$, allow us to absorb average differences in incarceration rates across age-groups that are unrelated to prosecutors’ perceptions of risk. For instance, prosecutors may view incarceration as more costly for young people and so incarcerate younger defendants at lower rates conditional on perceived risk.

D.3. Result

Figure A.5 illustrates the relationship between prosecutors’ beliefs about age out and their hypothetical incarceration choices. Prosecutors who believe that younger defendants are twice as likely to be re-arrested for a violent crime are 12.3 pp more likely to say that they would press for an incarceration sentence for the younger defendant relative to other prosecutors.⁵²

D.4. Text of Vignettes

Vignette 1: Officer Keating responded to a call from a woman on the corner of Chestnut and Main Street. She was bleeding from her left hand and from a cut on her neck. The victim informed Officer that 15 minutes earlier, she had argued with her boyfriend about whether to go over to his place that night. According to the victim, the verbal argument escalated when the suspect grabbed a beer bottle off the street, broke it against a street light, and then slashed her neck and hand. Victim was able to break free and run down the street. Victim states that suspect ran after her with the bottle in hand and shouted, “you are going to regret this,” but cut chase after she entered a corner store.

Suspect, a {Random Age}-year old male, is charged with assault with a deadly weapon with intent to kill or inflict serious injury.

Victim was transported to a nearby hospital but was released once doctors stitched up the cut on her hand and verified that her neck injury was not severe.

Criminal History: Suspect has no prior criminal history.

Vignette 2: Officer Clay responded to a call at 8:20pm on 6/2/2017 arriving at Wabash Park. Officer found a victim sitting on a bench, cradling her wrist. She had smears of dirt on her face

⁵¹For the hypothetical vignettes, there was wide variation in perceived seriousness, with the percent of prosecutors preferring prison sentences ranging from 26 percent to 70 percent. A one standard deviation increase in the relative seriousness of the vignette shown for older defendants was associated with an insignificant 3.0 percent increase in a prosecutor’s stated likelihood of re-arrest for older defendants compared to younger ones (p-value = 0.58).

⁵²The patterns for incarceration length are directionally similar for the hypothetical cases but not statistically significant (Table A.9).

and a bloody nose. She told the officer that when she had told her boyfriend that their relationship was over, he said, “Bitch, you’re over.” He grabbed her wrist and threw her to the ground. He then hit her multiple times in the arm and head with his tool-bag. She told the Officer that her wrist, and maybe her nose, felt broken.

The victim described the suspect as a tall {Random Age}-year-old with a shaved head. Victim was taken to hospital at her request. Her wrist and nose were not broken, but her wrist was splinted. The suspect was arrested the following day at 4:10pm at the victim and suspect’s joint residence.

He was charged with assault with a deadly weapon with intent to kill or inflict serious injury.

Criminal History: Suspect has no prior criminal history.

Vignette 3: At approximately 11:30pm on 12/12/2018, Officer DeLoitte arrived at the Motel 6 in response to a radio call. Officer found the door to the victim’s room ajar and the victim laying on the carpet and murmuring “he’s gonna kill me.” Officer asked the victim whether she could sit up and describe the perpetrator. She sat up with difficulty and told the Officer that the suspect was her boyfriend, a man of medium-build with a small birthmark on the left side of his neck. The suspect, {Random Age} years old, was taken into custody by Officer Bukowski.

Victim told the officer that an argument with her boyfriend had turned physical when he accused her of cheating. Suspect hit the victim and then grabbed the lamp standing next to the door and hit her in the chest. At that point, suspect ran from the motel room.

Victim was transported to the hospital. Although there was no major trauma, victim sustained severe bruising to her chest.

Suspect has been charged with assault with a deadly weapon with intent to kill or inflict serious injury.

Criminal History: Suspect has no prior criminal history.

Vignette 4: At 11:40pm on May 18 2018, Officer Delaney responded to a radio call, reporting a domestic disturbance at 1037 Dimick. Delaney found the victim standing outside her apartment. Victim sustained a black eye and was bleeding from a cut on her lip.

The victim said that she and her boyfriend got into an argument after dinner. He had grabbed her wrist and thrown her to the ground. While she was on the ground, he began kicking her abdomen. Victim reported he was wearing work boots while kicking her. She said he left after she started screaming for help.

The victim initially declined to provide information about her boyfriend. After a few minutes of speaking with the Officer, the victim provided the name of her boyfriend. She also stated that he is 5’10, heavy-set, with short hair.

The suspect is {Random Age} years old. He was arrested at 1:00 am on May 19th at a nearby park where the victim had said he might be. He has been charged with assault with a deadly weapon with intent to kill or inflict serious injury.

Criminal History: Suspect has no prior criminal history.

SURVEY QUESTIONS

Gender: *What is your gender? [Male; Female, Other]*

Race: *How would you describe your ethnicity? [White; Black or African American; Asian; Hispanic; Other]*

Political Ideology: *Generally speaking, how would you describe your political views? [Slider: -50 (Liberal) to +50 (Conservative)]*

Tenure: *How many years total have you practiced as a prosecutor?*

Defense Attorney: *Have you ever practiced as a criminal defense attorney? [Yes. If so, for how many years?; No]*

Law School: *From what law school did you receive your JD? [Drop-down list of law schools in NC; “Out-of-state law school. Please, specify.”]*

Constraints:

Consider your cases where you thought active time was appropriate. In what percent of these cases did the following factors prevent – or significantly limit – you from sentencing the defendant to active time?

- *Sentencing Guidelines [0-100]*
- *Sentencing Judge [0-100]*
- *Victim or Witness (e.g. willingness to cooperate) [0-100]*

Consider your cases where you thought active time was not appropriate. In what percent of these cases did the following factors prevent – or make it difficult to extend – an offer without active time?

- *Sentencing Guidelines [0-100]*
- *Sentencing Judge [0-100]*

We recognize that you often juggle multiple cases and that particularly demanding trials may require you to prioritize among your cases. During such periods, in what percent of your cases would you take the following steps?

- *Break down the charge to facilitate resolution [0-100]*
- *Delay resolution of the case until you have sufficient time [0-100]*
- *Pass the case to another ADA [0-100]*
- *Other. [0-100] Please specify [Write-in]*

Beliefs about Age and Violent Re-Arrest: *Suppose a defendant in your district were incarcerated for a year. For each of the following age ranges, what do you think the percent chance is that the defendant would be arrested for a serious offense within 5 years of their release? Note: serious offense is defined as felony assault, murder, manslaughter, serious sex offenses, robbery, burglary, kidnapping, or arson. [Five sliders for 16-19 years old, 20-25 years old, 26-35 years old, 36-50 years old, 50+ years old: 0 to 100]*

Beliefs about Criminal Record and Violent Re-arrest: *Suppose a defendant in your district were incarcerated for a year. For each of the following prior point ranges, what do you think the percent chance is that this defendant would be arrested for a serious offense within 5 years of their release? Note: serious offense is defined as felony assault, murder, manslaughter, serious sex offenses, robbery, burglary, kidnapping, or arson. [Five sliders for 0 prior points, 1 to 2 prior points, 3 to 5 prior points, 6 to 9 prior points, 10 or more prior points: 0 to 100]*

ESTIMATING THE SLOPE OF THE FRONTIER BETWEEN INCARCERATION AND VIOLENT RE-ARREST

This section describes the two ways that we estimate the slope between incarceration and violent re-arrest. Section F.F.1 explains how we estimate the average relationship between prosecutors' incarceration propensities and the rates of violent re-arrest in their cases. Section F.F.2 describes our replication of Rose and Shem-Tov [2021]'s design, which uses discontinuities in incarceration rates induced by the state sentencing guidelines to estimate the causal effect of incarceration on violent re-arrest.

F.1. Across-Prosecutor Design

Our first design compares the violent re-arrest rates across prosecutors with different incarceration propensities. This design uses the fact that much of the variation in prosecutors' incarceration rates is unrelated to their (in)accuracy and instead, reflects, for example, the relative weights that prosecutors place on the social costs of incarceration versus future crime.⁵³

⁵³We find that prosecutors' inaccuracy explains a third of the variation in the systematic component of their incarceration rates that replicates across random splits of their cases. To the extent to which the variation in prosecutors' incarceration rates is driven by their (in)accuracy, this strategy will lead a conservative assessment of more accurate prosecutor's impact on social

To estimate the relationship between a prosecutor's incarceration tendency and the violent re-arrest rate in her cases, it would be natural to relate prosecutors' estimated re-arrest and incarceration effects from the following Equations:

$$(F1) \quad \text{Incarceration}_i = \psi_{p, \text{Incarceration}} + \mu_{u(i), s(p(i)), g(i)} + v_i$$

$$(F2) \quad \text{Violent Re-Arrest}_i = \psi_{p, \text{Violent Re-Arrest}} + \mu_{u(i), s(p(i)), g(i)} + \zeta_i,$$

as in:

$$\hat{\psi}_{\text{Violent Re-arrest}, p} = \gamma + \Phi \hat{\psi}_{\text{Incarceration}, p} + \epsilon_p.$$

Yet, in a finite sample, variation in the unobservable characteristics of a prosecutor's caseload could affect both her estimated effect on incarceration and on re-arrest ($\frac{1}{N_p} \sum_{i=1}^{N_p} v_i \not\propto \frac{1}{N_p} \sum_{i=1}^{N_p} \zeta_i$ from Equations F1 and F2). For example, a prosecutor might randomly receive a set of cases where defendants were more likely to be re-arrested for reasons that the prosecutor can observe but the researcher cannot. These unobservable differences might increase the prosecutor's apparent effect on both incarceration and re-arrest ($\frac{1}{N_p} \sum_{i \in P} v_i > 0$ and $\frac{1}{N_p} \sum_{i \in P} \zeta_i > 0$), thereby biasing Φ upward and causing us to understate the extent to which higher rates of incarceration reduce re-arrest.

To overcome this challenge, we randomly split each prosecutor's caseload in half and instrument the prosecutor's estimated incarceration effect in one split, x , with her estimated incarceration effect in the other independent split, x' , according to the following two-stage design:

$$\begin{aligned} \text{First Stage:} \quad & \hat{\psi}_{\text{Incarceration}, p, x'} = \Phi_{\text{1st Stage}} \hat{\psi}_{\text{Incarceration}, p, x} + u_{p, x'} \\ (F3) \quad \text{Second Stage:} \quad & \hat{\psi}_{\text{Violent Re-arrest}, p, x'} = \Phi_{\text{IV}} \tilde{\psi}_{\text{Incarceration}, p, x} + v_{p, x'}, \end{aligned}$$

where $\tilde{\psi}_{\text{Incarceration}, p, x}$ denotes the predicted values from the first stage. Under random assignment, the prosecutor's two sets of cases will have independent idiosyncracies: the instrumental-variables approach will then capture the effect of the prosecutor's systematic incarceration tendency and net out the effect of idiosyncracies in any given set of cases. We use our full sample of cases to estimate this relationship but arrive at similar estimates when limiting to surveyed prosecutors (Table A.1).

value. To see this, suppose more accurate prosecutors have lower incarceration rates. In this case, we will *understate* how much increasing incarceration would reduce violent re-arrest and consequently underestimate how much accurate prosecutors could reduce violent re-arrest if they did not also reduce incarceration. Now, suppose, instead, that more accurate prosecutors have higher incarceration rates. In this case, we will *overstate* how much increasing incarceration would reduce violent re-arrest and ascribe too much of accurate prosecutors' lower violent re-arrest rates to their higher incarceration rates.

Table A.1—: Estimating the Average Relationship Between Prosecutors’ Incarceration and Re-Arrest Outcomes

	Panel (a): Violent Re-Arrest					
	<i>Full Sample</i>			<i>Survey Sample</i>		
	Incarceration Sample x' (1)	Violent Re-Arrest Sample x' (2)	(3)	Incarceration Sample x' (4)	Violent Re-Arrest Sample x' (5)	(6)
Incarceration in Sample x	0.74*** [0.026]	-0.059*** [0.011]		0.82*** [0.075]	-0.081* [0.043]	
Predicted Incarceration in x' ($\tilde{\psi}_{p, \text{Incar.}, x'}$)			-0.081*** [0.017]			-0.099* [0.065]
Dependent Mean	23.31	7.82	7.82	20.64	8.85	8.85
	Panel (b): Any Re-Arrest					
	<i>Full Sample</i>			<i>Survey Sample</i>		
	Incarceration Sample x' (1)	Any Re-Arrest Sample x' (2)	(3)	Incarceration Sample x' (4)	Any Re-Arrest Sample x' (5)	(6)
Incarceration in Sample x	0.74*** [0.026]	-0.12*** [0.022]		0.82*** [0.075]	-0.12 [0.090]	
Predicted Incarceration in x' ($\tilde{\psi}_{p, \text{Incar.}, x'}$)			-0.16*** [0.033]			-0.14 [0.13]
Dependent Mean	23.31	31.66	31.66	20.64	34.20	34.20
# Prosecutors	1,952	1,952	1,952	111	111	111
# Cases	789,840	789,840	789,840	67,806	67,806	67,806

Notes: This table estimates the average relationship between a prosecutor’s impact on incarceration and her impact on (a) violent re-arrest and (b) any re-arrest, using our split-sample, instrumental-variables design (Equation F3). Columns 1–3 consider the full sample and Columns 4–6 limit to the survey sample. Each prosecutor’s cases are randomly divided into two equally sized samples, x and x' . Columns 1 and 3 show the first stage relationship between prosecutor’s estimated incarceration effects (Equation F1) across the two samples. Columns 2 and 4 show the reduced-form relationship between a prosecutor’s estimated incarceration effect in one sample (Equation F1) and her re-arrest effect in the other (Equation F2). Columns 3 and 6 rescale the reduced-form coefficient by the first-stage to account for measurement error. Re-arrest is measured in the three years after disposition. The sample is limited to cases disposed before 2016 to allow for three full years of post-disposition data to observe re-arrest (since 90 percent of cases make it from arrest into the Superior Court data system within a year, felony arrest data is reliable through 2018). Block-bootstrapped errors that sample by prosecutors are in brackets. *p<0.1; **p<0.05; ***p<0.01.

Our second design uses the fact that the North Carolina sentencing guidelines create discontinuities in the likelihood of incarceration for defendants with marginally different criminal records. Figure A.1(a) illustrates the North Carolina sentencing guidelines, which are organized in a grid. The defendant’s charge determines the row, with more severe charges in higher rows.⁵⁴ The defendant’s criminal record determines the column. The defendant’s record is summarized by a statutory formula that summarizes the length and severity of his record: each prior record level groups multiple prior point scores together.⁵⁵ Each cell of the grid specifies the allowable sentence length and the recommended type of punishment, where "A" denotes incarceration (and "I" and "C" denote the type of probation). At certain cutoffs — highlighted in black — the recommended type of punishment shifts for defendants with an additional criminal-record prior point: either incarceration becomes possible (as in row I) or mandatory (in rows E, F, G, and H). Around these thresholds, there is a sharp uptick in the likelihood of incarceration as illustrated in Figure A.1(b).

We use the following two-stage specification to estimate how incarceration changes the likelihood of violent re-arrest:

$$\begin{aligned} \text{1st Stage: } \text{Incarceration}_i &= \phi_{1\text{st}} \text{Above a Threshold}_i + \mu_o + \mu_r + X_i' \kappa_{1\text{st}} + u_i \\ \text{(F4) 2nd Stage: } \text{Violent Rearrest}_i &= \Phi_{\text{Discontinuity}} \tilde{\text{Incarceration}}_i + X_i' \kappa_{2\text{nd}} + \mu_o + \mu_r + \epsilon_i \end{aligned}$$

where μ_o denotes fixed effects for the offense class of the arresting charge, μ_r denotes fixed effects for the defendant’s prior record points, and $\text{Above a Threshold}_i$ is an indicator for being above one of the focal thresholds in the guidelines (illustrated in Figure A.1). We estimate this within a four-point bandwidth of the thresholds. We include additional controls in X_i that mimic those in Rose and Shem-Tov [2021] within our data: defendant gender, race, ethnicity, age, charge code, county of conviction, year of offense, and number of previous convictions.

⁵⁴For example, cocaine sales is in row G, while cocaine possession is in row I.

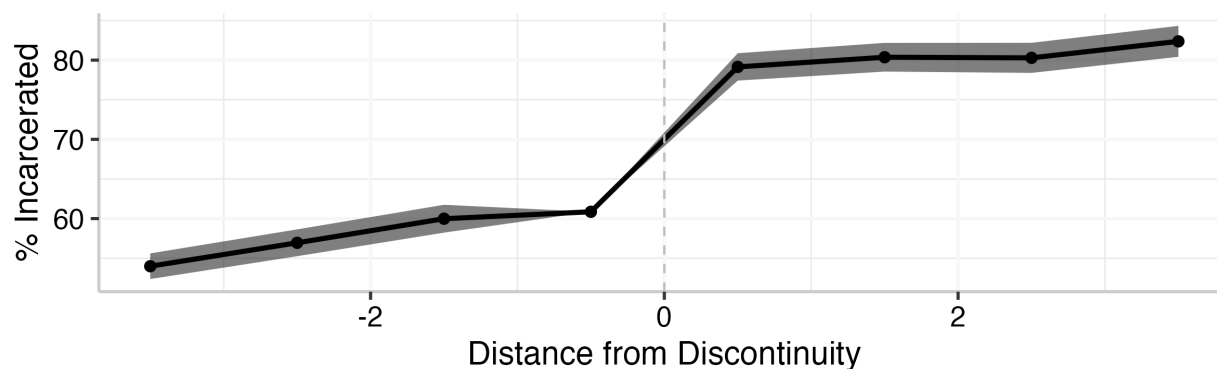
⁵⁵For example, a conviction for a misdemeanor like shoplifting adds one point while a mid-level felony like robbery adds four points.

Figure A.1. : Incarceration Discontinuities in North Carolina Sentencing Guidelines

Panel (a): Illustrating the Guidelines Since 2013

		PRIOR RECORD LEVEL							
		I 0-1 Pt	II 2-5 Pts	III 6-9 Pts	IV 10-13 Pts	V 14-17 Pts	VI 18+ Pts		
OFFENSE CLASS	E	I/A 25 - 31	I/A 29 - 36	A 33 - 41	A 38 - 48	A 44 - 55	A 50 - 63	DISPOSITION	Aggravated Range
		20 - 25	23 - 29	26 - 33	30 - 38	35 - 44	40 - 50		
		15 - 20	17 - 23	20 - 26	23 - 30	26 - 35	30 - 40		
	F	I/A 16 - 20	I/A 19 - 23	I/A 21 - 27	A 25 - 31	A 28 - 36	A 33 - 41	PRESUMPTIVE RANGE	Mitigated Range
		13 - 16	15 - 19	17 - 21	20 - 25	23 - 28	26 - 33		
		10 - 13	11 - 15	13 - 17	15 - 20	17 - 23	20 - 26		
	G	I/A 13 - 16	I/A 14 - 18	I/A 17 - 21	I/A 19 - 24	A 22 - 27	A 25 - 31		
		10 - 13	12 - 14	13 - 17	15 - 19	17 - 22	20 - 25		
		8 - 10	9 - 12	10 - 13	11 - 15	13 - 17	15 - 20		
	H	C/I/A 6 - 8	I/A 8 - 10	I/A 10 - 12	I/A 11 - 14	I/A 15 - 19	A 20 - 25		
		5 - 6	6 - 8	8 - 10	9 - 11	12 - 15	16 - 20		
		4 - 5	4 - 6	6 - 8	7 - 9	9 - 12	12 - 16		
	I	C 6 - 8	C/I 6 - 8	I 6 - 8	I/A 8 - 10	I/A 9 - 11	I/A 10 - 12		
		4 - 6	4 - 6	5 - 6	6 - 8	7 - 9	8 - 10		
		3 - 4	3 - 4	4 - 5	4 - 6	5 - 7	6 - 8		

Panel (b): Changes in Incarceration



Notes: This figure illustrates the discontinuities in incarceration induced by the North Carolina Sentencing Guidelines. Panel (a) illustrates the guidelines or “grid,” used since 2013. A similar set of guidelines were used between 1995 and 2012. The defendant’s charge determines the row, with more severe charges in higher rows. The defendant’s criminal record determines the column, based on a statutory formula that summarizes the length and severity of his record. The prior record level groups multiple prior points together. Each cell of the grid specifies the allowable types of punishments — “A” denotes incarceration and “I” and “C” denote the type of probation — as well as the range of acceptance sentence lengths in months (for aggravated, presumptive, and mitigated sentences). The black lines highlight where the recommended sentence type changes and incarceration becomes possible (in row I) or mandatory (in rows E, F, G, and H). Panel (b) illustrates the discontinuous shift in incarceration rates around these thresholds, pooling across all of these thresholds from 1995 to 2019.

Table A.2—: Incarceration and Re-Arrest

	Violent Re-Arrest (5 Years)		Any New Offense (5 Years)	
	(1)	(2)	(3)	(4)
Instrumented Incarceration	−0.109** (0.053)	−0.124** (0.057)	−0.290*** (0.090)	−0.279*** (0.094)
Additional Controls		✓		✓
Dependent Mean	0.08	0.08	0.36	0.36
F-stat (excluded instruments)	162.4	126.4	162.4	126.4
# Cases	55,837	55,837	55,837	55,837
# Defendants	47,171	47,171	47,171	47,171

Notes: This table presents the two-stage least squares estimates of the effect of incarceration on re-arrest, using the discontinuities in incarceration rates induced by the North Carolina Sentencing Guidelines (shown in Figure A.1). Each column estimates Equation F4 in a four-point bandwidth around the thresholds in the guidelines. The first two columns consider violent re-arrest (felony assault, murder, manslaughter, serious sex offenses, robbery, burglary, kidnapping, and arson). The next two columns consider any arrest for new felonies. Re-arrest is measured in the five years after disposition, so the sample is limited to cases disposed between 1995 and 2015 to allow for five full years of post-disposition data to observe re-arrest. Additional controls are defendant gender, race, ethnicity, age, charge code, county of conviction, year of offense, and number of previous convictions. Standard errors are clustered by defendant. *p<0.1; **p<0.05; ***p<0.01.