BROKERS OF BIAS IN THE CRIMINAL SYSTEM:

Do Prosecutors Compound or Attenuate Earlier Racial Disparities?[*]

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Abstract

In the criminal system, prosecutors mediate between the police's initial charge and the final punishment so can either compound or attenuate initial racial disparities. This paper evaluates how prosecutorial discretion impacts racial disparities and how these impacts have changed over time. Our context is North Carolina state felony court from 1995 and 2019. Leveraging discontinuities in the state sentencing guidelines, we find prosecutors' responses to mandatory prison initially compounded racial disparities at arrest but came to attenuate them. The reversal is concentrated in arrests that typically arise from police stops suggesting a shift in prosecutors' perceptions of policing.

I. INTRODUCTION

In the US, criminal cases often begin with the police's arrest and end with the law's mandatory punishment. Between the arrest and punishment, however, prosecutors can adjust the charge, thereby interrupting the direct path between the police's charge and the law's punishment.[1] This paper evaluates how prosecutor charging discretion impacts racial disparities in the criminal system and how these impacts have evolved over the twenty-five years from 1995 to 2019 in North Carolina state felony court.

In the pipeline of the criminal system, the prosecutor receives inputs from earlier decision-makers. In each case, the defendant's arresting charge is chosen by the police, while his prior criminal history is shaped by past judges, prosecutors, and police officers. In handling each case, the prosecutor can consequently perpetuate or attenuate any racial disparities introduced by earlier decision-makers. A prosecutor who always took the police's charge at face-value, for example, might pass through any initial bias, while one who questioned whether the police overcharged a Black defendant might attenuate unwarranted disparities. In general, a prosecutor's disparate impacts will depend on how the racial disparities in her choices compare to those in the inputs that she inherits from earlier decision-

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[1]Given prosecutors' unfettered discretion over charging, "[n]o serious observer disputes that prosecutors drive sentencing and hold most of the power in the United States criminal justice system" (Gershowitz, 2016). While the decisions of law enforcement officers, defense attorneys, judges, and parole officers all affect defendant outcomes, we focus on prosecutors, given the relative consensus among legal scholars that prosecutors have the most discretion (see, e.g., Pfaff (2017); Sklansky (2016); Gershowitz (2016); Pfaff (2013); Bibas (2009); Stith (2008); Davis (2007); Levine (2005); Melilli (1992)). Recently, a growing body of empirical work has also recognized the central role of the prosecutor in charging and sentencing bargaining (see, e.g., Ulmer et al. (2007); Rehavi and Starr (2014); Ulmer et al. (2007); Sloan (2019); Tuttle (2019)).

makers.[2] Given the racial disparities in the rate of felony arrests, the severity of arresting charges, and the length of defendants' criminal histories in North Carolina, it seems possible for later decision-makers — particularly prosecutors — to attenuate initial disparities by correcting for past bias.[3]

As illustrated in Panel (a) of Figure 1, in North Carolina in the late 1990s and early 2000s, a Black defendant was more likely to be incarcerated than a non-Black defendant with the same arresting charge and criminal history. During this period, the initial disparities in defendants' arrests, charges, and criminal histories were compounded later in the criminal pipeline. By 2015, however, a Black defendant in North Carolina was less likely to be incarcerated than a non-Black defendant with the same arresting charge and criminal history. During this later period, the initial disparities were attenuated further in the criminal pipeline. Over the full twenty-five years from 1995 and 2019, Black and non-Black defendants with similar 'inputs' of arresting charges and criminal histories were similarly likely to be incarcerated but this average equality was because the pipeline initially compounded disparities and later attenuated them.

This reversal suggestively stems from prosecutors. As illustrated in Panel (b) of

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[2]For clarity, we refer to prosecutors using the pronouns "she/her", and we refer to defendants using the pronouns "he/him" since 86% of defendants in our sample are male.

[3]Figure A.1 illustrates the disparities in felony arrests, arresting charge severity, and criminal history over the twenty-five years from 1995 to 2019. Throughout this period, Black defendants composed over half of those charged with felonies while accounting for only 20% of the North Carolina population. Among those who were arrested with felony charges, Black defendants had charges that were associated with 4pp higher rates of incarceration on average and averaged one more prior criminal history point — the equivalent of one additional misdemeanor crime. Over time, as fewer low-level drug felonies were brought to court, Black defendants became less overrepresented among defendants but those who remained had more severe charges. Taken together, these figures show a fairly consistent picture of large racial disparities in the inputs to prosecutors' decision-making.

Figure 1, Black defendants became increasingly likely to receive charge reductions between arrest and conviction compared to non-Black defendants with the same arresting charge and criminal history.

To better isolate prosecutors' discretionary choices, this paper evaluates how prosecutors' charging decisions respond to discontinuous changes in the statutory punishment for a given charge. At certain thresholds within the North Carolina state sentencing guidelines, defendants who have marginally longer criminal histories receive mandatory prison sentences if convicted of the arresting charge. Yet, defendants convicted of the same crime, who have marginally shorter criminal histories, need not receive prison sentences.[4] For defendants with these marginally longer criminal histories, the prosecutor must reduce the arresting charge if she does not want to impose a prison sentence. We ask how often prosecutors reduce the charges of Black and non-Black defendants to avoid mandatory prison and how the racial disparities in prosecutors' charging responses to the sentencing guidelines have changed over time.

Prosecutors' charging responses to the sentencing guidelines initially compounded racial disparities but came to attenutate them. Between 1995 and 2007, prosecutors were 2.4pp less likely to reduce charges for Black defendants to avoid mandatory prison than for non-Black defendants. During this period, the racial disparities

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[4]Sentencing guideline discontinuities have been used in other work to estimate the treatment effect of punishment on re-offense in the criminal system. Also using criminal records from North Carolina Superior Court, Rose and Shem-Tov (2021) use the discontinuity in prison exposure to estimate the treatment effect of prison (vs. probation) on re-offense. In Michigan, Estelle and Phillips (2018) and Harding et al. (2018) similarly use punishment discontinuities to examine the effects of prison on recidivism. Kuziemko (2013) also uses sentencing discontinuities, focusing on parole release. The North Carolina setting has also been used to study the plea deal process (Silveira, 2017).

in the inputs to the guidelines were compounded by prosecutors' behavioral responses to the guideline's mandates. By contrast, between 2008 and 2019, prosecutors were 2.6pp *more* likely to reduce charges for Black defendants to avoid mandatory prison than non-Black defendants. During this later period, the racial disparities in the inputs to the guidelines were attenuated by prosecutors' behavioral responses to the guideline's mandates. This parallels the reversal in the cross-sectional patterns in incarceration and charge reductions in Figure 1. As is the case with these cross-sectional analyses, there is no aggregate impact of prosecutorial discretion on racial disparities over the full twenty-five years because North Carolina prosecutors initially compounded racial disparities but came to attenuate them.

This trend in prosecutors' disparate impacts is entirely driven by cases that typically arise from police stops — that is, drug and weapon possession offenses — rather than victim reports — that is, property and violent offenses. Among cases with police-initiated arrests, prosecutors have become 1.1pp more likely to reduce charges for Black defendants to avoid mandatory prison each year. By contrast, reductions for non-Black defendants with police-initiated arresting charges have not changed over time, suggesting that attitudes towards these crimes have not shifted for all defendants. Instead, prosecutors may increasingly view police-initiated arrests as disproportionately generating unnecessary arrests among Black civilians but not among non-Black civilians.[5] In contrast to the patterns for police-initiated

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[5]The Black Lives Matter movement and the progressive prosecution movement may have drawn prosecutors attention to the disparate impacts of policing and the potential for police bias. The academic literature has found evidence both of unwarranted disparate impacts of policing and of police bias. Feigenberg and Miller (2021) find that police officers search Black motorists more often than white motorists and yet that searches of cars with Black occupants are equally or less

arrests, the racial disparities in prosecutors' charge reductions for victim-initiated arrests have not changed over time for either Black or non-Black defendants. In sum, the reversal in prosecutorial discretion's disparate impacts is entirely concentrated in cases where police discretion would most intimately shape the decision to stop, search, arrest, and charge the defendant, suggesting this change may reflect a shift in prosecutors' perceptions of policing.[6] This suggestive evidence about the centrality of prosecutors' interpretation of policing is consistent with our survey work in North Carolina, which finds a strong connection between prosecutors' reported skepticism of policing and the racial disparities in their cases (Emanuel, Harrington, Murdock, and Shaffer, 2021).[7]

We find that the trend in prosecutor impacts on racial disparities is driven both by behavioral changes in individual prosecutors and compositional changes in the selection of prosecutors.[8] The implied change in the selection of prosecutors is consistent with survey responses of prosecutors hired in later cohorts, who are more likely to ascribe racial disparities in incarceration to (mis)perceptions of defendant

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likely to yield contraband. Grogger and Ridgeway (2006) and Horrace and Rohlin (2016) find that racial disparities in traffic stops are greater during the day when the race of vehicle occupants is easier to detect.

[6]By contrast, a general change in prosecutors' racial preferences might be expected to affect a broader set of offenses.

[7]We document two distinct dimensions of prosecutors' skepticism of policing. First, prosecutors who state that (mis)perceptions of conduct are a more important driver of racial disparities in incarceration have smaller racial disparities in their cases. Second, prosecutors who report that they more frequently doubt the accuracy of the police report have significantly smaller racial disparities in their cases. This suggests that questioning policing decisions may reduce disparities even when prosecutors do not explicitly have bias in mind. Both of these dimensions of prosecutors' beliefs are important correlates of their disparate impacts even after accounting for prosecutors' demographics and political orientation suggesting these beliefs about policing may exert an independent effect on the outcomes in their cases.

[8]The change within prosecutors is consistent with prosecutors internalizing the growing attention to racial disparities in the criminal system; and the change across prosecutors is consistent with the recent progressive prosecution movement attracting different lawyers to prosecution.

conduct (Emanuel, Harrington, Murdock, and Shaffer, 2021).

Our paper contributes to a growing literature on the effect of discretion on racial disparities in the criminal system. We make two contributions. First, we emphasize prosecutors' pivotal role as mediators, whose interpretation of existing disparities at the point of arrest may be as important as their own biases in impacting racial disparities. Second, we estimate how prosecutors' effects on racial disparities have evolved from 1995 to 2019 and provide suggestive evidence that prosecutors' trend toward attenuating racial disparities reflects a shift in their interpretation of bias earlier in the system. Further, we find that the shift in prosecutors' impacts is due both to changes within prosecutors and changes in the selection of who becomes a prosecutor.

The existing literature primarily focus on end-points of the system rather than mediators like prosecutors: police (Knowles et al., 2001; Anwar and Fang, 2006; Grogger and Ridgeway, 2006; Antonovics and Knight, 2009; Anbarci and Lee, 2014; Horrace and Rohlin, 2016; Hoekstra and Sloan, 2020; Ba et al., 2021; Feigenberg and Miller, 2021; Goncalves and Mello, 2021); judges in bail-settings (Ayres and Waldfogel, 1994; Gelbach and Bushway, 2010; Arnold et al., 2018) and at sentencing (Steffensmeier and Demuth, 2006; Abrams et al., 2012; Rehavi and Starr, 2014; Yang, 2015; Depew et al., 2017); and parole officers in release hearings (Anwar and Fang, 2015; Mechoulan and Sahuguet, 2015). Relatedly, the literature tends to focus on biases of decision-makers themselves rather than how those decisions-makers interpret others' biases. One strand of this literature uses the race of decision-makers as a proxy for taste-based preferences to try to identify the impact of bias:

for prosecutors (Sloan, 2019), police (West, 2018; Hoekstra and Sloan, 2020; Ba et al., 2021), judges (Shayo and Zussman, 2011; Arnold et al., 2018), and juries (Anwar et al., 2012; Flanagan, 2018). Our paper contributes by highlighting another important channel through which decision-makers determine disparities in the system — namely, the way in which decision-makers interpret past biases.

Moreover, papers evaluating prosecutors' impacts on racial disparities have largely focused on federal prosecutors who process a small fraction of felony cases and face different incentives than state-level prosecutors (Rehavi and Starr, 2014; Tuttle, 2019).[9] Federal prosecutors may have stronger career incentives than state prosecutors to convict defendants of the highest applicable charge (Boylan, 2005; Epps, 2016). Given these stronger incentives, federal prosecutors may be more likely to leverage mandatory prison laws to secure lengthy sentences rather than checking the police by reducing defendant charges.[10] Research on the federal system has found that prosecutors leverage mandatory sentencing laws to increase punishments (Tuttle, 2019), especially for Black defendants, although the racial disparities in these impacts seem to have fallen over time (Light, 2021). By contrast, Bjerk (2005) finds, as we do, that state prosecutors use their charging discretion to circumvent mandatory minimum laws for certain defendants. However Bjerk does not specifically focus on prosecutors' racially disparate impacts. If state prosecutors do in fact have different incentives than federal prosecutors, they may be more willing to reduce defendant charges to attenuate past disparities. Since state

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[9]In 2001, for instance, 93% of court filings were handled by state courts (Manweller, 2006).

[10]Furthermore, federal prosecutors' impacts on racial disparities may more plausibly reflect their own biases as opposed to their perception of other actors' biases. Federal prosecutors tend to be more directly involved in the investigative work of their cases and therefore may have less need to interpret other agents' decisions before reaching a charging decision.

prosecutors handle the vast majority of felony cases, it is of central import to understand how these prosecutors impact racial disparities and how these impacts have changed over time.[11]

The rest of the paper is organized as follows: Section II describes our data and North Carolina's sentencing guidelines. Section III presents a simple model of prosecutor decision-making. Section IV details our empirical design. Section V presents our results about the impact of prosecutor discretion on racial disparities and its evolution over time. Section VI concludes.

II. DATA AND INSTITUTIONAL DETAILS

Our empirical context is North Carolina Superior Court, which handles most state felony cases. The Superior Court records come from the North Carolina Administrative Office of the Courts (AOC) and span the years from 1995 to 2019.

Criminal cases typically begin with either a police stop (as in, for example, drug possession) or a victim report to the police (as in, for example, property or violent crime). In either case, the police usually make an arrest. The arresting officer typically chooses the most severe charge that the officer believes could fit the offense.[12] Arrests are handled in Superior Court if there is probable cause for a felony charge.

In North Carolina Superior Court, prosecutors and judges are bound by the state felony sentencing guidelines, which mandate a type of punishment for each case:

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[11]In 2015, for example, the FBI estimates that law enforcement agencies made 10.8 million non-traffic arrests (FBI, 2015). That year, the federal system handled 151,460 arrests or just 1.5% of all arrests (BJS, 2015).

[12]We have been told by prosecutors that arresting officers typically select the highest potentially applicable charge given the arrestee's conduct. Consistent with this, charge enhancements are rare (4.9% of cases) while charge reductions are common (21.8% of cases).

mandatory prison, optional prison, or no prison.[13] As illustrated in Figure 2, there are two dimensions of the sentencing guidelines: (1) the row is determined by the severity of the defendant's current lead charge — the "offense class" — and (2) the column is determined by the defendant's criminal history prior points, the running variable on the x-axis of Figure 2. The criminal history prior points score is a weighted combination of prior convictions, using a statutory formula known by the defense and prosecution.[14]

The offense class and prior points together determine the guidelines' punishment and whether the defendant receives mandatory prison. While the defendant's prior points are based on past convictions using a preset formula, the defendant's offense class is determined by the prosecutor's discretionary charging decision. Thus, while the prior points are predetermined, the prosecutor can adjust the charge and resulting offense class. If the prosecutor wishes to avoid mandatory prison under the guidelines, she may adjust the charge but not the prior points. Sections III and IV explain how we isolate prosecutors' charging discretion using the four thresholds in North Carolina's sentencing guidelines where the guidelines' punishment switches discontinuously from optional to mandatory prison (highlighted in Figure 2).

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[13]When prison is not imposed, defendants convicted of felonies are put under supervised probation. While many states have sentencing guidelines, the North Carolina sentencing guidelines are particularly rigidly enforced.

[14]In this formula, a conviction for a misdemeanor, such as possession of drug paraphernalia, is one point; a conviction for low-level felony, such as possession of cocaine, is 2 points; a conviction for a mid-level felony, such as selling cocaine, is 4 points; and a conviction on a high-level felony, such as drug trafficking, is 6 to 10 points. The formula also adds additional points (a) for "patterns of criminal behavior" — when all the elements of the present offense are included in any prior offense — and (b) for offenses committed under probation or parole. The timing of past convictions plays a pivotal role in the calculation of prior points, since only the conviction for the most severe offense class on any given week contributes to the defendant's prior points.

The court records allow us to reconstruct the timeline of the case.[15] First, the defendant's arresting charge allows us to infer whether the arrest was likely initiated by a police stop — as in the case of drug possession, drug sales, and weapon possession — as opposed to a victim's report — as in the case of property and violent offenses. Together with the defendant's criminal history prior points, the arresting charge also allows us to reconstruct where each defendant starts in the sentencing guidelines. We refer to this starting point as the defendant's "initial guidelines' punishment." The defendant receives this initial punishment if the prosecutor retains the police's arrest charge. Second, the court records report the defendant's conviction charge, which allows us to determine where each defendant ultimately falls in the guidelines — the defendant's "final guidelines' punishment." In each case, we can consequently infer whether the final guidelines' punishment deviated from the initial guidelines' punishment because the prosecutor reduced defendant's charge between arrest and conviction.[16]

The court records contain defendant race, other demographics such as age and gender, and identifiers for the prosecutor assigned to the case. Information on the jurisdiction in which each case was adjudicated allows us to link jurisdiction-level information about urbanity from the 2010 Census, politics from the 2016 presidential election, and police use-of-force from 2000 to 2019 collected by Burghart (2020).

Our analysis focuses on the 72% of cases that are sentenced under the felony sen-

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[15]The criminal records do not neatly provide identifiers for each case. Appendix B details the method we used to construct cases.

[16]We focus on charge reductions rather than charge enhancements because arresting officers typically select the highest potentially applicable charge given their perception of the arrestee's conduct. Charge enhancements are rare (4.9% of cases) whereas charge reductions are common (21.8% of cases).

tencing guidelines and do not involve murder, rape, or kidnapping.[17] Since prior points are not recorded for defendants whose cases are reduced to misdemeanor crimes or are dismissed entirely (27% of cases), we cannot reconstruct where these defendants started in the sentencing guidelines and consequently drop these cases from our sample.[18] Section IV discusses how the omission of these cases could impact our results, and Section V presents evidence that this data limitation, if anything, causes our results to be understated. Since our analyses focus on how prosecutors' charging choices respond to the associated sentencing guideline's punishments, the analysis sample limits to defendants who initially fall within four prior points of a punishment discontinuity in Figure 2.

Table 1 provides descriptive statistics for our full sample and for our analysis sample. In our analysis sample, there are 31,752 cases handled by 1,474 prosecutors in 39 jurisdictions (or District Attorney offices). The prosecutor is known in 99% of cases. Among felony convictions in our analysis sample, incarceration rates are 66.8%, consistent with these cases being on the margin of incarceration. Only 2% of cases go to trial, with the remainder resolved by plea deals.[19] The punishment discontinuities disproportionately affect defendants with many prior points, so the

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[17]The current felony guidelines do not cover probation violations (41% of all court filings), misdemeanors (11.4% of non-probation cases), drug trafficking offenses (5.6%), driving-under-the-influence offenses (2%), three-strikes violations (0.7%), and cases charged prior to 1995 (3.6%). We exclude murder, rape, and kidnapping cases (5.1% of cases) since the case records offer an incomplete picture of the offense.

[18]One can construct approximate measures of defendants' prior points using the set of prior convictions contained in the court records from the AOC data extract. However, since prior point calculations often turn on idiosyncratic features of criminal convictions — such as the specific timing of the dispositions — such calculations lack sufficient precision to correctly place defendants right above versus right below discontinuities.

[19]We have been told that plea deals almost always set the punishment type but may leave the *length* of the punishment open to the judge's discretion within the allowable range under the guidelines in North Carolina. Therefore, judges play a limited role in determining whether the defendant receives a charge reduction or prison sentence.

average defendant in our analysis sample has twelve prior points compared to five prior points in the full sample.[20] Consistent with their lengthier criminal histories, defendants around the punishment discontinuities more frequently have prior felonies (65.8% versus 39.2%) and past stints of incarceration (44.0% versus 17.8%). As is almost always the case in the US criminal system, Black defendants are over-represented in our analysis sample: 60.6% of defendants are Black while only 20% of the state population is Black.

III. MODEL

The model illustrates how prosecutors' charging responses to the sentencing guidelines can reveal their payoffs from incarcerating different groups of defendants. This section presents the intuition of the model, with technical details in Appendix C.

In the model, the prosecutor's instrument is the plea offer.[21] Prosecutor p chooses whether to retain the initial arresting charge or reduce to a lower charge. She also chooses whether to offer a punishment of prison or no prison.

When choosing the plea offer, the prosecutor is subject to two constraints. One, she must choose a conviction charge that she could prove at trial. Two, she must offer a plea deal that is consistent with the sentencing guidelines. If a prosecutor wants to avoid incarcerating a defendant who initially qualifies for mandatory prison, she must reduce the defendant's charge.

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[20]Five prior points could be equivalent to a range of criminal histories, including five prior misdemeanors convictions, a couple of low-level felony convictions, or one high-level felony conviction.

[21]Since 98% of cases in our sample resolve in plea deals, it is essentially without loss of generality to assume that prosecutors offer a plea deal that helps determine the final punishment.

The prosecutor derives utility from two sources. One, she has a payoff $\delta_{i,p}$ from incarcerating defendant i, which could be positive or negative. This payoff depends on the prosecutor's tastes and her beliefs about defendant i's latent type based on potentially biased information from earlier decision-makers. Two, the prosecutor pays a reputational cost of $\psi > 0$ when she reduces a provable arresting charge because her boss and coworkers may think that she is shirking or 'breaking the rules' by manipulating the charge to secure her desired punishment.[22]

Finally, for the prosecutor's offer to be realized, it must be accepted by the defense. We assume that the probability that a plea deal is accepted is weakly increasing in the severity of the charge and, thus, the trial threat.[23]

When the guidelines make prison optional under the initial arresting charge, the prosecutor will only reduce the charge if it is unprovable. In this case, retaining the arresting charge does not constrain the prosecutor's offered punishment and weakly increases the likelihood of securing an offered punishment of prison. Thus, the probability of a reduction to C_L is given by:

$$\Pr(\text{Reduction}_{i,p} \mid \text{Optional Prison}_{H,i}) = \Pr(\text{Unprovable}_i). \tag{1}$$

By contrast, when prison is mandatory under the initial arresting charge, then the

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[22]As detailed in Appendix D, relaxing the assumption that reducing the charge is always costly (i.e. $\psi > 0$) does not substantively change our results under some regularity conditions on the distribution of punishment payoffs.

[23]In reality, the defense and prosecution often engage in costly bargaining. When prison is mandatory under the guidelines, the defense's bargaining position may be weaker. As detailed in Appendix D, this alternative formulation yields substantively similar conclusions as the current one so long as the reductions in the defense's bargaining power under mandatory prison are comparable across different groups of defendants.

prosecutor will reduce a provable charge if the benefit of avoiding incarcerating the defendant, $-\delta_{i,p}$, exceeds the reputational cost of reducing a provable arresting charge, ψ. Thus, the probability of a reduction is given by:

$$\Pr(\text{Reduction}_{i,p} \,|\, \text{Mandatory Prison}_{H,d}) = \Pr(-\delta_{i,p} > \psi \,|\, \text{Provable}_i)(1 - \Pr(\text{Unprovable}_i))$$
$$+ \Pr(\text{Unprovable}_i), \qquad (2)$$

which hinges both on the prosecutor's discretionary motives ($\Pr(-\delta_{i,p} > \psi \,|\, \text{Unprovable}_i = 0)$) and the likelihood that a case is unprovable ($\Pr(\text{Unprovable}_i)$). Taking the difference between equations 2 and 1 yields the prosecutor's charging response to mandatory prison:

$$\Delta \Pr(\text{Reduction}_{i,p}) = \Pr(-\delta_{i,p} > \psi \,|\, \text{Provable}_i)(1 - \Pr(\text{Unprovable}_i)), \qquad (3)$$

which is more closely tied — and in fact proportional — to the prosecutor's discretionary motives ($\Pr(-\delta_{i,p} > \psi \,|\, \text{Unprovable}_i = 0)$).

Let's consider this in the context of race. There is reason to believe that there are weakly more unprovable cases among Black defendants than non-Black defendants.[24] As a result, Black defendants may be more likely to receive charge reductions and thereby avoid mandatory prison because of the constraints that prosecutors face ($\Pr(\text{Unprovable}_d)$) rather than the discretion that prosecutors ex-

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[24]Empirically, in our context, there are more reductions for Black defendants under optional prison. Similarly, in Illinois state court, Jordan (2021) finds evidence that cases brought against Black defendants have weaker evidence than those brought against non-Black defendants. Theoretically, police racial bias could lead to more unprovable arresting charges being brought against Black defendants. And practically, prosecutors report more uncooperative witnesses in cases of Black than non-Black defendants in North Carolina (41% versus 30% of cases).

ercise ($\Pr(-\delta_{i,d} > \psi \,|\, \text{Provable}_i)$). By contrast, prosecutors' charging responses to mandatory prison better reflect prosecutors' discretionary decisions for Black and non-Black defendants. If prosecutors' charging response to mandatory prison were larger for Black defendants, then one could infer that prosecutors more frequently used their discretion to avoid incarcerating Black than non-Black defendants.

The next sections take this model to the data, first detailing how the sentencing guidelines approximate random assignment to mandatory versus optional prison and then investigating how prosecutors' responses to mandatory prison compound or attenuate racial disparities.

IV. EMPIRICAL DESIGN

Prosecutors' charging responses to mandatory prison can reveal the set of defendants whose charges they reduce to avoid mandatory prison. We use the punishment discontinuities in North Carolina's felony sentencing guidelines to approximate random assignment of defendants to mandatory versus optional prison under the guidelines. As illustrated in Figure 2, at four punishment discontinuities, defendants with marginally longer criminal histories would receive a mandatory prison sentence if the arresting charge were retained while those with marginally shorter criminal histories and equivalent arresting charges could receive a non-prison sentence even if the arresting charge were retained.

To make this more concrete, consider the following toy example. On April 8, 2009, Robert Shaw was arrested for cocaine sales: his 14 prior points placed him right below the discontinuity for mandatory prison in offense class G. A week later the

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same prosecutor received the case of Robert Pipkin, who has also been arrested for cocaine sales but whose 15 prior points placed him right above the discontinuity for mandatory prison. In these cases, the prosecutor reduced Pipkin's to avoid mandatory prison while retaining Shaw's arresting charge, which did not constrain the offered punishment. If Shaw and Pipkin's cases were otherwise similar, then the prosecutor's decision to reduce Pipkin's charge but not Shaw's reflected the prosecutor's discretionary choice to avoid incarcerating Pipkin. By contrast, the constraint of unprovable cases would cause the prosecutor to reduce in either case and is netted out in the comparison.

Our regression discontinuity design generalizes from this toy example to compare charging decisions on either sides of all four punishment discontinuities. Letting d_i denote the distance of defendant i's prior points from a punishment discontinuity, we estimate:

$$\text{Charge Reduction}_i = \beta \mathbb{1}[d_i > 0] + \epsilon_i \text{ if } |d_i| \leq b. \tag{4}$$

where the defendant i's distance from a mandatory prison threshold, d_i, is determined by his arrest charge. When the defendant's prior points exceed the threshold ($d_i > 0$), he initially qualifies for mandatory prison.

To account for the independent effect of prior criminal history, we consider a difference-in-discontinuity design that compares the change in charge reductions for defendants around punishment discontinuities to the change in reductions for defendants with the same number of prior points and similar arresting charges, but whose arresting charges do not place them around a punishment discontinuity. In the context of our toy example, we would compare the difference in charge reduc-

tions between defendants like Pipkin and Shaw with 15 and 14 prior points to the same difference for defendants with the same criminal histories but drug-related arrests that were in a different offense class and therefore not close to a punishment discontinuity. If the difference between 15 and 14 prior points is similar across offense classes among defendants with similar types of arrests, then the difference in these differences will capture the prosecutor's discretionary response to mandatory prison net of the direct effect of defendants' criminal histories.

We introduce a comparison across discontinuities rather than fitting local linear trends around each discontinuity because the discreteness of prior points may mean that certain prior points connote idiosyncratic information about defendants' criminal histories. For example, having an odd number of prior points typically means that a defendant has at least one misdemeanor conviction, each of which is worth one point. By contrast, having an even number of prior points could imply the defendant's criminal history consists entirely of felonies, which are typically worth two, four, or six points. If prosecutors put more weight on past felonies than past misdemeanors, going from an odd to even number of prior points — e.g. from 13 to 14 — may mean relatively more than going from an even to odd number of prior points — e.g. from 14 to 15 — meaning a linear trend can offer a poor control for defendants' prior criminal histories.

We use the following difference-in-discontinuity specification to generalize from this example.[25] Letting g denote the qualifying offense class (e.g., G); $t(i)$, the dis-

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[25]Unlike other difference-in-discontinuity designs, our strategy relies on cross-sectional differences in whether defendants qualify for a punishment discontinuity rather than on time-series differences in the rules governing the discontinuity (as in, for example, Lemieux and Milligan (2008); Cellini et al. (2010); Pettersson-Lidbom (2012); Grembi et al. (2016)).

position year (e.g., 2009); $c(i)$, crime-type (e.g., drug sales); s_i, the offense class; and $d_{i,g}$, the distance between the defendant's prior points and the focal punishment discontinuity:[26]

$$\text{Reduction}_{i,g} = \beta \, \mathbb{1}[s_i = g] \cdot \mathbb{1}[d_{i,g} \geq 0] + \mu_{g,t(i),c(i),d(i,g)} + \mu_{g,t(i),c(i),s(i)} + \epsilon_{i,g} \text{ if } |d_{i,g}| \leq b. \quad (5)$$

These controls allow us to limit comparisons to defendants convicted in the same year, arrested with similar crime types, and with the same number of prior points, but whose arresting charges place them in different offense classes under the sentencing guidelines. To account for charging practices that differ across place and over time, standard errors in all specifications are two-way clustered by the jurisdiction and the disposition year.

In our analyses, we consider robustness to limiting our control group to defendants who do not initially qualify for mandatory prison. This restriction allows the meaning of additional prior points to differ under optional versus mandatory prison.[27]

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[26]The construction of our analysis sample proceeds as follows. First, we create four separate datasets, one for each of the punishment discontinuities. We then define each variable vis-a-vis the focal punishment discontinuity at offense class g. Finally, we append the four data-sets and limiting each data-set to defendants within a bandwidth b of the focal punishment discontinuity. By fully interacting our controls with the focal discontinuity g, our analysis stacks the four discontinuities and effectively considers each discontinuity separately, which allows us to limit each discontinuity to cases within the bandwidth b.

[27]This is the analogue to the exclusion of already-treated units in differences-in-differences models as suggested by, for example, De Chaisemartin and d'Haultfoeuille (2020); Goodman-Bacon (2021). Focusing on defendants in optional prison would be important if mandatory prison changed the relationship between prior points and charging outcomes, just as in the difference-in-difference context, it is important to exclude already treated units in the presence of dynamic treatment effects that change over time. Since the interaction between prior points and mandatory prison does not seem first order in our context, our preferred specification uses the full set of controls.

Our baseline specifications consider a four prior-point bandwidth around the punishment discontinuities. This bandwidth maximizes our sample size while respecting the point thresholds in the guidelines. A four-point bandwidth ensures that we never include control cases that fall on either side of a discontinuity in another felony class. We then consider robustness to narrowing this bandwidth.

There are two primary threats to our empirical design. The first threat is manipulation of where defendants start in the guidelines. Such manipulation could mean defendants who just qualify for mandatory prison differ from those who just don't. However, manipulation of the prior points seems unlikely because these points are based on past events and use a preset formula known by both the defense and the prosecution.[28] Similarly, manipulation of the arresting charge seems unlikely since the arresting officer lacks the time and information to calculate the defendant's specific prior points before choosing the charge.[29]

The second threat is a data limitation that limits our ability to assess how prosecutors use case dismissals and reductions of felony cases to misdemeanors to avoid mandatory prison. Prior points are not recorded for these cases so we cannot accu-

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[28]In theory, forward-looking defense attorneys could also lead to a discontinuous fall in the density of defendants. Forward-looking defense attorneys may attempt to keep defendants' prior points below punishment discontinuities to reduce the probability of mandatory prison in any future interactions with the system. A few features of the North Carolina court system, however, reduce the incentive for such strategic behavior. First, different felony charges have different prior point cutoffs for mandatory prison, making it relatively unlikely that one more prior point would be pivotal in a defendant's next interaction with the system. Second, misdemeanor crimes, which account for the vast majority of offenses, are sentenced under a different set of guidelines with a different computation of prior criminal history. Third, prior-point thresholds changed in 2009, further complicating the relevant point thresholds to attempt to avoid.

[29]Prior points depend on the timing and specific grading of prior convictions. For instance, if an individual has prior convictions for multiple offenses in the same calendar week, only the most serious offense is used for the calculation, but if they're in sequential weeks, each offense contributes to the defendant's criminal history.

rately place these cases around punishment discontinuities at the time of arrest.[30] However, this omission would not substantively change our conclusions so long as non-felony reductions were similar substitutes with felony reductions for different groups of defendants.

We consider two partial tests for these violations. First, Figure A.2 considers the smoothness around punishment discontinuities in (a) the number of defendants convicted of felonies and (b) the share of defendants at a given prior point with a qualifying charge. If police and prosecutors wanted more defendants to initially qualify for mandatory prison, there would be bunching above the discontinuity rather than a smooth change in the density as in Figure A.2. If, instead, prosecutors often responded to mandatory prison with non-felony reductions, then the density of defendants with felony convictions would discontinuously fall rather than evolving smoothly.

Second, Table 2 considers the balance in defendant observable characteristics around the discontinuities. Under either violation, defendants above the discontinuity would have characteristics associated with lower rates of charge reductions as these defendants would either (a) have been targeted to initially qualify for mandatory prison or (b) have been passed over for a non-felony reduction. In contrast to these potential imbalances, Table 2 shows that defendant's observable characteristics are comparable above and below the discontinuity after accounting for the independent effect of discrete prior points in the difference-in-discontinuity design in column four.

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[30]However, conversations with prosecutors suggest that misdemeanor reductions and dismissals typically reflect unanticipated weakness in the evidence due to witnesses being unable or unwilling to testify, among other reasons.

V. RESULTS

We first characterize the extent to which prosecutors respond to the sentencing guidelines when choosing defendants' charges in Subsection V.A . We then consider how these responses differ by defendant race in Subsection V.B. We finally consider how the racial disparities in these responses have changed over time and explore the mechanisms driving the change in Subsection V.C.

V.A Prosecutors' Use of their Charging Discretion

Figure 3 depicts prosecutors' charging responses to mandatory prison, pooling across the four punishment discontinuities. The x-axis is the defendant's distance from a punishment discontinuity at the time of arrest, and the y-axis is the share of defendants who receive charge reductions between arrest and conviction. To the left of the dashed line, a defendant could receive a sentence with or without prison if he were convicted of his arresting charge. To the right of the dashed line, the defendant could only receive a prison sentence if he were convicted of his arresting charge, so the prosecutor must reduce the charge if she wants to avoid incarcerating him.

The points below the discontinuities have similar rates of charge reductions, indicating that criminal history has a weak relationship with reductions below discontinuities. Comparing the four points on either side of the discontinuity, charge reductions increase by 12.2pp when prison becomes mandatory, suggesting that prosecutors reduce charges to avoid mandatory prison for 12.2% of defendants who initially fall around punishment discontinuities.

Table 3 shows the robustness of this result to our difference-in-discontinuity controls and the inclusion of trends around the discontinuity. There is a consistent picture of charge reductions to avoid mandatory prison at each of the four discontinuities in North Carolina's felony sentencing guidelines, as presented in Figure A.3 and Table A.1, with significant responses at each discontinuity (ranging from 6pp to 21pp). Further, when the thresholds for mandatory prison changed in 2009, the pattern of charge reductions shifted accordingly (see Figure A.3).

The increase in charge reductions around punishment discontinuities nearly perfectly translates into a decline in prison sentences, as shown in Table A.2. Using the preferred difference-in-discontinuity specifications, the share of defendants who get a charge reduction and avoid prison rises by 11.8pp around the discontinuities.[31]

This paper argues that prosecutors' charging responses to mandatory prison reveal their incarceration payoffs for different groups of defendants. To check the plausibility of this claim, Table A.3 considers the response for defendant characteristics where one might have strong expectations about prosecutor payoffs, particularly defendant gender, past incarceration, and predicted re-offense.[32] The hypothesized payoffs are all reflected in the differential charge reductions around pun-

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[31]In addition to the 11.8% of defendants who receive discretionary charge reductions around discontinuities and ultimately avoid prison, another 8.4% of defendants are not incarcerated above punishment discontinuities because their charge would have been reduced on either side of the discontinuity. Therefore, discretionary charge reductions around the discontinuities can explain about half of cases where the defendant initially qualifies for mandatory prison but ultimately avoids prison (0.118/0.202 = .568).

[32]Prosecutors may lose sympathy for defendants who have already been convicted of a crime significant enough to result in prison. For defendants who are predictably more likely to re-offend based on their characteristics, prosecutors may view the benefits to public safety as large enough to outweigh the costs of incarceration. Finally, the literature suggests widespread preferential treatment for women in the criminal system (Bickle and Peterson, 1991; Spohn and Beichner, 2000).

ishment discontinuities, suggesting that prosecutors choose to avoid mandatory prison for select defendants.

The rest of the paper focuses on how North Carolina prosecutors' selective undoing of past discretionary decisions impacts racial disparities but the same approach could be applied to other types of disparities across defendants.

V.B The Impact of Charging Discretion on Racial Disparities

We first consider the disparate impacts of North Carolina prosecutors' charging discretion over all twenty-five years of our sample from 1995 to 2019. Panel (a) of Figure 4 shows prosecutors' charging responses to mandatory prison for Black and non-Black defendants aggregated over all years from 1995 to 2019. The x-axis represents a defendant's initial distance from a punishment discontinuity and the y-axis represents the share of Black defendants (in blue circles) and non-Black defendants (in orange triangles) who receive charge reductions between arrest and conviction.

On both sides of the discontinuity, Black defendants are more likely to receive charge reductions than non-Black defendants. However, these cross-sectional differences could simply reflect the constraint of unprovable cases. To isolate prosecutors' discretionary choices, we consider how prosecutors' charging choices respond to mandatory prison in the sentencing guidelines.

Around the threshold for mandatory prison in the dashed line, 12.5pp more Black defendants (column one of Panel (a) in Table 4) and 11.5pp more non-Black defendants (column two) receive charge reductions, indicating that Black and non-Black

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defendants benefit similarly from prosecutorial discretion. Taking the difference in these raw changes (column three), Black defendants are 0.9pp more likely to receive a charge reduction to avoid mandatory prison above the discontinuity, which is a small and statistically insignificant difference (95% CI = [-1.1pp, 3.0pp]).[33] Introducing the difference-in-discontinuity controls in column four offers a consistent picture of similar discretionary reductions for Black and non-Black defendants around punishment discontinuities.

The aggregate null effect of prosecutors on racial disparities in North Carolina Superior Court might be surprising given the mounting evidence of racial bias in the criminal system. However, this null could conceal much heterogeneity. While prosecutors' effects on racial disparities have been similar across crimes and geographies (see Table A.4), the next section considers the heterogeneous effects of North Carolina prosecutors' over time.

V.C   The Evolution of Prosecutor Impacts on Racial Disparities

The bottom panels of Figure 4 illustrate prosecutors' charging responses to mandatory prison for Black and non-Black defendants in two time periods. From 1995 to 2007, prosecutors were 2.4pp *less* likely to reduce charges for Black defendants in order to avoid mandatory prison (as reported in column three of Panel (b) in Table 4). By contrast, from 2008 to 2019, prosecutors were 2.6pp *more* likely to reduce charges for Black defendants to avoid mandatory prison (as reported in

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[33]With fewer provable cases among Black defendants, prosecutors have less scope to use their charging discretion to impact the punishments of Black defendants. Given that the observed charging response is similar for Black and non-Black defendants, this suggests prosecutors more frequently seek to avoid incarcerating Black defendants with provable cases. However, even after accounting for provability differences, prosecutors appear to have a limited discretionary impact on racial disparities over the full twenty-five years.

column three of Panel (c) in Table 4). Thus, while prosecutors' charging responses to mandatory prison initially compounded the racial disparities in the inputs to the guidelines, their discretionary choices came to attenuate these initial disparities.

This reversal in prosecutors' impacts on racial disparities reflects a continuous change over time. Each year, prosecutors became 0.38pp more likely to extend charge reductions to Black than non-Black defendants to avoid mandatory prison (as reported in column one of Table 5). This amounts to a 9.5pp (95% CI = [3.6pp, 15.4pp]) change in the relative treatment of Black defendants over our twenty-five year sample.[34] The difference-in-discontinuity design yields a similar estimated trend in column two of Table 5. Table A.5 shows robustness to narrowing the bandwidth, limiting the control group to defendants who initially qualify for optional prison, and fully interacting the difference-in-discontinuity controls with race. Finally, the trend appears to be, if anything, understated by the omission of non-felony reductions, as detailed in Table A.6.[35]

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[34]There is no significant trend in charge reductions for Black and non-Black defendants who initially qualify for optional prison, suggesting that the constraint of weak evidence — and thus the scope for prosecutorial discretion — did not differentially change by race. Each year, Black defendants below the discontinuity became 0.09pp less likely to receive charge reductions than non-Black defendants below the discontinuity (95% CI = [-0.34pp, 0.17pp]).

[35]As discussed in Section IV, one limitation of the data is that it does not allow us to assess how prosecutors use non-felony reductions (i.e. case dismissals and reductions from felonies to misdemeanors) to avoid mandatory prison because prior points are not recorded for these cases, preventing us from accurately placing them around the punishment discontinuities. Therefore, our analysis may omit a dimension of prosecutorial discretion. To analyze how non-felony reductions affect our results, we estimate the trend in the racial composition of felony convictions above versus below the discontinuities. If prosecutors disproportionately use non-felony reductions for Black or non-Black defendants, then the racial composition of felony convictions would change sharply around the discontinuity. Instead we find that the racial composition of felony convictions has remained balanced around the discontinuities during our time period, as reported in Table A.6. If anything, there has been a trend towards relatively fewer Black defendants receiving felony convictions above than below the discontinuities, suggesting that our analysis may understate the full change in prosecutors' impacts on racial disparities. Using the difference-in-discontinuity design, the combined impact of the implied trend in non-felony reductions and the estimated trend in felony reductions suggests that, each year, Black defendants became 0.66pp more likely to receive

To investigate the mechanisms driving the reversal in prosecutors' impacts, we first examine whether the reversal is concentrated in charges where police have more discretion and then decompose the shift into changes within prosecutors and changes in the composition of prosecutors.

Prosecutors' perceptions of policing. The trend in prosecutors' impacts on racial disparities could either be driven by a shift in prosecutors' own racial biases or a change in their interpretation of past bias in the system. To compare cases where past bias could play a more or less central role, we consider arrests where police typically have discretion to stop and search a person — that is, drug offenses and weapon possession — and those where police typically respond to a victim's report. Figure 5 separately plots the trends in racial disparities in prosecutors' responses to mandatory prison for police-initiated offenses (in the blue, solid line) and victim-initiated offenses (in the orange, dashed line). While there has been a significant change in the racial disparities in prosecutors' discretionary charging choices for police-initiated arrests, there has been no such trend for victim-initiated arrests which have always been treated more similarly across defendant race.

Each year, prosecutors have become 1.02pp more likely to reduce charges so Black defendants with police-initiated arrests could avoid mandatory prison. By contrast, prosecutors have become insignificantly 0.34pp less likely to reduce charges so non-Black defendants with police-initiated arrests could avoid mandatory prison. The difference in these differences indicates that each year prosecutors have become 1.36pp (95% CI = [0.75pp, 1.97pp]) more likely to reduce charges for Black

some type of reduction to avoid mandatory prison than non-Black defendants (95% CI = [0.19pp, 1.1pp]). This would amount to a 16.5pp increase in reductions between 1995 and 2019 for Black versus non-Black defendants.

than non-Black defendants with police-initiated arrests to avoid mandatory prison (as reported in column three of Table 5). Over our twenty-five year sample, this amounts to a 34pp change in prosecutors' relative treatment of Black versus non-Black defendants with police-initiated arrests, as prosecutors went from compounding the racial disparities that existed in these arrests to attenuating them.[36]

The consistent treatment of non-Black defendants with police-initiated charges suggests that prosecutors' attitudes towards these arrests have not shifted for all defendants. Instead, it appears as though prosecutors' interpretations of the disparate impacts of police discretion have changed, with ramifications solely for their treatment of Black defendants.

In contrast to the trends for police-initiated arrests, there is no significant change in victim-initiated arrests, where police discretion plays a less central role. As a result, there is a significant 1.4pp yearly difference in the trend in prosecutors' responses to police-initiated charges relative to victim-initiated charges as reported in column one of Table A.8. While the difference-in-discontinuity design suggests a smaller and less significant differential, this specification nonetheless suggests that

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[36] As reported in Table A.7, the trend in the racial disparities in prosecutors' charging choices for police-initiated crimes is robust to narrowing the bandwidth, limiting the control group to defendants who initially qualify for optional prison, allowing for differential trends in the treatment of criminal history by race, and fully interacting the difference-in-discontinuity controls with race.

Another concern might be that the quality of representation has changed for Black versus non-Black defendants. Particularly, one might worry about changes in the selection into public defense and the zealousness with which public defenders represent Black defendants, especially when they qualify for mandatory prison. To address this concern, we consider whether there has been a change in the interaction between race and public defender representation around the punishment discontinuities. As reported in Table A.9, the change in this interaction is not statistically significant in any specification and is economically small when considering the subset of police-initiated crimes in columns three and four. As a result, the coefficients on the trends in racial disparities in the second row are similar as in our baseline specifications after accounting for the potentially changing impact of defendants' representation. This provides at least suggestive support that the trend that we uncover is not due to the changing nature of defendants' legal representation.

prosecutors significantly changed in their responses to race among police-initiated charges but not victim-initiated ones.

The remaining columns of Table A.8 compares the trends in prosecutors' impacts on racial disparities for each of the components of police-initiated arrests — namely, drug possession, drug sales, and weapon possession — to those in victim-initiated arrests. Each of the components appears to have a stronger trend than victim-initiated arrests in the baseline discontinuity specifications, with especially large and robust differentials for drug possession. This is consistent with racial disparities in drug possession more strongly reflecting differences in policing rather than differences in crime-rates. In North Carolina, Black and non-Black civilians report similar rates of drug usage, both for all illegal drugs and for cocaine specifically (see Figure A.4).[37] Despite the similar drug usage among Black and non-Black civilians, Black civilians are nine times as likely to be arrested for felony drug possession.[38] Assuming prosecutors attribute racial disparities in drug possession arrests to policing rather than to usage, their perceptions of policing should be especially pivotal in driving trends in drug possession cases.

These patterns provide suggestive evidence that prosecutors' beliefs about polic-

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[37]These patterns in North Carolina based on data from the National Survey on Drug Use and Health are representative of what others have found nationally (Bachman et al., 1991; Wallace Jr et al., 2002; Gorvin, 2008).

[38]To see this, we can apply Bayes' rule:

$$\Pr(\text{Black} \,|\, \text{Arrest}) = \frac{\Pr(\text{Arrest} \,|\, \text{Black}) \Pr(\text{Black})}{\Pr(\text{Arrest} \,|\, \text{Black}) \Pr(\text{Black}) + \Pr(\text{Arrest} \,|\, \text{Not Black}) \Pr(\text{Not Black})}.$$

Since 71% of those arrested for felony drug possession are Black $\big(\Pr(\text{Black} \,|\, \text{Arrest}) = 0.71\big)$ and just 22% of the North Carolina population is Black $\big(\Pr(\text{Black}) = 0.22\big)$, this implies that Black defendants are about nine times more likely to be arrested for drug possession ($\frac{\Pr(\text{Arrest} \,|\, \text{Black})}{\Pr(\text{Arrest} \,|\, \text{Not Black})} = 8.7$).

ing play a central role in shaping their impacts on racial disparities. A survey that we conducted of North Carolina prosecutors in 2020 provides more direct evidence of the relationship between prosecutors' beliefs about policing and their racially disparate impacts (Emanuel, Harrington, Murdock, and Shaffer, 2021). In a sample of 176 prosecutors, those who report feeling more uncertain about the accuracy of the police report have smaller racial disparities in incarceration than other prosecutors in their offices. Similarly, those believe that racial disparities in incarceration are more reflective of (mis)perceptions of defendant conduct have smaller racial disparities. These patterns more directly suggest that prosecutors' interpretations of policing shape the extent to which they attenuate, pass through, or compound earlier racial disparities in the system.

Appendix E considers heterogeneous trends in prosecutor impacts on racial disparities across place. The trends in prosecutors' racially disparate impacts are marginally stronger in more liberal jurisdictions but the political differences are small and insignificant. The trends are significantly stronger in more urban jurisdictions, which may differ from rural jurisdictions in the selection of prosecutors or the practices of police. Consistent with the potentially pivotal role of policing and the changing perception of policing on the part of prosecutors, the trend in prosecutors' disparate impacts is stronger in jurisdictions with more instances of police use of deadly force. Further, instances of police deadly force fully explain the stronger trend in urban jurisdictions.

Compositional vs Behavioral Changes. The evolution in prosecutor impacts could reflect changes in existing prosecutors or changes in who chooses to become a pros-

ecutor. Table 6 decomposes the aggregate change in prosecutors' impact on racial disparities into behavioral changes within prosecutors and compositional changes across prosecutors. To ease comparison, column one of Table 6 reports the aggregate change in prosecutors' responses to race around the discontinuities using the preferred difference-in-discontinuity specification for cases with identifiable prosecutors. Columns two and three isolate the behavioral changes within individual prosecutors by allowing each prosecutor to vary in her average response to mandatory prison for Black and non-Black defendants. With prosecutor fixed effects, the estimated trend in charging disparities is identified using changes within prosecutors. In column three, the point estimate for the trend in prosecutors' responses to race around the discontinuities implies that three quarters of the aggregate trend exists within prosecutors. However, this estimate is too imprecise to rule out much smaller or larger behavioral changes. To increase our precision, column three estimates each prosecutor's average response to mandatory prison in the full sample of cases, while limiting the difference-in-discontinuity specification to cases within a four-point bandwidth of punishment discontinuities.[39] The resulting point estimate suggests that 61% of the aggregate effect persists within prosecutors. If we consider a prosecutor who handled cases for the entirety our sample period, we would expect a 6.25pp increase in reduction for Black relative to non-Black defendants between 1995 and 2019 (95% CI = [-0.12pp, 12.6pp]).

The more muted changes within prosecutors suggest that the changing selection of

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[39]Intuitively, this expansion of the sample to estimate prosecutor fixed effects can be thought of as a two-step approach. The first step estimates each prosecutor's average charging decisions for Black and non-Black defendants who initially qualify for mandatory prison and optional prison. The second step estimates how prosecutors respond to mandatory prison in a four-point bandwidth around the punishment discontinuities after netting out each prosecutor's average behavior given the defendant's race and initial guidelines punishment.

prosecutors has contributed to the trend in prosecutors' impacts on racial dispari-
ties. Column four of Table 6 aims to capture changes across cohorts of prosecutors.
We estimate whether Black defendants whose cases are handled by prosecutors
hired in year $t + 1$ are more likely to receive discretionary charge reductions than
similar Black defendants whose cases are handled by prosecutors hired in year t,
relative to the same difference for non-Black defendants. We define similar defen-
dants as those who are convicted in the same year, have the same number of prior
points, and have the same arresting charge type and severity.[40] Column four sug-
gests that prosecutors hired one year later extend 0.36pp more charge reductions
to Black versus non-Black defendants to avoid mandatory prison. If we compared
two prosecutors in 2019 — one just hired in 2019 and one hired in 1995 — the 2019
hire would be 9.0pp (95% CI = [2.6pp,15.4pp]) more likely than the 1995 hire to
extend a discretionary charge reduction to a Black defendant, relative to the same
difference for non-Black defendants.

In North Carolina, the trend in prosecutors' impacts on racial disparities appears
to be driven both by behavioral and compositional changes. Over time, there has
been a change in existing prosecutors' response to race. But new hires have beaten
this trend, suggesting a shift in the selection of lawyers who become prosecutors.
This shift in the selection of prosecutors is consistent with the survey evidence in
Emanuel, Harrington, Murdock, and Shaffer (2021), which finds that over time,
prosecution has attracted more lawyers who believe that (mis)perceptions drives

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[40]Specifically, we limit comparisons to cases initially near the same discontinuity (g), tried in
the same year (t), with the same arresting charge severity (s) and crime-type (c), and the same
prior points (p). Within these narrow comparisons, we then estimate whether the prosecutor's
cohort predicts charge reductions to avoid mandatory prison differently for Black and non-Black
defendants.

racial disparities. In the cross-section, prosecutors hired in later cohorts in North Carolina are also less likely to incarcerate Black defendants than non-Black defendants compared to other prosecutors handling similar cases in their offices.

VI. CONCLUSION

This paper investigates the impacts of prosecutors' charging discretion on racial disparities and how these impacts have changed over time. Using prosecutors' behavioral responses to punishment discontinuities in North Carolina's sentencing guidelines, we find that prosecutors' discretion initially compounded racial disparities in the late 1990s and early 2000s but have come to significantly attenuate racial disparities that exist in arrests and in past convictions in recent years.

The trend in prosecutor impacts on racial disparities is entirely driven by arrests that are typically initiated by the police, suggesting the change in prosecutors' impacts may primarily reflect a shift in their interpretation of earlier bias. This underscores the importance of interpreting prosecutors as part of a pipeline rather than as existing in a vacuum, where their impacts on racial disparities only reflect their own biases.

Our paper has two important limitations. One, our analysis has been limited to state prosecutors in a single state. While North Carolina is in many ways a microcosm of America — with rural and urban jurisdictions spanning the full political spectrum — it would be useful to understand how our results would generalize to court systems in other states with different decision-makers, laws, and procedures. Second, our analysis is necessarily a partial-equilibrium analysis of prosecutors

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taking police behavior as given. Understanding how police's charging choices respond to prosecutors' beliefs and preferences would be necessary to produce a general equilibrium account of shifts in prosecutorial discretion.

More broadly, our work has implications for other contexts in which one agent's inputs are the products of another agent's discretion. In addition to focusing on an agent's own internal biases, it may be important to consider each agent's perceptions of the bias of the earlier agent. While this paper focuses on prosecutors' charging decisions, the emphasis on relative bias may be equally important when evaluating discretion at other junctures of the criminal pipeline. Relative bias may also be critical in other contexts, such as labor markets and credit markets, where later decision-makers may or may not view earlier decisions as biased.

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Figure 1: Disparate Outcomes for Black and Non-Black Defendants with Similar Arrests and Criminal Histories

Panel (a): Racial Disparities in Incarceration

Panel (b): Racial Disparities in Charge Reductions
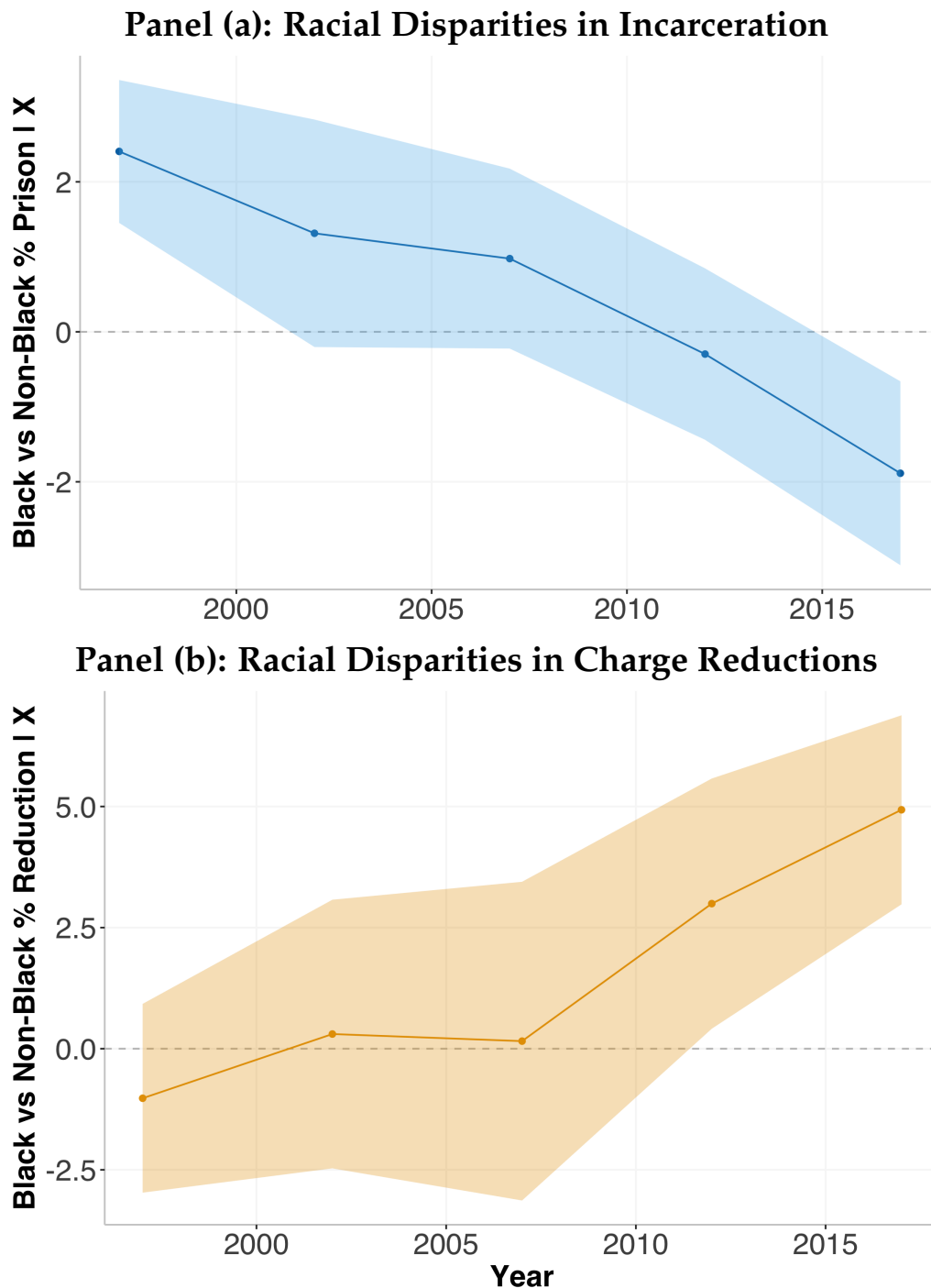
Notes: This figure depicts the time-series of racial disparities in defendant outcomes in North Carolina felony court between 1995 and 2019. The controls in X include fixed effects that fully interact (i) the disposition year, (ii) the defendant's most severe arresting charge, and (iii) the defendant's prior criminal-history points, which is a weighted sum of this prior convictions used in North Carolina's sentencing guidelines. Prior points are imputed from the defendant's prior convictions when not reported in the court records. Panel (a) shows the probability of prison defined as at least six months of incarceration, which would typically be served in state prison. Panel (b) shows the probability of a charge reduction between arrest and conviction. Each point reflects a different five year period. The error ribbons reflects 95% confidence intervals with standard errors two-way clustered by jurisdiction and conviction year.

Figure 2: Punishment Discontinuities
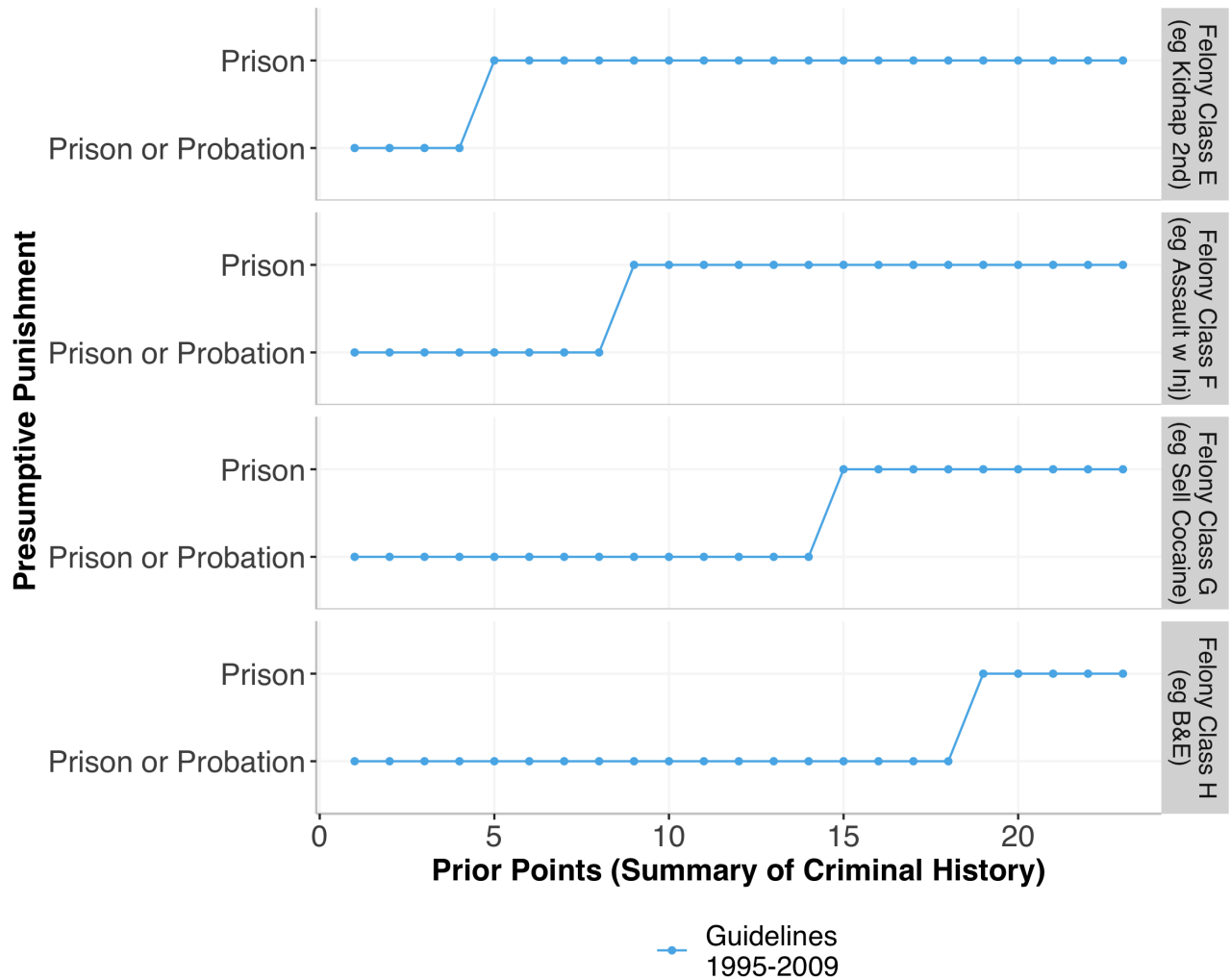
Notes: This figure illustrates the punishment discontinuities in the North Carolina Sentencing Guidelines. In each of the four panels, the x-axis running variable is prior criminal history points and the y-axis is the presumptive punishment under the guidelines. Each Panel depicts a different felony class, which is a grouping of charges that the legislature considers to be of similar severity. Within each felony class, there is a discontinuous switch from optional to mandatory prison with the addition of one prior point. For instance, a defendant with 8 prior points arrested on Assault with Injury in Felony Class F faces optional prison, while a defendant arrested on the same charge but with 9 prior points faces mandatory prison. This figure focuses on the sentencing guidelines used between 1995 and 2009. Figure A.3 illustrates the two guidelines used in North Carolina over the span of our data.

Figure 3: Prosecutors' Charging Response to Mandatory Prison Around Punishment Discontinuities
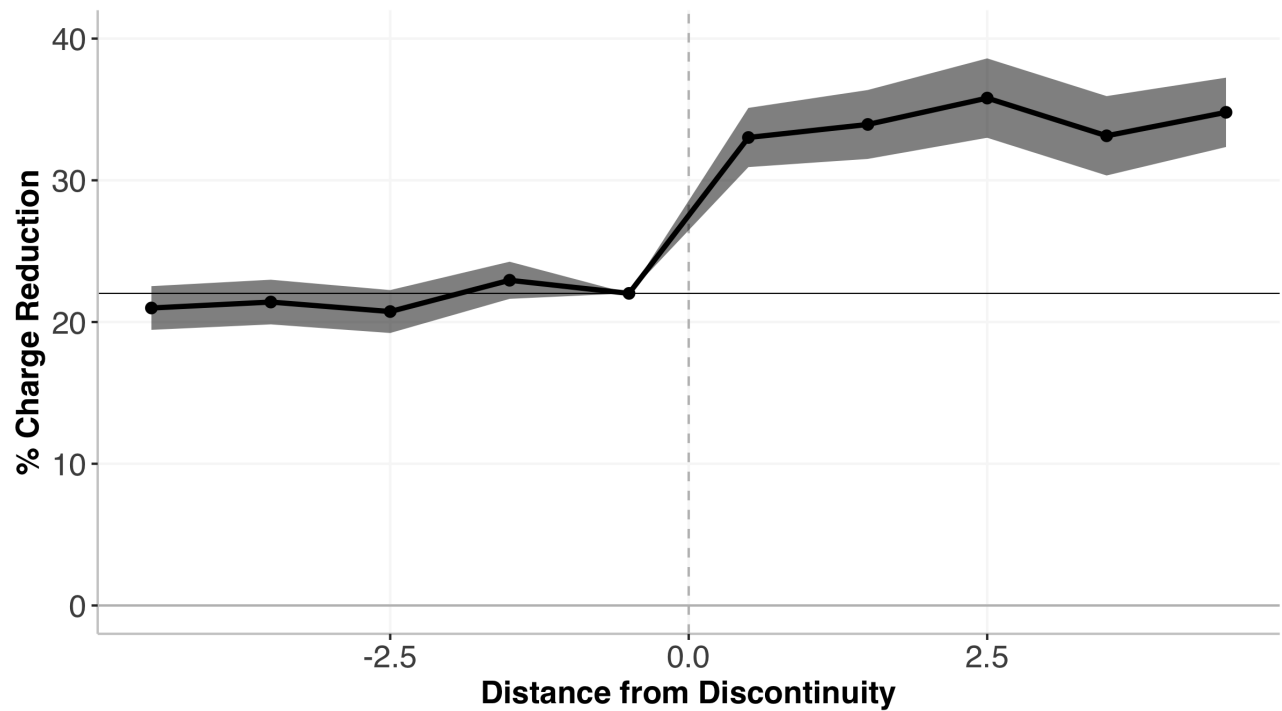
Notes: This figure depicts charge reductions around the punishment discontinuities in North Carolina's sentencing grid from 1995 to 2019. The x-axis plots the distance in prior points from the discontinuity at which the presumptive punishment switches from optional to mandatory prison, stacking across the four punishment discontinuities illustrated in Figure 2. The y-axis plots the percent of defendants whose charge is reduced between arrest and conviction. Above the discontinuity, a charge reduction is necessary to avoid mandatory prison. The error band reflects the 95% confidence interval with standard errors two-way clustered by jurisdiction and conviction year, with each point compared to the reference level one point below the discontinuity.

Figure 4: Racial Disparities in Prosecutors' Charging Responses to Mandatory Prison Around Punishment Discontinuities
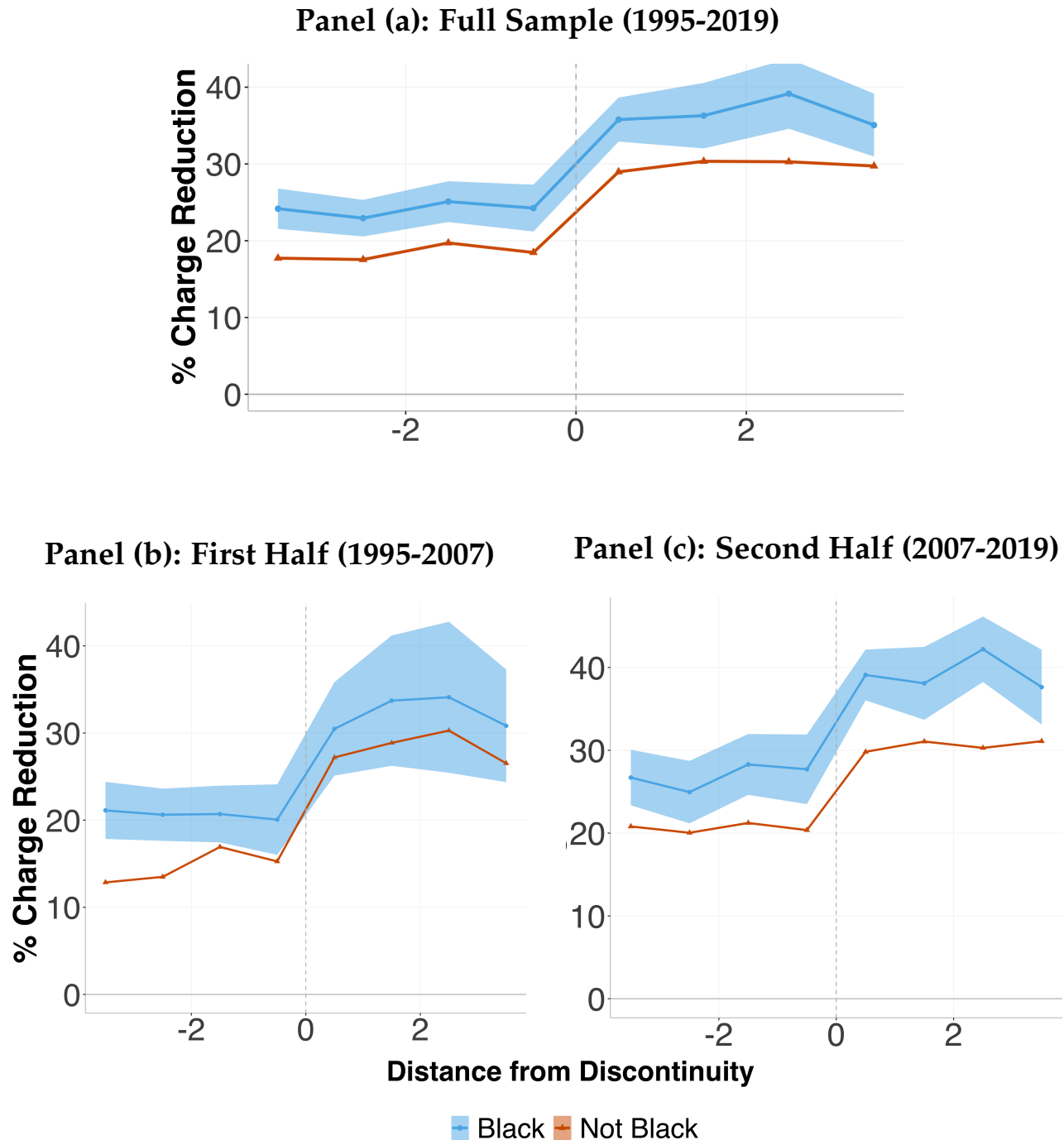
Notes: This figure depicts charge reductions around the punishment discontinuities in North Carolina's sentencing grid separately by defendant race. Panel (a) considers defendants convicted of felonies between 1995 and 2019; Panel (b), those convicted between 1995 and 2007; and Panel (c), those convicted between 2008 and 2019. In each panel, the x-axis plots defendants' distance from a punishment discontinuity at the time of arrest. To the right of the dashed line where the initial presumption becomes mandatory prison, the prosecutor must reduce the charge to avoid incarcerating the defendant. The y-axis plots the percent of defendants whose charge is reduced. The error band reflects the 95% confidence interval comparing Black to non-Black defendants with standard errors two-way clustered by jurisdiction and conviction year.

Figure 5: Trends in Racial Disparities in Prosecutors' Charging Responses to Mandatory Prison For Police-Initiated and Victim-Initiated Arrests
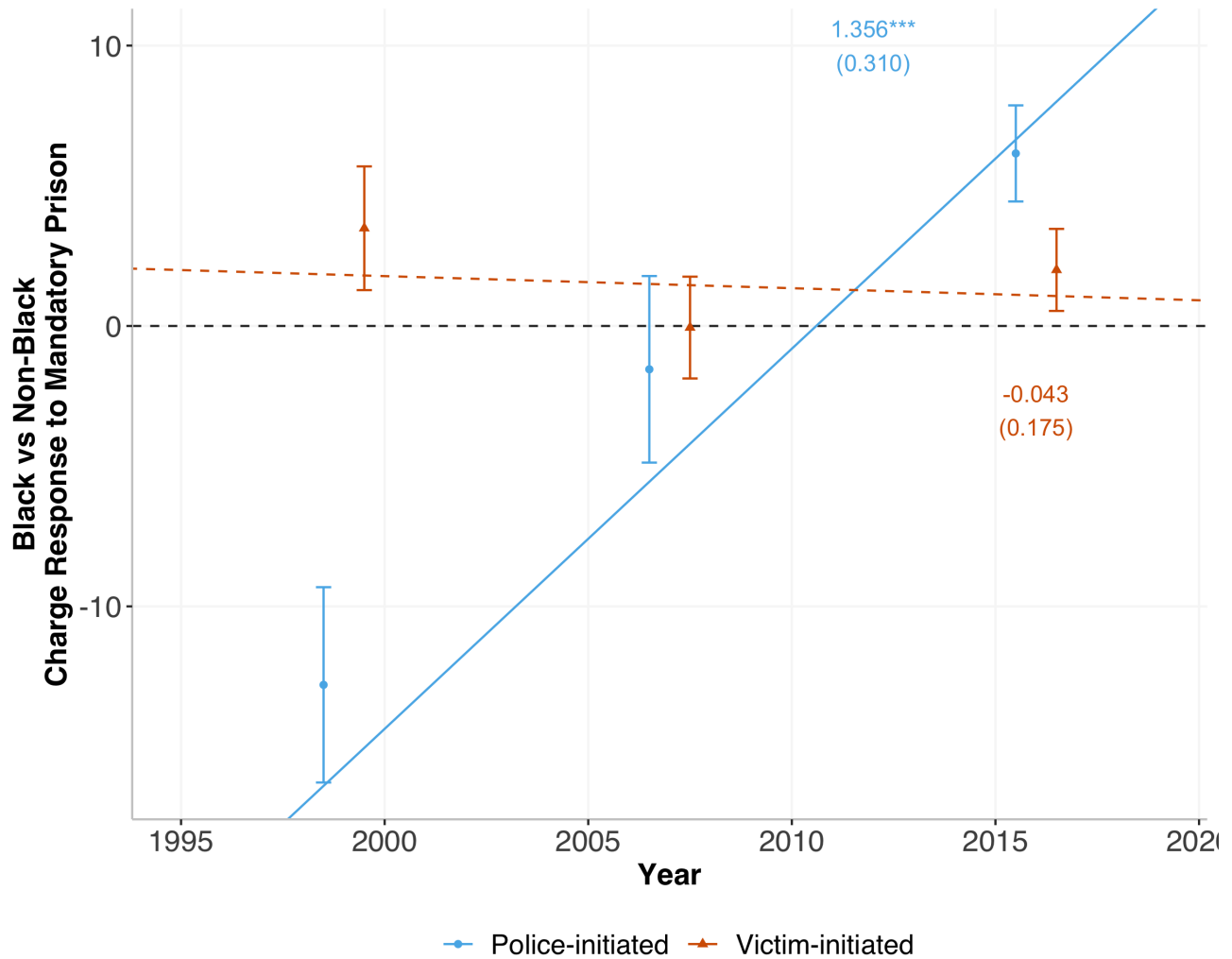
Notes: This figure investigates prosecutors' changing response to mandatory prison for Black versus non-Black defendants separately for police-initiated arrests (drug and weapon possession) and other charges that are typically initiated by a victim or witness report (property and violent crime). The x-axis plots the year of conviction. The y-axis plots the difference in the share of Black and non-Black defendants who receive charge reductions to avoid mandatory prison when the punishment discontinuously shifts from optional to mandatory prison in the guidelines. Each point reflects the estimated difference in charge reductions in a four point bandwidth around the discontinuities as in Equation 4 for a third of the time-series. The linear fits and annotated coefficients reflect the average yearly change. Standard errors are two-way clustered by jurisdiction and conviction year.

Table 1: Summary Statistics

	Full Sample	Around Punishment Discontinuities
Sentencing & Recidivism		
% Trial	2.1	2.4
% Charge Reduction	21.8	25.7
% Charge Enhancement	4.9	2.2
% Incarcerated (>6mo)	33.4	64.8
Avg Incarceration (mos)	8.5	12.3
% Recidivism (within 5yrs of release)	38.7	38.8
Criminal History		
Avg Prior Points	5.1	11.4
% Prior Felony	39.2	64.2
% Prior Incarceration (>6mo)	17.8	42.4
Demographics		
% Black	55.9	60.1
% Female	15.1	7.7
Avg Age	29.8	34.7
Crime Type		
% "Police-Initated" (Drug or Possess Weapon)	36.0	29.2
% Drug	30.3	18.2
% Possess Weapon	5.5	10.7
% Property	39.6	30.2
% Violent	18.2	27.2
Place Characteristics		
% Urban (2010 Census)	64.5	64.6
% Democrat Votes (2016 Presidential)	49.0	49.1
# Local Police Use of Deadly Force (2000-2019)	15.3	14.6
# Cases	512,840	44,315
# Prosecutors	2,202	1,538
# Jurisdictions	39	39
# Years	25	25

Notes: This table provides descriptive statistics for the defendants in our analyses. The full sample in the first column includes defendants sentenced under the felony guidelines in North Carolina between 1995 and 2019, excluding those charged with murder, rape, or kidnapping. The second column limits to defendants who initially fall within four prior points of a punishment discontinuity where the guidelines punishment switches from optional to mandatory prison as illustrated in Figure 2.

Table 2: Balance of Defendant Characteristics Around Punishment Discontinuities

	$\hat{\mu}_{d_i \leq 0}$	$\hat{\mu}_{d_i > 0}$	Δ	Δ
% Black	59.58	61.18	1.596***	-0.877
			(0.601)	(0.900)
Age (Years)	33.90	36.26	2.355***	-0.270*
			(0.110)	(0.144)
% Past Felony	60.50	71.87	11.371***	1.176
			(0.574)	(0.921)
% Past Prison	37.74	51.95	14.210***	0.871
			(0.492)	(0.759)
% Female	8.17	6.65	-1.517***	-0.213
			(0.259)	(0.487)
$100 \cdot \hat{\text{Pr}}(\text{Charge Reduction} \mid X)$	24.21	23.80	-0.409***	-0.025
			(0.014)	(0.019)
# Cases	29,924	14,391	44,315	408,137
# Defendants	27,437	13,225	37,912	192,838
# Prosecutors	1,473	1,284	1,538	1,994
Bandwidth = 4	✓	✓	✓	✓
Raw			✓	
Diff-in-Disc				✓

Notes: This table tests the balance of defendant observable characteristics around the punishment discontinuities. The sample limits to a bandwidth of four points around the punishment discontinuities. The last row collapses the observable characteristics in a linear prediction of the likelihood of a charge reduction. The first two columns present dependent means four points below and above the punishment discontinuities, where the guidelines' punishment changes from optional to mandatory prison. The third column presents the raw comparison as in equation 4. The fourth column considers a difference-in-discontinuity around the focal prior points for defendants between qualifying and non-qualifying arresting charges of the same crime type as in equation 5. All standard errors are two-way clustered by jurisdiction and year.

Table 3: Prosecutors' Charging Response to Mandatory Prison Around Punishment Discontinuities

| | Charge Reduction | | | | |
	(1)	(2)	(3)	(4)	(5)
Mandatory Prison	0.122***	0.148***	0.151***	0.123***	0.135***
	(0.008)	(0.013)	(0.011)	(0.015)	(0.020)
Priors Trend				0.009*	0.009
				(0.004)	(0.006)
Trend x Above				−0.006	−0.011
				(0.008)	(0.008)
Bandwidth = 4	✓	✓	✓	✓	✓
Diff-in-Disc (All)		✓		✓	
Diff-in-Disc (Only Optional)			✓		✓
Dep. Mean Below Focal Discontinuity	0.217	0.217	0.217	0.217	0.217
Dep. Mean	0.257	0.205	0.193	0.205	0.193
# Cases	44,315	363,673	344,281	363,673	344,281
# Defendants	37,912	192,838	172,809	192,838	172,809
# Prosecutors	1,538	1,994	1,945	1,994	1,945
# Jurisdictions	39	39	39	39	39
# Years	25	25	25	25	25

Notes: This table analyzes how charge reductions change around punishment discontinuities where the sentence switches from optional to mandatory prison. Each specification focuses on a four point bandwidth on either side of the four punishment discontinuities illustrated in Figure 2. The sample includes defendants sentenced under the North Carolina sentencing guidelines between 1995 and 2019. The first column considers the raw difference as in equation 4. The second column considers a difference-in-difference design that compares the change in charge reductions for defendants with qualifying and non-qualifying charges with the same prior points, the same crime-types, and the same conviction year as in equation 5. The third column limits the control group for the difference-in-discontinuity to defendants sentenced under optional prison. The fourth and fifth columns add linear trends in priors on both sides of the discontinuity to account for the possibility that charge reductions evolve differently for those with qualifying and non-qualifying offenses. All standard errors are two-way clustered by jurisdiction and conviction year.

Table 4: Racial Disparities in Prosecutors' Responses to Mandatory Prison

| | Charge Reduction | | | |
	Black	Non-Black	All Defendants	
Panel (a): 1995-2019				
Mandatory Prison x Black			0.0094	−0.0050
			(0.0103)	(0.0097)
Mandatory Prison	0.1246***	0.1152***	0.1152***	0.1556***
	(0.0104)	(0.0091)	(0.0091)	(0.0100)
Panel (b): 1995-2007				
Mandatory Prison x Black			−0.0243	−0.0423***
			(0.0184)	(0.0155)
Mandatory Prison	0.1154***	0.1397***	0.1397***	0.2005***
	(0.0150)	(0.0170)	(0.0170)	(0.0164)
Panel (c): 2008-2019				
Mandatory Prison x Black			0.0259***	0.0146
			(0.0036)	(0.0125)
Mandatory Prison	0.1244***	0.0985***	0.0985***	0.1318***
	(0.0102)	(0.0080)	(0.0080)	(0.0127)
Bandwidth = 4	✓	✓	✓	✓
Diff-in-Disc				✓
Dep. Mean Below	0.241	0.182	0.217	0.217
# Cases	26,633	17,682	12,944	131,362
# Prosecutors	1,405	1,303	1,538	1,538
# Jurisdictions	39	39	39	39
# Years	25	25	25	25

Notes: This table analyzes how prosecutors' charge reductions to avoid mandatory prison vary by defendant race. Panel (a) considers all defendants sentenced under North Carolina's felony guidelines between 1995 and 2019. Panel (b) focuses on the first half from 1995 to 2007. Panel (c) focuses on the second half from 2008 to 2019. In each panel, the first two columns separately consider defendants' likelihood of receiving a charge reduction when prison is mandatory to when prison is discretionary for Black and then non-Black defendants. The third column considers the raw comparison in these responses. The fourth column compares the changes around the punishment discontinuities to the same changes for defendants charged with similar non-qualifying crimes as in Equation 5. Standard errors are two-way clustered by jurisdiction and conviction year.

Table 5: Trends in Racial Disparities in Prosecutors' Charging Responses to Mandatory Prison

	All Charges		Charge Reduction Police-Initiated		Victim-Initiated	
	(1)	(2)	(3)	(4)	(5)	(6)
Black x Year x Mandatory Prison	0.0038***	0.0040***	0.0136***	0.0089**	−0.0004	0.0021
	(0.0012)	(0.0013)	(0.0031)	(0.0039)	(0.0017)	(0.0018)
Year x Mandatory Prison	−0.0018	−0.0042**	−0.0034	−0.0018	−0.0013	−0.0050**
	(0.0013)	(0.0020)	(0.0031)	(0.0042)	(0.0014)	(0.0023)
Black x Mandatory Prison	−0.0457*	−0.0650**	−0.2115***	−0.1624**	0.0199	−0.0286
	(0.0256)	(0.0240)	(0.0602)	(0.0749)	(0.0329)	(0.0277)
Mandatory Prison	0.1388***	0.2182***	0.1797***	0.1674**	0.1336***	0.2395***
	(0.0248)	(0.0329)	(0.0583)	(0.0751)	(0.0266)	(0.0364)
Bandwidth = 4	✓	✓	✓	✓	✓	✓
Diff-in-Disc		✓		✓		✓
Dep. Mean Below Focal Disc.	0.217	0.217	0.299	0.299	0.181	0.181
Dependent Mean	0.257	0.259	0.335	0.326	0.224	0.227
# Cases	44,315	408,137	12,944	131,362	31,371	276,775
# Defendants	37,912	192,838	72,772	73,763	132,656	132,656
# Prosecutors	1,538	1,994	1,598	1,601	1,874	1,874
# Jurisdictions	39	39	39	39	39	39
# Years	25	25	25	25	25	25

Notes: This table considers the time-series changes in how prosecutors respond to mandatory prison in choosing their charges for Black and non-Black defendants in North Carolina between 1995 and 2019. The first column presents the share of Black versus non-Black defendants over time who receive charge reductions to avoid mandatory prison in a four point bandwidth above versus below each punishment discontinuity. The second column controls for the independent effect of prior points by comparing the change in charging around the discontinuities to the changes for defendants with the same types of crimes but non-qualifying charges as in Equation 5. The third column considers robustness to limiting the control to defendants who initially qualify for optional prison. The fourth column fully interacts the difference-in-discontinuity controls with defendant race. Standard errors are two-way clustered by jurisdiction and year. Tables A.5 and A.7 report robustness to different bandwidths, control groups, and specifications, while Table A.7 considers alternative definitions of police-initiated arrests.

**Table 6:** Trends in Charge Reductions By Race: Composition vs Behavior

	Aggregate	Within Prosecutor		Across Prosecutor
	(1)	(2)	(3)	(4)
Black x Year x Mandatory Prison	0.0041** (0.0016)	0.0033 (0.0024)	0.0025* (0.0014)	
Black x Prosecutor Hire Year x Mandatory Prison				0.0037*** (0.0013)
Year x Mandatory Prison	−0.0035 (0.0021)	−0.0081** (0.0034)	−0.0024 (0.0020)	
Prosecutor Hire Year x Mandatory Prison				0.0008 (0.0010)
Diff-in-Disc (All Non-Qualifying)	✓	✓	✓	
Prosecutor x Race x Mandatory Prison FE		✓	✓	
Full Sample			✓	
Within Year ($\mu_{g,t(i),c(i),p(i),s(i),r(i)}$)				✓
Dep. Mean Below Focal Disc.	0.218	0.218	0.218	0.218
# Cases	296,311	280,088	1,475,304	296,311
# Defendants	164,496	156,644	156,644	156,644
# Prosecutors	1,326	1,326	1,326	1,326
# Jurisdictions	39	39	39	39
# Years	25	25	25	25

Notes: This table decomposes the aggregate change in prosecutors' impacts on racial disparities into changes within prosecutors and compositional changes across prosecutors. The first column presents the aggregate change in prosecutors' impacts on racial disparities around the discontinuity using our preferred difference-in-discontinuity specification in the set of cases with identifiable prosecutors. The second and third columns estimate the trend in racial disparities in prosecutors' charging responses to mandatory prison net of fixed differences in prosecutors' charging responses by race. The second column estimates these prosecutor fixed effects on the set of cases around punishment discontinuities; the third column estimates these prosecutor fixed effects on the full set of cases. The fourth column focuses on compositional changes across cohorts of prosecutors, by asking whether in a given year Black defendants are more likely to receive charge reductions to avoid mandatory prison when their cases are handled by prosecutors hired in later cohorts. Comparisons are limited to cases near the same discontinuity (g) with the same arresting charge severity (s), the same prior points ($p(i)$), and the same crime-type ($c(i)$). In all specifications, standard errors are two-way clustered by jurisdiction and conviction year.

A. ONLINE APPENDIX

A. Tables and Figures

Figure A.1: Disparate Inputs into Prosecutors' Decision-Making for Black and Non-Black Defendants

Panel (a):
% Black among Felony Defendants

Panel (b):
Arresting Charge Severity

Panel (c):
Prior Criminal-History Points
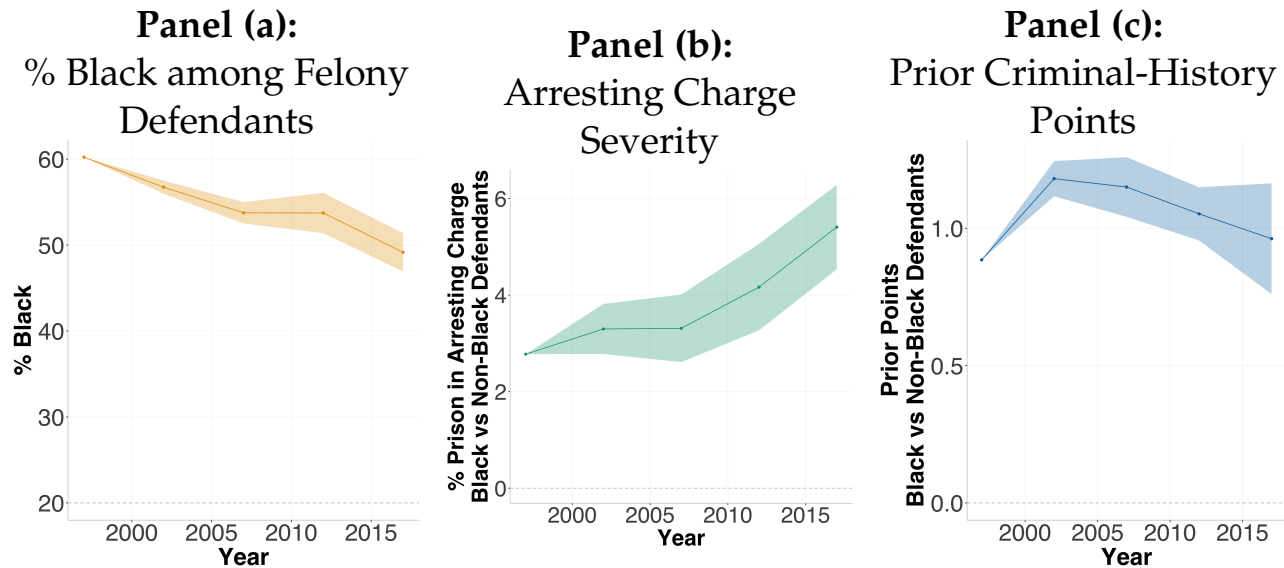
Notes: This figure depicts the time-series of racial disparities in defendant arrests and prior criminal history in North Carolina felony court between 1995 and 2019. Panel (a) considers the racial composition of those arrested with felonies that were indicted to Superior Court, compared to that in the North Carolina population. Panel (b) considers the racial disparities in the severity of defendants' arresting charges, as supposed by the likelihood of prison among defendants with each charge. Panel (c) considers the racial disparities in prior criminal-history points, which summarize defendant criminal history for the state sentencing guidelines. Each point reflects a different five year period. The error ribbons reflects 95% confidence intervals comparing each point to the initial difference in 1995-1999 with standard errors two-way clustered by jurisdiction and conviction year.

Figure A.2: McCrary Test Around Punishment Discontinuities

Panel (a): Number of Cases with Qualifying Arresting Charge

Panel (b): Percent of Cases at Each Prior Point with Qualifying Arresting Charges
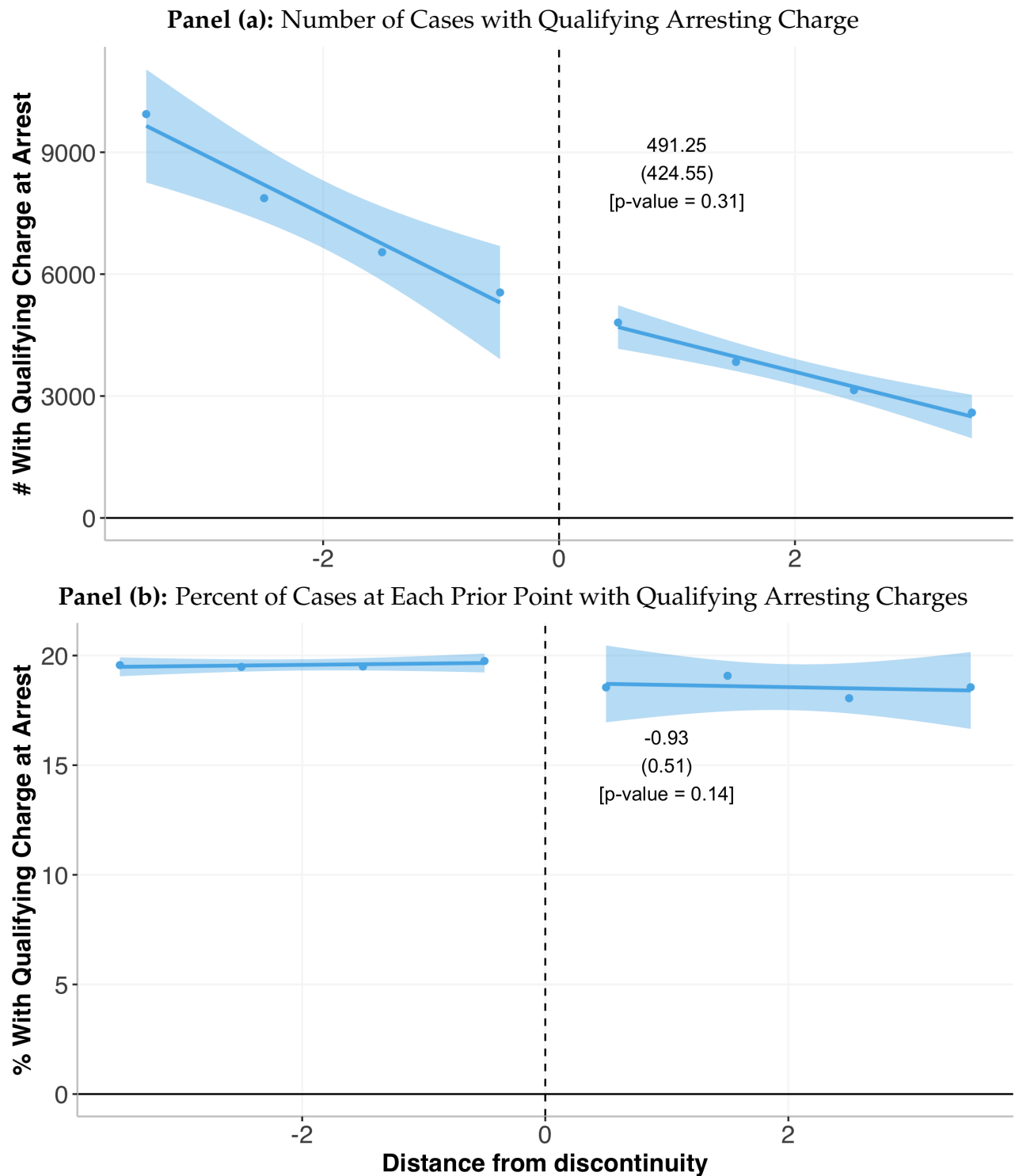
Notes: This figure tests for discontinuous changes in the density of cases around the punishment discontinuities. The x-axis depicts the distance from a punishment discontinuity. The y-axis depicts the number of cases with qualifying arresting charges in Panel (a) and the percent of cases with qualifying arresting charges in Panel (b). Both panels aggregate across the four punishment discontinuities. Panel (b) weights each discontinuity by the total number of qualifying cases around the discontinuity. The error bands reflect 95% confidence intervals around the local-linear fits of the averages at each prior point distance from the discontinuity. The annotated coefficients reflect the estimated deviation at the discontinuity from what would be expected given the local-linear fits on either side.

Table A.1: Prosecutors' Charging Responses At Each Punishment Discontinuity

	Charge Reduction			
	(1) Discontinuity at Class E	(2) Discontinuity at Class F	(3) Discontinuity at Class G	(4) Discontinuity at Class H
Mandatory Prison				
Above Focal Discontinuity	0.215***	0.128***	0.058**	0.114***
	(0.018)	(0.022)	(0.027)	(0.037)
Bandwidth = 3	✓	✓	✓	✓
Diff-in-Disc (All)	✓	✓	✓	✓
Dependant Mean				
Below Focal Discontinuity	0.389	0.158	0.269	0.101
Dependant Mean	0.266	0.248	0.235	0.252
# Qualifying Cases	7,010	5,924	8,009	10,809
# Total Cases	154,351	88,617	37,165	18,501
# Qualifying Defendants	6,928	5,589	7,675	9,363
# Total Defendants	127,321	72,071	31,390	15,699
# Jurisdictions	39	39	39	39
# Years	25	25	25	25

Notes: This table presents the change in charge reductions around each of the four punishment discontinuities where the guidelines sentence switches from optional to mandatory prison. Each specification focuses on a single discontinuity using a four point bandwidth on either side of the given punishment discontinuities illustrated in Figure 2. The sample includes defendants sentenced under the North Carolina sentencing guidelines between 1995 and 2019. The first column considers the punishment discontinuity at offense class E, which primarily includes serious assault and kidnapping cases. The second column considers the punishment discontinuity at offense class F, which primarily includes assault and sex-offense cases. The third column considers the punishment discontinuity at offense class G, which primarily includes drug sales, firearm possession, and robbery cases. Finally, the fourth column considers the punishment discontinuity at offense class H, which primarily include Breaking and Entering and low-level-property and drug-offense cases. The number of qualifying cases and defendants (in row six and eight) indicate just the number of cases and defendants in the focal offense class of each specification, while the total number of cases and defendants (in row seven and nine) include all cases used as controls (in other offense classes) to estimate the difference-in-discontinuities. All specifications use a difference-in-discontinuity design that compares the change in charge reductions for defendants with qualifying and non-qualifying charges with the same prior points, the same crime-types, and the same conviction year as in Equation 5. All standard errors are two-way clustered by jurisdiction and conviction year.

Figure A.3: Prosecutors' Charging Responses At Each Punishment Discontinuity
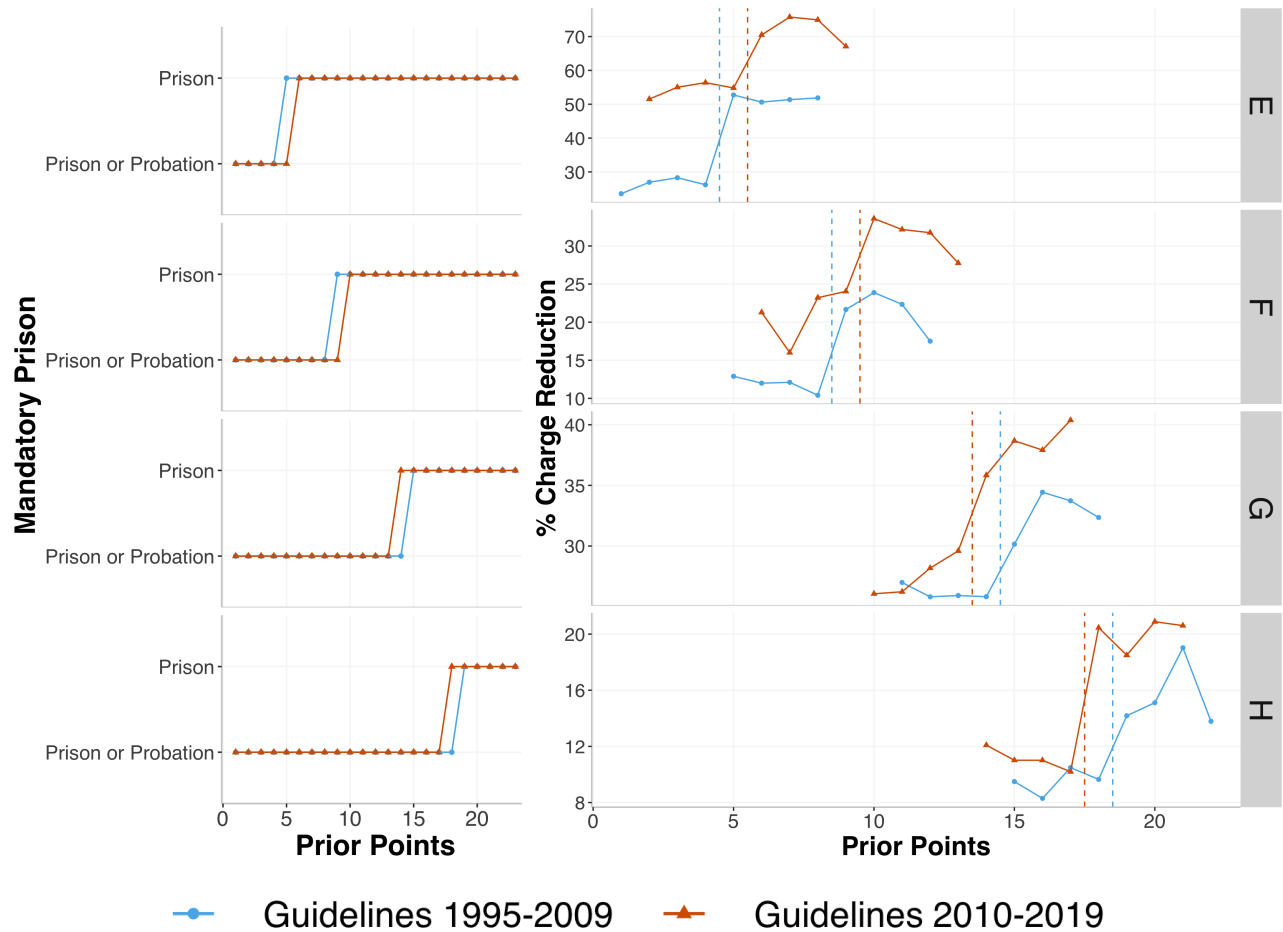
Notes: These figures illustrate the thresholds of and charging response to each punishment discontinuity, which are pooled in Figure 3 — and how charging shifted in response to the legislature switching the mandatory prison thresholds at the end of 2009. The left figure illustrates the punishment discontinuities thresholds in the initial and later versions of the North Carolina Sentencing Guidelines. The right figure shows the change in charge reductions around each discontinuity under both versions of the guidelines. Each row depicts a different felony class, or grouping of charges considered to be of similar severity by the legislature. Within each row, the blue line shows the initial sentencing guidelines (used from 1995 to 2009) and the orange line shows the later sentencing guidelines (used since 2010). The x-axis plots the prior points and the vertical dashed line highlights the threshold at which the presumptive punishment switches from optional to mandatory incarceration in each sentencing guidelines. The y-axis plots the percent of defendants whose arresting charges are reduced.

Table A.2: Change in Charge Reductions that Do Not Lead to Prison Around Punishment Discontinuities

| | Charge Reduction and No Prison | | | | |
	(1)	(2)	(3)	(4)	(5)
Mandatory Prison	0.055***	0.119***	0.076***	0.112***	0.090***
	(0.008)	(0.012)	(0.011)	(0.012)	(0.016)
Priors Trend				0.006*	0.002
				(0.003)	(0.005)
Trend x Above				−0.009	−0.013*
				(0.006)	(0.007)
Bandwidth = 4	✓	✓	✓	✓	✓
Diff-in-Disc (All)		✓		✓	
Diff-in-Disc (Only Optional)			✓		✓
Dep. Mean Below Focal Disc.	0.118	0.118	0.118	0.118	0.118
Dep. Mean	0.136	0.152	0.142	0.152	0.142
# Cases	44,315	408,137	344,281	408,137	344,281
# Defendants	37,912	192,838	172,809	192,838	172,809
# Prosecutors	1,538	1,994	1,945	1,994	1,945
# Jurisdictions	39	39	39	39	39
# Years	25	25	25	25	25

Notes: This table analyzes how charge reductions that lead to punishments without prison change around punishment discontinuities where the sentence switches from optional to mandatory prison. Each specification focuses on a four point bandwidth on either side of the four punishment discontinuities illustrated in Figure 2. The sample includes defendants sentenced under the North Carolina sentencing guidelines between 1995 and 2019. The first column considers the raw difference as in Equation 4. The second column considers a difference-in-difference design that compares the change in charge reductions for defendants with qualifying and non-qualifying charges with the same prior points, the same crime-types, and the same conviction year as in Equation 5. The third column limits the control group for the difference-in-discontinuity to defendants sentenced under optional prison. The fourth and fifth columns add linear trends in priors on both sides of the discontinuity to account for the possibility that charge reductions evolve differently for those with qualifying and non-qualifying offenses. All standard errors are two-way clustered by jurisdiction and conviction year.

Table A.3: Charge Reductions By Past Incarceration, Predicted Re-offense, and Gender

	Charge Reduction					
	Θ = Past Prison		Re-Offense		Female	
	(1)	(2)	(3)	(4)	(5)	(6)
Θ x Mandatory Prison	−0.057***	−0.065***	−0.067***	−0.065***	0.040**	0.045**
	(0.013)	(0.010)	(0.016)	(0.017)	(0.019)	(0.022)
Mandatory Prison	0.161***	0.169***	0.156***	0.173***	0.120***	0.141***
	(0.011)	(0.013)	(0.011)	(0.016)	(0.009)	(0.013)
Bandwidth = 3	✓	✓	✓	✓	✓	✓
Diff-in-Disc		✓		✓		✓
Dep. Mean Below Focal Disc.	0.218	0.218	0.218	0.218	0.218	0.218
# Cases	31,752	298,634	31,752	298,634	31,752	298,634
# Defendants	28,121	165,420	165,420	165,420	165,420	165,420
# Prosecutors	1,477	1,952	1,952	1,952	1,952	1,952
# Jurisdictions	39	39	39	39	39	39
# Years	25	25	25	25	25	25

Notes: This table considers how prosecutors' tendency to reduce charges to avoid mandatory prison varies by defendant characteristics. Columns one and two consider previous incarceration; columns three and four consider higher than average predicted re-offense; and columns five and six considers defendant gender. The odd columns estimates an equation analogous to Equation 4 for the relevant defendant group. The even columns estimate the difference-in-discontinuity design in Equation 5. Standard errors are two-way clustered by jurisdiction and conviction year. Predicted re-offense is based on a spline of defendant age interacted with defendant gender, the defendant's current crime-type, defendant race, and indicators for whether the defendant has criminal record, a previous incarceration stint, and a previous felony.

Table A.4: Heterogeneous Charging Responses to Race

	Charge Reduction				
	Θ = % Democrat (Z-Score)	Θ = % Urban (Z-Score)	Police Force (Z-Score)	Drug Possession	% Black in Charge (Z-Score)
	(1)	(2)	(3)	(4)	(5)
Θ x Black X Mand. Prison	−0.0014	−0.0021	−0.0240	−0.0352	−0.0236
	(0.0133)	(0.0153)	(0.0167)	(0.0796)	(0.0149)
Θ x Mand. Prison	0.0002	0.0021	0.0061	0.0393	−0.0022
	(0.0085)	(0.0100)	(0.0107)	(0.0784)	(0.0139)
Black X Mand. Prison	0.0030	0.0014	0.0032	0.0021	0.0023
	(0.0127)	(0.0128)	(0.0129)	(0.0124)	(0.0127)
Mandatory Prison	0.1431***	0.1434***	0.1441***	0.1415***	0.1530***
	(0.0144)	(0.0145)	(0.0147)	(0.0147)	(0.0185)
Diff-in-Disc (All)	✓	✓	✓	✓	✓
Dependent Mean	0.256	0.256	0.256	0.256	0.256
# Cases	298,634	298,634	298,634	298,634	298,634
# Defendants	28,121	28,121	28,121	28,121	28,121
# Jurisdictions	39	39	39	39	39
# Years	25	25	25	25	25

Notes: This table shows aggregate heterogeneous responses to mandatory prison for Black and non-Black defendants for cases sentenced under North Carolina's felony guidelines between 1995 and 2019. Each column estimates the difference-in-discontinuity design in Equation 5 using a four-point bandwidth. Column one considers heterogeneity by the jurisdiction's Democratic vote share in the 2016 presidential election. Column two considers heterogeneity by the jurisdictions share urban in the 2010 Census. Columns three considers heterogeneity by instances of police use of deadly force between 2000 and 2019. Column four considers the differential response to race in drug possession arrests as compared to all other offense. Finally, column five considers heterogeneity by the share of defendants who are Black within an arresting charge.

Table A.5: Robustness of Trends in Racial Disparities in Prosecutors' Charging Responses to Mandatory Prison

	Charge Reduction					
	(1)	(2)	(3)	(4)	(5)	(6)
Black x Year x Mandatory Prison	0.0038***	0.0040***	0.0043**	0.0038***	0.0046**	0.0060**
	(0.0012)	(0.0013)	(0.0016)	(0.0011)	(0.0018)	(0.0027)
Year x Mandatory Prison	−0.0018	−0.0042**	−0.0035*	−0.0042**	−0.0020	−0.0057**
	(0.0013)	(0.0020)	(0.0020)	(0.0018)	(0.0024)	(0.0027)
Black x Mandatory Prison	−0.0457*	−0.0650**	−0.0618*	−0.0585***	−0.0641**	−0.1127**
	(0.0256)	(0.0240)	(0.0312)	(0.0202)	(0.0297)	(0.0515)
Mandatory Prison	0.1388***	0.2182***	0.1970***	0.2147***	0.1444***	0.2553***
	(0.0248)	(0.0329)	(0.0345)	(0.0308)	(0.0405)	(0.0511)
Bandwidth	4	4	3	4	4	4
Diff-in-Disc		✓	✓	✓	✓	✓
Limited to Optional Prison				✓		
Interacted with Race						✓
Trends in Prior Points x Race					✓	
Dep. Mean Below Focal Disc.	0.217	0.217	0.217	0.217	0.217	0.217
Dependent Mean	0.257	0.259	0.256	0.193	0.259	0.259
# Cases	44,315	408,137	298,794	344,281	408,137	408,137
# Defendants	37,912	192,838	165,420	172,809	192,838	192,838
# Prosecutors	1,538	1,994	1,948	1,945	1,994	1,994
# Jurisdictions	39	39	39	39	39	39
# Years	25	25	25	25	25	25

Notes: This table considers the robustness of the trends in prosecutors' treatment of race around the punishment discontinuities to alternative specifications. The first two columns repeat those in Table 5 for reference. The third column limits the bandwidth to three rather than four prior points around the punishment discontinuities in North Carolina's sentencing guidelines. The fourth column limits the control group in the difference-in-discontinuity design to defendants sentenced under optional prison to allow prior points to have different meaning when defendants initially qualify for optional versus mandatory prison. The fifth column introduces differential trends in the treatment of criminal history for Black and non-Black defendants with qualifying and non-qualifying arresting charges. The sixth column interacts the difference-in-discontinuity design with defendant race to allow individual prior points and offense classes to be treated differently for Black and non-Black defendants. All standard errors are two-way clustered by jurisdiction and conviction year.

Table A.6: Racial Composition of Felony Convictions Around Punishment Discontinuities Over Time

	Share Black	
	(1)	(2)
Mandatory Prison x Year	−0.0001	−0.0015
	(0.0008)	(0.0012)
Mandatory Prison	0.0227*	0.0132
	(0.0124)	(0.0166)
Implied Trend in Racial Disparity in Misdemeanor Reductions & Full Drops Above	0.0001	0.0026
	(0.0013)	(0.0020)
Estimated Trend in Racial Disparity in Felony Reductions Above (Table 4)	0.0038	0.0040
	(0.0012)	(0.0013)
Adjusted Time Trend in Charging Responses	0.0038	0.0066**
	(0.0018)	(0.0024)
Diff-in-Disc		✓
Dep. Mean Below Focal Disc.	0.596	0.596
Dependent Mean	0.601	0.584
# Cases	44,315	408,137
# Defendants	37,912	192,838
# Prosecutors	1,538	1,994
# Jurisdictions	39	39
# Years	25	25

Notes: This table evaluates the changing racial composition of defendants who initially fall on either side of punishment discontinuities and are ultimately sentenced under the felony guidelines. Both columns consider the sample of defendants sentenced in North Carolina between 1995 and 2019. These columns each limit to a four point bandwidth around the punishment discontinuities. The first column considers the raw comparison as in Equation 4. The second column considers the difference-in-discontinuity design as in Equation 5. The implied trend in racial disparities in misdemeanor reductions and dismissals comes from scaling the change in the racial composition of defendants convicted of felonies above the discontinuity according to the share of defendants who are Black. This trend would hold assuming there were no changes in the racial composition of defendants who initially fall around the punishment discontinuities so the entire observed change comes from the felony versus misdemeanor/full drop margin. The adjusted time trend in charging responses combines this estimate with the estimate of felony charge reductions from Table 5. All standard errors are two-way clustered by jurisdiction and conviction year. The delta method is used to compute the standard error on the adjusted time trend in prosecutors' charging responses.

Table A.7: Robustness of Trends in Racial Disparities in Prosecutors' Charging Responses to Mandatory Prison for Police-Initiated Arrests

|	Charge Reduction					
	(1)	(2)	(3)	(4)	(5)	(6)
Black x Year x Mandatory Prison	0.0136***	0.0089**	0.0107***	0.0098**	0.0113***	0.0131**
	(0.0031)	(0.0039)	(0.0038)	(0.0041)	(0.0040)	(0.0053)
Year x Mandatory Prison	−0.0034	−0.0018	−0.0011	−0.0033	−0.0010	−0.0052
	(0.0031)	(0.0042)	(0.0043)	(0.0044)	(0.0045)	(0.0056)
Black x Mandatory Prison	−0.2115***	−0.1624**	−0.1716**	−0.1741**	−0.1895**	−0.2679**
	(0.0602)	(0.0749)	(0.0707)	(0.0802)	(0.0730)	(0.1103)
Mandatory Prison	0.1797***	0.1674**	0.1341*	0.1767**	0.1272*	0.2619**
	(0.0583)	(0.0751)	(0.0732)	(0.0760)	(0.0720)	(0.1110)
Bandwidth	4	4	3	4	4	4
Diff-in-Disc		✓	✓	✓	✓	✓
Limited to Optional Prison				✓		
Interacted with Race						✓
Trends in Prior Points x Race					✓	
Dep. Mean Below Focal Disc.	0.217	0.217	0.217	0.217	0.217	0.217
Dependent Mean	0.335	0.326	0.322	0.319	0.326	0.326
# Cases	12,944	131,362	96,836	125,714	131,362	131,362
# Defendants	37,912	192,838	165,420	172,809	192,838	192,838
# Prosecutors	1,538	1,994	1,948	1,945	1,994	1,994
# Jurisdictions	39	39	39	39	39	39
# Years	25	25	25	25	25	25

Notes: This table considers the robustness of the trends in prosecutors' treatment of race around the punishment discontinuities for police-initiated arresting charges to alternative specifications. The first two columns repeat the third and fourth columns in Table 5 for reference. The third column limits the bandwidth to three rather than four prior points around the punishment discontinuities in North Carolina's sentencing guidelines. The fourth column limits the control group in the difference-in-discontinuity design to defendants sentenced under optional prison to allow prior points to have different meaning when defendants initially qualify for optional versus mandatory prison. The fifth column introduces differential trends in the treatment of criminal history for Black and non-Black defendants with qualifying and non-qualifying arresting charges. The sixth column interacts the difference-in-discontinuity design with defendant race to allow individual prior points and offense classes to be treated differently for Black and non-Black defendants. All standard errors are two-way clustered by jurisdiction and conviction year.

Table A.8: Heterogeneous Trends in Prosecutor Impacts on Racial Disparities Across Crime-Types

	Charge Reduction							
	κ = Police-Initiated		Drug Possession		Drug Sales		Weapon Possession	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
κ x Black X Year X Mand. Prison	0.0140***	0.0067	0.0133***	0.0185***	0.0183**	−0.0005	0.0068	0.0013
	(0.0041)	(0.0049)	(0.0039)	(0.0064)	(0.0080)	(0.0086)	(0.0043)	(0.0048)
Black X Year X Mand. Prison	−0.0004	0.0021	0.0003	0.0021	−0.0004	0.0021	−0.0004	0.0021
	(0.0018)	(0.0019)	(0.0015)	(0.0018)	(0.0019)	(0.0020)	(0.0019)	(0.0020)
κ x Black X Mand. Prison	−0.2314***	−0.1338	−0.2338***	−0.2889*	−0.3313**	−0.0103	−0.1303*	−0.0411
	(0.0707)	(0.0839)	(0.0734)	(0.1427)	(0.1505)	(0.1525)	(0.0749)	(0.0719)
Black X Mandatory Prison	0.0199	−0.0286	0.0103	−0.0286	0.0199	−0.0286	0.0199	−0.0286
	(0.0329)	(0.0277)	(0.0296)	(0.0277)	(0.0330)	(0.0282)	(0.0334)	(0.0283)
κ x Year X Mand. Prison	−0.0021	0.0032	−0.0043	−0.0028	−0.0044	0.0065	−0.0019	−0.0037
	(0.0034)	(0.0047)	(0.0035)	(0.0142)	(0.0072)	(0.0100)	(0.0035)	(0.0054)
Year X Mandatory Prison	−0.0013	−0.0050**	−0.0014	−0.0050**	−0.0013	−0.0050**	−0.0013	−0.0050**
	(0.0014)	(0.0024)	(0.0014)	(0.0024)	(0.0016)	(0.0024)	(0.0014)	(0.0024)
Mandatory Prison	0.1336***	0.2395***	0.1355***	0.2395***	0.1336***	0.2395***	0.1336***	0.2395***
	(0.0266)	(0.0364)	(0.0254)	(0.0364)	(0.0266)	(0.0364)	(0.0268)	(0.0365)
Bandwidth = 4	✓	✓	✓	✓	✓	✓		
Diff-in-Disc		✓		✓		✓		
Dependent Mean	0.257	0.259	0.227	0.250	0.260	0.253	0.219	0.217
# Cases	44,315	408,137	38,492	326,964	37,194	321,472	36,115	313,251
# Defendants	192,838	37,912	161,742	29,174	160,039	32,331	191,439	37,579
# Prosecutors	1,538	1,994	1,483	1,943	1,538	1,921	1,503	1,916
# Jurisdictions	39	39	39	39	39	39		
# Years	25	25	25	25	25	25		

Notes: This table investigates heterogeneity in the trends in how prosecutors differentially respond to mandatory prison for Black and non-Black defendants across crime-types. The sample considers defendants sentenced under North Carolina's felony guidelines between 1995 and 2019. The odd columns estimate the raw change around the punishment discontinuities as in Equation 4, while the even columns estimate the difference-in-discontinuity design as in Equation 5, all within a four-point bandwidth. The first two columns consider heterogeneity by "police-initiated" crime where arrests typically result from police officers' decisions about whether to stop and search a person — that is, drug offenses and weapon possession. The second two columns consider heterogeneity by drug possession specifically, where reported criminal activity is similar by race (see Figure A.4). The final two columns consider a broader definition of police-initiated crime that includes technical offenses (e.g. failure to register as a sex offender), possession of stolen goods, and fleeing arrest. All standard errors are two-way clustered by jurisdiction and conviction year.

Figure A.4: Reported Drug Use by Race in North Carolina

Panel (a): Any Illicit Drug

Panel (B): Cocaine
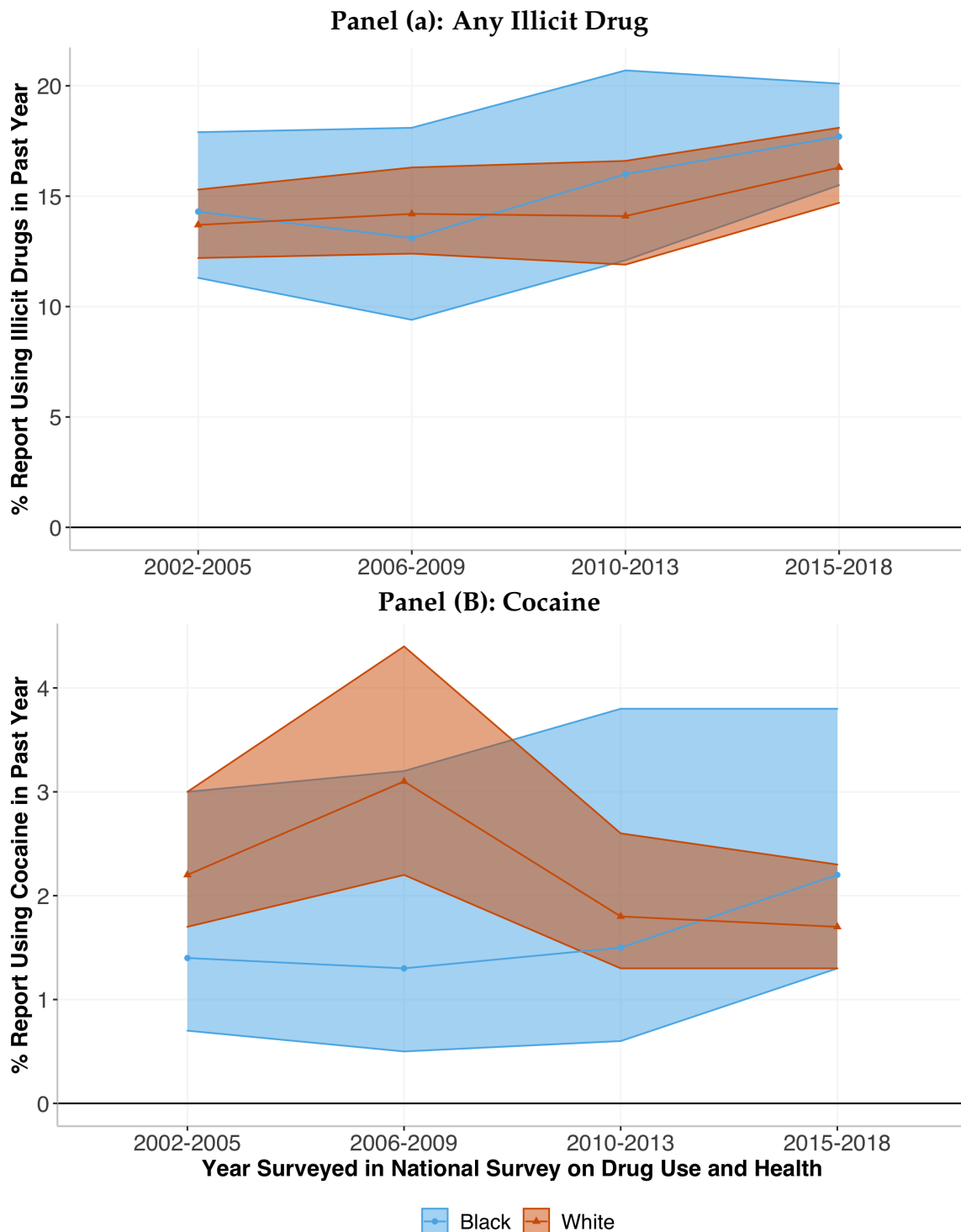
Notes: These figures illustrate racial differences in drug usage in North Carolina, using data from the National Survey on Drug Use and Health (SAMHDA, 2021). Panel (a) shows the percent of respondents who report using any illicit drug in the past year. Panel (b) shows the percent of respondents who report using cocaine. In each panel, usage for Black respondents is illustrated in blue circles and usage for white respondents is illustrated in orange triangles. The year 2014 is omitted because the field for any illicit drug use was missing in that year. Point estimates and standard errors come from the substance abuse and mental health data archive and are computed using survey weights.

Table A.9: Robustness of Trends in Racial Disparities to Controls for Legal Representation of Black and Non-Black Defendants Around the Punishment Discontinuities

| | Charge Reduction | | | |
	All Crimes		Police-Initiated	
Mand. Prison x Black x Public Defender x Year	0.0047	0.0037	0.0071	−0.0002
	(0.0032)	(0.0036)	(0.0069)	(0.0064)
Mand. Prison x Black x Year	0.0026*	0.0031*	0.0118***	0.0084*
	(0.0014)	(0.0018)	(0.0038)	(0.0046)
Mand. Prison x Public Defender x Year	−0.0045*	−0.0024	−0.0034	0.0076
	(0.0025)	(0.0022)	(0.0095)	(0.0064)
Mand. Prison x Year	−0.0008	−0.0036*	−0.0027	−0.0034
	(0.0015)	(0.0021)	(0.0038)	(0.0046)
Mand. Prison x Black x Public Defender	−0.0313	−0.0375	−0.0428	0.0554
	(0.0578)	(0.0629)	(0.1181)	(0.1170)
Mand. Prison x Black	−0.0399*	−0.0563**	−0.1995***	−0.1700*
	(0.0241)	(0.0271)	(0.0701)	(0.0867)
Mand. Prison x Public Defender	0.0423	0.0317	0.0396	−0.1233
	(0.0445)	(0.0355)	(0.1574)	(0.1140)
Mandatory Prison	0.1298***	0.2111***	0.1700**	0.1940**
	(0.0274)	(0.0353)	(0.0675)	(0.0798)
Diff-in-Disc		✓		✓
Dep. Mean Below Focal Disc.	0.217	0.217	0.299	0.299
# Cases	44,315	408,137	12,944	131,344

Notes: This table considers the robustness of the estimated trend in the racial disparities in prosecutors' charging responses to mandatory prison to the inclusion of controls for defendants' legal representation by public defenders. The sample includes cases sentenced under North Carolina's felony guidelines between 1995 and 2019. The first two columns consider all arrests and the second two columns consider police-initiated arrests for drug offenses or weapon possession. The odd columns estimate the raw differences in charging around punishment discontinuities as in Specification 4, while the even columns estimate the difference-in-discontinuity design in Specification 5. All specifications consider a four point bandwidth around the punishment discontinuities. Standard errors are two-way clustered by jurisdiction and conviction year.

B. Case Construction Details

In the North Carolina court records, the unit of observation — the "docket" — does not always reflect the unit at which decisions are made. For 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. When multiple docket numbers are handled by a single prosecutor, we assume that considerations in one docket influence decisions in other dockets that are considered concurrently. We therefore attempt to consolidate these dockets into a final "case" that reflects the unit of decision-making.

Since the final case often contains multiple charges, our case-level analyses use the lead charge in each case — the charge associated with the most severe punishment under the state sentencing guidelines.

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 the earlier docket was disposed. 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.

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. While probation violations enter some of our calculations for re-offense, they are excluded from our analyses since prosecutors are rarely involved in these cases in North Carolina.

C. Model Details

This section presents the details of our model that illustrates how prosecutors' charging responses to the sentencing guidelines reveal their payoffs from incarcerating different groups of defendants.

The Prosecutor's Instrument

The prosecutor p chooses the plea deal, including the offered charge and offered punishment of prison or no prison. When choosing the charge for defendant i,

the prosecutor can either retain the high charge chosen by the arresting officer ($C_{i,p} = H$) or reduce to a lesser offense ($C_{i,p} = L$).

The Prosecutor's Constraints

The Sentencing Guidelines' Constraint. Together with the defendant's prior criminal history, the prosecutor's chosen charge determines the sentencing guidelines' punishment. When the guideline's punishment is mandatory prison, the prosecutor must offer a plea deal with a prison sentence. When the guideline's punishment is optional prison, the prosecutor can choose whether to extend an offer with or without prison.

The Provability Constraint. Some charges cannot be proven in court because of weak or unpersuasive evidence, procedural problems, or uncooperative or unreliable witnesses.[41] We assume that the prosecutor never retains an unprovable charge because it would not be accepted by the defense and would not reflect well on their legal knowledge and integrity. We assume that evidence in defendant i's case is weak if Unprovable$_i = 1$, which is orthogonal to the guidelines' punishment.[42]

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[41] In theory, some charges may be technically provable but nonetheless be rejected by judges after the plea negotiation. In practice, prosecutors we have interviewed in North Carolina have told us that judges almost always agree to the negotiated charge in plea deals.

[42] According to prosecutors we interviewed in North Carolina, evidence strength and the prosecutor's ability to secure her preferred charge are not endogenous to the initial guidelines' punishment. Consistent with this, there is smoothness in the density of felony convictions around discontinuities where the presumptive punishment changes from optional to mandatory prison in Figure A.2. If cases were more difficult to prove when the initial presumption becomes mandatory prison, then more cases would need to be dismissed, leading to a discontinuous fall in the density of felony convictions.

Plea Deal Acceptance

We assume the defense's acceptance of the offer is a simple function of the deal that the prosecutor offers. We assume the defense always rejects an unprovable charge. For a provable charge, the defense will often accept the prosecutor's offer because going to trial exacts a trial penalty of a more severe sentence.

When the guidelines mandate prison for a provable charge against the defendant, the defense will accept a deal with prison to avoid a lengthier expected prison sentence at trial. When the guidelines allow for optional prison given a provable charge, the defense always accepts a plea offer without prison to avoid incarceration. In this case, the defense may also accept a deal with prison, but only with some probability.[43] We assume acceptance is increasing in the expected punishment at trial, which in turn is increasing in the severity of the prosecutors' chosen charge. Therefore, the prosecutor can increase the odds of securing a plea with prison by retaining the high arresting charge.

This reduced-form probability of acceptance is a simplification of reality, where the defense and prosecution often engage in costly bargaining over prison time. When prison is mandatory under the guidelines, the defense's bargaining position may be weaker. As detailed in Appendix D, this alternative formulation yields substantively similar conclusions as the current one so long as the reductions in the defense's bargaining power under mandatory prison are comparable across different groups of defendants.

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[43]If the defendant rejects an offer, the prosecutor and defense can renegotiate in the shadow of trial.

The Prosecutor's Utility

The prosecutor's utility depends on both the imposed punishment and the final charge. Imposing prison has a payoff of $\delta_{i,p}$, which can be positive or negative. Whenever prosecutor p reduces a provable charge, her boss thinks that it is possible that she is shirking from the work of proving the initial charge rather than aiming to secure a fairer punishment.[44] Thus, we make the simplifying assumption that reducing a provable charge always costs the prosecutor $\psi > 0$. This is also isomorphic to having prosecutors pay a cost for 'breaking the rules' by manipulating the charge to secure her desired punishment. As detailed in Appendix D, relaxing the assumption that reducing the charge is always costly (i.e. $\psi > 0$) does not substantively change our results under some regularity conditions.

Among provable cases, the prosecutor's expected utility is:

$$
\mathbb{E}[U_{i,p}] = \begin{cases} \psi + \delta_{i,p} \Pr(\text{Prison}_i \mid C_{i,p} = H) & \text{if charge is retained and offer is prison} \\ \psi & \text{if charge is retained and offer is not prison} \\ \delta_{i,p} \Pr(\text{Prison}_i \mid C_{i,p} = L) & \text{if charge is reduced and offer is prison} \\ 0 & \text{if charge is reduced and offer is not prison.} \end{cases}
$$

$$(6)$$

Crucially, prosecutors' payoffs from incarceration can depend both on their tastes for certain groups of defendants and their beliefs about defendants' latent types based on potentially biased signals from earlier in the criminal system pipeline.

Prosecutor Incarceration Payoffs. Let's consider how incarceration payoffs ($\delta_{i,p}$)

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[44]Alternatively, the boss could think she lacked the legal skill to prove the elements of the initial charge. Further, the police may take affront when prosecutors reduce provable charges.

may be shaped by a prosecutor's own taste-based biases and her perception of earlier bias in the system. Specifically, we consider how a prosecutor would update her belief about a defendant's type after receiving potentially biased signals.

For simplicity, assume that defendant i can be a high-crime or low-crime type, $\theta_i \in \{H, L\}$ and that i's arrest and prior convictions together produce a high- or low-crime signal, $s_i \in \{H, L\}$. All else equal, a prosecutor prefers to incarcerate high-crime defendants ($\rho > 0$). Prosecutor p may also have a taste-based preference for incarcerating Black versus non-Black defendants ($\alpha_{b,p} \lessgtr 0$). Further, prosecutor p's posterior belief that defendant i is a high-crime type can depend not only on the defendant's signal, s_i, but also, on the defendant's race, b_i: $\tilde{\pi}_p(s_i, b_i)$. Each prosecutor p may differ in how she interprets signals about defendants in light of their race. Putting this together, prosecutor p's payoff from incarcerating defendant i is:

$$\delta_{i,p} = \delta_{0,p} + \alpha_{b,p} \cdot b_i + \rho \tilde{\pi}_p(s_i, b_i) + \nu_{i,p}, \tag{7}$$

where $\delta_{0,p}$ captures the prosecutor's baseline severity and $\nu_{i,p}$ captures any other idiosyncratic preferences or beliefs about defendant i.

The expected difference in the prosecutor's payoff from incarcerating Black and non-Black defendants who both have high-crime signals is:

$$\delta_{\text{Black},p} - \delta_{\text{Non-Black},p} = \alpha_{b,p} + \rho(\tilde{\pi}_p(H, 1) - \tilde{\pi}_p(H, 0)) \tag{8}$$

which is determined by (a) her own racial bias ($\alpha_{b,p}$) and (b) the difference in the perceived accuracy of the high-crime signal for Black versus non-Black defendants

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$\left(\tilde{\pi}_p(H,1) - \tilde{\pi}_p(H,0)\right).$[45] This in turn depends on the prosecutor's beliefs about the source of racial disparities earlier in the system.

Consider how a prosecutor would rationally update her prior beliefs about defendant type in response to high-crime signals for Black and non-Black defendants. Suppose we were in a world where Black and non-Black defendants were equally likely to be high-crime types but where the system nonetheless generated more high-crime signals for Black defendants. These racially disparate signals could reflect more false-positives, f, for low-crime Black defendants than low-crime non-Black defendants ($f_{b=1} > f_{b=0}$) or, alternatively, more true-positives, τ for high-crime Black defendants ($\tau_{b=1} > \tau_{b=0}$). A prosecutor will perceive high-crime signals to be less accurate for Black defendants (and therefore update her prior less) if she believes that the racial difference in false-positives exceeds the racial difference in true-positives in percentage terms:[46]

$$\frac{f_{b=1,p} - f_{b=0,p}}{f_{b=0,p}} > \frac{\tau_{b=1,p} - \tau_{b=0,p}}{\tau_{b=0,p}}. \tag{9}$$

The prosecutor's perception of the relative accuracy of high-crime signals across

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[45]The prosecutor's own biases, $\alpha_{b,p}$, may capture the prosecutor's inherent priorities biases or the internalized biases of their bosses and the public who elects them.

[46]To see this, let π denote the common rate of high-types across races. Letting τ_b denote the true-positive rate for race b and f_b, the false-positive rate:

$$\tilde{\pi}_p(H,1) - \tilde{\pi}_p(H,0) = \frac{\tau_{b=1}\pi}{\tau_{b=1}\pi + f_{b=1}(1-\pi)} - \frac{\tau_{b=0}\pi}{\tau_{b=0}\pi + f_{b=0}(1-\pi)}$$

$$= \pi(1-\pi)\frac{f_{b=0}\Delta\tau - \tau_{b=0}\Delta f}{\Pr(s_i = H \mid b_i = 1)\Pr(s_i = H \mid b_i = 0)},$$

which is negative when:

$$\tau_{b=0}\Delta f > f_{b=0}\Delta\tau \ \text{ or } \ \frac{\Delta f}{f_{b=0}} > \frac{\Delta\tau}{\tau_{b=0}}.$$

races depends on her theory of the cause of racial disparities in the signals. If a prosecutor thinks, for instance, that systemic over-policing and individual police bias increase arrests and convictions of low-crime type Black defendants, she would conclude that Black defendants with high-crime signals were *less* likely to be high-crime types than non-Black defendants with the same signals (since $\frac{f_{b=1,p}-f_{b=0,p}}{f_{b=0,p}}$ would be high). By contrast, if the prosecutor thinks that a greater police presence in Black communities increases the catch-rate for high-crime types, she would conclude that Black defendants with high-crime signals were *more* likely to be high-crime types than non-Black defendants with the same signals (since $\frac{\tau_{b=1,p}-\tau_{b=0,p}}{\tau_{b=0,p}}$ would be high). Therefore, even if all prosecutors believe that the criminal system produces racial disparities in excess of the true difference in latent crime type, some prosecutors might counter-intuitively conclude that Black defendants with high-crime signals were nonetheless more likely to be high-crime types.[47]

Prosecutor choices around punishment discontinuities. Regardless of the source of a prosecutor's incarceration payoff ($\delta_{i,p}$), the following three propositions about prosecutor responses to mandatory prison hold.

The prosecutor's chosen conviction charge and punishment offer depend on whether the defendant's arresting charge and prior criminal history initially qualify him for optional or mandatory prison.

Proposition 1: *When the initial guidelines' punishment is optional prison, the prosecutor*

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[47]In addition to allowing prosecutors' taste-based preferences α_b and their beliefs about the origins of racial disparities ($f_{b,p}$ vs $\tau_{b,p}$) to vary across prosecutors, we also allow these parameters to evolve over time.

will retain the high arresting charge regardless of the desired sentence, as long as the high

charge is provable.

Suppose that the prosecutor would prefer to incarcerate the defendant ($\delta_{i,p} > 0$). In this case, the prosecutor will choose the high charge and offer prison since this demonstrates her ability and weakly increases the probability of securing a plea with prison. Suppose, instead, that the prosecutor would prefer not to incarcerate the defendant ($\delta_{i,p} < 0$). In this case, the prosecutor will choose to offer a plea without prison but retain the initial arresting charge.[48] Put simply, retaining the high charge always demonstrates the prosecutor's ability but never constrains the resulting punishment. □

Since the charge is only reduced if the case is unprovable, the probability of reduction under optional prison is the probability that the evidence is too weak to prove the arresting charge, ω_i:

$$\Pr(C_{i,p} = L \,|\, \text{Optional}_{H,i}) = \Pr(\text{Unprovable}_i). \tag{10}$$

Proposition 2: *When the initial guidelines' punishment is mandatory prison, the prosecutor's desired sentence will impact her charging choice.*

If the prosecutor does not reduce the defendant's charge, the sentencing guidelines will prevent her from offering a sentence without prison. Given the sentencing guidelines constraint, only the following subset of cases from Equation 6 are

---

[48]In North Carolina, a plea deal without prison for a felony charge is almost always a supervised probation sentence.

permissible :

$$
\mathbb{E}[U_{i,p}] = \begin{cases} \psi + \delta_{i,p} & \text{if charge is high and offer is prison} \\ \delta_{i,p} \Pr(\text{Prison}_i \mid C_{i,p} = L) & \text{if charge is low and offer is prison} \\ 0 & \text{if charge is low and offer is not prison.} \end{cases}
$$

(11)

If the prosecutor prefers incarceration ($\delta_{i,p} > 0$), she will offer a deal with prison and the high charge. If instead she would rather release the defendant ($\delta_{i,p} < 0$), the prosecutor will weigh the benefits of proving the high charge against the costs of incarcerating a defendant who she would prefer not to. The prosecutor will choose the low charge even when the high charge is provable (Unprovable$_i = 0$) if

$$
\delta_{i,p} \leq -\psi.
$$

(12)

Under the specific expression of prosecutor utility in Equation 7, we can consider this expression for a Black defendant with a high signal:

$$
\delta_0 + \alpha_{b,p} + \rho \tilde{\pi}_p(H, 1) + \nu_{i,p} \leq -\psi.
$$

(13)

This will be more likely to hold if (a) the prosecutor does not discriminate against Black defendants due to her tastes (lower $\alpha_{b,p}$) and (b) the prosecutor perceives high-crime signals for Black defendants to often be inaccurate because of high-rates of false-positives (lower $\tilde{\pi}_p(s_i, b_i)$). □

The probability of a charge reduction among cases that initially qualify for manda-

tory prison is:

$$\Pr(C_{i,p} = L \mid \text{Mandatory}_{H,i}) = \Pr(\text{Unprovable}_i)$$
$$+ (1 - \Pr(\text{Unprovable}_i)) \Pr(\delta_{i,p} \leq -\psi \mid \text{Unprovable}_i = 0).$$
$$(14)$$

Given Equation **??** and 14, the difference in the probability of a charge reduction under mandatory and optional prison is:

$$\Delta \Pr(C_{i,p} = L) = (1 - \Pr(\text{Unprovable}_i)) \Pr(\delta_{i,p} \leq -\psi \mid \text{Unprovable}_i = 0). \quad (15)$$

The observed charging response to mandatory prison is determined by the share of provable cases where the prosecutor retains charging discretion $(1 - \Pr(\text{Unprovable}_i))$ and the prosecutor's punishment preferences among this set of provable cases $(\Pr(\delta_{i,p} \leq -\psi \mid \text{Unprovable}_i = 0))$.

Inferring prosecutor incarceration payoffs over defendants of group A and B.
Proposition 3: *We can infer that prosecutors have a stronger desire to avoid incarcerating defendants of group A who have provable cases than those of B who have provable cases if:*

1. $\Delta \Pr(C_{i,p} = L \mid i \in A) > \Delta \Pr(C_{i,p} = L \mid i \in B)$ — *the observed charging response to mandatory prison is greater for group A than B and*

2. $\mathbb{E}[1 - Unprovable_i \mid i \in A] \leq \mathbb{E}[1 - Unprovable_i \mid i \in B]$ — *group B has weakly more provable cases than group A.*

One can manipulate Equation 14 to see that the only way for there to be a greater

charging response for group A ($\Delta \Pr(C_{i,p} = L \mid i \in A) > \Delta \Pr(C_{i,p} = L \mid i \in B)$)

despite more provable cases for group B ($\mathbb{E}[1 - \text{Unprovable}_i \mid i \in A] \leq \mathbb{E}[1 -$

$\text{Unprovable}_i \mid i \in B]$) is for prosecutors to receive a smaller incarceration payoff

for group A than B ($\Pr(\delta_{i,p} \leq \psi \mid i \in A, \text{Unprovable}_i = 0) > \Pr(\delta_{i,p} \leq \psi \mid i \in$

$B, \text{Unprovable}_i = 0)$). $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad$ $\square$

Intuitively, when defendants of group B have more provable cases, prosecutors

more frequently decide whether qualifying defendants get to avoid mandatory

prison — rather than the constraint of provability deciding for them. Therefore,

when the increase in charge reductions is larger for group A despite fewer provable

cases, the payoff from incarcerating group A is unambiguously lower.[49]

Empirically, we can evaluate whether we are in this unambiguous case by esti-

mating the share of cases with charge reductions under optional prison for group

A and B, since, by Proposition 1, the only reason for prosecutors to reduce these

charges is weak evidence.

Consider the difference in discretionary charge reductions between Black and non-

Black defendants with high-crime signals. Assuming an equal distribution of id-

iosyncratic shocks (ν) by race, Black defendants will be more likely to benefit

from charge reductions if: $\alpha_{b,p} + \rho \tilde{\pi}_p(H, 1) < \rho \tilde{\pi}_p(H, 0)$. Therefore, a prosecu-

tor's racial impacts will depend on her taste-based discrimination ($\alpha_{b,p}$) and on

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[49]As Proposition 3 indicates, prosecutors responses to mandatory prison identify their incarcer-
ation payoffs in the set of provable cases. If a prosecutor's payoff from incarcerating defendants is
negatively correlated with weak evidence, Equation 15 reveals that the observed charging response
to mandatory prison will be attenuated relative to charge responses if prosecutors were not con-
strained by weak evidence. Extending this logic to consider payoffs across groups of defendants,
the difference in the observed charging responses across groups will be further attenuated relative
to the true difference in payoffs if the group with lower incarceration payoffs also has higher rates
of weak evidence.

her perception of the relative accuracy of high-crime signals for Black defendants $\left(\tilde{\pi}_p(H,1) - \tilde{\pi}_p(H,0)\right)$. The lower a prosecutor's bias and the more she questions high-crime signals for Black defendants, the more she will extend discretionary charge reductions to Black defendants.

In sum, after accounting for provability differences across groups, observed differences in charging responses to mandatory prison capture differences in prosecutor payoffs. By contrast, the level of charge reductions in all cases captures reductions determined by discretion as well as reductions determined by weak evidence. Finally, differences in charging responses across groups of defendants reflect both prosecutors' tastes and perceptions.

D. Model Extensions

Prosecutors may not want to retain charges that they could not prove at trial, either because of the risk to their reputation or their intrinsic desire to follow the law. In addition to these incentives for the prosecutor, the defense would never accept a plea offer with a charge that the prosecutor could not prove in court.[50] Therefore, prosecutors must always reduce unprovable charges.

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[50]In practice, defense attorney quality and efforts could have an impact on the final charge. Therefore, one may worry that defense attorneys fight harder when the defendant would qualify for mandatory prison absent a charge reduction, which would violate our assumption that provability is orthogonal to the punishment under the guidelines. However, defense attorneys are always required to zealously represent their client's interests and therefore should fight against charges with weak evidence regardless of the punishment. Moreover, among the set of inframarginal cases that are obviously provable or obviously not provable, there is limited scope for the defense attorney's efforts to matter since the viability of the case is obvious to all parties. In our model, where provability is binary, all cases are inframarginal and therefore this concern is assumed away. If, instead, some cases were on the margin of being provable, there would be greater scope for the defense attorney's extra efforts to matter since fighting the evidence in marginally provable cases could result in a reduction. Since this issue only arises among marginal cases, it has a limited capacity to impact our estimates of prosecutor discretion.

D.1. Relaxing the Assumption of Positive Conviction Utility ($\psi > 0$)

Relaxing the assumption that prosecutors always gain from convicting a defendant of the high provable charge would not substantively change our inferences about prosecutors' payoffs using their charging responses to mandatory prison. Relaxing this assumption would allow for charge reductions when defendants initially qualify for optional prison to capture prosecutor payoffs in addition to weak evidence. Assuming that the distributions of prosecutor payoffs for different groups of defendants are smooth and unimodal, a higher rate of reductions to avoid mandatory prison for one group indicates that the group has lower punishment payoffs as long as a minority of defendants in each group who initially qualify for optional prison receive discretionary charge reductions. To see how a violation of this assumption could lead to incorrect inferences, imagine there was a very preferred group of defendants who *always* receive charge reductions even when they initially qualify for optional prison. For this group, there would be no response to mandatory prison precisely because the group is especially preferred.

E. Heterogeneous Trends Across Place

We consider heterogeneous trends in prosecutor impacts on racial disparities across place. We first consider whether prosecutors in liberal and urban jurisdictions drive the observed trend in prosecutors' disparate impacts. In column one of Table A.11, the trend in prosecutors' impacts on racial disparities is marginally stronger in left-leaning jurisdictions, but political differences are small and insignificant.[51]

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[51]We define the politics of jurisdictions using the vote share from the 2016 presidential election. A one standard deviation increase in the Democratic vote share predicts a .14pp stronger trend in prosecutors' impacts on racial disparities around the punishment discontinuities (95% CI = [-0.056, 0.34]).

In column two, the trend in prosecutors' impacts is significantly stronger in urban jurisdictions, although it is also present in rural jurisdictions.[52] Since progressive prosecution and the Black Lives Matter movement have been concentrated in urban centers, urban prosecutors' tastes and perceptions of earlier bias may have changed more than those of other prosecutors.[53]

Since the trend in urban jurisdictions may be driven by growing awareness of the disparate impacts of policing, column three directly focuses on jurisdictions with aggressive policing, as characterized by instances of fatal encounters between police and civilians.[54] With each passing year, prosecutors in jurisdictions that are one standard deviation above the mean in deadly use of police force have become 1.06pp more likely to extend charge reductions to Black versus non-Black defendants, beating the average trend by 0.54pp (95% CI = [0.23pp, 0.85pp]). Between 1995 and 2019, prosecutors in these jurisdictions became 26.5pp more likely to extend charge reductions to Black defendants, dwarfing the average trend by

[52]We define urbanity using the county-level statistics on share urban from the 2010 Census. A one standard deviation increase in the share of a jurisdiction's that is urban predicts a .35pp stronger trend in prosecutor impacts on racial disparities around the punishment discontinuities (95 % CI = [0.095, 0.60]).

[53]Liberal jurisdictions may have been particularly receptive to the Black Lives Matter and progressive prosecution movements. Consistent with this view, the combination of left-leaning politics with urban policing offers a particularly potent force for change as reported in column five of Table A.10. We identify three left-leaning, urban jurisdictions — Charlotte, Durham, and Raleigh — as those with urban demographics and Democratic vote-shares that are both at least a standard deviation above the median in North Carolina. These three urban, left-leaning jurisdictions have a 0.85pp stronger trend in prosecutor impacts on racial disparities around the punishment discontinuities (95 % CI = [0.002pp, 1.12pp]). This is slightly higher than the 0.66pp difference that would be independently predicted by politics and urbanity.

[54]We consider instances of fatal encounters with police up to 2019, excluding those that involve vehicles. We include fatal encounters with civilians of either race because of the imprecision in the coding of race, especially in earlier years. Results are similar but less precise restricting to fatal encounters with civilians coded as Black. Results are also similar but less precise using the hazard rate of fatal encounters. The data on Police use of deadly force come from Fatal Encounters, which has collected data on all fatal encounters between police and civilians since January 2000 using newspaper reports and FOIA requests (Burghart, 2020).

13.5pp.[55] The stronger trend is robust to the inclusion of interactions with local politics and urbanity (column four).

The stronger trend in more aggressively policed jurisdictions is consistent with a change in prosecutors' beliefs about earlier bias in the system. Prosecutors in aggressively policed jurisdictions may have come to believe that police arrests create more false-positives in Black communities, which may bear the brunt of aggressive policing. Consistent with this interpretation, the stronger trend in aggressively policed jurisdictions persists within prosecutors (column five of Table A.11), suggesting that *all* prosecutors in aggressively policed jurisdictions have changed their perception of bias in signals of crime. While it is possible that this stronger trend instead reflects prosecutor preferences, it seems unlikely that the incidence of police use-of-deadly-force would be especially predictive of shifts in taste-based discrimination ($\alpha_{b,p}$).

In contrast to the robustness of results for police use-of-force, the stronger trend in urban, liberal jurisdictions is not robust to the inclusion of interactions with local police use-of-force (compare columns five and six of Table A.10). Since the trends in prosecutor preferences likely differ in urban, liberal jurisdictions, this null result is consistent with the trend in prosecutors' racial impacts largely reflecting changes in beliefs rather than preferences.[56]

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[55]By 2019, prosecutors in more aggressively policed jurisdictions were marginally more likely to extend charge reductions for Black defendants to avoid mandatory prison. However, in 1995, these prosecutors were 10pp *less* likely to extend reductions to Black defendants relative to less aggressively policed jurisdictions. This may reflect the fact that prosecutors in heavily policed jurisdictions were themselves more racially biased. Alternatively, these prosecutors may have interpreted more severe arresting charges and longer criminal histories of Black defendants as more accurately reflecting their true criminal conduct.

[56]The next draft will consider the change in politics within each jurisdiction, which may more directly predict the change in prosecutor preferences.

Table A.10: Heterogeneous Trends Across Place: Adding Police Deadly Force Controls

	Charge Reduction					
	Θ = % Democrat (Z-Score)		Θ = % Urban (Z-Score)		Θ = Urban & Liberal	
	(1)	(2)	(3)	(4)	(5)	(6)
Θ x Black X Year X Mand. Prison	0.0014	−0.0014	0.0035**	0.0009	0.0085***	0.0008
	(0.0010)	(0.0014)	(0.0013)	(0.0019)	(0.0021)	(0.0040)
Black X Year X Mand. Prison	0.0055***	0.0060***	0.0052***	0.0054***	0.0034*	0.0052**
	(0.0016)	(0.0017)	(0.0016)	(0.0016)	(0.0019)	(0.0025)
Θ x Black X Mand. Prison	−0.0250	0.0321	−0.0549*	0.0086	−0.1507***	0.0077
	(0.0231)	(0.0212)	(0.0284)	(0.0337)	(0.0508)	(0.0761)
Black X Mandatory Prison	−0.0786**	−0.0874***	−0.0760**	−0.0795***	−0.0426	−0.0785
	(0.0281)	(0.0293)	(0.0293)	(0.0276)	(0.0341)	(0.0488)
Θ x Year X Mand. Prison	−0.0026***	−0.0012	−0.0037**	−0.0026	−0.0069**	−0.0014
	(0.0009)	(0.0010)	(0.0016)	(0.0019)	(0.0029)	(0.0039)
Year X Mandatory Prison	−0.0044**	−0.0049**	−0.0043**	−0.0046**	−0.0029	−0.0044
	(0.0019)	(0.0021)	(0.0019)	(0.0020)	(0.0025)	(0.0026)
Mandatory Prison	0.2093***	0.2170***	0.2078***	0.2140***	0.1877***	0.2115***
	(0.0325)	(0.0350)	(0.0325)	(0.0350)	(0.0422)	(0.0477)
Diff-in-Disc (All)	✓	✓	✓	✓	✓	✓
Police Deadly Force Interactions		✓		✓		✓
Dependent Mean	0.256	0.256	0.256	0.256	0.256	0.256
# Cases	298,634	298,634	298,634	298,634	298,634	298,634
# Defendants	28,121	28,121	28,121	28,121	28,121	28,121
# Jurisdictions	39	39	39	39	39	39
# Years	25	25	25	25	25	25

Notes: This table complements Table A.11 by considering how the estimated heterogeneity in the trends in prosecutor impacts on racial disparities by politics and urbanity are affected by the inclusion of interactions with police use of deadly force. The sample considers defendants sentenced under North Carolina's felony guidelines between 1995 and 2019. Each column estimates the difference-in-discontinuity design in Equation 5 in a four-point bandwidth. The first two columns consider heterogeneity by the jurisdiction's Democratic vote share in the 2016 presidential election. The next two columns consider heterogeneity by the jurisdictions share urban in the 2010 Census. The final two columns consider heterogeneity between the urban, liberal jurisdictions of Charlotte, Durham, and Raleigh and the rest of the state. These jurisdictions were identified as those urban demographics and Democratic vote-shares both at least a standard deviation above the median in North Carolina. The even columns add interactions of race and time with instances of police use of deadly force between 2000 and 2019, as a proxy for the intensity of local policing (Burghart, 2020). All standard errors are two-way clustered by jurisdiction and conviction year.

Table A.11: Heterogeneous Trends Across Place

	Charge Reduction				
	Θ = % Democrat (Z-Score)	% Urban (Z-Score)	Police Deadly Force (Z-Score)		
	(1)	(2)	(3)	(4)	(5)
Θ x Black X Year X Mand. Prison	0.0014	0.0035**	0.0054***	0.0050*	0.0024***
	(0.0010)	(0.0013)	(0.0016)	(0.0027)	(0.0008)
Black X Year X Mand. Prison	0.0055***	0.0052***	0.0052***	0.0059***	0.0035**
	(0.0016)	(0.0016)	(0.0016)	(0.0017)	(0.0016)
Θ x Black X Mand. Prison	−0.0250	−0.0549*	−0.1004***	−0.1114***	
	(0.0231)	(0.0284)	(0.0213)	(0.0357)	
Black X Mandatory Prison	−0.0786**	−0.0760**	−0.0745**	−0.0876***	
	(0.0281)	(0.0293)	(0.0289)	(0.0301)	
Θ x Year X Mand. Prison	−0.0026***	−0.0037**	−0.0043**	−0.0023	−0.0042***
	(0.0009)	(0.0016)	(0.0021)	(0.0022)	(0.0007)
Year X Mandatory Prison	−0.0044**	−0.0043**	−0.0045**	−0.0048**	−0.0033*
	(0.0019)	(0.0019)	(0.0021)	(0.0020)	(0.0018)
Mandatory Prison	0.2093***	0.2078***	0.2115***	0.2157***	
	(0.0325)	(0.0325)	(0.0363)	(0.0342)	
Diff-in-Disc (All)	✓	✓	✓	✓	✓
Political & Urban Interactions				✓	
Prosecutor FE					✓
Dependent Mean	0.256	0.256	0.256	0.256	0.271
# Cases	298,634	298,634	298,634	298,634	1,475,304
# Defendants	28,121	28,121	28,121	28,121	28,121
# Jurisdictions	39	39	39	39	39
# Years	25	25	25	25	25

Notes: This table investigates heterogeneous trends in how prosecutors differentially respond to mandatory prison for Black and non-Black defendants. The sample considers defendants sentenced under North Carolina's felony guidelines between 1995 and 2019. Each column estimates the difference-in-discontinuity design in Equation 5 in a four-point bandwidth. Column one considers heterogeneity by the jurisdiction's Democratic vote share in the 2016 presidential election. Column two considers heterogeneity by the jurisdictions share urban in the 2010 Census. Columns three through five consider heterogeneity by instances of police use of deadly force between 2000 and 2019, as a proxy for the intensity of local policing (Burghart, 2020). Column four includes interactions of urbanity and politics with race and time around the discontinuity to isolate heterogeneity by police force net of these other factors. Table A.10 reports the effect of adding police force interactions to the estimated heterogeneity by politics and urbanity. Column five includes prosecutor fixed effects interacted with mandatory prison and race to consider the changes within prosecutor rather than across prosecutor. All standard errors are two-way clustered by jurisdiction and conviction year.