

JUSTFAIR North Carolina

Uncovering Judicial Bias: A data-oriented study on the racial bias that permeates North Carolina's criminal justice processes

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Abstract

This study discusses the longstanding problem of racial bias in the United States' criminal justice system, when it is widely known Black communities are disproportionately represented in the incarcerated population. A robust data-oriented approach based on legal sentencing guidelines and historical sentencing records is believed to be the most effective way to uncover the complex and deeply rooted nature of this race-based bias. Through the lens of this study, we examine different decisions made in criminal courts of North Carolina and evaluate to what extent the personal biases of public officials about race, gender, and socioeconomic factors could be producing different decision-making outcomes. We investigate sentencing and prosecutorial processes, supplemented with racial discrepancies in who is charged with crime, for each county in North Carolina. Additionally, we also observe the geographical patterns that emerge from this analysis, to increase accountability for judicial officials in each district, and increase awareness about the importance of decision-making being accessible to the public.

Introduction

The U.S. has a longstanding history of race-based discrimination in the criminal justice system, depicted by the disproportionate makeup of African American prisoners as opposed to the general populace (Hinton et al., 2018). Certainly, Black Americans comprise only 13% of the U.S. population but constitute 40% of those incarcerated (Gilbert, 2022). These inequalities can be caused by disparities in how individuals are treated by the judicial system, which can have serious consequences for the lives and communities of people of color. From the perspective of "The New Jim Crow" by Michelle Alexander, studying racial bias in the criminal justice system is crucial because it exposes the ways in which the system maintains a racial caste system even after abolition of Jim Crow Laws in the 1960s. Alexander argues that the criminal justice system is not colorblind, as many people believe, but rather operates as a mechanism for racial control. Indeed, a recent study found a significant increase in incarceration rates of Black Americans that can be explained as a response to the passing of the Voting Rights Act in 1965 which lifted some restrictions for Black Americans to exercise their right to vote (Eubank, Fresh, 2023). Other analyses conclude that bias does exist in the criminal justice system and has had devastating effects on communities of color. (Thompson, 2014; Taibbi, 2014; Hessick, 2022; Pfaff, 2017).

Studying racial bias in the criminal justice system is the first step towards understanding how the system operates as a mechanism for racial control and motivating work towards solutions that prevent it from perpetuating racial inequality. As a recent initiative in this field, the JUSTFAIR project, presented by the Institute for the Quantitative Study of Inclusion, Diversity, and Equity (QSIDE) aims to bring transparency to the criminal justice system in the United States, by making archived court records publicly available in an aggregated format to facilitate analysis of the decisions made in courts of all levels. So

far, JUSTFAIR has built a database of criminal sentencing decisions and analyzed sentencing disparity at the federal level. The research project presented in this paper is a subsequent effort of the JUSTFAIR initiative to expand JUSTFAIR to the state-level scope of North Carolina.

The preceding discussion motivates the following research inquiries specific to this study:

- How can racial bias manifest in criminal sentencing within local district courts?
- What metrics can we use to measure racial bias in data as the closest reflection of the phenomenon?
- How does decision-making seem to vary across independent district courts in North Carolina?

Background

As stated in the Vera Institute's 2018 report, *An Unjust Burden: The Disparate Treatment of Black Americans in the Criminal Justice System*, the deep rootedness of the systemic bias in justice procedures makes it a complex and challenging problem to solve, but one without which true justice cannot be served. Certainly, there are four components of the Criminal Justice System in the US: legislation, law enforcement or policing, courts, and corrections. Each component has different levels of hierarchy and degrees of influence in society, and within each level, there are several decision-makers who play varied roles in serving justice. Nonetheless, State-level criminal courts can be one of the most important component and level to study given it is where the most important decisions about a person's freedom are made. In the US, more than 75% of prisoners are confined in local jails and State prisons from convictions made in State-level courts (Sawyer, Wagner, 2023). By studying disparities in criminal justice at the state-district level, we can better understand how biases manifest in convictions, among other court decisions, and hold individuals and institutions accountable for their actions.

Investigating this bias in state criminal courts requires a robust data-oriented approach on historical court records. According to the U.S. Constitution, citizens have a right to access criminal trial proceedings (amend. VI). However, trial proceedings' records are difficult to obtain in a way that court decisions can be analyzed; therefore, in practice, the right is rarely granted. More specifically, "the public does not have access to high quality, large-scale information about the federal criminal justice system, and therefore, much of what happens in criminal courts remains opaque" (Ciocanel, et al. 2020). Beliefs of bias in a system that seems to be intentionally obscure have eroded public trust in law enforcement, the justice processes, and democracy itself, which can ultimately undermine public safety. Those attitudes seen in today's political climate call for increasing transparency and accountability of public officials in all components of the judicial system. Even though sentencing guidelines exist to inform decision makers of the corresponding penalties for every processed trial, among other rules that govern the court system processes in most State courts, prosecutors, district attorneys, and, ultimately, appointed judges hold discretion on each case's outcome, allowing personal and systemic biases to obstruct justice. Through conducting statistical investigations and exposing the extent of demographic-based disparities in criminal

court decisions, we aim to encourage the election of public officials who will not perpetuate existing biases, but rather fight to eliminate them. This will help to restore trust in the institutions they represent.

Despite the data limitations, recent studies have concluded that the disproportionate rates of incarceration of people of color in an already highly punitive judicial system can be attributed to race-based bias. A study conducted by the Institute for the Quantitative Study of Inclusion, Diversity, and Equity (QSIDE) claims that racial biases in Federal court decisions are the most plausible explanation for race discrepancies in criminal charge and incarceration rates (Ciocanel, et al., 2020). Conversely, John Pfaff in his book *Locked In* (2017) finds there are three possible reasons why prison populations have race disparities, among which only one is related to personal biases of decision makers. However, untangling these reasons is not always achievable. Pfaff explains that more Blacks and Latinos are held in prisons, first, because they simply commit more crimes; second, because Blacks and Latinos commit more crimes that are easier to catch or that there is more political interest in catching; and third, because there is more heavy policing of neighborhoods where Blacks and Latinos live. Pfaff supports each of these points with sound evidence and clarifies that Blacks face more systematic pressures to commit crimes because of “persistent structural barriers to economic and social advancement” (p.92-93), which makes them more pressured to engage in illegal activities such as selling drugs. Pfaff, however, does not disregard the systemic bias that produces over policing in neighborhoods of color. While policing is outside of the scope of this study, the importance of the racial composition of the input stream of arrests onto a system that is generally over-punitive and sending more people to prison than any other country must be acknowledged.

The overall highly punitive criminal justice system of the U.S., as it works today, creates power imbalances that allow for personal biases of decision makers to obstruct justice. The U.S. is the country with the highest number of prisoners per capita in the world, surpassed by more than 500 points in comparison with other developed countries in the West (Bureau of Justice Statistics, 2010). Pfaff, in *Locked In*, argues that there is a “man behind the curtain” of mass incarceration, and that is the prosecutor. The prosecutor is an elected public official who builds a case against a person facing criminal charges. According to Pfaff, prosecutors, because they are almost never contended in elections, they are politically powerful, control their own budgets, and are “substantially better positioned than defense attorneys” to win cases, are responsible for the disproportionate surge in incarceration in the US. Pfaff also argues that prosecutors’ jobs are never publicly tracked and are almost completely ignored by regulators (p. 206).

Reciprocally, since American politics started to become tougher on crime to combat rising rates of property and violent offenses in the late 1970s and 1980s, prosecutors began to conduct pre-trial negotiations with defendants to prevent the increasing number of expensive and lengthy trial proceedings. These negotiations, called plea bargains, are coercive in nature. Carissa Hessick, a professor at the University of North Carolina, explains in her book *Punishment without Trial* (2021) that a person with a stake in the outcome of a case is not a neutral decision maker when offered a plea-bargaining deal. In her book, Hessick argues that the plea bargain negotiation has a power imbalance when the prosecutor holds

a person's freedom as a bargaining chip and can threaten to charge that person with more severe crimes; therefore, the prosecutor will almost always have more power to coerce the defendant to relinquish their right to a trial and plead guilty. With that much power and no regulation or oversight, prosecutors' personal biases are more likely to manifest in criminal process outcomes and obstruct judicial processes. In fact, since plea bargains became "normal" in the 2000s, guilty pleas have not dropped below 95% of the total cases prosecuted in the US, compared to ~70% in the 1970s (Hessick, 2021). The reality is that if that percentage dropped, courthouses, as they function today would not be able to hold the surge in trials. This resource constrain that is giving unregulated power to prosecutors and allowing personal biases to infiltrate their decisions about peoples' freedom, is the type of systematic devices that are preventing justice from being served in the current state of criminal courts.

Methods

Data & Measurement

The primary dataset used for the analysis was obtained from the Automated Criminal & Infractions System (ACIS), which contains only case information as recorded by all criminal court clerks' offices in North Carolina. The dataset consists of a 5-year direct extract from the ACIS system of 14,081,546 cases that are matched to 23,039,404 individual offences, in total. The creation date of cases can go back as far as the 1970s, however, the extract contains every case that has been created or updated in the years between January 1st of 2017 and December 1st of 2021. Given cases do not usually get updated after a year of their creation, the majority of the cases in this extract have been created in this five-year range.

Most of the cases in the ACIS Court System extract are handled by district courts compared to superior courts, that means most cases committed in the five-year range of the dataset are of relative low severity. In North Carolina, both district and superior courts are trial courts, meaning they hold trials and gather juries to determine outcomes of cases. District courts, however, handle serious, but lower-level crimes, whereas Superior courts hear criminal cases involving felony crimes. Because districts designated for independent courts are geographical entities created by amalgamating bordering counties, we will use this level to compare court officials' behavior.

Each case in the dataset represents the full cycle of criminal proceedings from arraignment to indictment, and finally sentencing or disposition. The completeness of different features in the data explains the processes different types of cases go through. Figure 1 shows incomplete information in the dataset. For example, the Bond Amount feature is missing in more than half of the cases because not all cases are considered by a magistrate for the defendant to have to pay a bail bond to remain free before conviction. Depending on the disposition of the initially charged offense, the information available varies. One important limitation of this lack of designation is that, without the full set of cases that could have had a decision being recorded in the data, it becomes too difficult to single out effects of any other variable

such as race or gender. A more detailed discussion on the missing offense information is shown in the Results section.

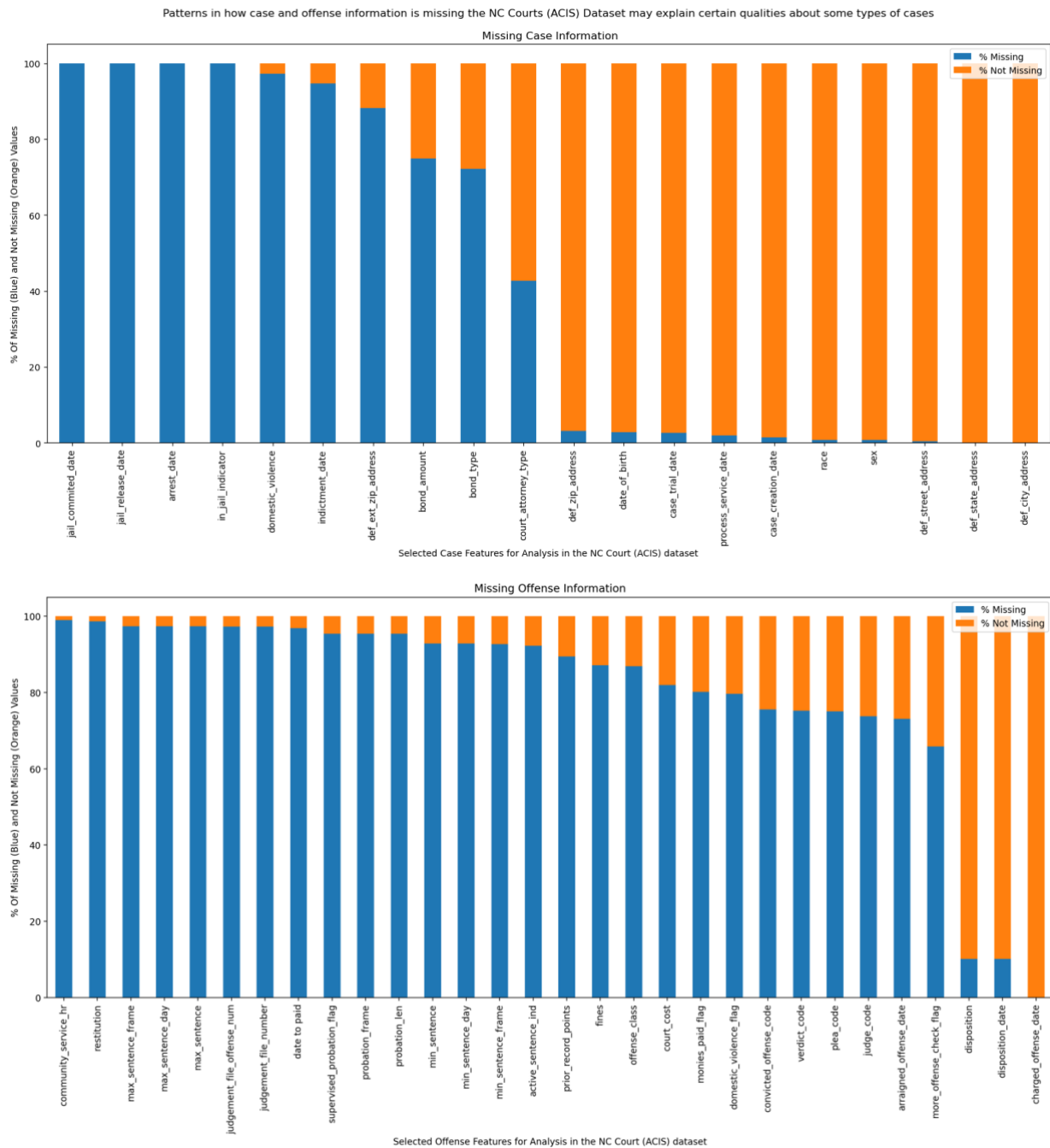


Figure 1. Patterns in missing case and offense information may explain different prosecution routes in the criminal justice system.

The information available in the dataset dictates the types of analyses that can be made with enough robustness to draw conclusions about bias as a plausible cause of disparities in decision outcomes. Therefore, this study is divided into three parts: System admissions and pre-trial decisions, Prosecution, and Sentencing.

System Admissions

Literature and news have shown that there may be an arbitrary nature to the way different demographic groups are arrested under the policing system in the United States today. In this section, we devise metrics to investigate the variation in arrests, citations, or any type of admission into the criminal court system that creates a case record and observe geographical results for these metrics by court district. The goal of this analysis is to answer the following questions:

- Are any demographic groups overrepresented in local criminal court records as compared to their representation in the population? The metrics we use for this are as follows:
 - *Percentage Point Difference*
 - *Increased likelihood of being involved in criminal case*
- How does the above over or under representation vary by court district?

The first metric we have created to measure overrepresentation is the difference in percentage points between Black proportions in the population versus the ACIS dataset. More explicitly, this is calculated as follows for every county in North Carolina:

$$\text{Percentage Point Difference}_{\text{county } i} = \text{\% of Black cases in ACIS}_{\text{county } i} - \text{\% of Black people in the population}_{\text{county } i}$$

The above metric is also calculated for Hispanic populations. It relies on the assumption that people's race does not inherently cause them to commit more crime. It is possible, however, that due to socio-economic factors, people of color are committing more crime, getting policed more, committing crimes that are easier to catch, or are being racially discriminated against.

In addition to *Percentage Point Difference*, we also look at how many more times is a person of color likely to be involved in a criminal case than a White person in the same county. Starting with the Black population, this is calculated by finding, for each county, the number of cases per Black person divided by the number of cases per White person. More explicitly:

$$\text{Black Person More Likely to be Involved in ACIS Case than White Person}_{\text{county } i} = \frac{\text{\% of Black cases in ACIS of Black pop}_{\text{county } i}}{\text{\% White cases in ACIS of White pop}_{\text{county } i}}$$

This metric allows for a direct comparison between White and Black likelihoods of being involved in a criminal case in North Carolina. The same metric is extended to Hispanic populations in comparison to White populations.

The above metrics are calculated for each county in North Carolina. Based on preceding studies, the expectation is that most counties will have a positive *Percentage Point Difference* for Black and less so for Hispanic races, indicating that people of color are overrepresented in most counties. We also suspect that most counties will have greater than 1.5 values for the likelihood metric, which means that Black or Hispanic

people are more than 1.5 times likely to be involved in a criminal case as compared to White people in the same counties.

In terms of geographical variation, we expect counties that are less populated and more rural, have greater indications of racial bias through these metrics. Many of North Carolina's rural counties are concentrated towards the west of the state¹, and we expect to see patterns of difference between the West and rest of the state.

Prosecution

To assess the variation of plea bargains among different demographic groups in North Carolina, we establish a new metric: the relative severity difference between the initial charges by police and the offenses for which individuals are ultimately convicted, or *Relative Δ Severity*.

Relative Δ Severity

$$= \frac{\sum \text{Severity of Convicted Offenses} - \sum \text{Severity of Initial Charged Offenses}}{\left(\frac{\sum \text{Severity of Convicted Offenses} + \sum \text{Severity of Initial Charged Offenses}}{2} \right)}$$

For each offense, a severity score is assigned in two ways: The class rank approach and the empirical approach.

The class rank approach uses the ordinal classification described in the North Carolina Punishment Charts for both Felonies and Misdemeanors to assign a severity score to each offense. Criminal offenses have standard codes, names, and descriptions according to a statute, which are organized in classes (A1, 1, 2, 3, I, H, G, F, E, D, C, B2, B1, A) ordered by the minimum sentence length range the statutes recommend. The severity of a set of offenses is determined by summing the ranks of the offenses according to this classification.

Alternatively, the empirical approach estimates the severity of each offense by normalizing the average sentence length convicted for any offense that appears in the dataset. This method assigns a relative severity score or rank to each offense in the dataset, not just the offenses that are classified by the law. This approach has the benefit of maintaining relative severity within classes and accommodating changes in beliefs about the moral gravity of offenses that may have occurred since the initial sentencing classification was created in 2013. However, this approach may be affected by the distribution of offenses across demographic groups, potentially absorbing some of the variation that is intended to be isolated.

The prosecution analysis is made at the case level. However, not all offenses are convicted, and the class of un-convicted offenses is not populated in the data. The missing class of offenses is imputed using

¹ Map of Rural/Urban Counties of North Carolina, https://files.nc.gov/ncdhhs/RuralUrban_2019.pdf

the North Carolina corresponding statutes for sentencing. These offenses and corresponding codes and classes are tabulated in and published in [nccourt.gov](https://www.nccourts.gov)². Three decisions were made to generate imputations:

1. In cases where an offense code can belong to more than one class, according to the statutes, the less severe class was chosen. Offenses that could belong to two classes are not common, though.
2. Some charged offenses have classes assigned that do not match what the latest statutes ascribe. This could happen because of the age of some of the cases. However, this occurs only on 7.5% of the offenses. This is not a problem when estimating severity using the offense minimum sentence lengths only.
3. There are 499 coded offenses that are not classified by law. Those were filtered out of the sample of study. Most of the unclassified offenses are traffic violations.

Sentencing

To understand the study of sentencing decisions, we first describe the outputs this analysis is interested in. The length of criminal sentences is the main variable that is adjusted to the severity of the crime convicted, and thus, a potential source of disparity among convictions of different groups of people with different demographics.

In North Carolina, the criminal sentence length of any crime is advised by the Sentencing guidelines, which aim to bring consistency to punishments under the legal system. This law contains two punishment charts (see Supplementary Materials section), in which, a sentence minimum and maximum length is determined by 3 factors:

1. The type of crime (i.e., whether it is a felony or a misdemeanor)
2. The class of the crime, which is a classification of standard misconducts
3. The prior-record points, which apprise the frequency and severity of previously committed crimes of a defendant.

The three ranges in each sentencing bracket reflect the variability in an individual's circumstances, which would be to the discretion of the decision maker to select for each conviction. The ranges, in order of severity, from smallest to largest, are referred to as mitigated, presumptive and aggravated. For example, a mitigated sentence may be selected for a low-income individual stealing to provide for themselves.

Given the punishment charts, the actual sentencing range of all the offense cases can be matched based on the defendant's prior record level and the offense class of the committed crime. However, since the punishment charts are not a mandatory law for determining sentencing length, it's also possible that the

² <https://www.nccourts.gov/documents/publications/nc-courts-offense-codes-and-classes>

sentencing length given did not follow the chart, but instead fell outside the three ranges. Therefore, there are five final categories of sentencing range: under sentencing (sentencing length given is shorter than the minimum of mitigated range), mitigated, presumptive, aggravated, and over-sentencing (sentencing length given is longer than the maximum of aggravated range). In this way, each of the offense cases is classified into one of the five ranges and our sentencing analysis is further built upon this classification. By comparing the distribution of these five ranges across different races, and the other way around – the distribution of races among the five ranges, we are able to examine if racial disparity is presented here from the perspective of sentencing length. For example, if the percentage of aggravated range received among black defendants is higher than their white counterparts, then this can indicate that black defendants are more likely to be given harsh punishment, which will be a sign of racial bias. The metric we used for quantifying racial difference is defined as:

$$\text{Normalized sentencing difference of Black vs. White} = \frac{\frac{\% \text{ of black defendants in a certain range}}{\% \text{ of black defendants in population}} - \frac{\% \text{ of white defendants in a certain range}}{\% \text{ of white defendants in population}}}{}$$

This can be viewed as the percentage difference between black and white defendants in a certain sentencing range after normalizing by population distribution.

Data used for the sentencing analysis is a subset of the original dataset after filtering out the entries with incomplete information on offense class, prior record points, sentencing length. It's worth noting that there exists a steep funnel of the data that is available to analyze as Figure 2 shows. In spite of the fact that all the cases have initial charged offenses available, only 24.4% have convicted offense codes. Moreover, there are only about 5% of cases which have sentencing and prior records information available for us to compare them with the punishment guidelines. Therefore, the sentencing analysis is limited to the scope of data with sentencing and prior records information available.



Figure 2. Funnel of case data availability from initial charges to final sentencing

Results & Discussion

Sentencing

After matching the offense class and prior record points with the punishment charts and comparing the given sentencing length and suggested length in the charts, 81% of the offense cases fell within the suggested sentencing range. The remaining cases are either under-sentenced or over-sentenced compared to the punishment charts. The distribution of the five sentencing ranges (**Figure 3**) shows that the shape is not quite normal, especially since there is a significant portion of cases that fall into the over-sentencing range (~20%). Therefore, before we even get into the investigation of racial bias, this disproportionately higher percentage of cases in the over-sentencing range first suggests that the system looks more over-punitive than not, which is consistent with our literature review.

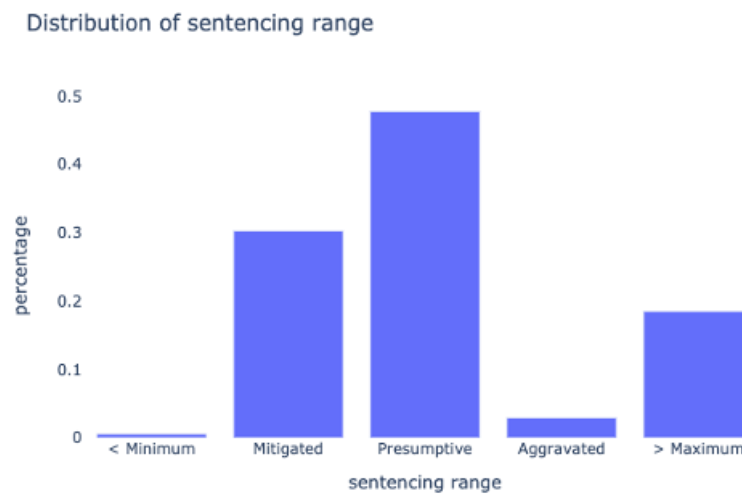


Figure 3. Distribution of sentencing ranges

Among those felony cases which are over-sentenced, i.e., have sentencing length greater than the maximum of aggravated range, 51.9% are black defendants while 41.1% are white defendants. This percentage of black defendants is disproportionately higher compared to the distribution of racial groups in the entire offense data, which consists of 49.9% white defendants and 43.4% black defendants.

It's also worth mentioning that there exist geographical variations across counties after we further segmented the data at county level. **Figure 4** shows the percentage of cases that fall into the over-sentencing range at the county level and the geographical variations can be observed clearly in this plot. Comparing to the population density map in North Carolina, we can observe the difference between the rural and urban areas - darker areas in the percentage of sentencing range map generally correspond to the lighter areas in the population density map, which suggests that the rural areas are more likely to be over-punitive than not.

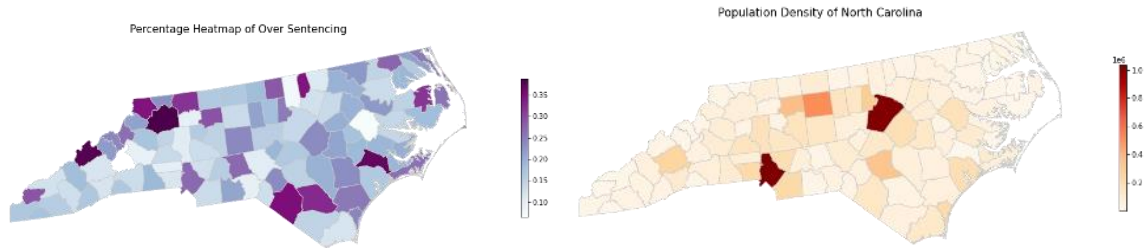


Figure 4. Comparison of Percentage of Over-sentencing cases vs. Population Density

To tie the analysis back to the racial bias investigation, we broke down the over-sentencing range by race and calculated the percentage differences between black defendants and white defendants in the over-sentencing range after normalizing by population distribution (Formula from Method section). The map that is colored by the magnitude of percentage difference in races indicates a similar pattern as before – the rural areas exhibit more significant racial bias overall (**Figure 5**).

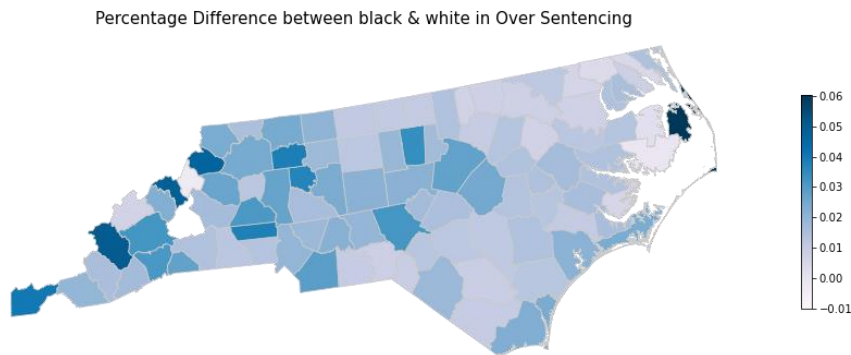


Figure 5. Normalized Percentage Difference between Black & White Defendants in Over-sentencing Range

However, when comparing racial distributions across other sentencing ranges, we did not observe racial bias as significantly as in the over-sentencing range and our original expectation at the beginning, at least at the aggregated level. It could be the case of geographical variations that we've convinced from the analysis on the over-sentencing range, but more importantly, it's more likely to be the case that the data we are using for sentencing analysis has already omitted the racial bias that happened earlier in the judicial process, which pointed us to other perspectives in the judicial system for the investigation of racial bias from a broader horizon.

Prosecution

The study examined two metrics, the class-based rank relative change and the empirical relative change, to evaluate the severity of plea bargaining. While these metrics rank most offenses in similar orders, they assign different relative magnitudes of severity to each offense, and thus, to each outcome of plea bargaining. The differences in offense severity ranking create tradeoffs in the reliability of comparisons made for different demographic groups. **Figure 6** illustrates the differences in the relative

severity change of offenses in a case using both approaches to estimate offense severity. Additionally, many changes in offense codes observed in plea bargains provide arrangements that are not reflected in sentence length (e.g., protection of immigration status, better parole options). However, the empirical approach cannot capture this type of leniency, which may explain why it generally shows less leniency in all plea deals.

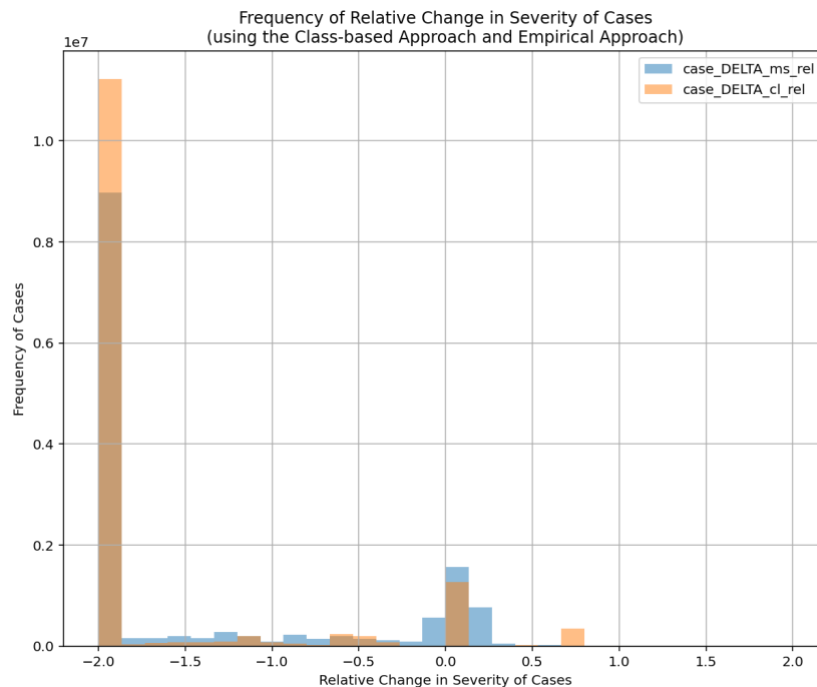


Figure 6. Histograms of the relative change in severity after plea bargaining using the two approaches: The Empirical Approach (blue) and the Class-based approach (orange). In these plots, it can be observed how the Empirical Approach (blue) shows less leniency, overall, granted in plea bargains compared to the law-based (class-based, in orange) approach.

There are tradeoffs in how each approach measures the relative change in the severity of plea bargain deals. The class-based rank approach, which uses the 14 offense classes described in the NC Sentencing Guidelines (as quoted), offers a theoretical ranking of offenses based on standards of behavior determined by law. The nature of this ordering is believed to have less race-based biases. However, the main drawback of this approach is that there are only 14 classes organizing hundreds of standardized offenses, including both misdemeanors and felonies. Consequently, this metric cannot capture the important variation in the severity of offenses that occur within classes. Another disadvantage of the class-based approach is that the class-based ranking assumes equal distances between each value, whereas a more realistic representation of the slope of the ordinal severity of offenses is closer to an exponential function. In contrast, the empirical approach calculates a metric based on the average minimum sentence length of offenses. This approach may incorporate differences in the treatment of defendants with different demographics if, for example, black defendants are charged or convicted more frequently with a set of offenses different from those charged against white defendants. This explanation is to be further investigated in future research.

In general, the aggregate results of the prosecution analysis are similar to those of the sentencing analysis. A linear regression model is specified to estimate the effects of race and gender on the relative change in severity of offenses in the plea bargain that would happen on each criminal case, while controlling for the defendant's prior record and court attorney type. The regression results using the class-based approach show that there is no significant difference in the magnitudes of the drop in severity of plea bargains between white and black defendants. However, there is a significant difference in how Hispanic, Asian, and other racial minorities are treated compared to white and black defendants. Using the class-based metric, Hispanics receive the worst treatment in plea deals; they are convicted of sets of offenses that are often more severe than the ones initially charged. Running the same regression with the empirical metric of severity change as a response variable yields different results. They indicate that there is a small but significant difference between black defendants compared to white defendants, with higher leniency observed for black defendants when using the empirical metric, supporting the theory that black and white defendants may be charged with different offenses.

The results obtained from the prosecution analysis alone do not describe a system where, at the aggregate state level, there are clear disparities based on race and gender. However, this type of disparities is seen at the county level, similar to the behavior observed in sentencing severity for black compared to white defendants. **Figure 7** illustrates the effects of the origin of the case, that is, which county the case was processed in, on the plea bargain severity, showing significant differences in most counties.

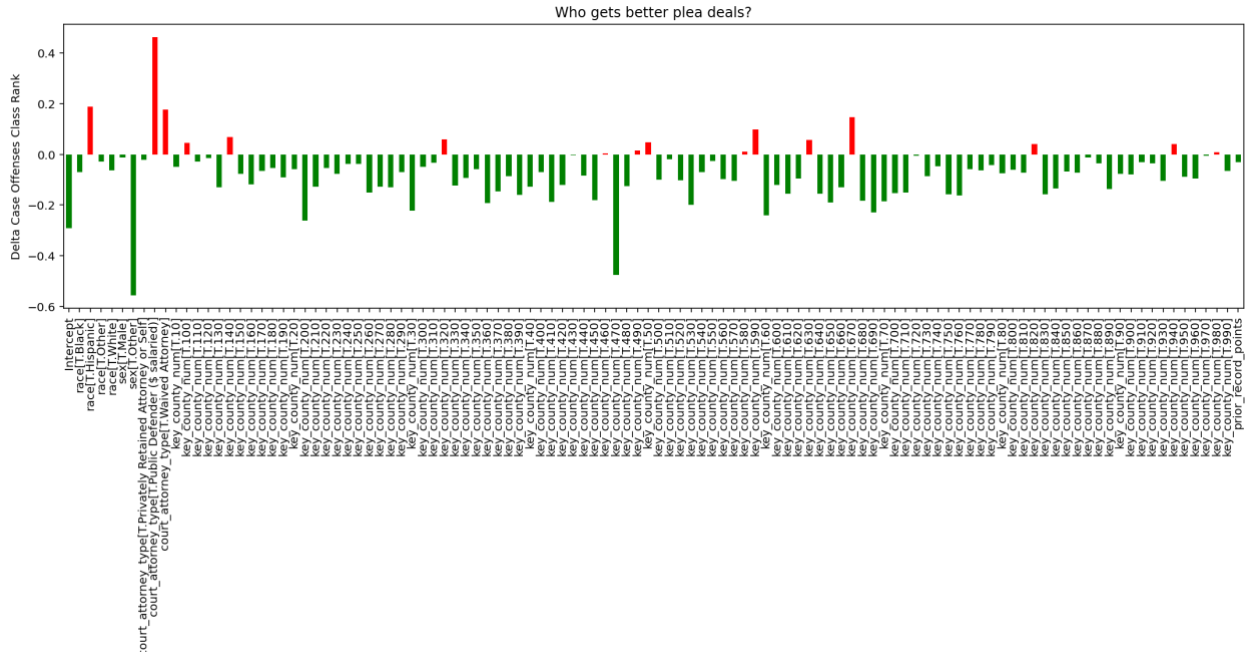


Figure 7. Effects of the origin of the case, that is, which county was the case processed on, over the plea bargain severity.

Upon examining the average differences in the leniency of plea bargains granted to Black versus White defendants, it became clear that counties with a greater tendency to be punitive towards Black defendants also tended to have higher rates of Black over-representation in criminal cases. **Figure 8**

demonstrates a weak positive correlation between the over-representation of Black/White individuals in the courts and the discrepancy in plea bargain leniency between Black and White defendants.

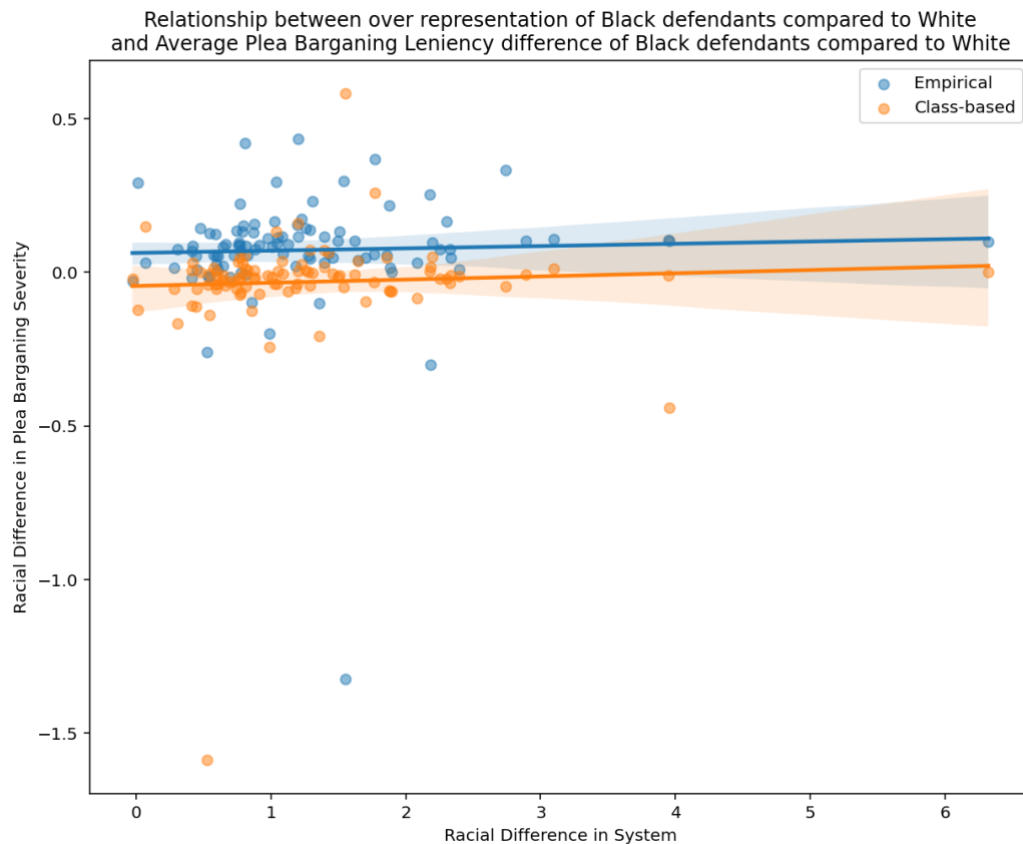


Figure 8. There is, in fact, a weak but positive correlation (0.0375 for the empirical metric and 0.050 for the class-based metric) between the over-representation of Black/White in courts, and White versus Black in leniency of deals.

System Admissions

Our analysis revealed that Black individuals are overrepresented in the North Carolina criminal justice system, comprising approximately 33% of defendants despite representing only 20% of the population. While socioeconomic status may contribute to higher crime rates among Black individuals, our findings suggest that racial bias within the judicial system may also be a significant factor.

Furthermore, we found that Black individuals are 2.7 times more likely to appear in the case system than white individuals on average in North Carolina, with a maximum disparity of 8 times in Watauga County. Only one county, Jackson County, had a slightly higher probability for white individuals to appear in the system compared to Black individuals.

Finally, our analysis also revealed a positive correlation between counties that are more punitive towards Black defendants and those where Black individuals are overrepresented in criminal cases. See **Figure 9**. These results disqualify many alternative explanations for the disparities observed that are not related to race-based biases influencing decision-making.

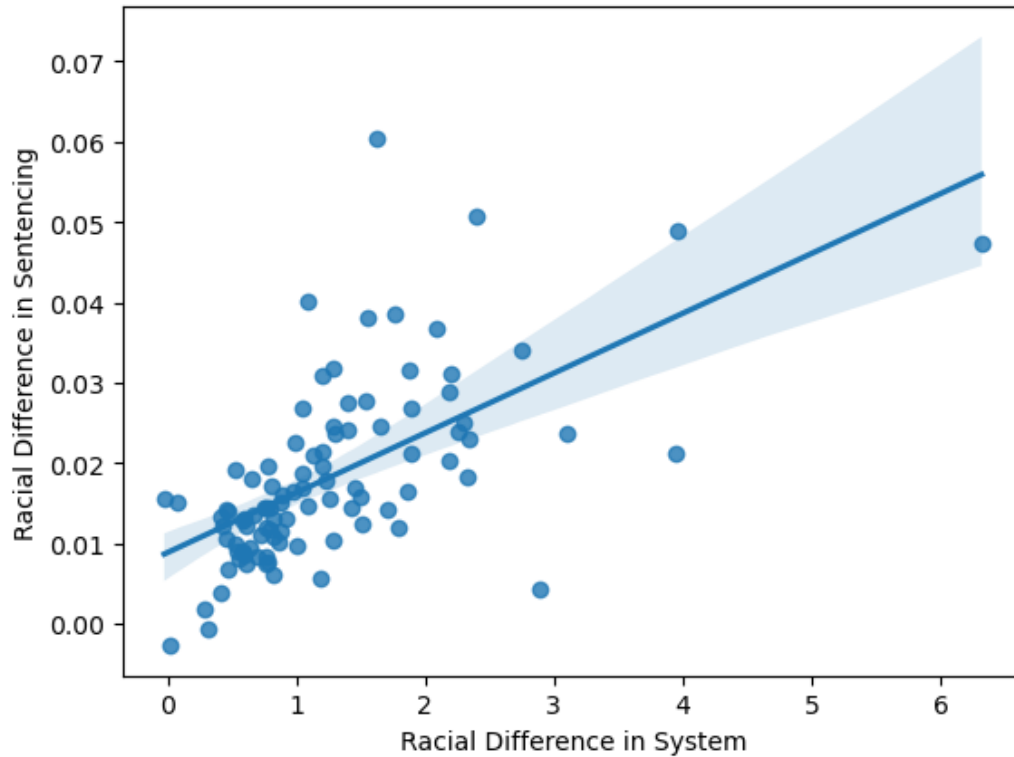


Figure 9. Correlation between the normalized over-representation of Black defendants, by county, and the normalized proportion of over-sentencing of black defendants, by county.

Conclusion

The conclusions drawn from this study support claims that are frequently found in the existing literature. A clear racial disparity exists in the rate of involvement in criminal cases, and this disparity varies between counties. However, we did not observe statistically significant racial and gender disparities in pre-trial activities, sentencing, and plea-bargaining leniency at the aggregate state level for Black defendants. Disparities in plea bargaining affecting Hispanic defendants may be explained by limitations of the metrics capturing severity, and further research is needed to fully understand the disadvantages suffered by Hispanic defendants in plea deals. While there are many potential explanations for this phenomenon, systemic racism remains a plausible factor.

Moreover, our study reveals significant disparities in the severity of decisions made in cases involving minority groups in certain counties when compared to the statewide average. The substantial variation in the behavior of district courts in different counties highlights the differences in the justice systems that can exist within a single state. Notably, counties with disproportionately severe decisions regarding bail bonds, plea bargaining, and sentencing of minority groups, when compared to White defendants, are also more likely to demonstrate higher levels of overrepresentation of minorities, particularly Black populations, as cases.

In conclusion, this study provides evidence supporting claims of racial biases in decisions made in the criminal justice courts in North Carolina. Further research is needed to fully understand the mechanisms behind these disparities and to identify potential solutions. However, our findings highlight the importance of addressing systemic racism and the need for accountability mechanism to ensure a fair and just criminal justice system for all individuals, regardless of demographic or socio-economic factors.

The full technical documentation for this project can be found [here](#).

Limitations

As with all studies, our findings are just as good as the underlying data available to us. While ACIS data is large, it is often incomplete and allows for only limited analyses, as discussed before. A more cohesive approach would include looking at policing data along with sentencing data.

We also recognize the arbitrary nature of measuring racial bias. Despite our efforts to control for other factors, we understand that race is a conglomerate of experiences that transcend the appearance of a person at the moment when we measure “race” as a variable contributing to the disparities in outcomes we see in criminal justice. What this means is that the results we see could be due to over-policing, low-income communities becoming hubs for crime, or Black individuals committing crimes that are easier to catch. It is difficult to obtain a complete picture of a subject like racial bias, and we can, at best, use data to observe patterns and make inferences based on them.

Supplementary Materials

- [Felony Punishment Chart and Minimum/Maximum Table for Offenses Committed on or after October 1, 2013](#)
- [Minimum/Maximum Table for Class B1 through E Felony Sex Offenses Committed on or after December 1, 2011](#)
- [Advanced Supervised Release Term: Pleas Entered and Findings of Guilt on or after January 1, 2012](#)
- [Misdemeanor Punishment Chart for Offenses Committed on or after October 1, 2013](#)
- [ACIS Dataset Citizen's Guide](#)
- [ACIS Data Layout](#)

Data Availability Statement

The data used in this study were obtained from the Administrative Office of the Courts in North Carolina. The data includes information from the North Carolina District and Superior Courts and was obtained through the Automated Criminal/Infractions System (ACIS). The data are available to researchers upon request and approval from the North Carolina Administrative Office of the Courts. Restrictions may

apply to the availability of these data, which were used under license for this study and are not publicly available. Requests to access these data should be directed to the North Carolina Administrative Office of the Courts.

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Ethical Standards

The authors affirm that this research did not involve human subjects.

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