Bailing on Justice:
Plea Bargain Sentencing Outcomes

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Abstract

In 2020, over 630,000 American adults were detained in local jails each day, 74% of whom had not yet been convicted of a crime. These defendants were detained before going to court because they did not make bail. There is a large body of work documenting the negative impacts of pretrial detention on a variety of outcomes, both short term such as sentencing and long term such as labour market outcomes. However, most of these studies take place in the largest cities in the U.S., which is partly a result of data availability. Thus, it is unclear if these results replicate outside of these urban cores. This paper uses data from Berkshire, which is disproportionately rural and White, to test whether the negative effects of pretrial detention extend to these less studied areas. First, using Durham data, the negative effects of pretrial detention in urban areas that previous studies have reported are replicated. Then, using Berkshire data, the negative effects of pretrial detention are shown to not only extend to rural populations, but are in fact more severe.

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1 Introduction

"You will have your day in court" is a common expression, but in reality, the overwhelming majority of criminal cases in the U.S. justice system never make it to trial. In 2011, the Bureau of Justice Assistance found that 90 to 95 percent of cases in the United States are resolved by plea bargaining. Guilty pleas became the norm in the U.S. justice system following the civil war, accounting for 50 percent of all felony dispositions by 1860 and 90 percent by 1900 (McConville, 2005). In the late twentieth century, prosecutors began to include increasingly restrictive terms in plea bargains such as waivers of appellate rights, defendants' rights to habeas corpus, and rights to discovery materials. These waivers are commonplace in modern plea bargaining with over half of plea agreements including habeas waivers and nearly a third of robbery related plea agreements waiving defendants' rights to DNA evidence (Clatch, 2017). Efforts have been made to remove prosecutorial discretion by creating mandatory minimum sentences, but prosecutors can still circumvent these laws by changing the charges they bring against a defendant. Another way prosecutors can adjust a defendant's plea is through sentencing.

As will be discussed in the literature review, defendants' future outcomes hinge on their sentence. Defendants may receive a prison sentence, or they may receive an alternative sentence, which is any sentence that does not include a prison term. It can be assigned to a defendant regardless of whether they plea bargain. Some examples include parole, probation, and rehabilitation. According to the Bureau of Justice Statistics, at the end of 2020, 3.89 million people were under correctional supervision in the community. This equates to 1 in 66 U.S. adults. By comparison, there were 2.22 million people in state or federal prisons in the U.S. at

yearend 2020. This demonstrates the central role that alternative sentencing plays in the U.S. justice system.

So, what factors determine whether a defendant receives a custodial or non-custodial sentence? Stevenson (2018) analyzed how bail impacts a defendant's sentencing outcome in Philadelphia using randomized bail judge assignment as a natural experiment. This analysis found that pretrial detention leads to a 13% increase in the likelihood of being convicted, largely caused by an increase in guilty pleas among defendants who otherwise would not have had a case brought against them due to a lack of evidence. Additionally, pretrial detention led to a 42% increase in the length of incarceration sentence defendants received. Thus, bail plays a major role in case outcomes in the American criminal justice system.

In 2020, approximately 630,000 people were detained in local jails each day. Most of these people had not yet been convicted of a crime, but instead were being detained before going to court because they did not make bail. In most states, defendants are required to pay cash bail to avoid being detained in jail while awaiting their trial to ensure defendants return to court for their trial. However, this means that poorer Americans are more likely to face pretrial detention (ACLU, 2023).

There is a volume of scholarship about plea bargaining across fields, including economics, but most economic articles on the subject are interested in the *efficiency* of plea bargains. This paper analyzes which characteristics (i.e., race, gender, age, criminal record, assigned judge, etc.) impact the deal a defendant receives. Specifically, this paper examines which characteristics, if any, impact the type of sentence a defendant who plea bargains receives. Given that alternative sentences are intended to reduce recidivism and help convicts avoid institutionalization and contribute to society, understanding whether certain groups are

more or less likely to receive these sentencing outcomes has economic implications. One factor my analysis yields as a determinant is pretrial detention. By analyzing individual-case-level plea bargaining data, this paper further examines the impact of pretrial detention on defendants' sentencing outcomes.

My thesis analyzes the impact of pretrial detention through two lenses: Berkshire, Massachusetts and Durham, North Carolina. Methods in this paper do not yield as tight of identification as some of the papers in the literature review, including Dobbie et al. (2018), but these studies take place in large urban cores. Thus, using data from Berkshire, this paper provides novel insights into the effects of pretrial detention on plea bargaining in rural regions. The Durham data allows comparison between the findings in Berkshire, a homogenous rural area, with an urban area.

The rest of the paper is organized as follows. First, an extensive literature review on plea bargaining and factors that impact case outcomes. Second, an overview of the dataset used for my analyses. Third, a descriptive analysis of the data. Fourth, the empirical strategy. Fifth, the results of this analysis. Finally, a conclusion, including a discussion of my results.

2 Literature Review

There is extensive literature on the subject of plea bargaining and pretrial detention across fields. My literature review includes papers from legal studies, economics, and psychology. Each paper contributes a unique perspective to my analysis of plea bargaining and pretrial detention and allows me to examine the topic through multiple lenses. While the following papers all discuss the topic of plea bargaining or pretrial detention, none deal directly with the impacts of pretrial detention on sentencing outcomes for defendants who plea bargain in urban vs. rural areas, which is a key focus of my research.

First, it is important to note that plea bargaining is not a universal phenomenon. Until 2004, plea bargaining was prohibited in France. Even defendants who voluntarily pleaded guilty had to go to trial because the French justice system believes that the court should determine guilt, not the defendant or the prosecutor. Givati (2011) analyzed the drivers of differences in policy on plea bargaining around the world. He found that a greater social emphasis on ensuring innocent individuals are not punished leads to less use of plea bargaining and a higher level of crime leads to a greater use of plea bargaining. This finding holds true for the American justice system, which has one of the highest plea bargain rates. The U.S. has the fifth highest crime rate among OECD countries and only 70.6% of the population believes that punishing an innocent individual is the worse type of judicial mistake. Therefore, the ubiquitous use of plea bargaining to manage judicial systems seen in the United States is not universal (Givati, 2011).

Landes (1971) is one of the most cited economic analyses of the U.S. court system, including plea bargains. Utilizing an American Bar Foundation study and data from the 89 U.S. district courts that publish statistics annually, Landes (1971) applied least-squares regressions

to make several key findings regarding how the bail system, court delay, legal fees, and county are correlated with sentencing outcomes for defendants in the United States. In his analysis, Landes (1971) was able to make inferences from county-wide data by controlling for several variables including percent not White population, percent urban population, and median family income.

From his regressions, Landes (1971) found that the propensity for defendants to go to trial was higher for defendants released on bail. One explanation for this is the costs of going to trial compared to settling are increased by not making bail because the delay of trial is usually longer than the length of time it takes to negotiate a settlement. Defendants who do not make bail spend this additional time in jail, increasing their costs. A second explanation is defendants in jail have restricted access to resources, which makes it harder for jailed defendants to mount a strong case. Another interesting finding is trial delay decreased trial demand, which suggests that defendants are sensitive to how long it takes to go to trial when weighing a plea bargain. Additionally, Landes (1971) found that subsidizing a defendant's legal fees increased the demand for trials, so costs are impacting whether a defendant pursues a trial. Finally, districts with higher average sentences have proportionately more trials. Hence, when the stakes are higher, defendants are more likely to go to court. These findings leave room for further analysis of what other traits impact a defendant's decision to settle (Landes, 1971).

Another important contribution to the economic analysis of plea bargaining is the shadow-of-trial model. The shadow-of-trial is one of the most cited applications of efficiency-based contract arguments to justify the plea-bargaining system. The concept was actually created in the context of divorce settlements by Mnookin and Kornhauser (1979). The idea is that a couple's divorce negotiations are done while considering the law, or in the shadow of it,

because neither party would agree to terms that would make them worse off than if they went to court. Similarly, when considering a plea bargain, prosecutors and defendants act in the "shadow-of-trial" (Mnookin & Kornhauser, 1979).

In the context of plea bargaining, the shadow-of-trial model assumes that all parties act rationally when considering a plea bargain and make decisions based on the probable outcome of a trial. As such, when a defendant chooses to pursue a plea bargain, it is assumed to be a fair and efficient outcome. Recently, scholars have questioned this assumption. In analyzing archival criminal cases to see if there was a link between the strength of a case and a defendant's likelihood to plead guilty, Bushway and Redlich (2012) found no correlation. In a subsequent article, Bushway et al. (2014) surveyed 2,600 attorneys and judges. Respondents were asked to imagine a case scenario and to then indicate their estimates of the probability of conviction at trial, average sentence for a trial conviction, least and most severe sentences for a trial conviction, and the least severe sentence that would be acceptable for a plea bargain. Their study found that judges' responses were not consistent with the shadow model whereas defense lawyers' and prosecutors' responses were mostly consistent with the shadow model. While this study had findings more consistent with the shadow-of-trial model, the experiment did not account for delay to trial or if defendants' behaviour aligns with the model (Clatch, 2017).

McGregor (1992) also made valuable contributions to the economic literature on plea bargaining using a more theoretic approach. He questioned the common assumption among economists that plea bargaining is efficient because it conserves state resources. He argued that not all defendants would demand a trial by jury without the system of plea bargaining, and in cases where the defendant would have pleaded guilty without a deal, the state makes unnecessary concessions. Additionally, he noted that the reduced sentences associated with plea

bargaining may weaken the deterrent effect of criminal law thus increasing the crime rate and strain on the criminal justice system. Plea bargaining may also create adverse incentives for prosecutors because by resolving a case via plea they do not need to collect sufficient evidence to meet the "burden of proof" requirement of a trial, so the expectation of a plea allows them to press charges with insufficient evidence. This may be particularly damaging to innocent defendants who are likely to have less evidence against them, so prosecutors are likely to offer them a more attractive deal. This puts pressure on innocent defendants to plead guilty. This motivated my interest in analyzing the incentives plea bargains create for prosecutors and defendants and how those incentives impact outcomes (McGregor, 1992).

McGregor (1992) also addresses the efficiency argument supporting plea bargains. He notes the trading of many goods that may create efficiency are barred from the market, like body parts or one's vote. This may diminish efficiency but protects other values that society deems as more important than efficiency. In the case of plea bargains, McGregor (1992) suggests that guilt and responsibility are arguably more central to the criminal justice system than efficiency, and as such a market model of plea bargains may be inappropriate (McGregor, 1992).

Like Landes, Abrams (2011) used an econometric model to analyze plea bargains but focussed on sentencing outcomes for cases resolved via plea vs. trial. Using data from 42,552 cases between 1997 and 2011 from Cook County, Illinois, Abrams (2011) applied an ordinary least squares regression controlling for potentially confounding case and defendant characteristics as well as an instrumental variable approach to control for both observable and unobservable heterogeneity. For his instrumental variable, Abrams (2011) used how long a judge has been serving. Since there is less uncertainty about the outcome of a trial when a judge

has a longer track record, this instrumental variable accounts for whether a case goes to trial without being correlated to sentence length. This analysis finds that defendants have lower expected sentences after a trial than after a plea bargain. In fact, cases settled via plea bargain received sentences 14-18 months longer than those settled via trial. Abrams' (2011) findings contradict work by Brereton and Casper (1982) and Nagel and Schulhofer (1997) because their work only included trial sentences that include prison time. Abrams' (2011) analysis additionally includes fines and probation outcomes at trial and counts them as sentences of zero. Without including these cases, Abrams' (2011) findings align with previous works' findings that cases that go to trial receive higher average sentences. The difference between Abrams' (2011) work and others demonstrates the impact of including or excluding acquitted defendants in results (Abrams, 2011).

Psychologists have also contributed to the plea bargaining literature through their analysis of intertemporal choice. Harris (2012) conducted several studies which found that most study participants preferred to endure non-monetary aversive experiences, i.e., an electric shock, immediately rather than later in order to minimize the experience of dread and painful anticipation. Vanderveldt et al. (2015) conducted two experiments which found that participants prefer outcomes that are immediate rather than delayed and certain rather than probabilistic. These findings may have implications for why so many defendants choose to plead guilty rather than await a lengthy, risky trial.

Another factor that may impact a defendant's decision to plea is punishment severity. Boylan (2012) analyzed this question using data of 450 suspects arrested for assault in Portland, Oregon and 8,587 federal drug trafficking cases. He found that the lack of judicial supervision over plea bargain charge decisions gives prosecutors significant discretion over sentencing

decisions. To circumvent mandatory minimum sentencing laws, prosecutors can adjust a defendant's charges. For example, they can charge a defendant with possessing a gun while selling drugs, which has a five-year minimum sentence in addition to the drug-trafficking sentence, or they can decline to file gun charges and just charge the defendant for drug-trafficking which doesn't carry a minimum sentence. While judges may not have much power in plea bargain charge and sentencing decisions, Boylan (2012) did find that prosecutors tend to seek harsher penalties against defendants who are assigned to harsher judges, which is consistent with strategic behavior. Furthering this finding, he found a ten-month increase in a judge's average prison sentence raises trial rates by 11 percent. Thus, average sentence length of a trial conviction has a significant relationship with plea rates (Boylan, 2012).

Sentencing not only impacts pleas, but also recidivism rates. Bushway and Owens (2013) studied over 33,000 sentences of men between the ages of 18 and 31 convicted between 1999 and 2004. They found a ten percent increase in the recommended sentence for a crime, holding actual punishment constant, is associated with a 1.2 percent increase in recidivism. This finding has important implications for how the practice of plea bargaining may be impacting recidivism rates. Namely, when the actual punishment for a crime is less than the recommended sentence for a crime, which is the case for most plea deals, recidivism rates tend to increase. Thus, consistency in the threatened sentence and actual sentence for a crime can make the criminal justice system more effective at reducing crime. This could be interesting to look at when analyzing differences in the plea deals of convicts with criminal histories compared to first-time offenders (Bushway & Owens, 2013).

In addition to sentencing, the severity of charges a defendant will receive can also play an important role in a defendant's decision to plea. Using 2015 violent-crime data from three

counties in Massachusetts, Frazier et al. (2019) found that sex offenders are especially motivated to plead guilty if they can avoid being on the sex offender registry (SORB). Although sex offenders pleaded at a higher rate than other crime types, they found that defendants who resolved their case by plea were significantly more likely to be required to register with the SORB. This may be partly due to self-selection (not guilty defendants may be more likely to go to trail) but may also reflect defendants incorrectly assessing their expected outcomes at trial. Similarly, they found that plea deals for violent crime defendants generally did not result in the shortening of prison and probation sentences. This suggests that there is information asymmetry between violent crime defendants and prosecutors. Age was negatively associated with the probability of case disposition by plea and required registration with the SORB. There was also a significant positive association between additional charges and sentence length and cases resolved by plea had longer average probation lengths. Thus, analyzing differences in plea deals for different crime types could be valuable (Frazier et al., 2019).

Pretrial detention has been shown to play a significant role in determining a defendant's sentencing outcome. Furthering Landes' (1971) finding that the propensity for defendants to go to trial was higher for defendants released on bail, Dobbie et al. (2018) used data from over 420,000 defendants from two large, urban counties to analyze the impacts of pretrial detention on case outcomes. First, they found that making bail decreases a defendant's probability of being found guilty by 14.0 percentage points, a 24.2% change from the mean for defendants who did not make bail. This difference can be partially explained by a decrease in the probability of defendants who make bail pleading guilty. Defendants who made bail were 10.8 percentage points less likely to plead guilty, a 24.5% decrease from the mean.

Dobbie et al. (2018) additionally found that pretrial detention impacts a defendant's long- term outcomes. Making bail decreased a defendant's likelihood of rearrest following case disposition by 12.1 percentage points, a 35.3% reduction. Furthermore, making bail increases a defendant's probability of employment three to four years after the bail hearing by 9.4 percentage points, a 24.9% increase. Therefore, determining what factors make a defendant more or less likely to receive pretrial detention as well as how pretrial detention affects case outcomes for defendants in my sample has economic implications.

Sentencing outcomes, specifically whether a defendant receives a custodial sentence, have been shown to have an impact on recidivism and an offender's labor-market outcomes. Michel and Hémet (2022) analyzed a policy reform enacting more lenient sentences against drunk drivers in Denmark in 2000. After the reform, the percentage of offenders receiving custodial sentences dropped from 71.9% in 1999 to 14.2% in 2001.

Looking at the impact of the reform on recidivism, they found it had no significant impact on offenders' subsequent drunk-driving convictions. However, custodial sentences, compared to non-custodial sentences, increased an offender's average number of convictions for crimes other than drunk driving. After eight years, custodial sentences increased the average number of convictions by 1.4, an 89.8% increase from the sample mean. After ten years, custodial sentences increased the average number of convictions by 1.0, a 53.6% increase from the sample mean. The average increase in the number of convictions was strong and particularly significant for property crimes, whereas there was no statistically significant effect on the number of convictions for violent crimes.

Sentencing outcomes also have an impact on defendants' labor-market outcomes. To analyze this impact, Michel and Hémet (2022) studied the probability of an offender having a

job in year t, the number of weeks an offender received unemployment-related benefits by time t, and an offender's cumulative income by time t. Using these outcomes, they found that custodial sentences significantly weaken offenders' labor market outcomes on a long-term basis. Offenders given a prison sentence were less likely to be employed than offenders who received a non-custodial sentence and were more likely to rely on unemployment-related benefits and have lower earnings.

3 Data

3.1 Data Source

To examine the impact of pretrial detention, among other characteristics, on a defendant's sentencing outcome, this paper uses a population-level data set collected by the Wilson Center for Science and Justice at Duke Law. The data includes all cases resolved via plea bargain in Berkshire, Massachusetts and Durham, North Carolina from April 2021 to April 2022. The District Attorneys from both counties approached the Wilson Center for Science and Justice to work with them. They were interested in obtaining data on their plea bargains to see if there were disparities in how those cases were resolved and measure whether they were adhering to their office policies. Thus, these two regions are convenience samples, albeit high-quality convenience samples.

The data includes defendant demographics, a description of the current offense, what charge and sentence the defendant received, judge assignment, what type of attorney the defendant had, whether the defendant made bail, and factors that the prosecutor considered in deciding on charge and sentencing. Further explanation of the included variables can be found in the Appendix.

The Berkshire, MA data includes 81 superior court cases and 1,012 district court entries. Of these entries, 10 superior court cases and 585 district court cases are missing some data. The Durham, NC data includes 333 superior court entries. Of these entries, 120 cases are missing some data. Ideally, comparison would be made only between the superior courts in both counties, but Berkshire is a small rural area, so the superior court sample size is small. As such, data for both district court and superior court cases are included.

Berkshire County is a rural district in northwest Massachusetts and has a population of 128k. It has a median household income of $62,166 and median age of 47.2. Its population is 87.7% White, 2.51% Black, and 2.22% Hispanic (U.S. Census Bureau, 2020). In terms of violent crime, Berkshire has 709 violent crimes for every 100k people compared to the national average of 366. For property crime, Berkshire has 1,883 property crimes for every 100k people compared to the national average of 2,109 (FBI, 2019).

In comparison to Berkshire, Durham is an urban district in central North Carolina and is part of the Research Triangle region. Durham has a population of 276k people. It has a median household income of $61,962 and median age of 34.1. Its population is 40% White, 37.1% Black, and 8.47% Hispanic (U.S. Census Bureau, 2020). In terms of violent crime, Durham has 729 violent crimes for every 100k people compared to the national average of 366. For property crime, Durham has 3,807 property crimes for every 100k people compared to the national average of 2,109 (FBI, 2019).

Overall, the two counties are similar in terms of median household income and violent crime rates. The main difference between the two regions is that Durham is urban while Berkshire is rural. Additionally, Durham is more diverse than Berkshire with almost equal proportions of Black and White residents whereas Berkshire is predominantly White. Durham also has a higher rate of property crimes, which is reflected in the crime type by region graph in the next section.

3.2 Summary Statistics

This section compares defendant demographics in Berkshire and Durham.

Figure 1: Defendant Gender and Race
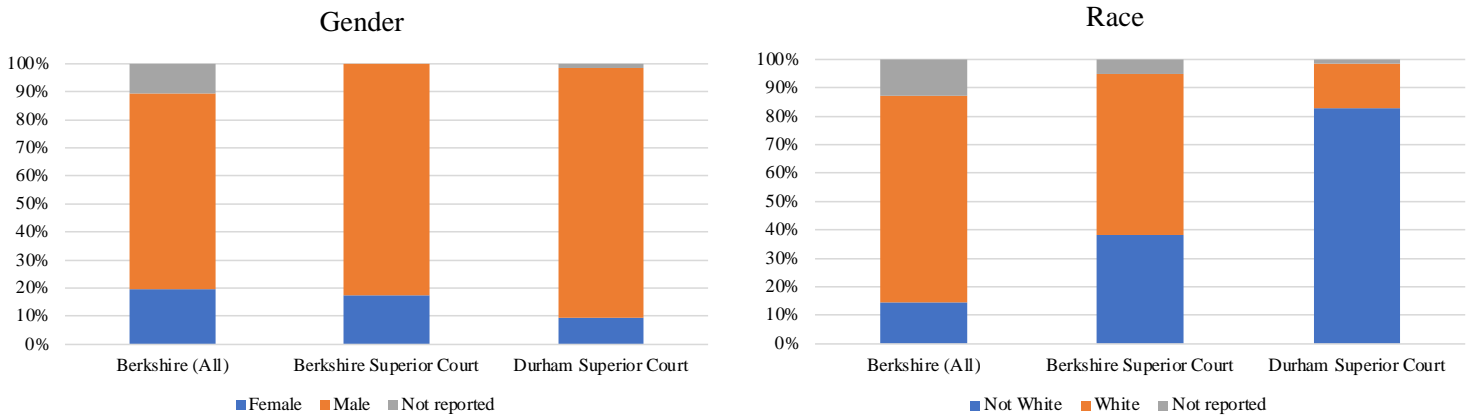
Figure 1 shows that overall, in Berkshire, 70% of defendants are male and 19% are female, and in Durham, 89% of defendants of male and 9% are female. Part of this disparity can be explained by differences between defendant demographics in the district court and superior court. In Berkshire's superior court, 83% of defendants are male and 17% are female. Across both regions, there are a low number of defendants with no reported gender. These gender distributions are close to the national average of men committing 73.8% of crimes and women committing 26.2% (FBI 2012).

Looking at race, Durham has a much higher proportion of not White defendants than Berkshire. In Berkshire's superior court, 57% of defendants are White and 38% are not White, compared to all of Berkshire defendants, which are 72% White and 15% not White. In Durham, 16% of defendants are White and 83% are not White. This demonstrates the difference in diversity between the regions. For comparison, 75.8% of Americans are White, and 69.4% of crimes are committed by White Americans (U.S. Census Bureau, 2020; FBI, 2019).

Figure 2: Crime Type by Region

Crime Type

■ Berkshire (All)   ■ Berkshire Superior Court   ■ Durham Superior Court
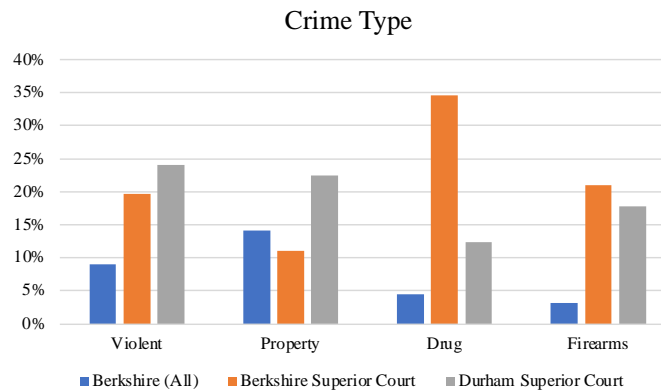
Figure 3: Crime Type by Gender

Crime Type by Gender

■ Berkshire (All) Male   ■ Berkshire (All) Female   ■ Durham Superior Court Male   ■ Durham Superior Court Female

Figure 4: Crime Type by Race

Crime Type by Race

■ Berkshire (All) White   ■ Berkshire (All) Not White   ■ Durham Superior Court White   ■ Durham Superior Court Not White
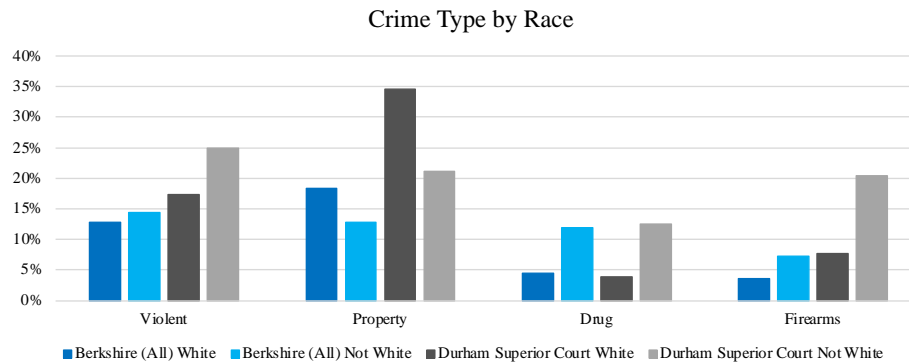
Differences in crime types committed in Berkshire and Durham by court, as well as by gender and race are shown in Figures 2, 3, and 4. Crimes in both regions may be categorized in more than one crime type or not categorized at all. Thus, the figures above present the proportion of defendants who were flagged as committing a certain crime type. Figure 2 shows that defendants in both Berkshire and Durham's superior courts committed

violent crimes and firearm-related crimes at higher rates than defendants in Berkshire's district court. Also, 35% of cases in Berkshire's superior court are categorized as drug-related while only 12% of Durham's superior court cases are. In Durham's superior court, 23% of crimes are property crimes while only 11% of Berkshire superior court crimes are. This may be partially explained by the overall higher rate of property crimes in Durham than Berkshire, as the property crimes rate in Durham is above the national average.

Figure 5: Rates of Bail
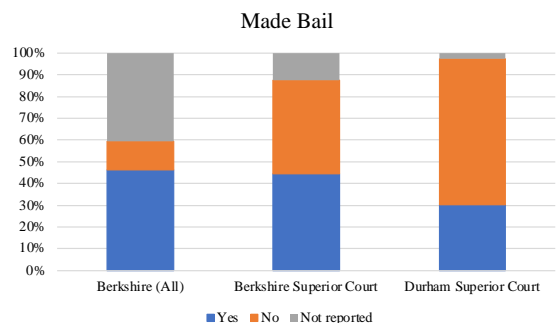
Moving to pretrial detention, Figure 5 illustrates that defendants made bail at a lower rate in Berkshire's superior court than district court and defendants made bail at a lower rate in Durham's superior court than Berkshire's superior court.

Figure 6: Crime Type by Bail
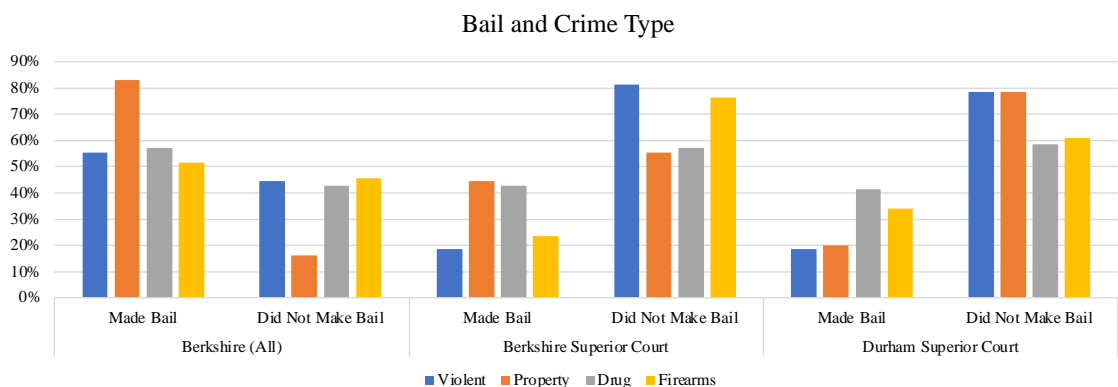
Figure 6 shows for each crime type, the percent of defendants who made bail and did not make bail. Defendants who committed property crimes in Berkshire made bail at high

rates, while the other crime types were about half and half. In Berkshire's superior court and Durham's superior court, defendants made bail at a lower rate. In both counties' superior courts, about 80% of defendants who committed violent crimes did not make bail. Defendants who committed property crimes made bail at a lower rate in Durham's superior court than Berkshire's. Defendants who committed firearm-related crimes in Berkshire's superior court made bail at a lower rate than in Durham.

Figure 7: Charge Type by Bail
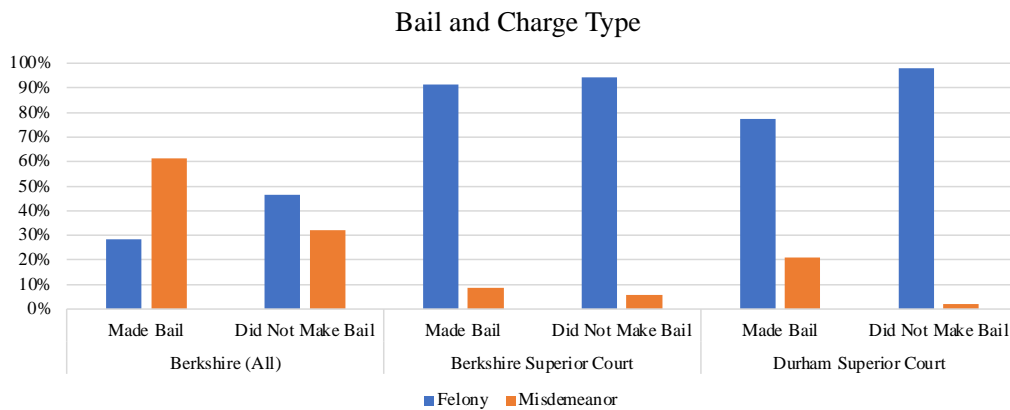
Figure 7 shows for each bail assignment, the proportion of defendants who received a felony or misdemeanor charge. Unsurprisingly, both superior courts have a higher proportion of defendants with a felony charge than Berkshire's district court. Durham's superior court has a higher proportion of defendants who did not make bail with felony charges. Almost all defendants in Durham who did not make bail had a felony charge.

4 Empirical Specification

To analyze this data, I use a linear probability model and selection-on-observables strategy (inverse probability weighting (IPW) and regression adjustment) to determine the causal effects of pretrial detention.

I begin by replicating the negative effects of pretrial detention on defendant outcomes in urban areas that previous studies have found using Durham data. Then I show using data from Berkshire that not only do the negative effects of detention extend to rural populations, but they are also more severe.

In the linear probability model, the dependent variable is a binary variable that is 1 if the defendant is assigned an alternative sentence, any sentence that does not include a prison term, and 0 if assigned a prison sentence. Any case that is assigned "Yes" for the "Prison" variable is assigned a 0. All other cases are assigned a 1.

The variables included in the regression are defined as follows. "Did Not Make Bail" is an indicator variable assigned "1" if the defendant did not make bail and "0" if the defendant did. "Bail Missing" is a "1" if the prosecutor did not record whether the defendant made bail. "Female" is an indicator variable where "1" means the defendant is female, and male is the control group. There is also a variable to account for if the defendant's gender was missing. "Not White" is an indicator variable where "1" means the defendant is not White, which includes defendants categorized as Black and Hispanic. There is also a variable to account for if the defendant's race was missing or entered as Other. "Age" is broken down into 5 buckets with defendants aged 18 to 25 being the baseline. "Age Missing" accounts for defendants with no reported age.

"Violent Crime Type" is an indicator where "1" means the defendant committed a crime the prosecutor categorized as violent. Defendants who did not have any crime type categorization entered are assigned a "1" for the "Crime Type Missing" variable. The model also considers a defendant's previous criminal history by including the variable "Has Priors", which is a "1" if the defendant has previously been charged with a crime. "Priors Missing" accounts for defendants whose prior criminal records were not reported. "Felony Charge" is assigned a "1" if any of the defendant's current charges are a felony. "Charge Missing" is assigned "1" if the type of charge a defendant received is not reported. "Private Attorney" is assigned a "1" if the defendant hired a private attorney. Attorney type was not entered for some defendants so there is a variable to account for those defendants as well.

In the selection-on-observables approach, the treatment group consists of defendants who did not make bail and the control group consists of defendants who made bail. In Durham, there are 101 potential control units. In Berkshire, there are 555 potential control units. For each treated observation, I first identify exact matches based on the defendant's gender, race, age group, crime type, prior record, charge type, and attorney type.

Table 1: Balance – Durham

	Treatment	Control	Match Controls
Age	37.85	34.00	34.97
White	16.59%	13.64%	15.40%
Not White	82.06%	84.55%	83.44%
Male	90.13%	87.27%	88.18%
Female	8.52%	10.91%	10.66%
Violent Crime Type	28.25%	15.45%	16.90%
Has Priors	80.27%	60.91%	72.19%
Felony Charge	97.76%	77.27%	91.53%
Private Attorney	13.00%	37.27%	30.33%

Table 2: Balance – Berkshire

	Treatment	Control	Match Controls
Age	36.97	36.89	36.39
White	57.64%	74.71%	61.99%
Not White	20.14%	14.33%	15.66%
Male	70.83%	69.76%	68.78%
Female	8.33%	21.18%	10.66%
Violent Crime Type	30.56%	5.80%	18.72%
Has Priors	81.25%	72.60%	71.51%
Felony Charge	46.53%	28.45%	36.87%
Private Attorney	7.64%	11.70%	7.71%

Table 3: Balance – Berkshire Superior Court

	Treatment	Control	Match Controls
Age	33.82	35.60	35.20
White	62.86%	52.17%	51.75%
Not White	34.29%	43.48%	41.96%
Male	80.00%	84.78%	90.34%
Female	20.00%	15.22%	9.66%
Violent Crime Type	30.56%	37.14%	6.52%
Has Priors	82.86%	56.52%	63.33%
Felony Charge	46.53%	94.29%	91.30%
Private Attorney	7.64%	25.71%	13.04%

Matching based on these covariates yields a sample of 322 defendant observations from Durham, 649 defendant observations from all of Berkshire, and 71 defendant observations from Berkshire's superior court in non-degenerate match groups. The first two columns in Tables 1, 2, and 3 above show pre-treatment covariate balance in the sample. The treatment group is defendants who did not make bail. The control group is defendants who made bail. Prior to reweighting, there are substantial differences in key defendant characteristics such as whether a defendant committed a violent crime type, has prior convictions, or received a felony charge. Column 3 shows the average values and proportions for each covariate after reweighting. Altogether, the results in Tables 1 and 2 indicate that re-weighted treated and control defendants are quite similar along observable characteristics. Table 3 has more variation, but still the re-

weighted treated and control defendants are mostly similar along observable characteristics.

Using these match groups, a logit model is estimated with pretrial detention as the dependent variable, indicating whether the defendant made bail, and defendant characteristics that impact bail outcomes as controls. This model estimates the predicted probability of receiving pretrial detention.

Figure 8: Density – Durham
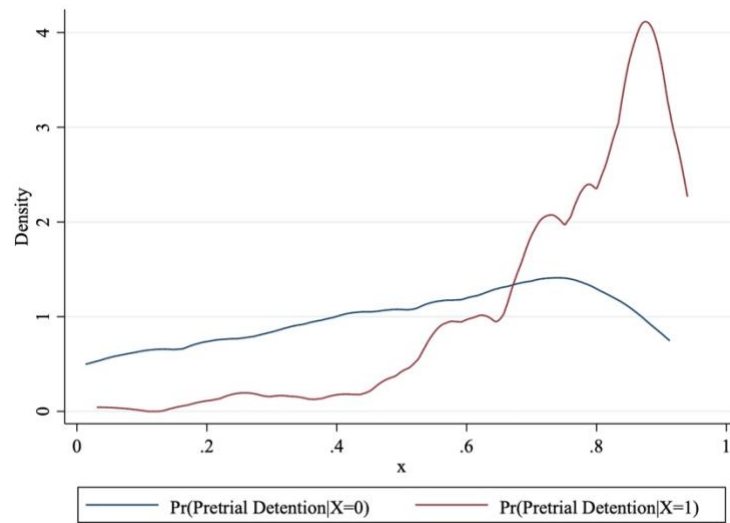
Figure 9: Density – Berkshire
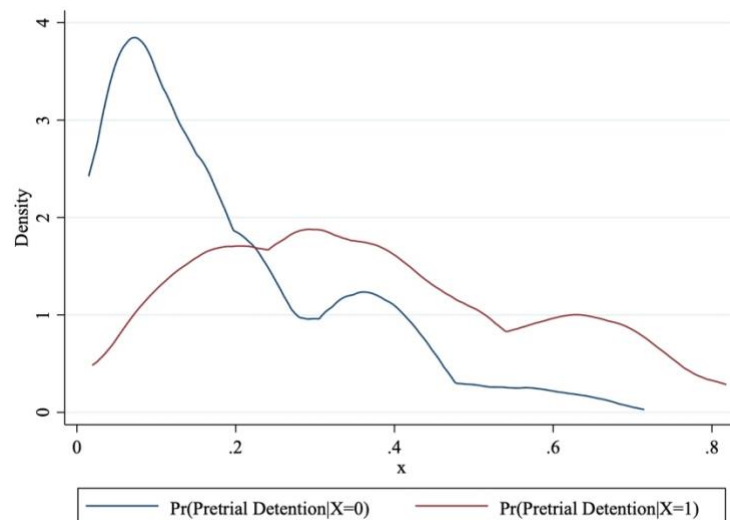
Figure 10: Density – Berkshire Superior Court
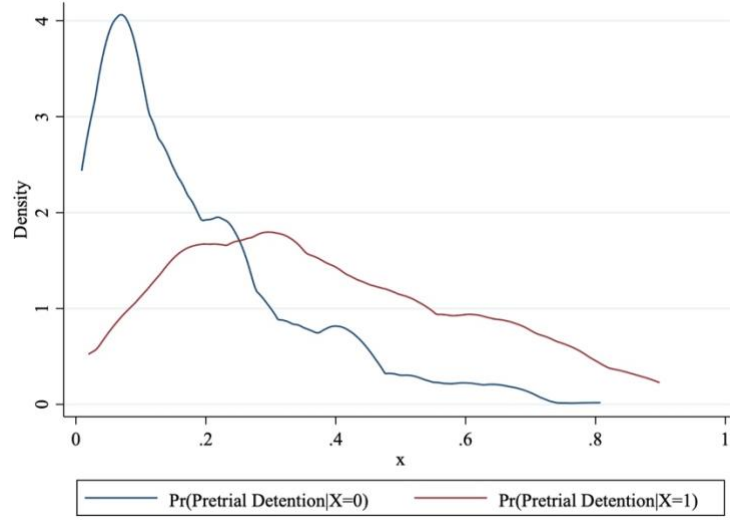
Figures 8, 9, and 10 show the distribution of propensity scores for treatment and control defendants in non-degenerate match groups in Durham, all of Berkshire, and Berkshire's superior court respectively. As expected, the distribution of treated defendants is shifted to the right for Durham, all of Berkshire, and Berkshire's superior court. However, there is significant overlap between the treatment and control distributions for all three groups. To generate an estimate of the average treatment effect on the treated (ATT), I estimate the following model:

$$Y_i = \gamma Pretrial\ Detention_i + X_i\beta + \epsilon_i \tag{1}$$

where Y_i is the outcome of interest (e.g., whether defendant i receives an alternative sentence). $Pretrial\ Detention_i$ is an indicator variable equal to one if the defendant did not make bail and X_i is the group of covariates used to estimate the propensity score model. The control units are weighted by $\frac{\hat{p}}{1+\hat{p}}$ where $\hat{p}$ is the predicted propensity. Treatment units have a weight of one.

With the additions of IPW and regression adjustment in Eq. 1, the estimator $\hat{p}$ is a "doubly-robust" two-step estimator of p. Thus, estimates of the effects of bail assignment on defendants' sentencing outcomes will be unbiased if either the underlying matching model or

the regression model is correctly specified. This regression-adjusted matching estimator performs better than either regression or matching individually (Imbens & Wooldridge, 2009).

The identification assumption used in this approach is: conditional on the observable characteristics included in the match and in the regression, pretrial detention placement is as good as random between treated and control defendants. Thus, the main issue with identification using this approach is that some defendant characteristics not controlled for could be correlated with bail assignment. For example, while this model controls for violent crime types, a judge may not grant a defendant bail based on specifics of the crime a defendant committed, which is not accounted for in the model.

This approach does not rule out omitted variable bias, but the two assumptions needed to recover causal estimates in the matching approach are common support and conditional independence. I provide evidence that the common support assumption is satisfied and show that matching helps to eliminate some, but not all, of the unobserved heterogeneity. Therefore, based on the results of these checks, I cannot claim these estimates are fully causal, but they strongly suggest a negative causal effect of pretrial detention on sentencing outcomes.

5 Results and Discussion

Table 4: Durham linear probability model of correlation between receiving an alternative sentence and defendant characteristics

Dependent Variable:	Alternative Sentence					
Model:	(1)		(2)		(3)	
Did not make bail	-0.516	***	-0.477	***	-0.440	***
	(0.051)		(0.053)		(0.061)	
Bail missing	-0.429	***	-0.263	*	-0.299	*
	(0.163)		(0.152)		(0.159)	
Female			0.212	**	0.195	**
			(0.086)		(0.087)	
Gender Missing			0.604	***	0.512	***
			(0.134)		(0.171)	
Not White			-0.073		-0.058	
			(0.070)		(0.069)	
Race Missing			-0.281	*	-0.301	*
			(0.151)		(0.155)	
Age 26 to 34			0.152	*	0.144	*
			(0.079)		(0.079)	
Age 35 to 44			0.046		0.047	
			(0.088)		(0.087)	
Age 45 to 59			0.072		0.081	
			(0.088)		(0.087)	
Age Over 60			0.141		0.190	
			(0.143)		(0.150)	
Age Missing			-0.143	**	-0.081	
			(0.070)		(0.072)	
Violent Crime Type					-0.150	**
					(0.059)	
Crime Type Missing					-0.100	
					(0.062)	
Has Priors					-0.110	*
					(0.058)	
Felony Charge					-0.178	*
					(0.098)	
Charge Missing					-0.681	***
					(0.116)	
Private Attorney					-0.028	
					(0.060)	
Attorney Type Missing					-0.265	***
					(0.097)	
Constant	0.762	***	0.768	***	1.029	***
	(0.043)		(0.093)		(0.116)	
Dependant Mean	0.727		0.727		0.727	
	(0.447)		(0.447)		(0.447)	
% Effect	-70.91%		-65.52%		-60.55%	
R-squared	23.09%		31.36%		35.40%	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The three regressions shown above include different controls. Model 1 is a regression between pretrial detention and alternative sentence with no controls. Model 2 and Model 3 add other covariates to account for defendant demographics and offense specifics. All included variables are shown in the table.

Linear probability model estimates for Durham are shown above in Table 4. This table reaffirms that pretrial detention has a negative impact on defendants' sentencing outcomes. In the first model, not making bail decreases a defendant's likelihood of receiving an alternative sentence by 51.6 percentage points, a 70.91% decrease from the mean. Once controls are added, the magnitude of the decrease shrinks to 44.0 percentage points, a 60.55% decrease from the mean. Thus, not making bail is statistically significant at a 99 percent confidence level and economically significant across all three models.

Other variables worth noting are committing a violent crime type, having priors, and receiving a felony charge. A defendant who commits a violent crime type is 15.0 percentage points less likely to receive an alternative sentence, a 20.63% decrease from the mean. Having a prior conviction is correlated with a defendant being 11.0 percentage points less likely to receive an alternative sentence, a 15.13% decrease from the mean. A defendant receiving a felony charge for a current offense is correlated with them being 17.8 percentage points less likely to receive an alternative sentence, a 24.48% decrease from the mean.

Several missing variables have statistical significance in the model, and this is largely due to these variables not being reported for a small number of defendants. Of 333 defendants in Durham's superior court, only 9 did not have their bail assignment reported, 5 have their gender missing, and 5 have their race missing.

Table 5: Berkshire linear probability model of correlation between receiving an alternative sentence and defendant characteristics

Dependent Variable:	Alternative Sentence					
Model:	(1)		(2)		(3)	
Did not make bail	-0.624	***	-0.621	***	-0.576	***
	(0.035)		(0.035)		(0.040)	
Bail missing	-0.768	***	-0.775	***	-0.613	***
	(0.019)		(0.020)		(0.116)	
Female			-0.015		-0.020	
			(0.024)		(0.023)	
Gender Missing			0.195		0.203	*
			(0.120)		(0.117)	
Not White			-0.022		-0.020	
			(0.027)		(0.026)	
Race Missing			0.023		0.015	
			(0.084)		(0.083)	
Age 26 to 34			-0.028		-0.033	
			(0.031)		(0.031)	
Age 35 to 44			0.006		0.006	
			(0.031)		(0.030)	
Age 45 to 59			0.034		0.034	
			(0.032)		(0.031)	
Age Over 60			0.008		-0.007	
			(0.046)		(0.045)	
Age Missing			-0.248	***	-0.241	**
			(0.104)		(0.104)	
Violent Crime Type					-0.130	***
					(0.046)	
Crime Type Missing					-0.185	*
					(0.108)	
Has Priors					0.005	
					(0.034)	
Priors Missing					-0.005	
					(0.094)	
Felony Charge					-0.091	***
					(0.022)	
Charge Missing					-0.014	
					(0.040)	
Private Attorney					0.021	
					(0.029)	
Attorney Type Missing					-0.044	
					(0.065)	
Constant	0.770	***	0.786	***	0.838	***
	(0.019)		(0.032)		(0.033)	
Dependant Mean	0.411		0.411		0.411	
	(0.492)		(0.492)		(0.492)	
% Effect	-151.95%		-151.07%		-140.26%	
R-squared	57.77%		58.32%		59.95%	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Linear probability model estimates for all of Berkshire are shown in Table 5 above. This table demonstrates that, like in urban areas, pretrial detention has a negative impact on defendants' sentencing outcomes in rural areas. In the first model, not making bail decreases a defendant's likelihood of receiving an alternative sentence by 62.4 percentage points, a 151.95% decrease from the mean. Once controls are added, the magnitude of the decrease decreases slightly to 57.6 percentage points, a 140.26% decrease from the mean. Thus, not making bail is statistically significant at a 99 percent confidence level and economically significant across all three models.

Like in the model for Durham, committing a violent crime type and receiving a felony charge are statistically significant. Having prior convictions however does not have statistical significance in Berkshire. Committing a violent crime type is correlated with being 18.5 percentage points less likely to receive an alternative sentence, a 45.01% decrease from the mean. Receiving a felony charge is correlated with being 9.1 percentage points less likely to receive an alternative sentence, a 22.14% decrease from the mean.

Several missing variables have statistical significance in the model, and this is largely due to these variables not being reported for a small number of defendants. Of 1,093 defendants in Berkshire, only 116 have their gender missing, 136 have their race missing, and 130 have their age missing. Pretrial detention was reported at a lower rate in Berkshire, but mostly in the district court. Of 1,012 district court cases, 433 did not have bail assignment reported. Of 81 superior court cases, 10 did not have bail assignment reported.

Table 6: Durham and Berkshire linear probability models adding interaction terms

Dependent Variable:	Alternative Sentence			
Model:	Berkshire (All)		Durham	
Did Not Make Bail	-0.560	***	-0.357	**
	(0.048)		(0.153)	
Did Not Make Bail × Female	-0.072		-0.083	
	(0.106)		(0.183)	
Did Not Make Bail × Not White	-0.057		-0.106	
	(0.089)		(0.159)	
Bail missing	-0.620	***	-0.323	**
	(0.116)		(0.153)	
Female	0.015		-0.008	
	(0.059)		(0.269)	
Female × Not White	-0.297	***	0.183	
	(0.109)		(0.199)	
Gender Missing	0.198	*	0.541	***
	(0.116)		(0.156)	
Not White	0.031		0.055	
	(0.064)		(0.203)	
Race Missing	0.021		-0.359	**
	(0.082)		(0.170)	
Age 26 to 34	-0.031		0.141	*
	(0.031)		(0.080)	
Age 35 to 44	0.005		0.044	
	(0.030)		(0.089)	
Age 45 to 59	0.033		0.079	
	(0.031)		(0.089)	
Age Over 60	-0.005		0.183	
	(0.045)		(0.158)	
Age Missing	-0.254	**	-0.079	
	(0.103)		(0.073)	
Violent Crime Type	-0.137	**	-0.111	
	(0.055)		0.147	
Violent Crime Type × Female	0.062		-0.223	
	(0.135)		0.231	
Violent Crime Type × Not White	0.014		-0.019	
	(0.120)		0.155	
Crime Type Missing	-0.173	*	-0.114	*
	(0.104)		0.063	
Has Priors	0.009		-0.164	
	(0.039)		0.145	
Has Priors × Female	-0.026		-0.002	
	(0.063)		0.187	
Has Priors × Not White	-0.007		0.081	
	(0.066)		0.153	
Priors Missing	-0.009		---	
	(0.093)		---	

Felony Charge	-0.090	***	-0.114	
	(0.028)		0.215	
Felony Charge × Female	0.029		0.210	
	(0.056)		0.279	
Felony Charge × Not White	-0.022		-0.130	
	(0.059)		0.233	
Charge Missing	-0.017		-0.747	***
	(0.041)		0.125	
Private Attorney	0.022		-0.032	
	(0.029)		0.062	
Attorney Type Missing	-0.022		-0.251	***
	(0.064)		0.089	
Constant	0.826	***	0.969	***
	(0.038)		(0.202)	
Dependant Mean	0.411		0.727	
	(0.492)		(0.447)	
% Effect	-136.32%		-49.11%	
R-squared	60.40%		36.51%	

* p < 0.05, ** p < 0.01, *** p < 0.001

The only interaction term that has statistical significance is being female and not White. Being female and not White in Berkshire is correlated with being 29.7 percentage points less likely to receive an alternative sentence, a 72.26% decrease from the mean. There are only 15 defendants in Berkshire who are female and not White, 9 of whom have priors and 5 of whom received a felony charge. Thus, the statistical significance of this variable may be partially explained by the small sample. It is also worth noting that none of the interaction terms involving bail are even remotely close to being significant. This suggests race and gender do not impact the influence pretrial detention has on sentencing.

Not making bail remains statistically significant in both Berkshire and Durham and still has a larger percent effect in Berkshire. Committing a violent crime type is only statistically significant in Berkshire when interaction terms are added but has a negative correlation with receiving an alternative sentence in both models. Similarly, receiving a felony charge no longer has significance in Durham, but it still has a negative correlation with a slightly smaller percent effect.

Using the re-weighted samples discussed in the empirical specification yields the results

shown below in Tables 7, 8, and 9:

Table 7: Durham "Doubly-Robust" Two-Step Estimator

Dependent Variable:	Alternative Sentence	
Model:	Doubly Robust Estimator	
Did not make bail	-0.448	***
	(0.062)	
Female	0.192	*
	(0.101)	
Gender Missing	0.449	**
	(0.200)	
Not White	-0.077	
	(0.073)	
Race Missing	-0.215	
	(0.164)	
Age 26 to 34	0.215	**
	(0.092)	
Age 35 to 44	0.100	
	(0.090)	
Age 45 to 59	0.126	
	(0.090)	
Age Over 60	0.146	
	(0.190)	
Age Missing	-0.005	
	(0.070)	
Violent Crime Type	-0.186	***
	(0.060)	
Crime Type Missing	-0.148	**
	(0.069)	
Has Priors	-0.113	*
	(0.064)	
Felony Charge	-0.383	**
	(0.165)	
Private Attorney	0.007	
	(0.069)	
Attorney Type Missing	-0.150	
	(0.115)	
Constant	1.214	***
	(0.177)	
Dependant Mean	0.753	
	(0.433)	
% Effect	-59.44%	
R-squared	27.15%	

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 8: Berkshire "Doubly-Robust" Two-Step Estimator

Dependent Variable:	Alternative Sentence	
Model:	Doubly Robust Estimator	
Did not make bail	-0.563	***
	(0.041)	
Female	-0.043	
	(0.057)	
Gender Missing	0.120	
	(0.250)	
Not White	-0.025	
	(0.053)	
Race Missing	0.240	
	(0.310)	
Age 26 to 34	-0.093	
	(0.066)	
Age 35 to 44	-0.043	
	(0.076)	
Age 45 to 59	-0.017	
	(0.086)	
Age Over 60	-0.014	
	(0.099)	
Age Missing	-0.466	**
	(0.181)	
Violent Crime Type	-0.102	**
	(0.044)	
Crime Type Missing	-0.148	
	(0.116)	
Has Priors	0.021	
	(0.049)	
Priors Missing	0.310	
	(0.241)	
Felony Charge	-0.118	**
	(0.049)	
Charge Missing	-0.082	
	(0.154)	
Private Attorney	0.118	
	(0.079)	
Attorney Type Missing	0.110	
	(0.139)	
Constant	0.834	***
	(0.072)	
Dependant Mean	0.735	
	(0.442)	
% Effect	-76.67%	
R-squared	38.98%	

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 9: Berkshire Superior Court "Doubly-Robust" Two-Step Estimator

Dependent Variable:	Alternative Sentence	
Model:	Doubly Robust Estimator	
Did not make bail	-0.301	***
	(0.102)	
Female	0.051	
	(0.052)	
Not White	0.058	
	(0.042)	
Race Missing	0.570	*
	(0.318)	
Age 26 to 34	0.006	
	(0.040)	
Age 35 to 44	0.165	
	(0.124)	
Age 45 to 59	0.021	
	(0.056)	
Age Over 60	0.199	
	(0.168)	
Age Missing	-0.165	
	(0.203)	
Violent Crime Type	-0.061	
	(0.043)	
Crime Type Missing	-0.038	
	(0.132)	
Has Priors	-0.014	
	(0.064)	
Felony Charge	-0.133	
	(0.154)	
Private Attorney	0.078	*
	(0.045)	
Attorney Type Missing	0.078	
	(0.110)	
Constant	0.396	**
	(0.171)	
Dependant Mean	0.376	
	(0.491)	
% Effect	-80.13%	
R-squared	44.39%	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7 and 8 present the main results for Durham and all of Berkshire respectively. In both Durham and Berkshire, defendants who do not make bail have notably worse sentencing outcomes than those who make bail. In Durham, defendants are 44.8 percentage points (59.44%) less likely to receive an alternative sentence. In all of Berkshire, defendants are 56.3 percentage points (76.67%) less likely to receive an alternative sentence.

To check whether difference in the magnitude of the effect of pretrial detention on sentencing in Durham and Berkshire is caused by the inclusion of district court cases in Durham, the same analysis is conducted on just Berkshire superior court cases. Table 9 presents the results for Berkshire's superior court. Like in Tables 7 and 8, not making bail has a negative impact on defendants' sentencing outcomes. In Berkshire's superior court, defendants who do not make bail are 30.1 (80.13%) percentage points less likely to receive an alternative sentence. Thus, the greater impact of pretrial detention on sentencing outcomes in Berkshire cannot be explained by the inclusion of the district court cases.

6 Conclusion

This work contributes to the literature on plea bargaining, alternative sentencing, and pretrial detention discussed in the literature review section by investigating the impact of pretrial detention on plea bargain case outcomes in a predominantly White rural area compared to a predominantly Black urban area. This is valuable because most of the existing literature on plea bargaining, alternative sentencing, and pretrial detention focuses its research on large urban areas, as shown in the literature review.

Alternative sentencing is a key part of the U.S. justice system. Alternative sentencing is intended to help convicts continue their normal lives while completing their punishment, and it has been shown in the literature review to have implications for offenders' long-term recidivism and labor market outcomes. Thus, it is valuable to understand whether certain groups are more or less likely to benefit from alternative sentencing.

The results from the Berkshire and Durham data demonstrate the importance of pretrial detention on sentencing outcomes for defendants. In Durham, defendants who do not make bail are 59.44% less likely to receive an alternative sentence than defendants who make bail. In all of Berkshire, defendants who do not make bail are 76.67% less likely to receive an alternative sentence, and in Berkshire's superior court, defendants who do not make bail are 80.13% less likely to receive an alternative sentence. According to the Federal Bureau of Prisons (2021), in 2020 it cost $39,158 annually ($120.59 per day) to incarcerate an inmate. Thus, the higher rates of prison sentences among defendants who do not make bail is costly. Not only is pretrial detention expensive for taxpayers, but it also takes a toll on defendants' long-term outcomes. Defendants detained pretrial are 24.9% less likely to be employed in the formal labour market

three to four years after their bail hearing (Dobbie et al., 2018). This equates to a loss of $29,001 in lifetime income for defendants who do not make bail.

These results show that not making bail is significantly correlated with receiving a prison sentence, especially in Berkshire, a predominantly White rural area. This suggests that the negative effect of pretrial detention is also found outside of urban areas. Thus, defendants in rural areas who do not make bail, like their urban counterparts, are at a disadvantage in the criminal justice system.

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Appendix

1 Berkshire Codebook
Overview:
- Data collected between April 1st, 2021, and April 30th, 2022.
- This is a *population- level data set* – all cases in that office that were resolved via plea agreement during this period of time.
- District Court or Unknown Court = 1012 cases.
    - Prosecutor data in 585 cases (58%).
- Superior Court = 81 cases.
    - Prosecutor data in 71 cases (88%).

Variables

Column A: "Case.number" assigned to each row/case. "DC___" for District Court or Unknown Court cases (e.g., DC532) and "SC__" for Superior Court cases (e.g., SC45)

Column B: "Court" - Categorical variable with three options; "District Court", "Superior Court", and "Not reported".

Column C: "Defense.Attorney" – Categorical variable with five options; "a private attorney", "a court-appointed attorney", "from CPCS", "unknown", and "Not reported".

Column D: "Defendant.Gender" – Categorical variable with four options; "Male", "Female", "Other", and "Not reported".

Column E: "Defendant.Race" – Categorical variable with six options; "White", "Black", "Hispanic", "Other", "Unknown", and "Not reported".

Column F: "Defendant.Age" – Continuous numeric variable with missing data denoted by "NA". Represents the defendant's age at the time of the plea negotiations.

Column G: "Threat.PublicSafety" – A categorical variable with five options; "High", "Moderate", "Minor", "Control_none", and "Not reported". Indicates the prosecutor's perception of the level of threat the defendant posed to public safety.

Column G: "Threat.Property" – A categorical variable with five options; "High", "Moderate", "Minor", "Control_none", and "Not reported". Indicates the prosecutor's perception of the level of threat the defendant posed to property.

Column I: "Prior.Felonies" – A numeric variable listing the number of felony charges the defendant has been convicted of in the past.

Column J: "Prior.Misdemeanors" – A numeric variable listing the number of misdemeanor charges the defendant has been convicted of in the past.

Column K: "Prior.CWOFs" – A numeric variable listing the number of charges against the defendant resolved with a CWOF in the past.

Column L: "Previous.Incarceration" – Categorical variable with three categories; "Yes" means they have been incarcerated before, "No" means they have not, and "Not reported" means the prosecutor did not fill out the form for this case or chose not to answer this question.

Column M: "Incarceration.Type" – If the defendant has been incarcerated before, prosecutors could indicate here if it was "State Prison" (most serious), "House of Corrections", or "County/Split.

Column N: "Prior.Probation" – Categorical variable with three categories; "Yes" means they have had a probation sentence before, "No" means they have not, and "Not reported" means the prosecutor did not fill out the form for this case or chose not to answer this question.

Column O: "Prior.Probation.Violation" – If the defendant has served probation before, the prosecutor could indicate here if they violated the terms of their probation in the past ("Yes" or "No").

Column P: "Crimetype.People" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column Q: "Crimetype.Violent" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column R: "Crimetype.Property" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column S: "Crimetype.Drug" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column T: "Crimetype.MotorVehicle" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column U: "Crimetype.Financial" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column V: "Crimetype.Firearms" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column W: "Crime.Type.Committed.Previously" – Categorical variable where "Yes" means that this defendant has been previously convicted of the type of crime they are accused of committing in this case.

Column X: "Victims?" – Categorical variable with three options Indicates if it was a victim in this case ("Yes"), if it was a crime against a business ("Business"), or no victims reported ("Not reported").

Column Y: "No.of.Victims" – Numeric variable. If known, the number of victims was reported here (could be up to 5 or "more than 5").

Column Z: "Judge.Name" – a Categorical variable with the name of the judge who presided over the case to use as a control variable.

Column AA: "Procedural.Event.Assoc.w.Plea" – Categorical variable indicate what criminal legal event/procedure/trial/hearing was underway when the Tender of Plea was finalized.

Column AB: "Pretrial.Detention" – What the person charged detained pretrial? "Yes" or "No" binary categorical variable (or "Not reported").

Column AC: "Pretrial.Detention.Length.Days" – number of days that the prosecutor reported the person charges was held pretrial.

Column AD: "Pretrial.Detention.Section" – Which section was used to justify holding the person charged pretrial? Options:

- Section 58A - Dangerousness hearing, persons accused of offenses involving physical force or abuse.
- Section 58B - Revocation of release and detention order following violation of release concerns.
- Section 58 - Release on person recognizance or unsecured appearance bond.
- Not reported

Column AE: "Disposition.276/87" – "Yes" means that the plea was resolved with a global plea disposition under Chapter 276, Section 87 of MA G.L. "No" means it wasn't and "Not reported" means the prosecutor did not fill out the form for this case, or chose not to answer this question.

Column AF: "Probation.Length.276/87" – length of probation period associated with a 276/87 Disposition in <u>months</u>.

Column AG: "Probation.T&Cs.276/87" – any terms and conditions associated with the 276/87 disposition.

Column AH: "Charges.276/87" – the charges that will be dropped after the probation period for the 276/87 is complete.

Column AI: "Charges.AvOffenseLevel.276/87" – average offense level of the charges that will be dropped after the probation period for the 276/87 is complete.

Column AJ: "Suspended.Split" – Was the sentence suspended or split? Categorical: Suspended, Split, Not Suspended, or Not Reported.

Column AK: "Community.Service" – Was community service part of the plea agreement? "Yes" or "No" binary categorical variable.

Column AL: "Rehab.Treatment" – Was rehabilitation or treatment part of the plea agreement? "Yes" or "No" binary categorical variable.

Column AM: "Rehab.Treatment.Type" – select all that apply from a list and also some open response (for other).

Column AN: "Rehab.Treatment.Details" – More information about the rehab or treatment conditions of the plea.

Column AO: "Multi.Sentences.Served" – if more than one sentence was included in the plea, how will they be served? Options: "No" = not multiple sentences; "Concurrently" = served at the same time; "Consecutively" = served one after another.

Charge 1 columns:

- Column AP: "Charge1.Disposition" = disposition associated with this charge e.g., "Guilty verdict/finding", "276/87", "Dismissed.
- Column AQ: "Charge1.Crime" = name of the charge.
- Column AR: "Charge1.Offense.Level" = offense level of charge one.
- Column AS: "Charge1.ForM" = whether the offense was a felony or misdemeanor.

- Column AT: "Charge1.SentenceSS" = the sentence types in plea for this charge reported by the support staff.
- Column AU: "Charge1.LengthSS" = the sentence length in plea for this charge reported by the support staff.
- Column AV: "Charge1.Fines/Fees" = what fines and fees were included in the plea, if any.
- Column AW: "Charge1.ProbationADA" = whether probation was part of the sentence for this charge, as reported by the ADA ("Yes" or "No").
- Column AX: "Charge1.ProbLengthADA: = length of the probation charge, if any, as reported by the ADA (in months).
- Column AY: "Charge1.PrisonADA" = whether prison was part of the sentence for this charge, as reported by the ADA ("Yes" or "No").
- Column AZ: "Charge1.PrisLengthADA: = length of the prison charge, if any, as reported by the ADA (in months).

Charge 2 columns (follow same pattern): BA to BK

Charge 3 columns (follow same pattern): BL to BV

Charge 4 columns (follow same pattern): BW to CG

Charge 4 columns (follow same pattern): CH to CR

Mitigating factors: reported as considered in this case = "1", not reported in this case "0".

- Columns CS to DE

Aggravating factors: reported as considered in this case = "1", not reported in this case "0".

- Columns DF to DS

Other sentencing factors: reported as considered in this case = "1", not reported in this case "0".

- Columns DT to DX

Collateral consequences: reported as considered in this case = "1", not reported in this case "0".

- Columns DY to EF

2 Berkshire bail summary statistics

	Whole Sample	Made bail	Did not make bail	Bail Missing
Made Bail	46.20%	100.00%	0.00%	0.00%
Did Not Make Bail	13.17%	0.00%	100.00%	0.00%
Bail Missing	40.62%	0.00%	0.00%	100.00%
Male	69.90%	42.54%	13.35%	44.11%
Female	19.49%	45.54%	5.63%	48.84%
Gender Missing	10.61%	71.55%	25.86%	2.59%
White	72.46%	43.43%	10.48%	46.09%
Not White	14.64%	38.79%	17.58%	43.64%
Race Missing	12.90%	71.32%	23.53%	5.15%
Age 18 to 25	15.83%	48.55%	12.14%	39.31%
Age 26 to 34	28.82%	45.08%	12.70%	42.22%
Age 35 to 44	23.24%	38.19%	10.63%	51.18%
Age 45 to 59	13.63%	38.26%	8.72%	53.02%
Age Over 60	17.57%	63.02%	22.40%	14.58%
Age Missing	11.89%	70.00%	25.38%	4.62%
Violent Crime Type	9.06%	55.56%	44.44%	0.00%
Crime Type Missing	41.99%	3.27%	0.87%	95.86%
No Prior Probation	23.06%	89.29%	9.52%	1.19%
Received Prior Probation	35.22%	69.35%	30.39%	26.00%
Prior Probation Missing	41.72%	2.85%	0.66%	96.49%
Public Defender	76.30%	42.21%	11.99%	45.80%
Private Attorney	11.16%	47.54%	9.02%	43.33%
Attorney Type Missing	12.53%	69.34%	24.09%	6.57%

3 Durham Codebook
Overview:
- Data collected between April 12th, 2021, and April 12th, 2022.
- This is a *population-level data set* – all cases in that office that were resolved via plea agreement during this period of time.
- Superior Court = 333 cases.

Variables

Column A: "Case.number" assigned to each row/case. "SC__" for Superior Court cases (e.g., SC45).

Column B: "Defense.Attorney" – Categorical variable with four options; "a private attorney", "a court-appointed attorney", "a public defender", and "NA"

Column C: "Defendant.Gender" – Categorical variable with three options; "Male", "Female", and "NA".

Column D: "Defendant.Race" – Categorical variable with five options; "White", "Black", "Hispanic", "American Indian", and "NA".

Column E: "Defendant.Age" – Continuous numeric variable with missing data denoted by "NA". Represents the defendant's age at the time of the plea negotiations.

Column F: "Threat.PublicSafety" – A categorical variable with four options; "no threat at all", "Minor threat", "Moderate threat", and "High level of threat".

Column G: "Threat.Property" – A categorical variable with four options; "no threat at all", "Minor threat", "Moderate threat", and "High level of threat".

Column H: "Threat.Self" – A categorical variable with four options; "no threat at all", "Minor threat", "Moderate threat", and "High level of threat".

Column I: "Prior.Felonies" – A numeric variable listing the number of felony charges the defendant has been convicted of in the past.

Column J: "Prior.Misdemeanors" – A numeric variable listing the number of misdemeanor charges the defendant has been convicted of in the past.

Column K: "Crimetype.Sexual" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column L: "Crimetype.Violent" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column M: "Crimetype.Property" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column N: "Crimetype.Drug" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column O: "Crimetype.Firearms" – a "0" means that there were no crimes of this type in this case and "1" means that there were crimes of this type in this case.

Column P: "Victims?" – A categorical variable with five options that indicates if it was a victim in this case ("Person or persons"), if it was a crime against a business or corporation

("Business or corporation"), the state of North Carolina ("The state of North Carolina"), "Other (please specify)", or no victims reported ("NA").

Column Q: Victims.Other – Text entry for the selection of "Other (please specify)".

Column R: "No.of.Victims" – A binary variable. If known, the number of victims was reported here ("one primary victim" or "two or more primary victims").

Column S: "Pretrial.Detention" – A binary variable indicating if the person charged detained pretrial? "Yes" or "No" (or "NA").

Column T: "Pretrial.Detention.Length" – A categorical variable with eight options; "1-2 days", "3-6 days", "7-29 days", "1-6 months", "6-12 months", "12-24 months", "2 years or longer", and "NA". The range of days or months that the prosecutor reported the person charged was held pretrial.

Column U: "Pretrial.Detention.Reason" – A binary variable indicating why the person charged was detained pretrial. "The defendant's pretrial detention was solely for this case" or "Other cases impacted the defendant's pretrial detention" (or "NA").

Column V: "Rehab.Treatment" – Was rehabilitation or treatment part of the plea agreement? "Yes" or "No" binary categorical variable.

Column W: "Rehab.Treatment.Type" – options included: Substance Use, Mental Health, or Both

Column X: Sentence.Type – options included: active (a prison sentence), split, and probation.

Column Y: "Multi.Sentences.Served" – if more than one sentence was included in the plea, how will they be served? Options: "Concurrently" = served at the same time; "Consecutively" = served one after another; "Open" = open plea, the sentence is determined by the judge; "Not specified"; "NA".

Charge 1 columns:

- Column Z: "Charge1.Disposition" = disposition associated with this charge e.g., "Guilty verdict/finding", "276/87", "Dismissed.
- Column AA: "Charge1.Crime" = name of the charge.
- Column AB: "Charge1.Offense.Level" = offense level of charge one.
- Column AC: "Charge1.ForM" = whether the offense was a felony or misdemeanor.
- Column AD: "Charge1.ProbationADA" = whether probation was part of the sentence for this charge, as reported by the ADA ("Yes" or "No").
- Column AE: "Charge1.ProbLengthADA: = length of the probation charge, if any, as reported by the ADA (in months).
- Column AF: "Charge1.PrisLengthADA.min: = bottom of the minimum sentencing range of the prison charge, if any, as reported by the ADA (in months).
- Column AG: "Charge1.PrisLengthADA.max: = top of the minimum sentencing range of the prison charge, if any, as reported by the ADA (in months).

Charge 2 columns (follow same pattern): AH to AO

Charge 3 columns (follow same pattern): AP to AW

Charge 4 columns (follow same pattern): AX to BE

Charge 5 columns (follow same pattern): BF to BM

Mitigating factors: reported as considered in this case = "1", not reported in this case "0".

- Columns BN to BV (all variables beginning with "len_")

Aggravating factors: reported as considered in this case = "1", not reported in this case "0".

- Columns BW to CD (all variables beginning with "sev_")

Collateral consequences: reported as considered in this case = "1", not reported in this case "0".

- Columns CE to CM (all variables beginning with "coll_")

Other sentencing factors: reported as considered in this case = "1", not reported in this case "0".

- Columns CN to CW (all variables beginning with "add_")

4 Durham bail summary statistics

	Whole Sample	Made bail	Did not make bail	Bail Missing
Made Bail	30.33%	100.00%	0.00%	0.00%
Did Not Make Bail	66.97%	0.00%	100.00%	0.00%
Bail Missing	2.70%	0.00%	0.00%	100.00%
Male	89.19%	29.63%	67.68%	2.69%
Female	9.31%	35.48%	61.29%	3.23%
Gender Missing	1.50%	40.00%	60.00%	0.00%
White	15.62%	28.85%	71.15%	0.00%
Not White	82.88%	30.43%	66.30%	3.26%
Race Missing	1.50%	40.00%	60.00%	0.00%
Age 18 to 25	12.01%	40.00%	60.00%	0.00%
Age 26 to 34	20.42%	47.06%	52.94%	0.00%
Age 35 to 44	15.92%	24.53%	73.58%	1.89%
Age 45 to 59	13.21%	18.18%	81.82%	0.00%
Age Over 60	2.40%	50.00%	50.00%	0.00%
Age Missing	36.04%	23.33%	70.00%	6.67%
Violent Crime Type	24.02%	18.75%	78.75%	2.50%
Crime Type Missing	25.23%	41.67%	54.76%	3.57%
No Priors	26.13%	42.53%	50.57%	6.90%
Has Priors	73.87%	26.02%	72.76%	1.22%
Public Defender	78.08%	23.46%	73.85%	2.69%
Private Attorney	21.02%	57.14%	41.43%	1.43%
Attorney Type Missing	0.90%	0.00%	66.67%	33.33%