A (Plea) Offer You Can Refuse

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ABSTRACT

Plea bargaining is ubiquitous in the United States, yet lack of data on rejected plea offers constrains empirical analysis. We compile novel data covering all initial plea offers for 23,000 felony cases in Philadelphia from 2012 to 2017. Our analysis yields three main insights. First, rejected initial offers are on average longer than eventual sentences, even for defendants convicted at trial. This contradicts the conventional trial penalty theory, namely, that rejecting a plea offer leads to a longer sentence. Second, using accepted offers as counterfactuals for rejected offers can lead to inaccurate estimates of the magnitude and even direction of the trial penalty. Third, even after controlling for detailed observables, initial plea offers are longer for Black defendants, especially those detained pretrial. Our study highlights the complexity of bargaining dynamics and the need for new theoretical frameworks and data on rejected offers to inform both theory and practice.

1. INTRODUCTION

Plea bargaining is the predominant way that criminal cases are resolved in the United States. Over 90 percent of felony convictions nationally result from guilty pleas (Reaves 2013), which involve an agreement between the prosecution and the defense wherein the defendant relinquishes their right to a jury trial and pleads guilty to specific charges. The con-

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ventional wisdom is that, in return, the defendant will receive a more lenient punishment than if convicted at trial. Despite its prevalence, the plea-bargaining process remains largely concealed from public scrutiny. Unlike criminal trials, which are typically public, plea bargaining occurs behind closed doors, and records of rejected plea offers are rarely kept, let alone shared with researchers. Our paper offers some of the first empirical insights into the factors that influence initial plea offers and examines how these offers compare with sentences based on the resolution of the cases. These insights provide new perspectives on theories of plea bargaining.

We introduce a novel administrative dataset obtained from the Philadelphia District Attorney's Office (DAO). It contains information on approximately 23,000 initial plea offers, including rejected ones, made for a wide range of felony cases between 2012 and 2017.[1] Additionally, we have detailed information about case and defendant characteristics, case progression through the court system, and case dispositions. With this novel data, we can start to unpack the black box of criminal plea bargaining. Ultimately, our findings diverge from much of the existing literature on plea bargaining. We make four main contributions.

First, we use a potential outcomes framework to examine what we can learn about the causal effect of rejecting a prosecutor's offer on one's ultimate sentence. We define the "plea rejection penalty" as the difference in the expected sentence if a plea is rejected, versus if a plea is accepted. We show that with data on rejected offers, it is possible to measure the average treatment effect of going to trial for one group of defendants: those who rejected a plea offer. We also provide an illustrative example demonstrating how relying on sentences for those who accepted plea deals as a counterfactual can misestimate the magnitude and even the direction of the trial penalty, which underscores the limitations of conventional empirical strategies.

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1. Because of data limitations, our analyses exclude misdemeanors, more serious felonies, and cases handled after Lawrence Krasner, who ran on a reformist platform, took office in 2018 as the district attorney of Philadelphia.

Turning to our empirical analyses, we then ask how plea offers vary across offense and defendant characteristics. We show that initial offers are most correlated with case severity and a person's priors—the key inputs for Pennsylvania sentencing guidelines. Typically, these initial offers fall within or below the sentencing guideline recommendations, seldom exceeding them. We also find that plea offers are longer for Black defendants, even after controlling for observable variables related to case severity. This is particularly pronounced for Black defendants who are in jail at the time an offer is extended.

We show that initial plea offers are, on average, significantly longer than the sentences for cases that do not plead out immediately, even when defendants are convicted at trial, whether by bench or jury trial. These findings challenge the conventional view that favorable plea offers are intended to encourage swift settlements. Instead, our analysis shows that sentences are often more lenient than the initial offers, at least for those who reject them. We also find that defendants incarcerated pretrial are more likely to accept initial offers, while Black defendants and those facing longer initial offers are more likely to reject them.

Our main finding builds on the potential outcomes framework we develop and applies to those defendants who rejected their initial plea offers and were ultimately convicted. For this group, we can estimate the causal effect of rejecting their offers by comparing their sentences with the initial offers. We contrast this with what we would infer if we compared the sentences of individuals convicted after rejecting the offers with the sentences of those who accepted them.[2] We find that these two approaches lead to opposing conclusions. Individuals convicted after rejecting an initial offer have sentences that are on average shorter than the offer was; however, these sentences are longer than average sentences of those who accepted their offers, even after controlling for differences in case observables. Beyond their substantive implications, our findings raise important questions about the validity of previous methodologies used to assess the trial penalty.[3] We find that individuals who reject initial offers differ systematically from those who accept them. Those who reject offers are 17 percentage points less likely to be in jail, and they tend to

2. The goal of this paper is not to adjudicate between interpretations of the trial penalty versus the plea discount. For a discussion of this distinction, see Grunwald (2020).

3. We note that our analysis is limited to the early plea offer stage, and findings may vary when comparing accepted and rejected offers at later stages of the judicial process.

face harsher offers: A 10-month increase in the initial offer is associated with a 3-percentage-point-higher likelihood of rejection. Because an initial offer reflects many factors, which are plausibly correlated with expected sentences, those who accept offers likely differ from those who reject them on unobservables, as well. Nonetheless, conceptually, these findings underscore the limitations of using accepted offers as counterfactuals for rejected offers.

Our paper speaks to several literatures. This work is among the first to systematically analyze how initial plea bargains correspond to eventual sentences, and it complements ongoing mixed-methods research on the determinants of plea offers that does not include rejected offers (Matei et al. 2022; Grodensky et al. 2023; Garrett et al. 2023). It also contributes to a growing literature on the role that prosecutors play in shaping criminal justice outcomes (Bjerk 2005; Devers 2011; Rehavi and Starr 2014; Tuttle 2019; MacDonald and Raphael 2020; Agan, Doleac, and Harvey 2023; Mitchell et al. 2022; Owusu 2022; Ouss and Stevenson 2023; Shaffer 2023; Nguyen and Ouss 2026). Because of data limitations, this prior work typically considers court outcomes that are influenced but not solely controlled by prosecutors, such as sentences, or upstream decisions like charging that precede the plea stage entirely, whereas we can directly examine a decision completely in the prosecutor's hands. More broadly, our paper contributes to an active and growing literature on the determinants of criminal justice outcomes and their differences across demographic groups (Anwar, Bayer, and Hjalmarsson 2012; Yang 2015; Mueller-Smith 2015; Feigenberg and Miller 2021; Arteaga 2021; Rose 2021; Rose and Shem-Tov 2021; Abrams et al. 2022; Jordan 2022; Owusu 2022; Humphries et al. 2025; Garin et al. 2025).

Our paper also speaks to a theoretical and empirical literature on plea bargaining specifically. While we observe only initial plea offers, if our findings hold for later stages of plea negotiations, they would be at odds with prevailing views in the legal literature on the trial penalty, which posits that favorable plea offers should encourage defendants to accept plea offers and avoid lengthy and costly trials (Landes 1971; Mnookin and Kornhauser 1978; Fisher 2000; Bjerk 2007, 2021; Grunwald 2020). Empirical papers that attempt to measure the trial penalty generally compare cases that are resolved through pleas versus at trial (McCoy 2005; Ulmer and Bradley 2006; Ulmer, Eisenstein, and Johnson 2010; Bushway and Redlich 2012; Kutateladze, Andiloro, and Johnson 2016; Silveira 2017; Yan and Bushway 2018; Jordan 2023) and generally find that,

conditional on conviction, sentences are shorter when cases are resolved through pleas. An exception is Abrams (2011), which highlights the importance of considering acquittals: Even if trial sentences are harsher than plea deals, the expected sentences may be shorter because of the acquittal rate. Our paper takes a very different approach: Instead of using cases resolved via plea as the counterfactual (as the past literature, including Abrams [2011], has) we compare criminal case outcomes with the initial plea offers for the same case. A substantial body of research has documented the impact of prosecutorial discretion and the inequities it can produce (Alschuler 1968, 1981; Bibas 2002; Stuntz 2004, 2011; Wright 2005; Sklansky 2018; Hessick 2021). If applicable to other jurisdictions, our paper may alleviate some concerns about one way in which this discretion is used to secure additional convictions. Indeed, at least in the initial phases, we do not find large penalties for rejecting these offers, as would be the case with coercively short initial plea offers.

Our empirical results are more consistent with the long-standing theoretical literature, mainly developed in the civil litigation context, and later applied in the criminal context (Grossman and Katz 1983; Priest and Klein 1984; Reinganum 1988; Spier 1992; Kim 2010; Silveira 2017; Jordan 2023). This literature generally focuses on the role that initial offers may play in the sorting of cases under asymmetric information. Most notably, the classic Bebchuk (1984) settlement bargaining model predicts resolution patterns on the basis of the likelihood of conviction: Defendants with a high probability of conviction are more likely to settle early, which leaves those with a lower probability of conviction to go to trial. To our knowledge, our paper is the first to provide empirical evidence relevant to this model using data about initial offers and case dispositions. As a result, it contributes to a growing body of empirical work examining the dynamics of negotiation in various economic settings (Backus et al. 2020; Larsen 2021; Keniston et al. 2021). Our results are also consistent with legal scholarship highlighting that bargaining strategies can be used by prosecutors to create favorable power dynamics and ultimately secure more convictions (Wright and Miller 2002; Bibas 2004; Wright and Engen 2005; Wright 2005; Crespo 2018).

Finally, we note that we view as a significant contribution of our paper the introduction of a new, important dataset and its description. Our main goal is not so much to test extant theories but rather to provoke new ones, as well as new analyses that can better help us understand the workhorse of the criminal justice system in the United States—the plea

bargain. Science, including social science, best advances through the interplay of theory, empirics, and experiment. We hope this contribution will encourage others to build on it.

The rest of the paper is organized as follows. In Section 2, we describe how to measure penalties for rejecting plea offers, using a potential outcomes framework. In Section 3, we provide institutional background on the plea process in Philadelphia, describe the data that we use in our analyses, and show how case observables correlate with initial offers. In Section 4, we present our main empirical results on how initial plea offers compare with case resolutions and discuss how these results help inform existing empirical work on the trial penalty. We discuss the external validity of our results in Section 5, and Section 6 concludes.

2. MEASURING THE COSTS OF REJECTING PLEAS

2.1. Setup

In this section, we use a potential outcomes framework to clarify when we can identify the causal effect of rejecting a plea offer on a defendant's sentence. Let S_i be sentence length; treatment $R_i \in 0, 1$ indicates whether a person rejected a plea offer. The treatment effect (that is, the causal effect of rejecting the prosecutor's offer) may be expressed as $E[S_i^1 - S_i^0]$, where S_i^1 is individual i's sentence if they reject the offer, and S_i^0 is individual i's sentence if they accept the offer. Throughout the paper, we refer to this as the "plea rejection penalty," which is the difference between the plea offer and the sentence if the plea offer is rejected. We note that a common understanding of the trial penalty—one that focuses on cases in which a defendant rejects a plea offer (typically the final one) and is convicted at trial—is a special case of the plea rejection penalty. The estimand for this parameter of interest is

$$\begin{aligned} E[S_i^1 - S_i^0] &= E[S_i \mid R_i = 1] - E[S_i \mid R_i = 0] \\ &= \underbrace{E[S_i^1 \mid R_i = 1] - E[S_i^0 \mid R_i = 1]}_{\substack{\text{Average treatment effect} \\ \text{for those who rejected the offer}}} + \underbrace{E[S_i^0 \mid R_i = 1] - E[S_i^0 \mid R_i = 0]}_{\text{Selection bias}}. \end{aligned} \quad (1)$$

In most empirical settings, researchers observe case outcomes but not the underlying plea offers. As a result, the commonly measured difference, $E[S_i \mid R_i = 1] - E[S_i \mid R_i = 0]$, is the sum of the average treatment effect on the treated (ATT) and of selection bias. However, when rejected plea

offers are observed, we can directly recover $E[S_i^0 \mid R_i = 1]$, since, under the assumption that sentences equal offers for those who accept, the rejected offer represents the counterfactual sentence. This enables us to estimate both the ATT and selection bias, using the rejected offers to recover the appropriate counterfactual for those who declined.[4]

Another estimand of interest is the average treatment effect of going to trial for those who accepted a plea offer. This could be thought of as a plea discount:

$$\begin{aligned} E[S_i^0 - S_i^1] &= E[S_i \mid R_i = 0] - E[S_i \mid R_i = 1] \\ &= \underbrace{E[S_i^0 \mid R_i = 0] - E[S_i^1 \mid R_i = 0]}_{\substack{\text{Average treatment effect} \\ \text{for those who rejected the offer}}} + \underbrace{E[S_i^1 \mid R_i = 0] - E[S_i^1 \mid R_i = 1]}_{\text{Selection bias}}. \end{aligned} \quad (2)$$

Even with data on all plea offers (including rejected offers), we still do not have estimates of $E[S_i^1 \mid R_i = 0]$—the expected sentences (for example, trial sentences) had the pleas been rejected by those who chose to accept plea offers. We therefore cannot measure this counterfactual sentence length.

It is possible that the treatment effect of rejecting a plea offer is similar for both those who reject a plea offer and those who accept it. In many models, the penalties for rejecting plea offers are justified by greater litigation costs. If litigation costs are the main driver of these longer sentences, and if they are similar for both groups, the treatment effects for both groups of compliers could be similar. But there could also be heterogeneity in treatment effects. For example, imagine that people who were caught red-handed are more likely to accept plea offers. Perhaps judges are especially harsh toward defendants who reject prosecutors' offers when the evidence against them is strong, viewing rejection as a failure to accept responsibility. It is therefore possible that the treatment effect is different for these two groups. Following the framework presented in this section, one of the main contributions of our paper is the set of empirical results presented in Section 4.2 that highlight our ability to identify the treatment effect for those individuals who reject plea offers.

4. We note that the trial penalty is often calculated only for cases that end in a conviction. If that is the parameter of interest, one can condition on conviction and replace $E[S_i \mid R_i = 1]$ with $E[S_i \mid R_i = 1, \text{Convict}]$. In several of our analyses, we consider sentences conditional on conviction.

2.2. An Illustrative Example

The implicit assumption underlying analyses that compare trial sentences with sentences for cases in which plea offers were accepted—used to quantify the trial penalty—is that accepted plea offers serve as an appropriate counterfactual for rejected offers, once case observables have been accounted for. We illustrate significant limitations to this approach, using a simple example.

Consider Defendant A, who is charged with assault and has one prior conviction. His last plea offer was a 3-year sentence. Defendant A opts for trial and is convicted and sentenced to 5 years. In this example, the unconditional trial penalty is 2 years (the trial sentence exceeds the last offer by 2 years).

However, the last plea offer is not typically observed in the data. Instead, analysts use the average sentence of similar defendants who accepted plea offers as a counterfactual for Defendant A's rejected offer. Now suppose that these comparable defendants received an average sentence of 1 year, perhaps because they had unobservably weaker evidence against them. In this case, researchers might erroneously infer an unconditional trial penalty of 4 years where the true trial penalty is 2 years.

In some cases, even the sign of the trial penalty could invert. For instance, if Defendant A's last offer was 10 years but he is ultimately sentenced to 5 years at trial, there is no trial penalty—the trial sentence is shorter than the last offer.[5] If researchers use average sentences for similar defendants who accepted plea offers as indicative of Defendant A's last rejected offer (for example, 1 year), they would incorrectly conclude the existence of a trial penalty.

3. INSTITUTIONS AND DATA

In this section, we first describe the plea-bargaining process in Philadelphia and compare it with that in other jurisdictions. We then present the data that we use and discuss correlates of initial plea offers.

3.1. Plea Bargaining in Philadelphia

The flowchart in Figure 1 outlines how felony cases progress from arrest to resolution in Philadelphia. It also includes information on the number

5. In this example, perhaps Defendant A chose to go to trial because the last offer carried an excessively long sentence.

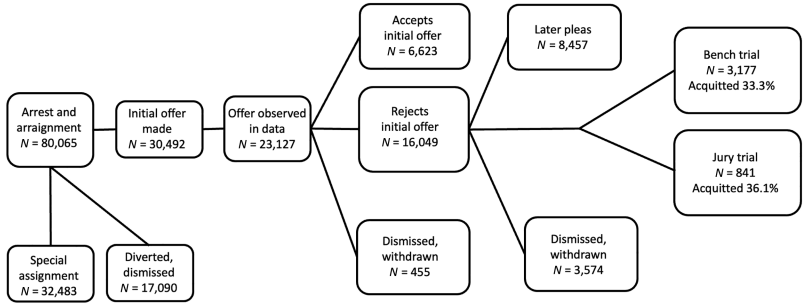


Figure 1. Flowchart of felony case processing in Philadelphia. *Note:* We include the number of cases at each stage between 2012 and 2017 (*N*) and the percent of cases ending in an acquittal if the case goes to bench or jury trial.

of cases at each stage of advancement and the percentages of cases resulting in acquittal if the case goes to trial.

Upon an individual's arrest, police officers write a report explaining the circumstances of the arrest and recommend charges. Subsequently, a prosecutor from the DAO reviews this report and decides whether and how to charge the arrestee.[6] Should the charges involve felonies, the case proceeds to a preliminary hearing conducted in the Philadelphia Municipal Court, where a judge decides if there is prima facie evidence for the case to proceed to trial in the Court of Common Pleas. If the felony case progresses, it is usually assigned to a prosecutor who works on crafting an initial plea offer, which is entered into a DAO case management system.[7] In Philadelphia, this is referred to as the "Smartroom phase," with prosecutors handling these types of cases working in the Smartroom unit at the DAO. After reviewing the case, the prosecutor prepares a plea offer, taking into account various factors such as the strength of the evidence, the nature of the offense, the offense gravity score (OGS), and the defendant's prior record score (PRS). A prosecutor typically has approximately 2 weeks to communicate this initial offer. While the prosecutor consults the guidelines when making an offer, they maintain discretion to customize it. Both plea offers and final sentences are expressed as ranges,

6. In Philadelphia, approximately 95 percent of arrests lead to formal charges being filed.

7. Some more serious cases are handled by prosecutors in specialized units, where offers for such cases are not systematically recorded. These include homicides, nonfatal shootings, domestic violence, sexual assault, and significant economic crimes resulting in damages exceeding $50,000.

from a minimum to a maximum term.[8] Unless otherwise noted, we consider the minimum sentence throughout this paper, as this is the value specified in the sentencing guidelines.

There are various ways in which felony cases can be resolved in Philadelphia. Defendants have a constitutional right to a jury trial, but they also have the option of a bench trial (in which a judge, rather than a jury, decides the outcome of a case) or a plea deal. Plea deals come in two forms. In a negotiated plea, the defendant pleads guilty and accept the prosecutor's offer. Once a negotiated plea deal is accepted, the judge proceeds to sentencing, ensuring that the agreed-upon terms are appropriate and in accordance with the law. It is extremely rare for a judge to object to a negotiated plea. In an open plea, the defendant pleads guilty to charges but without a negotiated sentence; instead, the judge determines the sentence.[9] Additionally, at any stage of the process, the case may be withdrawn or dismissed.

Throughout this paper, given the data that we have, we focus on whether a defendant accepts the initial offer extended by the prosecutor—that is, whether a negotiated plea is immediately reached. If the initial offer is rejected, the case moves forward. The defendant may choose to enter an open plea, or both parties may prepare for trial. If so, the case is assigned to a new prosecutor in a different unit and is transferred to another courtroom, where it is overseen by a different judge for pretrial proceedings and, when applicable, the trial itself. The newly assigned prosecutor reviews the case notes and may extend additional offers. If these subsequent offers are also declined, or if no further offers are made, the case ultimately proceeds to trial, unless it is withdrawn or dismissed beforehand.

3.2. Comparing Philadelphia with Other Jurisdictions

Philadelphia is the fifth largest city in the United States, with a population of 1.6 million. Its population is 45 percent Black, 45 percent White, 13 percent Hispanic, and 8 percent Asian (these categories are nonexclusive). In 2016, a third of lead charges were for drug crimes, a quarter were for violent offenses or firearm possession, and 21 percent were for

8. The defendant must serve at least the minimum in custody; the remaining time may be served either in prison or on parole. By law, the maximum sentence must be at least twice the length of the minimum.

9. We categorize nolo contendere pleas—in which the defendant accepts the sentence from a negotiated plea but does not admit guilt—as negotiated pleas.

property offenses. The median time to disposition for a felony offense was 278 days, or 9.2 months, with a median of 12 hearings.

It is difficult to determine exactly how Philadelphia compares with other jurisdictions, given geographic variations in data-collection practices and in institutions. The most recent national snapshot of criminal case processing in state courts comes from the Bureau of Justice Statistics' 2009 report on felony defendants in large urban counties (Reaves 2013). In that study, the median time to disposition was 111 days, and 26 percent of felony defendants were either acquitted or had their cases dismissed. In our sample, 23 percent of defendants who received an initial plea offer were acquitted or had their cases dismissed.

One noteworthy distinction is Philadelphia's greater utilization of bench trials compared with most other jurisdictions. While the national trial rate in state criminal courts is currently below 10 percent, one-fifth of all cases in Philadelphia are resolved through bench trials (14 percent of felony cases and 40 percent of misdemeanors). Among the approximately 20 states reporting to the Court Statistics Project between 2013 and 2021, six reported a notable fraction of bench trials. According to White (1970, pp. 441–42), bench trials in Philadelphia are often perceived as "slow pleas," serving as a platform for the defense to present evidence on the case's circumstances and seek a more lenient sentence instead of pursuing an acquittal.

Table OB1 in Online Appendix OB compares disposition types for felonies in Philadelphia with those in other Pennsylvania counties. While dismissal, withdrawal, and acquittal rates are similar, trial convictions and open pleas are more common in Philadelphia compared with the rest of Pennsylvania (12 percent versus 4 percent of cases for trial convictions; 19 percent versus 3 percent for open pleas). However, akin to almost all jurisdictions, the majority of cases in Philadelphia are resolved through plea bargaining (66 percent of all felony cases and 85 percent of felony convictions).

3.3. Data

For our analyses, we merge several administrative datasets: internal records of the first offers made to defendants, arrest records, and court records, which we describe in turn. Further details on sample construction are in Online Appendix OA.

Data on Initial Plea Offers. Our main dataset encompasses information on initial plea offers made for felonies between 2012 and 2017. We se-

lected these start and end dates since they coincide with periods when plea offers are consistently recorded.[10] Offers were expected to be recorded for all cases, regardless of outcome, in an internal database maintained by the Philadelphia DAO's case management system.

We observe initial plea offers for 87.4 percent of cases. To explore patterns of missing electronic data, we manually examined 253 randomly selected paper case files. We provide full details for the assessment of missing observations in Section OA2 in Online Appendix OA and summarize key findings here. Cases lacking electronic data are very similar to cases for which we possess data across a range of observable characteristics, with slight differences. For the random sample of cases, 39.1 percent received no offer, 20.9 percent have plea offer information on paper, and 39.9 percent lack offer information. We suspect that the slight differences in observables are likely due to limitations in our approach to identify a few more serious cases that do not receive initial offers, rather than biased reporting of plea offers.

Data on Case Characteristics and Dispositions. We combine plea offer data with information coming from court dockets provided by the Administrative Office of Pennsylvania Courts. From court dockets, we extract information on OGS, PRS, case disposition, sentences, prosecutor, and bail posting dates. We also include information from arrest records maintained by the Philadelphia police. Arrest records include all statutes an arrestee is initially charged with, which helps to identify the set of offenses for which we expect the defendant to receive an initial offer. We collect defendant sociodemographic characteristics (age, sex, race, and ethnicity) from this dataset and also use it to construct measures of prior arrests.

Arrest Narratives. The final dataset consists of arrest narratives, which we use to compute predicted probabilities of conviction on the basis of information available to the prosecution and defense but typically unobservable to analysts. Arrest narratives are free-text accounts recorded by

10. The recording rate for plea offers declines from 87.4 percent during the sample period to 80.4 percent in 2018, 64.2 percent in 2019, and 59.4 percent in 2020. Consequently, we cannot use these data to study the impact on plea bargaining of prosecutor-driven criminal justice reforms initiated by Larry Krasner, who took office in January 2018. According to discussions with prosecutors at the district attorney's office, this decline in reporting can be attributed to various factors, including a focus on expediting case disposal, turnover affecting internal knowledge of the case reporting system, and delayed implementation of new case reporting software.

police officers at the time of an arrest, detailing the context surrounding the event. These narratives are used throughout the criminal process, including at the charging stage and in court, and offer a contemporaneous account of officers' observations—such as the defendant's behavior, the context of the arrest, and any evidence recovered—all of which may be introduced in court. We include these data in an attempt to shed light on the most important unobservable: defendant guilt. We train a random forest model on narratives from 2008 to 2011 (prior to our main analysis period) in which the outcome is probability of conviction. We then apply the trained model to generate predicted probabilities of conviction in our main dataset (see Online Appendix OC for details).

Our data are organized at the defendant-case level. Where multiple cases are examined concurrently, we aggregate them, which reflects institutional practices. We identify the lead charge as the most serious offense across cases and calculate the offer and sentence as the maximum carceral offer and carceral sentence faced across jointly considered cases. Following the literature, we count noncarceral sentences (including probation or fines) as sentences of 0 months. In robustness tests, we also consider total supervision time, which is equal to the maximum carceral offer plus probation time. Dismissals, withdrawals, and acquittals are also counted as 0 months.

Table 1 provides summary statistics for our primary dataset, which includes 23,127 cases. Approximately one-third of cases have a lead charge associated with a drug offense, one-third involve a violent offense, and one-fifth pertain to a property offense. The remaining lead charges include public order, obstruction of justice, and simple assault. Three-quarters of individuals in the sample have a history of arrests, with an average of three arrests per person.[11] A total of 87 percent of defendants are male, with an average age of 32. The majority of individuals in our sample are Black (67 percent) or Hispanic (17 percent), while only 15 percent are White. The mean initial plea offer is 14 months of incarceration and 3 years of probation,[12] and 29 percent of people accept the initial offer while 71 percent reject it.

11. The average offense gravity score on a case is 7. A total of 87 percent of cases in our sample have a score between 5 and 11.

12. Probation time is missing for 16.5 percent of offers. We exclude these offers from summary statistics on probation length because it is unclear if a missing value indicates the offer includes no probation, if probation time will be part of later negotiations, or if probation offers are simply unreported.

Table 1. Descriptive Statistics for Case and Defendant Characteristics

Characteristic	All Cases	Accepts Initial Offer	Later Conviction	Dismissed, Withdrawn, or Acquitted
Offenses:				
Drugs	.34	.37	.33	.30
Weapons	.14	.07	.18	.16
Aggravated assault	.10	.07	.12	.12
Property	.21	.28	.17	.21
Robbery	.09	.08	.09	.09
Other	.12	.12	.10	.13
Offense gravity score	7.02	6.08	7.46	7.29
Prior record score	2.27	1.91	2.39	2.48
Prior arrests	2.85	2.76	2.83	3.00
Defendant characteristics:				
Black	.67	.61	.69	.71
Hispanic	.17	.19	.17	.16
White	.15	.20	.14	.14
Male	.87	.83	.88	.87
Age	32.30	31.50	32.35	33.16
In jail at offer	.48	.51	.48	.41
Public defender	.81	.83	.80	.78
Offer:				
Has incarceration	.69	.50	.78	.73
Carceral length	13.95	6.17	17.99	15.16
Probation length	37.92	38.25	38.60	36.14
Sentence:				
Has incarceration	.44	.49	.60	.00
Carceral length	6.67	5.34	10.56	.00
Probation length	28.16	36.58	36.01	.00
Disposition:				
Accepts prosecutor's initial offer	.29	1.00	.00	.00
Later plea	.37	.00	.76	.00
Any trial conviction	.11	.00	.24	.00
Dismissed/withdrawn/acquitted	.23	.00	.00	1.00
N	23,127	6,623	11,111	5,393

Source. Administrative Office of Pennsylvania Courts, Philadelphia District Attorney's Office case management system, and the Philadelphia Police Department's Preliminary Arraignment Reporting System.

Note. We define offense type as the lead charge on a case. The most common offenses in "Other" are public order, simple assault, and obstruction of justice. Prior arrests are counted within 10 years of the plea offer date. Race/ethnicity categories are mutually exclusive: Hispanic includes those whom the police identify as both White and Hispanic, and White includes those whom the police identify as White but not Hispanic. "In jail at offer" is an indicator for whether the defendant is incarcerated when they receive the initial offer. "Public defender" is an indicator for whether the defendant ever has a court-appointed attorney. Carceral and probation lengths are in months; sentences for nonconvictions are coded as 0.

3.4. Correlates of Initial Plea Offers

Before turning to our main analyses, we explore how case observables correlate with initial plea offers. To do so, we regress plea offer length on case and defendant characteristics. Specifically, we estimate the following equation:

$$O_{it} = \alpha + \beta_1 X_{it} + \beta_2 C_{it} + \delta_t + \varepsilon_{it}, \tag{3}$$

where O_{it} is the plea offer length in months, X_{it} is a set of sociodemographic characteristics (race, gender, and age), C_{it} is a set of case-level characteristics (statute, offense severity and priors, prosecutor making the initial offer, defense type, and pretrial incarceration), δ_t is a set of year-month fixed effects, and ε_{it} is the error term.

The results are reported in Table 2. All regressions include year-month fixed effects. First, we find that there are substantial racial differences in initial plea offers. While much of the difference is explained by correlation with other covariates, as seen by the smaller coefficients on race across columns, even after including a rich set of controls, initial offers are .9 months longer for Black relative to White defendants. This difference is statistically significant and substantial: It represents a 6 percent increase relative to the overall 14-month average initial offer.

Second, we find that offers are on average 1.7 months longer for people who are in jail pretrial (column 5). This could be because of differences in unobservable case characteristics (although we do control for a rich set of case observables) or because prosecutors make harsher offers for those who are in jail pretrial, suspecting they can leverage greater acceptance rates from people who may be released upon accepting an offer, if pretrial detention time covers a person's sentence. This is consistent with past literature on the effects of pretrial detention on convictions (Gupta, Hansman, and Frenchman 2016; Leslie and Pope 2017; Stevenson 2018; Dobbie, Goldin, and Yang 2018). The results from column 5 of Table 2 suggest another cost of pretrial detention: Not only are conviction rates higher but these higher convictions might also be for cases that have worse offers.

Putting together the findings on race and pretrial detention, we include an interaction term in column 6. We find that, even after controlling for a rich set of observables (and in particular, detailed measures of current and past offenses), the difference in initial plea offers is concentrated among Black people who are in jail pretrial: Their initial plea offers are

Table 2. Correlation between Initial Offer Length and Case Observables

	(1)	(2)	(3)	(4)	(5)	(6)
Black	4.38**	1.14**	1.22**	.90**	.86**	.14
	(.34)	(.25)	(.25)	(.25)	(.25)	(.33)
Hispanic	1.27*	−.73+	−.26	−.12	−.16	−.39
	(.43)	(.32)	(.31)	(.32)	(.32)	(.41)
Male	6.01**	.39	.80*	.76*	.60+	.57+
	(.35)	(.27)	(.27)	(.27)	(.27)	(.27)
Age	.13**	−.06**	−.04**	−.05**	−.04**	−.04**
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Public defender	−1.01*	−.36	−.33	−.37	−.49+	−.46+
	(.31)	(.23)	(.22)	(.22)	(.22)	(.22)
In jail at offer					1.69**	.46
					(.19)	(.45)
Black × in jail at offer						1.66**
						(.49)
Hispanic × in jail at offer						.64
						(.60)
Offense gravity score	No	Yes	Yes	Yes	Yes	Yes
Prior record score	No	Yes	Yes	Yes	Yes	Yes
Statute	No	No	Yes	Yes	Yes	Yes
Prosecutor fixed effects	No	No	No	Yes	Yes	Yes
R^2	.04	.47	.52	.53	.53	.53

Source. Administrative Office of Pennsylvania Courts, Philadelphia District Attorney's Office case management system, and the Philadelphia Police Department's Preliminary Arraignment Reporting System.

Note. Data are ordinary least squares estimates of the correlation between initial offer length and case observables. All columns include regressors for demographics (race, gender, and age), an indicator for if the defendant ever has a court-assigned attorney, and year-month fixed effects. Race/ethnicity categories are mutually exclusive: Hispanic includes those whom the police identify as both White and Hispanic, and the omitted category White includes those whom the police identify as White but not as Hispanic. Robust standard errors are in parentheses. The mean of the dependent variable is 13.95. $N = 23{,}127$.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

on average 1.7 months longer, which represents a 12 percent increase relative to the overall 14-month average initial offer. These differences in initial offers suggest another way in which pretrial detention, already marked by significant racial disparities (Demuth 2003; McIntyre and Baradaran 2013), may further exacerbate downstream racial inequities in penal outcomes. We note that this is consistent with racial disparities found in many parts of the criminal justice system (Abrams, Bertrand,

and Mullainathan 2012; Rehavi and Starr 2014; Arnold, Dobbie, and Yang 2018; Tuttle 2019; Ba et al. 2021; Arnold, Dobbie, and Hull 2022), though our research design does not allow us to explain what drives these differences.

Third, we note that sentencing scores have by far the greatest explanatory power, as shown by the jump in the R^2-value when we include these variables (between columns 1 and 2). Adding controls for statute in column 3 only marginally increases the R^2-value, which suggests that prosecutors do not tailor offers to specific statutes. Instead, it appears that they anchor initial offers primarily on the basis of recommendations outlined in Pennsylvania's sentencing guidelines. That criminal history and crime type account for almost all of the explanatory power in predicting initial plea offers should be appealing to those concerned about prosecutorial overreach—as is the fact that adding prosecutor fixed effects, in column 4, barely changes the R^2-value. However, the R^2-value is .53 with all covariates, which indicates that over 40 percent of the variation in initial plea offers remains unexplained by these observables, allowing considerable scope for prosecutorial discretion.

4. EMPIRICAL ESTIMATES OF THE PLEA REJECTION PENALTY

In this section, we provide novel causal estimates of the penalties associated with rejecting a plea offer for the subset of individuals who rejected their initial offers. This type of estimate has not previously been possible because of the absence of data on rejected plea offers. We then compare our estimates with those produced by standard methods in the literature, which rely on accepted plea offers as a proxy for what would have happened had a defendant rejected the offer. The difference between these two approaches is immense—not only in magnitude, but also in direction. Unsurprisingly, much of the difference stems from selection: Cases in which initial offers are rejected differ substantially from those in which they are accepted. While adding controls reduces this gap, it does not eliminate it. Even when incorporating a novel text-based proxy for defendant guilt, the sign of the estimated penalty still differs across the two approaches.

Throughout this section, we estimate the penalty for rejecting the initial plea offer. While the trial penalty is typically defined in the empirical literature as the gap between the final offer and the sentence at trial,

both measures capture the cost of plea rejection at different stages of the process. The core rationale behind the trial penalty—discouraging defendants from pursuing resource-intensive proceedings—would apply for rejecting both initial and final offers (Grossman and Katz 1983; Priest and Klein 1984; Reinganum 1988; Spier 1992; Kim 2010). In Section 5, we discuss how our estimates may differ from those based on final offers.

We also note that many of our analyses focus on sentences conditional on conviction. This aligns with a common definition of the trial penalty, which compares the sentences received by those convicted at trial with the plea offers they rejected. Including cases that result in dismissal or acquittal would lower average sentences, as these outcomes effectively result in sentences of 0 months.

4.1. Comparing Sentences and Initial Plea Offers

Before turning to causal estimates, we begin by examining average sentence lengths across the full distribution of initial plea offers. Figure 2 plots the mean sentence length for different ranges of initial plea offers in cases that resulted in a conviction, by mode of case resolution. The horizontal lines represent what the relationship would look like if sentence lengths were equal to plea offers.[13] The size of each round marker captures the number of observations within each offer bin.

Figure 2 shows a clear positive relationship between the size of the initial plea offer and the eventual sentence: As offers increase, so do sentences. However, with the exception of very low offers (0–2 months), average sentences tend to fall below the initial offers for those who reject them. Moreover, the gap between initial offers and sentences grows as initial offers increase.[14] One notable exception arises for offers with no carceral time, but since we examine only cases resulting in conviction, sentences will mechanically (weakly) surpass the initial offers. These patterns hold regardless of the method of disposition, whether the conviction results from accepting a later plea or proceeding to trial.[15]

13. Specifically, the horizontal lines represent the mean offer within each offer bin.

14. We note that sentences are slightly lower than offers even for defendants who accept their initial offers, particularly for longer offers. This pattern is driven mostly by offers of 0 months. Figure OB1 in Online Appendix OB shows median offers and sentences: When the initial offer is accepted, medians coincide, but for later convictions, the gap between offers and sentences widens as offer lengths increase.

15. Figure OB2 shows the distribution of initial offers and sentences for convicted individuals. Notably, a large share of both offers and sentences involve no incarceration, and sentence lengths are particularly dispersed in jury trial cases.

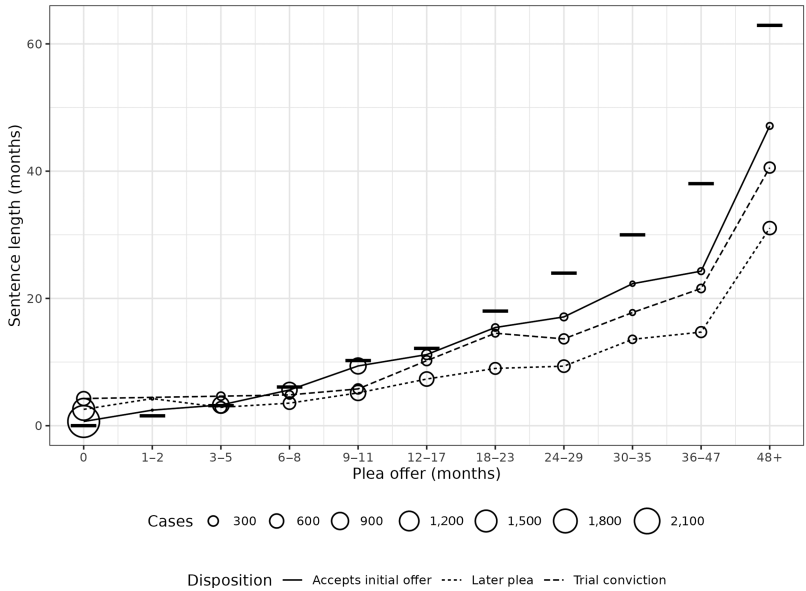


Figure 2. Sentence length and initial plea offer by method of case resolution. *Note:* This figure plots the mean sentence length (*circles*) by plea offer length, separately by disposition. Initial offer lengths are binned to reflect commonly occurring values; horizontal lines reflect the mean of each bin. Line types indicate how the case was resolved: cases where the prosecutor's initial offer is accepted appear as solid lines; later pleas (including open pleas) appear as dotted lines; trial convictions appear as dashed lines. The size of each circle reflects the number of cases with that disposition type and initial plea offer length; bins with fewer than 20 observations are excluded from the figure. Data source: Administrative Office of Pennsylvania Courts and Philadelphia District Attorney's Office case management system.

4.2. Is There a Penalty for Rejecting an Initial Plea Offer?

In Section 2, we argued that with data on rejected plea offers, we can identify the average treatment effect of rejecting an initial offer on sentence length, for those who reject that offer. For individuals who reject initial offers, we can compare their eventual sentences with these values (using notation from Section 2):

1. The sentences of those who accepted their initial offer, following the conventional approach in the literature: $E[S_i \mid R_i = 0]$.
2. The initial offers that were rejected, which are typically unobserved: $E[S_i^0 \mid R_i = 1]$.

The first comparison reflects the conventional approach used in the literature when rejected offers are unobserved. The second yields the ATT

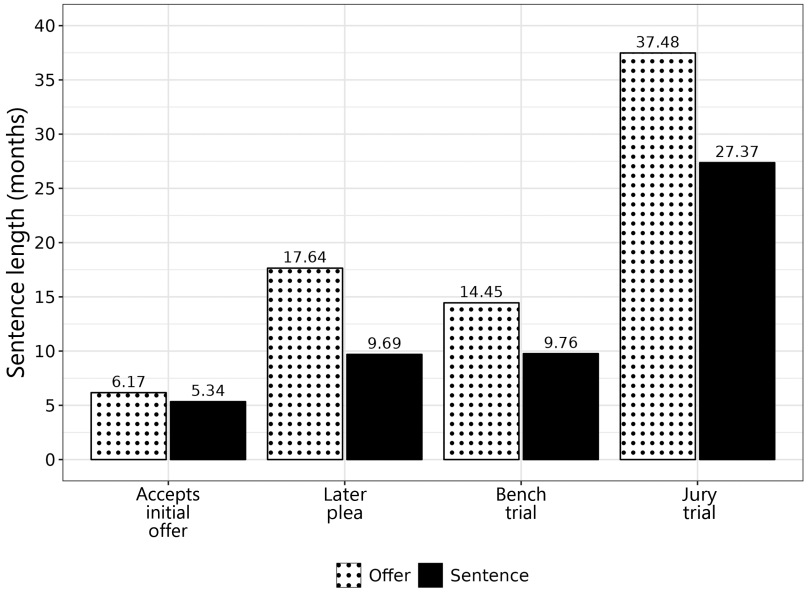


Figure 3. Plea offer and sentence length of guilty defendants by case resolution. *Note:* This figure plots the average carceral time, in months, for initial offers (*dotted bars*) and sentences (*dark bars*). We break results out by resolution type: accepts the prosecutor's initial plea offer, accepts a later plea, bench trial conviction, and jury trial conviction. Data source: Philadelphia District Attorney's Office case management system and Administrative Office of Pennsylvania Courts.

defined in equation (1). With both available, we can assess how well this standard counterfactual approximates the actual sentencing effects of rejecting an offer.

Figure 3 conveys the causal effect of rejecting a plea offer for those individuals who do so and are eventually found guilty at trial or plead guilty. We plot initial offers (*dotted bars*) and sentences (*dark bars*) on the basis of how a case is resolved. We classify case resolution into four categories: acceptance of the prosecutor's initial offer, acceptance of a plea deal later in the process, conviction through a bench trial, and conviction through a jury trial.

Figure 3 presents one of our central findings: For individuals who reject an initial plea offer and are ultimately convicted—whether through a later plea, a bench trial, or a jury trial—the sentence is, on average, shorter than the original offer. This does not even account for the large number of cases that are dismissed or withdrawn or for which the indi-

vidual is acquitted. If we had included such cases, the gap between sentences and plea offers would be even larger.[16]

The careful reader will note that the mean sentence is slightly shorter than the initial offer for those who accept the initial offer, which likely reflects a small amount of negotiation. In the model we present in Section 2, we assume that these are equal. Fortunately, this is a good assumption for a subset of prosecutors: those who almost never discount their initial offers when pleas are immediately accepted. In Philadelphia, for one-third of prosecutors, the final sentence equals the initial offer in 93 percent of cases.[17]

Figure 4 presents offers and sentences for people who accepted their initial offers and for people who were convicted after having rejected their initial offers (that is, who were convicted through later pleas, bench trials, or jury trials). For the prosecutors who rarely discount, there is a mere 4-day difference between sentence and plea offer when the initial plea offer is accepted. Our results are very similar for this subset of prosecutors: There is a substantial gain to defendants from rejecting their initial offers. For those defendants who are eventually convicted (or plead later) the mean sentence is 11.3 months, compared with an initial offer of 17.7 months. Thus we have an average causal effect of rejecting a plea of a 6.4-month-shorter sentence for the group that chooses to do so.

If a researcher did not have data on rejected pleas, they could only compare sentences (the black bars in Figure 4). By comparing the sentences of those who accepted versus rejected their initial offers, they would infer that defendants are penalized for rejecting their initial offers. Indeed, average sentences are longer for cases in which initial offers are rejected. According to Figure 4*B,* the sentence is 5.1 months if the prosecutor's initial offer is accepted and 11.3 months if a person is convicted later.

In Table 3, we compute different measures of the penalty for rejecting an initial plea offer. The values in columns 1 and 2 are identical for the first four rows because each row includes all early pleas to serve as counterfactuals in one of our measures of penalties.

16. We note that our analysis so far does not adjust for differences between defendants who accept and those who reject initial offers. Section 4.3, and in particular Table 5, documents and discusses several important differences between these groups.

17. We use this threshold to capture the prosecutors who rarely discount sentences but still keep enough cases; a stricter cutoff would drop too many prosecutors and yield too few cases.

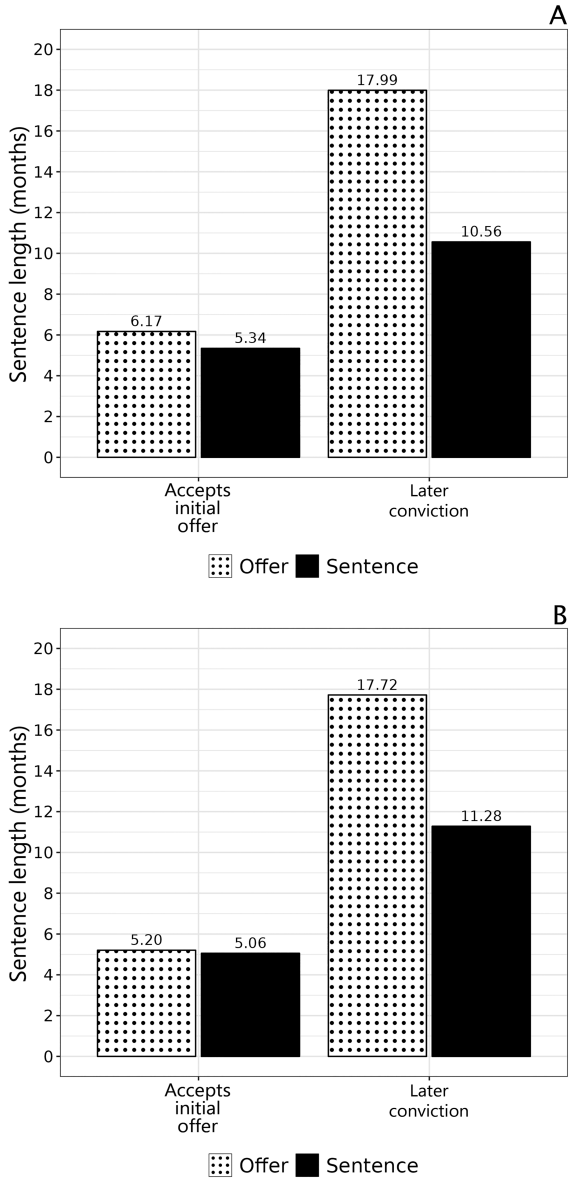


Figure 4. Plea offer and sentence length of guilty defendants by response to offer. *A,* All cases; *B,* cases handled by prosecutors who rarely discount sentences (at least 93 percent of early pleas match the initial offer). *Note:* This figure plots the average prison time, in months, for initial offers (*dotted bars*) and sentences (*dark bars*). We break results out by whether the defendant accepted the initial offer or whether they were later convicted, through a later plea or trial. Early pleas are defined as cases in which defendants accept a plea after the initial offer but before trial. Data source: Administrative Office of Pennsylvania Courts and the Philadelphia District Attorney's Office case management system.

Table 3. Plea Offers, Sentence Lengths, and Measures of Penalties for Rejecting Initial Offers

	Accepts Initial Offer		Later Conviction		Measures of Plea Rejection Penalties (%)	
					Old $\frac{(4)-(2)}{(2)}$	New $\frac{(4)-(3)}{(3)}$
	Offer (1)	Sentence (2)	Offer (3)	Sentence (4)	(5)	(6)
All cases:						
Early pleas versus:						
All convictions ($N = 17{,}734$)	6.2	5.3	18.0	10.6	98	−41
Later pleas ($N = 8{,}457$)	6.2	5.3	17.6	9.7	81	−45
Bench trials ($N = 2{,}117$)	6.2	5.3	14.4	9.8	83	−32
Jury trials ($N = 537$)	6.2	5.3	37.5	27.4	412	−27
Crime type:						
Violent ($N = 5{,}814$)	12.1	10.5	27.0	16.2	54	−40
Property ($N = 3{,}773$)	4.4	3.7	11.9	7.1	93	−40
Drugs ($N = 6{,}168$)	4.5	3.9	11.7	6.7	70	−43
Other ($N = 1{,}979$)	4.7	4.0	14.4	7.6	90	−48
Prosecutors who rarely discount sentences:						
Early pleas versus:						
All convictions ($N = 5{,}795$)	5.2	5.1	17.7	11.3	123	−36
Later pleas ($N = 2{,}726$)	5.2	5.1	17.2	10.2	102	−40
Bench trials ($N = 664$)	5.2	5.1	13.7	10.2	102	−26
Jury trials ($N = 200$)	5.2	5.1	38.8	29.6	485	−24
Crime type:						
Violent ($N = 1{,}613$)	11.0	10.4	29.6	19.3	85	−35
Property ($N = 856$)	3.2	3.1	11.8	7.6	147	−36
Drugs ($N = 2{,}818$)	4.0	4.0	11.1	7.1	78	−36
Other ($N = 508$)	4.7	4.6	14.9	7.7	69	−48

Source. Administrative Office of Pennsylvania Courts, Philadelphia District Attorney's Office case management system, and the Philadelphia Police Department's Preliminary Arraignment Reporting System.

Note. To calculate the old measure, the difference between the sentence from a later conviction and the sentence if a person accepts the offer is divided by the sentence if a person accepts the offer. To calculate the new measure, the difference between the sentence from a later conviction and the initial offer is divided by the initial offer. Prosecutors who rarely discount include those for whom at least 93 percent of early pleas match the initial offers. Early pleas are defined as cases in which defendants accept pleas after initial offers but before trial.

Columns 5 and 6 present two estimates of the penalty for rejecting a plea offer, computed in different ways that we refer to as the "old" and "new" approaches. The old approach, commonly used when data on rejected offers are unavailable, calculates the relative difference between sentences following conviction and those from accepted pleas. The new

definition relies on data on rejected offers and is the relative difference between the sentence and plea offer within the same case.

What we have seen in Figures 3 and 4 is very starkly on display in Table 3 for all subsets of the data: The traditional way of computing the penalty for rejecting a plea offer indicates positive and large penalties for rejecting a plea, while the new approach we adopt shows that there are substantial discounts for doing so. The old approach indicates that those who reject a plea and are convicted by a jury end up with over four times the sentence they would have received if they had accepted the average initial offer. But of course there is a huge amount of selection, and with our data we can see that the initial offer for this group averages 37.5 months. Thus if we compute the new penalty for rejecting a plea offer, we see that rejecting the initial plea offer results in a sentence that is 27 percent lower on average. We discuss the importance of selection in Section 4.3.

For cases involving only those prosecutors for whom sentences are almost identical to initial offers when these are accepted, the old measure of the penalty for rejecting a plea offer grows in magnitude somewhat and the new one shrinks. But the old measure of the penalty for rejecting a plea offer is always positive and at least 69 percent, and the new measure is negative and at least 24 percent in magnitude. The new measure shows that the biggest discount is for cases that result in later pleas. Perhaps surprisingly, there is not much variation by crime type, although the largest discounts are for offenses in the "other" category that includes offenses such as public order, simple assault, and obstruction of justice.[18] Overall, we find large differences between the plea rejection penalty estimated using the traditional approach and our new estimates. We now report further results that shed light on these differences.

Our analyses focus on individuals who rejected their initial offers and were ultimately convicted. However, 23 percent of those who reject their initial offers receive no sentence at all—either because the case is dismissed or they are acquitted at trial. Defendants likely take this possibility into account when deciding whether to reject a plea. If they are making decisions on the basis of expected outcomes, then the average sentence for all who reject the initial offer—convicted or not—would be

18. Table OB2 shows that results in Table 3 are similar across definitions of sentence length, including those which account for pretrial detention and probation. While the magnitudes vary, the old plea rejection penalty is always positive, and the new one is always negative when we use the alternative definitions of sentence length.

approximately 23 percent lower than what we report, which substantially widens the gap between initial offers and sentences. Our main estimates are therefore conservative, in the sense that they understate the unconditional difference between initial offers and sentencing outcomes.

4.3. Selection in Initial Plea Offer Rejections

So far, we have shown that defendants who are found guilty after rejecting initial plea offers receive lower sentences than what they were initially offered. This finding contrasts with much of the literature and widely held beliefs that defendants are penalized for rejecting pleas. In this section we show that the main reason for these differences is selection. From Figure 3, it appears that rejected offers are 3.3 times larger than accepted ones—5.3 months for those who accept the initial offer, compared with 17.6 months for later pleas. This difference could reflect a treatment effect of longer offers—defendants may be more likely to take their chances at trial when faced with harsher plea deals—and selection effects—defendants with certain case characteristics are more likely to receive lengthy offers. In this section, we show that cases resolved through initial plea agreements differ systematically from those resolved through other means, with selection occurring along multiple dimensions.

We explore this by regressing sentence length on whether the initial offer is rejected, using the following specification:

$$S_{it} = \alpha + \beta_1 R_{it} + \beta_2 X_{it} + \delta_{it} + \varepsilon_{it}, \tag{4}$$

where S_{it} is sentence length; R_{it} is an indicator equal to one if the person rejects the prosecutor's initial offer; X_{it} is a set of case and demographic controls including OGS, PRS, statute, age, race, gender, initial prosecutor, attorney type, and whether the defendant is in jail when they receive the offer; δ_{it} is a set of year-month fixed effects; and ε_{it} is the error term.

Table 4 presents the results of these analyses. When we examine all types of case resolutions (that is, including dismissals and acquittals), pleas result in sentences that are 1.49 months shorter, once controlling for observable case characteristics (column 2). This is consistent with Abrams (2011), which finds similar results in Cook County when including cases that result in dismissal or acquittal. In contrast, much of the literature focuses on sentences conditional on conviction. If we examine just the subset of cases for which a conviction was reached (columns 4–9), then sentences are shorter for those who opt for negotiated pleas. The gap is large at over 5 months when not including controls. This dif-

Table 4. Correlation between the Sentence and Rejecting the Initial Offer

	All Other Cases			All Other Convictions			Trial Convictions		
Comparison Group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
All cases:									
Rejects initial offer	1.87**	−1.49**	−1.42**	5.22**	.27	.13	7.98**	2.38**	2.03**
	(.19)	(.17)	(.18)	(.22)	(.19)	(.19)	(.32)	(.27)	(.28)
$\hat{p}$			11.29**			4.14*			.80
			(1.21)			(1.43)			(1.97)
Mean of dependent variable	6.67	6.67	6.64	8.61	8.61	8.47	7.63	7.63	7.47
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
R^2	.004	.293	.316	.030	.423	.441	.063	.458	.478
N	23,127	23,127	19,841	17,734	17,734	15,449	9,277	9,277	8,066
Prosecutors who rarely discount sentences:									
Rejects initial offer	2.87**	−1.22**	−1.08**	6.23**	.40	.41	9.62**	2.68**	2.66**
	(.36)	(.32)	(.32)	(.41)	(.34)	(.33)	(.57)	(.48)	(.48)
$\hat{p}$			11.16**			4.64+			.56
			(2.22)			(2.51)			(3.45)
Mean of dependent variable	7.07	7.07	6.94	8.91	8.91	8.64	7.76	7.76	7.57
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
R^2	.009	.346	.367	.039	.488	.500	.086	.524	.531
N	7,387	7,387	6,579	5,795	5,795	5,244	3,069	3,069	2,782

Source. Administrative Office of Pennsylvania Courts, Philadelphia District Attorney's Office case management system, and the Philadelphia Police Department's Preliminary Arraignment Reporting System.

Note. Controls include those for statute, offense gravity score, prior record score, age, race, gender, and prosecutor; indicators for the defendant being indigent and being in jail when they receive their initial offer; an indicator for whether the arrest is a sight arrest; police arrest report length; and year-month fixed effects. Columns 3, 6, and 9 also control for the predicted probability of conviction. Columns 3, 6, and 9 use the sample of sight arrests; other columns use the full sample. Prosecutors who rarely discount are those for whom at least 93 percent of early pleas match the initial offers. Early pleas are defined as cases in which defendants accept pleas after initial offers but before trial. Robust standard errors are in parentheses.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

ference is substantially smaller when including controls for case observables (column 5), but the direction is the same. When restricting the set of cases to just those that end in trial, the coefficient on rejecting the initial offer grows, although controlling for observables diminishes it substantially.

Table OB3 in Online Appendix OB presents a parallel analysis, this time using initial offer length as the outcome instead of sentence length. Adding controls for case observables substantially reduces the gap in initial offers between those who accept them and those who reject them. Even when restricting the sample to trial convictions—where the gap narrows the least—it declines from 12.9 months to 4.8 months. Across all specifications, individuals who reject initial offers still receive offers that are at least 3 months longer, even after adjusting for observables.

The difference in results with and without controls shows that there is substantial selection in terms of who rejects initial plea offers. In Table 5, we examine which observables are correlated with rejecting the initial offer, by regressing an indicator variable equal to one if a person rejects the initial offer on case and defendant observables. A comparison of columns 1 and 2 shows that adding controls decreases the correlation with offer length by about half, but it still has a substantial effect: Increasing the offer length by the mean of 14 months increases the likelihood of rejection by 5.2 percentage points.

Across specifications we find that Black defendants are about 7 percentage points more likely to reject plea offers than White defendants, even after controlling for charge severity, criminal history, and a number of other characteristics. Male defendants are also more likely to reject plea offers. Defendants represented by public defenders are about 4 percentage points less likely to reject initial offers, compared with those who have other types of representation, which could be attributable to public defenders' large workload (Caspi 2023; Liu and Mahler 2026). Unsurprisingly, longer offers are correlated with a higher likelihood of rejection, with a 10-month-higher offer corresponding to a roughly 3-percentage-point higher likelihood that the offer is rejected. The largest correlation that we observe is for defendants incarcerated pretrial. The plea offer rejection rate for this group is 16 to 17 percentage points lower than those not incarcerated pretrial.

Our data are very rich and include detailed information on offenses and criminal history. While we note strong correlations between several observable covariates and the decision to reject a plea offer, it is possible

Table 5. Correlation between Rejecting the Initial Offer and Case Observables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Offer length (months)	.006**	.003**	.003**		.003**	.003**	.003**
	(.000)	(.000)	(.000)		(.000)	(.000)	(.000)
$\hat{p}$			−.459**				−.377**
			(.049)				(.049)
Black				.069**	.066**	.068**	.068**
				(.008)	(.008)	(.011)	(.012)
Hispanic				.029*	.030*	.012	.016
				(.010)	(.010)	(.014)	(.015)
Male				.033**	.031**	.031**	.035**
				(.009)	(.009)	(.009)	(.010)
Age				.000	.000	.000	.000
				(.000)	(.000)	(.000)	(.000)
Public defender				−.040**	−.040**	−.040**	−.038**
				(.008)	(.008)	(.008)	(.008)
In jail at offer				−.157**	−.162**	−.166**	−.173**
				(.006)	(.006)	(.015)	(.016)
Charges				.003+	.001	.001	.002
				(.001)	(.001)	(.001)	(.001)
Black × in jail at offer						−.003	.005
						(.016)	(.018)
Hispanic × in jail at offer						.038+	.042+
						(.020)	(.021)
R^2	.070	.129	.135	.150	.158	.159	.165
N	23,127	23,127	19,841	23,127	23,127	23,127	19,841

Data source. Administrative Office of Pennsylvania Courts, Philadelphia District Attorney's Office case management system, and the Philadelphia Police Department's Preliminary Arraignment Reporting System.

Note. Column 1 includes no controls. All other regressions include controls for statute, number of charges, offense gravity score, prior record score, prior arrests, prosecutor, whether an arrest is a sight arrest, and year-month fixed effects as well as demographics (race, gender, and age), an indicator for whether the defendant ever has a court-assigned attorney, and an indicator for whether the defendant is in jail when they receive the offer. Columns 3 and 7 also control for the predicted probability of conviction. Columns 3 and 7 use the sample of sight arrests; other columns use the full sample. Robust standard errors are in parentheses. The mean of the dependent variable is .714.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

that people who reject initial offers have (unobservably) stronger cases than those who accept them. In particular, individuals with weaker evidence against them may be less likely to plead guilty. To capture this dimension, we use a random forest model to predict the likelihood of guilt on the basis of the text of arrest narratives. We describe this approach in Online Appendix OC.

In columns 3 and 7 of Table 5, we include these predicted probabilities $\hat{p}$ in our regression.[19] We find that the predicted probability of conviction is a strong predictor of accepting a plea offer. Individuals with higher predicted conviction probabilities are significantly more likely to accept a prosecutor's initial offer; going from the top to the bottom decile of predicted likelihood of conviction reduces the likelihood of accepting the initial offer by 8.9 percentage points. Comparing columns 2 and 3 and columns 6 and 7 shows that including this additional control does not materially impact the correlations of the other covariates. In particular, we find the consistent result that, even controlling for all observables, longer plea offers correspond to higher rejection rates.

In columns 3, 6, and 9 of Table 4, we examine the correlation between rejecting an initial offer and sentence length while incorporating predicted conviction as a covariate. First, we note that this variable is correlated with sentence length—sentence length is longer when the evidence is stronger—except when including only initially rejected offers and trial convictions. Second, adding this variable does not change the relationship between rejecting the initial offer and sentence length—the coefficient remains unchanged, despite predicted conviction being associated with longer sentences. This finding suggests that, at least for this particular dimension of (typically unobservable) differences across cases, it is orthogonal to the relationship between rejecting a plea offer and the final sentence. There could of course be other dimensions along which cases could differ that are not captured in this measure, such as perceived credibility of witnesses or evidence that is collected after the arrest is made that would not appear in the arrest narrative.

19. As described in Online Appendix OC, we limit these analyses to sight arrests, because prosecutors may collaborate with police to write warrant affidavits, which would potentially confound the outcome by including information that relates to the likelihood of conviction.

4.4. Charge Bargaining

One important mechanism that could be driving the difference between initial offers and ultimate sentences is charge bargaining. Scholars have emphasized charge bargaining as a mechanism through which plea deals may be shaped: Prosecutors may initially overcharge to make later offers appear more favorable (Meares 1995; Wright and Miller 2002; Bibas 2004). Analogously, it may be that in the early stages of plea bargaining—the period captured in our data—prosecutors inflate initial offers to make subsequent offers appear more favorable to defendants. Figure OB3 in Online Appendx OB explores this idea. Although we lack data on charges specifically retained at the time of the first offer, we observe charges at three stages: at charging, when the case is held for court, and at disposition. The number of charges declines over time, consistent with charge bargaining.[20] For defendants who accept their first offers—whose sentences closely match those offers—the charges at sentencing likely reflect those in the offers. On average, these cases show two fewer charges between holding for court and sentencing, a pattern we also find for other dispositions. If discounting practices before the first offer is made are similar for other disposition types, this suggests that most charge bargaining occurs at the initial offer stage. While further charge reductions or sentence bargaining may still happen later, these findings suggest that sentence bargaining operates independently of, and perhaps in addition to, charge bargaining. While exploratory, these results suggest that most charge bargaining likely occurs prior to the initial plea offer being made and thus has limited influence on subsequent changes in sentencing outcomes.

5. DISCUSSION

In this section, we first discuss the external validity of our findings. We then explore the broader implications of our work, focusing on empirical research on the trial penalty and the role of plea offers throughout the penal process.

20. Note that this relationship is not mechanical. Charges can also be added at different stages.

5.1. Generalizability

Following List (2020) and Cullen and Perez-Truglia (2022), we start by considering whether there is a better setting to study our question of interest: how rejected plea offers compare with ultimate sentences. We conducted our study in Philadelphia because, to our knowledge, it is the only large jurisdiction that has shared information on all plea offers—both those that are accepted and those that are rejected—for a large number of cases. There is therefore no other context in which we could have analyzed rejected plea offers, and our paper provides the first large-scale analysis of the plea-bargaining process that incorporates data on rejected offers.

However, there are several ways in which Philadelphia may stand out. First, the Philadelphia DAO is the third largest in the United States. This could influence the kinds of cases coming in, processing time, or office-wide practices, all of which could influence how plea offers compare with eventual sentences. Second, this office has a horizontal model of prosecution. Since different prosecutors handle cases at different points in time, this in theory could lead to more deviations and less binding offers than when a single prosecutor handles a case throughout. Although there is no empirical evidence on this effect in prosecutors' offices, Abrams and Goonetilleke (2025) provide evidence from a natural experiment of no large impact on sentencing when a public defenders' office switched from a horizontal to a partially vertical model. Third, as described in Section 3.2, Philadelphia has a relatively high trial rate: 12 percent of felony convictions are secured through trials, compared with roughly 4 percent of felony convictions in large urban counties in the United States (Reaves 2013). It is possible that the greater prevalence of trials in Philadelphia dampens differences between plea and trial outcomes, relative to places where trials are more exceptional. We note however that the vast majority of felony convictions—82 percent—are secured through pleas, so these are still very common. Finally, Ouziel (2023) shows that bench trial rates vary substantially across jurisdictions, as do many features of how the courts work in practice. Therefore, it is unlikely that any particular jurisdiction in the United States would be representative of the United States as a whole.

We also observe information only on initial plea offers that are rejected. However, the most common definition of the "trial penalty" com-

pares the sentence imposed at trial with the sentence a defendant would have received had they accepted the final plea offer. This distinction matters: If plea offers become more lenient over time, the gap between final offers and trial sentences may shrink or even reverse relative to what we observe for initial offers. Some legal scholarship suggests that offers evolve strategically, either to induce settlement later in the process or in response to new information about case strength, such as the availability of key witnesses (Graef et al. 2023). Early offers may be intentionally harsh to produce "sticker shock," consistent with "overreaching" and "sliding down" bargaining strategies described by Crespo (2018, pp. 1313, 1309).[21] If later offers are systematically more favorable, then accepted pleas may be a better counterfactual for people who were convicted at trial. However, if similar patterns of selection persist throughout the plea process, then using accepted pleas as counterfactuals—an approach common in the literature—can produce highly misleading estimates. Our results underscore the need for data on final offers, not just initial ones, to reassess the direction and magnitude of the trial penalty.

Given that this is the very first paper to introduce any data on rejected offers at scale, it is difficult to predict whether the differences described above would lead to different findings in other settings. It is possible that the magnitude, and maybe the sign, would be different in other jurisdictions and at other points in the process. Our work however points to the importance of thinking carefully about using accepted offers as counterfactuals.

5.2. Interpretation

While this paper focuses on presenting new empirical evidence on plea bargaining, our findings also raise implications for theoretical models of the plea process. A common class of models assumes that prosecutors have noisy signals about likely trial outcomes and make plea offers that are discounted relative to expected sentences. If the noise is symmetric and centered at zero, a majority of defendants should accept their initial offers, including some for whom prosecutors overestimate likely trial sentences, provided the discount is sufficiently large. Yet in our data, only 29 percent of defendants accept their initial offers. This does not invalidate

21. We note however that much of this theory hinges on overcharging as a strategic tool. As discussed in Section 4.4, our data suggest that if overcharging occurs, it likely happens prior to the initial offer stage.

such models but suggests they may require added complexity, such as asymmetric error terms, to be consistent with observed behavior.

Philadelphia's relatively low plea rate (85 percent of felony convictions) compared with that in other large cities may also reflect rational responses to the structure of early plea offers. If, as our results suggest, rejecting an initial offer often leads to more lenient outcomes, and if this also holds for later pleas and at later stages of the court process, this could explain why a substantial share of cases proceed to later pleas, trial, or dismissal.

It is important to note that since our causal findings hold only for individuals who reject their initial offers, and these individuals differ in observable (and probably unobservable) ways from those who accept the offers, we cannot make the claim that any defendant should reject an offer. However, given the patterns that we see in our data, we explore different theoretical reasons for why 29 percent of defendants might accept their initial pleas. As discussed in Section 2, we cannot directly observe the counterfactual sentences for those who accept. We can hypothesize that some of these defendants anticipate a worse outcome at trial on the basis of private information and rationally choose to settle early. Conversely, those who reject these offers may have private information about the weakness of the evidence against them. Another possibility is that prosecutors, in some instances, extend offers based on multiple charges, including more serious ones they believe may later be dropped if proving them at trial is difficult. However, as we show in Section 4.4, most charge reductions occur prior to the initial plea offer, which limits the number of cases in our setting for which this overcharging explanation may apply.

Defendants may also respond less to expected values and more to distributional extremes, especially the risk of particularly severe punishments. In our data, conditional on conviction, sentences are shorter than initial offers in 60 percent of convictions and equal in 28 percent, but they are longer in 13 percent.[22] For those who receive longer sentences than the initial offers, the gap can be substantial: 1.3 percent of people who are convicted after rejecting their initial offers face at least 1 additional year of imprisonment. Furthermore, in 4 percent of convictions, there is no carceral time in the initial plea offer, but the defendants end up with some incarceration. Defendants may weigh the possibility of a worst-case trial outcome more heavily than the expected value of a more

22. If we were to consider dismissals and acquittals as well, then sentences are shorter in 63 percent of cases, equal in 27 percent, and longer in 10 percent.

favorable sentence (Bibas 2004; Dervan and Edkins 2013). They may rely on the availability heuristic (Tversky and Kahneman 1973), making decisions based on salient examples of extreme sentences imposed at trial, which plausibly receive more attention than shorter ones. Anecdotally, cases in which a defendant rejected a short plea offer and ultimately received a lengthy sentence appear to be more salient to defense attorneys. Institutional features may also influence early plea decisions. The Philadelphia Public Defender's Office handles roughly 70 percent of arrests, and its attorneys may have incentives to encourage early resolution, at least for some cases—both to manage heavy caseloads and to maintain productive relationships with prosecutors and judges. While these factors likely impact defendants' decision-making in some jurisdictions, the effect in Philadelphia must be limited. Since only 29 percent of cases are resolved through early pleas, these are not likely to be prime influences in most cases.

Finally, we note that our results suggest a possible reconciliation of competing views in the plea-bargaining literature. Prosecutors may use early offers as a sorting mechanism, encouraging defendants facing strong evidence or serious charges to plead early. As cases progress, offers may become more moderate, reflecting bargaining dynamics or trial-related costs. For example, prosecutors may be using a split-the-difference negotiating technique, consistent with Backus et al. (2020) or Keniston et al. (2021). This would align with theories that view plea bargaining as a negotiation process, rather than a simple trial-plea dichotomy (Wright and Miller 2002; Jolly and Prescott 2021). Access to data on final plea offers would allow researchers to evaluate these dynamics more precisely and clarify whether the trial penalty, as typically defined, holds empirically.

6. CONCLUSION

Plea offers are ubiquitous in our criminal justice system, yet empirical research on the plea-bargaining process remains sparse. In this paper, we analyze a novel dataset from the Philadelphia DAO, which records initial offers made in felony cases.

We find that initial plea offers are significantly longer than sentences for cases not immediately resolved through a plea, even when a person is later convicted at trial. We document substantial selection between cases resolved through initial plea agreements and those that are not.

This means that the traditional approach to computing the trial penalty—comparing sentences at trial with accepted pleas—may not be as informative as previously believed. We also find that even after controlling for detailed case observables, initial plea offers are longer for Black defendants and for those in jail pretrial. The differences are particularly pronounced for Black individuals who are detained pretrial.

We note a few limitations of our study. Our analyses exclude the most serious felonies, for which we do not have data. Our data include information on initial offers but not subsequent ones, if any. If there are later offers and they are rejected, they could be shorter than trial outcomes. Finally, our data predate several reforms that may have altered plea-bargaining dynamics. For instance, in 2024, Pennsylvania adopted sentencing guidelines that emphasize crime severity over criminal history. In Philadelphia, policies adopted in 2018 and 2019 encouraging leniency in plea offers reduced average sentences (Nguyen and Ouss 2026); the gap between initial offers and final sentences may now be different. Our study context resembles jurisdictions without these reforms, but the lack of more recent comprehensive data on plea offers prevents us from evaluating the effects of these changes.

While largely descriptive, our work sheds new light on the plea process by including novel data on initial offers that are eventually rejected, which have previously been unavailable in a major jurisdiction. The new findings from these data help us to better understand plea-bargaining behavior in practice and we hope will prompt additional formal models of the process. We also hope that this work may inspire prosecutors' offices to collect information not just on initial offers but also on later offers, to better describe the evolution of plea offers throughout the system.

REFERENCES

Abrams, David S. 2011. Is Pleading Really a Bargain? *Journal of Empirical Legal Studies* 8:200–221.

Abrams, David S., Marianne Bertrand, and Sendhil Mullainathan. 2012. Do Judges Vary in Their Treatment of Race? *Journal of Legal Studies* 41:347–84.

Abrams, David, Roberto Galbiati, Emeric Henry, and Arnaud Philippe. 2022. When in Rome . . . : On Local Norms and Sentencing Decisions. *Journal of the European Economic Association* 20:700–738.

Abrams, David S., and Priyanka Goonetilleke. 2025. Assembly-Line Public Defense. *New York University Law Review* 100:1418–80.

Agan, Amanda, Jennifer L. Doleac, and Anna Harvey. 2023. Misdemeanor Prosecution. *Quarterly Journal of Economics* 138:1453–1505.

Alschuler, Albert W. 1968. The Prosecutor's Role in Plea Bargaining. *University of Chicago Law Review* 36:50–112.

———. 1981. The Changing Plea Bargaining Debate. *California Law Review* 69:652–730.

Anwar, Shamena, Patrick Bayer, and Randi Hjalmarsson. 2012. The Impact of Jury Race in Criminal Trials. *Quarterly Journal of Economics* 127:1017–55.

Arnold, David, Will Dobbie, and Peter Hull. 2022. Measuring Racial Discrimination in Bail Decisions. *American Economic Review* 112:2992–3038.

Arnold, David, Will Dobbie, and Crystal S. Yang. 2018. Racial Bias in Bail Decisions. *Quarterly Journal of Economics* 133:1885–1932.

Arteaga, Carolina. 2021. Parental Incarceration and Children's Educational Attainment. *Review of Economics and Statistics* 105:1394–1410.

Ba, Bocar A., Dean Knox, Jonathan Mummolo, and Roman Rivera. 2021. The Role of Officer Race and Gender in Police-Civilian Interactions in Chicago. *Science* 371:696–702.

Backus, Matthew, Thomas Blake, Brad Larsen, and Steven Tadelis. 2020. Sequential Bargaining in the Field: Evidence from Millions of Online Bargaining Interactions. *Quarterly Journal of Economics* 135:1319–61.

Bebchuk, Lucian Arye. 1984. Litigation and Settlement under Imperfect Information. *RAND Journal of Economics* 15:404–15.

Bibas, Stephanos. 2002. Bringing Moral Values into a Flawed Plea-Bargaining System. *Cornell Law Review* 88:1425–32.

———. 2004. Plea Bargaining outside the Shadow of Trial. *Harvard Law Review* 117:2463–2547.

Bjerk, David. 2005. Making the Crime Fit the Penalty: The Role of Prosecutorial Discretion under Mandatory Minimum Sentencing. *Journal of Law and Economics* 48:591–625.

———. 2007. Guilt Shall Not Escape or Innocence Suffer? The Limits of Plea Bargaining when Defendant Guilt Is Uncertain. *American Law and Economics Review* 9:305–29.

———. 2021. Socially Optimal Plea Bargaining with Costly Trials and Bayesian Juries. *Economic Inquiry* 59:263–79.

Bushway, Shawn D., and Allison D. Redlich. 2012. Is Plea Bargaining in the "Shadow of the Trial" a Mirage? *Journal of Quantitative Criminology* 28:437–54.

Caspi, Aviv. 2023. Overworking Public Defenders. Working paper. Stanford University, Stanford, CA.

Crespo, Andrew Manuel. 2018. The Hidden Law of Plea Bargaining. *Columbia Law Review* 118:1303–1424.

Cullen, Zoë, and Ricardo Perez-Truglia. 2022. How Much Does Your Boss Make? The Effects of Salary Comparisons. *Journal of Political Economy* 130:766–822.

Demuth, Stephen. 2003. Racial and Ethnic Differences in Pretrial Release Decisions and Outcomes: A Comparison of Hispanic, Black, and White Felony Arrestees. *Criminology* 41:873–908.

Dervan, Lucian E., and Vanessa A. Edkins. 2013. The Innocent Defendant's Dilemma: An Innovative Empirical Study of Plea Bargaining's Innocence Problem. *Journal of Criminal Law and Criminology* 103:1–48.

Devers, Lindsey. 2011. *Research Summary: Plea and Charge Bargaining*. Bureau of Justice Assistance, Washington, DC.

Dobbie, Will, Jacob Goldin, and Crystal S. Yang. 2018. The Effects of Pretrial Detention on Conviction, Future Crime, and Employment: Evidence from Randomly Assigned Judges. *American Economic Review* 108:201–40.

Feigenberg, Benjamin, and Conrad Miller. 2021. Racial Divisions and Criminal Justice: Evidence from Southern State Courts. *American Economic Journal: Economic Policy* 13:207–40.

Fisher, George. 2000. Plea Bargaining's Triumph. *Yale Law Journal* 109:857–1086.

Garin, Andrew, Dmitri Koustas, Carl McPherson, Samuel Norris, Matthew Pecenco, Evan K. Rose, Yotam Shem-Tov, and Jeffrey Weaver. 2025. The Impact of Incarceration on Employment, Earnings, and Tax Filing. *Econometrica* 93:503–38.

Garrett, Brandon L., William E. Crozier, Kevin Dahaghi, Elizabeth J. Gifford, Catherine Grodensky, Adele Quigley-McBride, and Jennifer Teitcher. 2023. Open Prosecution. *Stanford Law Review* 75:1365–1430.

Graef, Lindsay, Sandra Mayson, Aurélie Ouss, and Megan T. Stevenson. 2023. Systemic Failure to Appear in Court. *University of Pennsylvania Law Review* 172:1–60.

Grodensky, Catherine A., William E. Crozier, Elizabeth J. Gifford, and Brandon L. Garrett. 2023. Understanding Plea Bargaining in a New Progressive DA's Office: How Line Prosecutors Understand and Implement Progressive Goals through Plea Decisions. *Criminal Justice and Behavior* 50:429–53.

Grossman, Gene M., and Michael L. Katz. 1983. Plea Bargaining and Social Welfare. *American Economic Review* 73:749–57.

Grunwald, Ben. 2020. Distinguishing Plea Discounts and Trial Penalties. *Georgia State University Law Review* 37:261–303.

Gupta, Arpit, Christopher Hansman, and Ethan Frenchman. 2016. The Heavy Costs of High Bail: Evidence from Judge Randomization. *Journal of Legal Studies* 45:471–505.

Hessick, Carissa Byrne. 2021. *Punishment Without Trial: Why Plea Bargaining Is a Bad Deal*. Abrams.

Humphries, John Eric, Aurélie Ouss, Kamelia Stavreva, Megan T. Stevenson, and Winnie Van Dijk. 2025. Conviction, Incarceration, and Recidivism: Understanding the Revolving Door. *Quarterly Journal of Economics* 140:2907–62.

Jolly, Richard Lorren, and J.J. Prescott. 2021. Beyond Plea Bargaining: A Theory of Criminal Settlement. *Boston College Law Review* 62:1047–1116.

Jordan, Andrew. 2022. Racial Patterns in Approval of Felony Charges. Working paper. Washington University in St. Louis, St. Louis.

———. 2023. Plea Bargaining with Risk Aversion. Working paper. Washington University in St. Louis, St. Louis.

Keniston, Daniel, Bradley J. Larsen, Shengwu Li, J.J. Prescott, Bernardo S. Silveira, and Chuan Yu. 2021. Fairness in Incomplete Information Bargaining: Theory and Widespread Evidence from the Field. Working Paper No. 29111. National Bureau of Economic Research, Cambridge, MA.

Kim, Jeong-Yoo. 2010. Credible Plea Bargaining. *European Journal of Law and Economics* 29:279–93.

Kutateladze, Besiki Luka, Nancy R. Andiloro, and Brian D. Johnson. 2016. Opening Pandora's Box: How Does Defendant Race Influence Plea Bargaining? *Justice Quarterly* 33:398–426.

Landes, William M. 1971. An Economic Analysis of the Courts. *Journal of Law and Economics* 14:61–107.

Larsen, Bradley J. 2021. The Efficiency of Real-World Bargaining: Evidence from Wholesale Used-Auto Auctions. *Review of Economic Studies* 88:851–82.

Leslie, Emily, and Nolan G. Pope. 2017. The Unintended Impact of Pretrial Detention on Case Outcomes: Evidence from New York City Arraignments. *Journal of Law and Economics* 60:529–57.

List, John A. 2020. Non Est Disputandum de Generalizability? A Glimpse into the External Validity Trial. Working Paper No. 27535. National Bureau of Economic Research, Cambridge, MA.

Liu, Zhihan, and Amy C. Mahler. 2026. The Impact of Working Conditions on Productivity: Evidence from the US Public Defense System. *Journal of Public Economics* 257, art. 105630. https://doi.org/10.1016/j.jpubeco.2026.105630.

MacDonald, John, and Steven Raphael. 2020. Effect of Scaling Back Punishment on Racial and Ethnic Disparities in Criminal Case Outcomes. *Criminology and Public Policy* 19:1139–64.

Matei, Andreea, Lily Robin, Kelly Roberts Freeman, and Leigh Courtney. 2022. *An Exploration of Prosecutorial Discretion in Plea Bargaining in Philadelphia*. Urban Institute, Washington, DC.

McCoy, Candace. 2005. Plea Bargaining as Coercion: The Trial Penalty and Plea Bargaining Reform. *Criminal Law Quarterly* 50:67–107.

McIntyre, Frank, and Shima Baradaran. 2013. Race, Prediction, and Pretrial Detention. *Journal of Empirical Legal Studies* 10:741–70.

Meares, Tracey L. 1995. Rewards for Good Behavior: Influencing Prosecutorial Discretion and Conduct with Financial Incentives. *Fordham Law Review* 64:851–919.

Mitchell, Ojmarrh, Daniela Oramas Mora, Tracey L. Sticco, and Lyndsay N. Boggess. 2022. Are Progressive Chief Prosecutors Effective in Reducing Prison Use and Cumulative Racial/Ethnic Disadvantage? Evidence from Florida. *Criminology and Public Policy* 21:535–65.

Mnookin, Robert H., and Lewis Kornhauser. 1978. Bargaining in the Shadow of the Law: The Case of Divorce. *Yale Law Journal* 88:950–97.

Mueller-Smith, Michael. 2015. The Criminal and Labor Market Impacts of Incarceration. Working paper. University of Michigan, Ann Arbor.

Nguyen, Viet, and Aurélie Ouss. 2026. Prosecutorial Guidelines and Courtroom Workgroups. *Justice Quarterly* 43:849–79.

Ouss, Aurélie, and Megan Stevenson. 2023. Does Cash Bail Deter Misconduct? *American Economic Journal: Applied Economics* 15:150–82.

Ouziel, Lauren M. 2023. Fact-Finder Choice in Felony Courts. *University of California, Davis Law Review* 57:1191–1265.

Owusu, Felix. 2022. *Presumptive Declination and Diversion in Suffolk County, MA*. Rappaport Institute for Greater Boston, Boston.

Priest, George L., and Benjamin Klein. 1984. The Selection of Disputes for Litigation. *Journal of Legal Studies* 13:1–55.

Reaves, Brian A. 2013. *Felony Defendants in Large Urban Counties, 2009: Statistical Tables*. Report No. NCJ 243777. Bureau of Justice Statistics, Washington, DC.

Rehavi, M. Marit, and Sonja B. Starr. 2014. Racial Disparity in Federal Criminal Sentences. *Journal of Political Economy* 122:1320–54.

Reinganum, Jennifer F. 1988. Plea Bargaining and Prosecutorial Discretion. *American Economic Review* 78:713–28.

Rose, Evan K. 2021. Who Gets a Second Chance? Effectiveness and Equity in Supervision of Criminal Offenders. *Quarterly Journal of Economics* 136:1199–1253.

Rose, Evan K., and Yotam Shem-Tov. 2021. How Does Incarceration Affect Reoffending? Estimating the Dose-Response Function. *Journal of Political Economy* 129:3302–56.

Shaffer, Hannah. 2023. Prosecutors, Race, and the Criminal Pipeline. *University of Chicago Law Review* 90:1889–1965.

Silveira, Bernardo S. 2017. Bargaining with Asymmetric Information: An Empirical Study of Plea Negotiations. *Econometrica* 85:419–52.

Sklansky, David Alan. 2018. The Problems with Prosecutors. *Annual Review of Criminology* 1:451–69.

Spier, Kathryn E. 1992. The Dynamics of Pretrial Negotiation. *Review of Economic Studies* 59:93–108.

Stevenson, Megan T. 2018. Distortion of Justice: How the Inability to Pay Bail Affects Case Outcomes. *Journal of Law, Economics, and Organization* 34:511–42.

Stuntz, William J. 2004. Plea Bargaining and Criminal Law's Disappearing Shadow. *Harvard Law Review* 117:2548–69.

———. 2011. *The Collapse of American Criminal Justice*. Belknap Press of Harvard University Press.

Tuttle, Cody. 2019. Racial Disparities in Federal Sentencing: Evidence from Drug Mandatory Minimums. Working paper. University of Texas at Austin.

Tversky, Amos, and Daniel Kahneman. 1973. Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology* 5:207–32.

Ulmer, Jeffery T., and Mindy S. Bradley. 2006. Variation in Trial Penalties among Serious Violent Offenses. *Criminology* 44:631–70.

Ulmer, Jeffery T., James Eisenstein, and Brian D. Johnson. 2010. Trial Penalties in Federal Sentencing: Extra-Guidelines Factors and District Variation. *Justice Quarterly* 27:560–92.

White, Welsh S. 1970. A Proposal for Reform of the Plea Bargaining Process. *University of Pennsylvania Law Review* 119:439–65.

Wright, Ronald F. 2005. Trial Distortion and the End of Innocence in Federal Criminal Justice. *University of Pennsylvania Law Review* 154:79–156.

Wright, Ronald F., and Rodney L. Engen. 2005. The Effects of Depth and Distance in a Criminal Code on Charging, Sentencing, and Prosecutor Power. *North Carolina Law Review* 84:1935–82.

Wright, Ronald, and Marc Miller. 2002. The Screening/Bargaining Tradeoff. *Stanford Law Review* 55:29–118.

Yan, Shi, and Shawn D. Bushway. 2018. Plea Discounts or Trial Penalties? Making Sense of the Trial-Plea Sentence Disparities. *Justice Quarterly* 35:1226–49.

Yang, Crystal S. 2015. Free at Last? Judicial Discretion and Racial Disparities in Federal Sentencing. *Journal of Legal Studies* 44:75–111.