# The Racialized Packaging of Punishment:

# An Instrumental Variables Approach to Confinement, Surveillance, and Financial Extraction

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# Abstract

Research on racial disparities in the criminal legal system generally examines isolated sentencing decisions, rather than the broader “package” of punishment that many defendants experience. Using Minnesota court data from 2004-2018, we specify multivariate regression and instrumental variables models to simultaneously estimate the outcomes of three different elements of racialized punishment: control of the body (incarceration), generalized surveillance (probation), and financial extraction (monetary sanctions). We instrument incarceration length using local jail capacity, which accounts for confounding and the endogenous simultaneity of incarceration and other forms of punishment. Our results show strong racial patterning in the “mix” of punishment for similarly situated defendants. Before accounting for this mix, Black, Hispanic, and Native American defendants appear to receive less probation time and lower monetary sanctions, but longer incarceration than White defendants. After taking incarceration into account, however, Black, Hispanic, and Native American defendants receive comparable monetary sanctions to White defendants. This suggests the lesser LFO amounts are due to a “trade off” with confinement, but probation is racialized above and beyond the disparities present in incarceration. These results show that punishment can, and perhaps should, be modeled as it is often experienced -- as a constitutive package of costs, surveillance, and confinement.

Decades of research link race and racism to criminal sanctions. Studies have linked defendant race (e.g., Light 2022) and the racial demographic context at sentencing (e.g., Ulmer and Johnson 2004) to numerous sentencing outcomes, such as incarceration likelihoods and probabilities (Britt 2000, Light 2022), probation lengths (Harrington and Spohn 2017), sentencing guideline departures (Johnson 2003), and monetary sanctions (Harris et. al. 2011), among others. Yet, the vast majority of these studies consider each of these sentencing elements of punishment in isolation. But from the perspective of those who recommend and impose those criminal sentences and those who are subject to them, punishment is conceived of and *experienced* as an interwoven “package”—a combination of punishment elements and severities that collectively constitute a criminal sentence. This article develops a more comprehensive account of race and punishment by modeling this package along three distinct axesof racialized social control: incarceration, probation, and monetary sanctions. We conceptualize criminal sentences as representative of a matrix of confinement, surveillance, and costs that are applied and received *in tandem,* with each constitutive axis of punishment being endogenous to defendant race*.* This package of punishment is more than the additive sum of its parts: rather, each mode of punishment interacts with the others in ways that impact individual defendants, often compounding the financial and familial strain of criminal punishment (Harris et. al. 2010; Comfort 2009).

The central idea of the “packaging of punishment” is that the presence and severity of each punishment element may be related to the presence and intensity of other elements. For example, a judge who gives a lengthy incarceration sentence may reduce (or increase) the fine amount they order. Different punishment components may also be racialized in different ways, and are likely to be correlated with one another in the sentencing process (Slavinski and Pettit 2022). Standard estimates of residual race effects—typically based on regression models that adjust for legal factors such as offense severity, criminal history, and presumptive sentence—fail to account for such interdependencies and are therefore subject to potential bias. Such analyses not only obscure part of the punishment picture for individuals and communities, but they also yield a distorted view of the role of the defendant’s race in the sentencing process. Put another way, we may reach erroneous conclusions about *how a certain punishment axis is racialized* if we do not consider that component’s interrelationship to other modes of punishment, *which* *are also raced.*

 In the following study, we model this punishment process as it is generally experienced: as a simultaneously composed “package of punishment” that incorporates multiple axes of punitive practice. We then develop an instrumental variable design to explore the interrelationships between the modalities of punishment, which offers a more complete, and accurate, picture of the remaining racial sentencing disparities. In doing so, we draw on a novel analysis of court administrative data in Minnesota, a state characterized by relatively low rates of incarceration, relatively high racial disparities, and lengthy probation terms (The Sentencing Project 2021). In presenting a more comprehensive and accurate picture of racial disparities in sentencing across punishment modalities, we gain further insight into how racial stratification is (re)produced in the sentencing stage of criminal legal system processing.

# Punishment and Racialized Social Control

Criminal punishment is strongly racialized in the United States. The steep rise in jail and prison populations from the mid-1970s to 2008 is largely a story of racialized mass incarceration, with Black men experiencing especially high rates of imprisonment and felony conviction (Western 2004; Shannon et al. 2017). Researchers have attributed such disparities to diverse causes, including overt discrimination, color-blind racism, political fear-mongering, criminalization in response to racial threat, rising violence in impoverished communities, structural economic shifts, and various combinations of these mechanisms (Alexander 2012; Campbell and Schoenfeld 2013; Forman 2017; Garland 2001; Tonry 1995, 2009, 2011; Wacquant 2000, 2001).

Although the imprisonment rate has dropped over the last decade (roughly 25 percent from 2011-2021, with a 1.4 percent drop from 2020 to year end 2021), considerable racial disproportionality remains. According to the Bureau of Justice Statistics (BJS), in 2021 32 percent of the prison population was Black, 24 percent was Hispanic, and 31 percent was non-Hispanic White (Carson 2021). The demography of imprisonment in the United States, in conjunction with its sharp and unparalleled rise, are the two components of *mass imprisonment* (Garland 2001) and *racialized mass incarceration* (Bobo and Thompson 2006). Accordingly, racial disparities in incarceration are well documented and are powerfully illustrated through simple comparisons. In state and federal prisons, Hispanics are incarcerated at 2.4x non-Hispanic White rates, and African Americans are incarcerated at 5x the rate of Whites (Carson 2020). Racial disparities are also prevalent in the population of those with felony criminal records who are no longer under any form of correctional supervision. Shannon et. al. (2017) estimate that 8 percent of Americans had a record of felony conviction in 2010, but 33 percent of African American men had such a record. The aggregate punishment disparities described here “can be located at a variety of decision-making points” (Baumer 2013:236), including both selection into arrest (e.g., the geography of police patrol) as well as post-arrest racial biases in criminal justice processing. Yet only about 55 percent of the racial disparity in incarceration rates can be attributed to racial variation at the arrest stage, leaving a substantial portion of the disparity due to post-arrest factors such as racial variation in sentencing (Baumer 2013; Tonry and Melewski 2008).

Recent accounts of these racialized patterns in punishment emphasize the coupling of criminal justice and poverty governance, where rollbacks—or redirections—of the social assistance sector coincided with the immense growth of the criminal legal apparatus (Wacquant 2009; Soss et. al. 2011).  In this theoretical framework, the prison serves not as a deterrent and incapacitative crime control device, but rather as an institution “for the capture and management of a population considered contemptible and expendable” (Wacquant 2009, p. 195), in lieu of declining social welfare. Wacquant (2000) identifies the ethnoracial character of modern U.S. punishment as a “surrogate ghetto,” where the prison has emerged as the preeminent social control device for poor, Black Americans that mirrors the function of city blocks segregated by race. This characterization of penal institutions is a later development in racialized forms of social control that included chattel slavery and the Jim Crow system of enforced discrimination (see also Alexander 2010). This scholarship identifies punishment, and, in particular, the prison, as a defining feature of social control and racial oppression in an American society founded upon the criminalization of Black and minority populations (Hinton and Cook 2021).

Further, scholars have noted how both crime and punishment have been racially typified in American culture and parlance. Support for punitive policies has been grounded in a “belief system that constructs crime in terms of race and race in terms of crime” (Beckett and Sasson 2000, p. 136), so much so that fears about crime are better explained by neighborhood racial demographics than by official measures of crime (Quillian and Pager 2001). The racially disparate rates of arrest and incarceration have been used as part of a “statistical discourse” (Muhammad 2010) that has, in part, helped create stereotypes about Blackness and crime in American culture and public opinion. A wealth of scholarship indicates the coupling of Blackness with criminality (e.g., Quillian and Pager 2001), and this nexus helps explain patterns in punitiveness. Using national survey data, Chiricos et. al. (2004) show that the racial typification of crime is a robust predictor of punitive attitudes, suggesting that racist views of crime may “bleed into” cultural expectations and the practice of punitiveness within the criminal legal system. A robust literature also shows how individual-level punishment is shaped by race, much of which finds robust, albeit time-varying (Light 2022), extralegal effects of defendant race on criminal sentencing.

However, rarely has research on the racialization of punishment considered multiple punishment components *simultaneously* in their analyses. Instead, studies have primarily analyzed each mode of punishment in isolation and have not examined the potential interrelationships between different axes of punishment, nor the potential heterogeneity in extralegal race effects across different sentencing outcomes. That said, several studies have carefully examined the impact of race and racism at multiple decision points. For example, research by Kutateladze et. al. (2014) consider pre-trial detention, plea offers, and incarceration, finding that the effects of race and ethnicity vary across these decision points. They observed that Black and Latino defendants were more likely to be detained, to receive custodial plea offers (as opposed to non-custodial plea offers), and to receive incarceration sentences – but these defendants were also more likely to receive case dismissals. As Kutateladze and colleagues explain, “If we had examined only case dismissals, as some prior work has done, we would have mistakenly concluded that Blacks and Latinos were treated more leniently than Whites, even though they received more severe outcomes at all other stages of the system” (2014: 538). This scholarship illustrates that different aspects of the criminal legal apparatus can be racialized in different ways and to varying degrees.

Before introducing the “package of punishment” conceptual framework in more detail, we first review the current literature on racial effects on punishment across the three primary (but, as we argue, interrelated) sentencing components: incarceration, probation, and monetary sanctions.

### Race and Incarceration

In many ways, racialized mass incarceration has been a product of changes and enduring inequities in the sentencing stages of punishment. Scholarship on race and imprisonment has historically examined race as an individual-level extralegal variable that leads to disparate outcomes in sentencing (Baumer 2013; Spohn 2000). Early scholarship in this area typically measured sentencing severity with either a single variable of sentence length (indicating the duration of the imposed sentence), a single binary outcome variable (coded 1 if an individual was sentenced to any incarceration and 0 for any other sentence such as probation or monetary penalties), or a combination of both measures. Research in this tradition typically statistically adjusts for legal variables such as offense severity and criminal history, as well as other case or individual characteristics (e.g., gender), with an eye toward accurate empirical estimation of the partial racial effects that remain.

Studies examining the binary outcome measure of the presence of incarceration generally find that Black, Hispanic, and Native American defendants are more likely to be sentenced to incarceration (Franklin 2020; King and Light 2019; Spohn 2017; Steffensmeier and Demuth 2000; Britt 2000; Spohn and Holleran 2000; Unnever 1982). Analyses of sentence length and those that combine both measures of sentence severity yield less consistent results, but often conclude that at least in certain contexts (Peterson and Hagan 1984; Ulmer and Johnson 2004) or among specific subgroups (Demuth and Steffensmeier 2004; Lizotte 1978) racial minority defendants are punished more harshly than White defendants. Further, these extralegal racial effects exhibit significant variation across U.S. counties, and punishment is also shaped by county-level attributes, including racial demographic characteristics (Ulmer and Johnson 2004). Recent scholarship has also noted a decline in the magnitude of extralegal race effects over time in federal courts, with this shrinking gap attributed in part to decreasing Black sentences and increasing White sentences, changes in case characteristics (e.g., criminal history), and shifts in prosecutorial use of mandatory minimums (Light 2022).

Much of the scholarship in this arena explores only a few racial/ethnic groups (White, Black, and Hispanic). Among these categories, Black defendants are treated the most punitively, followed by Hispanic defendants, with White defendants the least punitively on average (Frase 2009; Unnever 1982), though sentencing analyses that have included Native American defendants have found that Native Americans are often subject to greater penalties relative to other groups (Franklin 2013; Ulmer and Bradley 2018). When age and employment are considered, research has further indicated that men of color who are younger or with worse employment circumstances face lengthier incarceration sentences (Steffensmeier and Demuth 2000). These empirical patterns are consistent with predictions within conflict and racial threat theories of punishment, in which marginalized groups deemed “threatening” either economically or culturally are subject to greater punishment (Duxbury 2021; Jacobs et al. 2005; Crawford et al. 1998). Further, scholarship marks modern racialized patterns in incarceration as part and parcel of broader historical projects of American racial social control, with specific emphasis on the policing and confinement of Black bodies (Hattery and Smith 2021; Alexander 2010; Wacquant 2000).

Consistent with this extensive body of research, our first research hypothesis is as follows:

*Hypothesis 1: Black, Native American, and Hispanic, defendants will receive longer incarceration sentences than White defendants, after accounting for confounding and the endogenous simultaneity of confinement, probation, and monetary sanctions.*

### Race and Probation

The hyper-surveillance of racial minority groups is not a new social phenomenon. From practices in chattel slavery such as branding and runaway slave notices, to modern over-policing and police violence, surveillance of non-White Americans is an ever-present feature of social life that plays a role in both race-making and racial domination (Browne 2015). Community supervision can also be considered a key facet of racialized surveillance, given the disparate rates of exposure to probation between racial groups (Phelps 2018). Relatively fewer studies have considered the effects of defendant race on the outcome of probation supervision as compared to incarceration sentences, but an emerging line of scholarship has investigated how race impacts probation sentences, again finding evidence that racial minorities receive harsher or longer sentences. Most of this literature has focused on the likelihood of receiving probation versus a custodial sentence. For instance, studies by Freiburger and Hiliniski (2013) and Harrington and Spohn (2007) found that Black defendants were more likely to receive a sentence of jail rather than probation. Likewise, Black men are less likely than Whites and women to receive probation rather than incarceration (Freiburger and Sheeran 2020). Among those receiving probation and assigned to a low-risk category by an assessment, Lowder et al. (2019) similarly found that White defendants received shorter probation lengths than Black defendants.

Taking a different approach by focusing specifically on the components of probation sentences, Anat Kimchi (2021) assessed the assignment of probation conditions as “patterned sentencing packages” in a sample of Minnesota probation sentences in the Twin Cities’ counties of Hennepin and Ramsey. Compared to White defendants, Kimchi found Black defendants were more likely to receive more numerous probation conditions that were more restrictive, while Hispanic defendants were more likely to face probation conditions that incurred more financial burdens.

Nevertheless, research also indicates that disparities in probation supervision rates are generally smaller than disparities for incarceration rates (Phelps 2018). Among those whose race is known, the Bureau of Justice Statistics (2021:23) reports that the 2020 U.S. probation population was approximately 54 percent non-Hispanic White, 30 percent non-Hispanic Black, 13 percent Hispanic, and 3 percent multiracial or of other races. Accounting for the endogeneity between probation and prison sentences is important if judges are more likely to incarcerate Black and Native American defendants. Racial advantage could then take the form of both a short probation sentence (relative to a long probation sentence) or a long probation sentence (relative to a prison sentence).

Given the extant research on race and probation sentencing, coupled with the scholarship documenting racial surveillance as a key facet of modern racialized social control, this leads us to an additional research hypothesis:

*Hypothesis 2: Black, Native American, and Hispanic defendants will receive longer probation sentences than White defendants, after accounting for confounding and the endogenous simultaneity of confinement, probation, and punishment monetary sanctions.*

### Race and Monetary Sanctions

A third form of criminal punishment, monetary sanctions or legal financial obligations (LFOs), affects far more U.S. residents than incarceration or probation. These monetary sanctions are financial penalties imposed by the state in criminal cases, such as fines, fees, surcharges, and restitution. And scholarship has documented the important role of these legal financial obligations in racialized resource extraction. From early slave patrols and military-policing that enforced chattel slavery and Native dispossession to modern forms of predatory extraction such as monetary sanctions, bail, and forfeitures, the criminal legal apparatus has buttressed racial capitalism, or the relationship between capitalist accumulation and racial dominance (Page and Soss 2021). In this vein, legal financial obligations represent a key mechanism by which racial inequality and dominance is strengthened via wealth depletion, hardship, and other adverse consequences of predatory extraction.

In a series of articles and an important book, Alexes Harris (2016) and colleagues (Harris, Evans, and Beckett 2011) systematically investigate the relationship between race/ethnicity, context, and monetary sanctions. In an analysis of Washington state sentencing data, for example, they find that Hispanic defendants receive higher fines and fees on average as compared to White defendants (Harris, Evans, and Beckett 2011). They also find that racialized crime scripts, tied to both moral outrage and cultural stereotypes, impact monetary sanctions amounts. For example, Black defendants charged with violent crimes are levied higher fines and fees than similarly situated Black defendants charged with non-violent crimes. Moreover, they find that Latino defendants receive higher fines, especially in the context of counties with large Latino populations. In such contexts, even persons who do not identify as Latino receive a race-based “courtesy stigma” (Goffman 1963) in which all individuals sentenced in disproportionately Latinx communities receive higher financial penalties for drug-related charges. This “courtesy stigma” works similarly with the stereotypical relationship of Blackness and violence, with persons convicted of violent crimes in counties with greater proportions of Black residents also receiving harsher monetary sanctions. Similar scholarship using court administrative data from Minnesota finds that Native Americans are subject to the largest overall legal financial obligations, particularly in areas proximal to tribal lands (Stewart et. al. 2022). In short, these findings suggest that monetary sanctions do not impose an equal burden on all racial and ethnic groups.

Although court-ordered legal financial obligations have much in common with other forms of punishment, they are distinct in an important way: the experience of monetary sanctions is explicitly patterned by defendants’ “ability to pay.” Ability to pay, in turn, is strongly patterned by race (Harris 2016), and judges can take factors like income into consideration when imposing a financial sentence. Thus, it follows that racial patterns in criminal financial penalties could be endogenous to the large racial differences in wealth, income, employment, and other indicators of financial standing (e.g., Thomas et al. 2020), which are, in part, patterned by racialized criminal histories (Larson et al. 2022; Western and Sirois 2018; Pager 2003; Western 2001).   This relatively new body of research highlights the salience of race in sentencing decisions *beyond* confinement or community supervision, and motivates another research hypothesis:

*Hypothesis 3: Black, Native American, and Hispanic defendants will receive larger monetary sanction orders than White defendants, after accounting for confounding and the endogenous simultaneity of confinement, probation, and punishment monetary sanctions.*

### Linking Incarceration to Other Forms of Punishment

Finally, the primary goal of the current paper is to assess the racial impacts of different axes of punishment *within the sentence.* Although we are not assessing racial impacts across different decision points, as Kutateladze et. al. (2014) did, a similar logic nonetheless applies: distinct aspects of the criminal justice system are differentially racialized and likely interrelated. Thus, more complex analyses are needed to accurately assess the racial disparities across different modes of punishment. Key to this idea is the interrelationships between axes of sentencing, particularly in terms of the main outcomes of the criminal sentence of confinement, probation, and monetary sanctions—which we refer to as the “package of punishment.” As an simple example, most defendants who receive a sentence of incarceration also receive some form of monetary sanction (Beckett and Harris 2011; Harris 2016; Harris et al. 2017; Harris, Evans, and Beckett 2010). But do fines constitute a substitute for incarceration length? Or is the relationship between the two positive, where defendants are given higher fines and fees that accompany longer incarceration spells?

In an early study of fraud defendants in the federal courts, Waldfogel (1995) finds evidence of substitution, observing a negative association between monetary penalties and the likelihood of prison and the severity of prison sentences. A more recent study of federal white-collar sentencing similarly finds that defendants who pay fines are likely to receive less prison time, but restitution has a positive, albeit diminishing, impact on incarceration length (Schanzenbach & Yager 2006). In a more recent and comprehensive analysis of federal sentencing data, Martin (2012) finds evidence that monetary sanctions function as both a complement and substitute to incarceration. Specifically, Martin finds that receiving a prison sentence is associated with reduced monetary penalties, suggestive of a “trade-off,” but that prison lengths are associated with higher monetary loads.

To date, we are not aware of any studies that estimate the impact of one component of punishment on another form while addressing the simultaneity bias that arises. Further, we are not aware of any such study examining incarceration, probation, and monetary sanctions using state court data among the much broader class of crimes for which both fines and incarceration may be imposed. Although the research in this area is in its nascent stages, the preponderance of the evidence is suggestive of a trade-off of incarceration and lower levels of punishment. Thus, our final hypothesis:

*Hypothesis 4: Incarceration will be negatively associated with both probation length and monetary sanction orders.*

## The Racialized Packaging of Punishment

The current study aims to show how race simultaneously influences three distinct but interrelated punishment elements—incarceration, probation, and monetary sanctions—and to interrogate the differences in racialization across these axes of punishment. This study extends research on the extralegal effects of race on punishment in two important ways. First, we examine a broad class of state court data to simultaneously model incarceration, probation, and monetary sanction outcomes, and examine the similarities and differences in how individual-level case and defendant characteristics impact each axis of sentencing. We expect that certain case or defendant characteristics may weigh more heavily in particular parts of the punishment process, especially regarding the disproportionate incarceration of people of color (e.g., Wacquant 2009). In considering each component in isolation, much of the extant research makes the implicit assumption that these outcomes are independent of one another, which may mischaracterize how judges make decisions and distort the broader punishment picture. To relax this potentially untenable assumption, we examine how the racialization of punishment may vary with the component of punishment under consideration and provide a more complete picture of the racial patterns in criminal sentencing within a single context.

Second, much existing work has focused on Black-White disparities, such that narrow racial categorizations remain a significant limitation in regression-based research on sentencing outcomes (Baumer 2013). This study uses a more expansive racial and ethnic categorization than previous work, with sufficient sample sizes to adequately estimate the punishment patterns for smaller racial groups, such as Native Americans. Thus, this analysis moves beyond the traditional White-Black dichotomy, expanding scholarly examination of racialized criminal sentences to racial groups that are often not under consideration in these studies of sentencing disparities.

### Correlations Within the Punishment Matrix

From a statistical perspective, models that examine only a single aspect of punishment may be misspecified if the component under examination influences another aspect of the punishment defendants receive. In statistical parlance, each mode of punishment may be endogenous to the other forms, therefore not explicitly modeling these interrelationships would result in model misspecification and omitted variables bias. To the extent that punishment outcomes influence one another and are correlated with key exposure variables of interest, omitting other forms of punishment from the model could bias the estimated effects, potentially leading to erroneous conclusions about the sentencing process. This is particularly important to consider in the estimation of extralegal race effects, as punishment outcomes may be dependent on the intensities of other punishment forms, which previous research indicates *are also raced* themselves*.* Thus, a key innovation of our analysis is to account for the racial patterns in the other modes of punishment, to get not only a more complete, but a more *accurate* estimation of the race effects in the criminal sentencing process. This also allows us to examine to what extent racial patterns in one form may “bleed into” other modes of sentencing, as well as the extent to which punishments are raced above and beyond the racial patterns among the other axes. Analyses that do not account for these interdependencies risk mischaracterizing the extralegal race effects in the criminal sentencing process. For example, if there are significant racial disparities in incarceration, and incarceration is negatively related to monetary sanctions, the unadjusted estimates for race in the monetary sanctions model (that is, in models without adjustment for incarceration decisions), could be biased downwards as race is collinear with incarceration and left unspecified.

Our approach is to model the effect of the incarceration component on both the monetary sanction and probation components, adjusting for simultaneity and omitted variables bias, to minimize the bias that could result from key individual extralegal variables (i.e., defendant race) being collinear with incarceration sentences. This allows us to a) investigate whether a judge's decisions represent a “piling on” (Uggen and Stewart 2014) or a “substitution” of punishment forms, and b) statistically adjust for the interrelationships between race and incarceration, to obtain a more accurate picture of the racial determinants of monetary sanctions and probation.

Although we cannot completely disentangle the causal ordering of these sentences with our current data, previous research indicates that incarceration is typically considered the most severe of these penalties by court actors. For instance, in a scale of sentencing severity derived from assessments by judges (Buchner 1979), imprisonment was considered more severe than probation—even when the duration of probation was far lengthier than the prison term (monetary sanctions were not even considered in this scale). Clair (2020) more recently confirmed that courtroom actors – even public defense attorneys – consider confinement paramount, even though some defendants disagree with this assumption.

Previous research thus suggests that incarceration decisions are of primary interest to the involved parties and may represent a key decision point, to which sanctions such as fine amounts and probation lengths are endogenous. As part of a larger, multi-method study of monetary sanctions (Authors, 2017), we conducted interviews with attorneys. These similarly showed that considerations about confinement were prioritized before determinations of both probation and monetary sanctions. For instance, as one prosecutor described:

*“Well, those [monetary sanctions] are so minimal. I mean, we're usually arguing about the terms and conditions of probation typically, right? That's the most important thing, are they going to prison. If they're not going to prison, what's the term of the probation, right? That's really the meat of it. The other things are just more kind of throwaways. I think they're just part of maybe what a judge does routinely, because the law says they're supposed to.”*

Likewise, as another Minnesota prosecutor explained:

*“…If there's going to be a plea agreement, for example, which is the vast majority of cases. We will talk to defense counsel about things like duration of probation, potential incarceration, conditions of probation and then obviously the offense, that will be the offense of conviction. We almost always say we'll leave the fine up to the court.”*

As these examples demonstrate, considerations about incarceration are prioritized in the courts in our research site *before* probation and monetary sanctions.[[1]](#footnote-1) We therefore control for the impact of incarceration, and potential simultaneity with the other axes of punishment, using an instrumental variable design described below. With these advances, we hope to bring the impact of racial characteristics on multiple aspects of punishment into sharper focus by explicitly modeling the contingent nature of the punishment packages.

# Data and Methods

## Minnesota State Court Administrative Data

Our analysis examines an extract of administrative criminal court data from the Minnesota State Court Administrator’s Office (SCAO). The SCAO data extract includes granular data points for all cases sentenced from 2004-2017 that had a case resolution as of August 2018 in Minnesota criminal courts. Data points include charge-level and case-level details and events as well as defendant demographics and residential information. To identify unique persons in the data (described below), probabilistic deduplication (Forest and Eder 2022) via a partially supervised algorithm with defendant full names and birthdays was used to create unique person identifiers, in order to identify cases within individuals.[[2]](#footnote-2)

We restrict our analyses to cases that contain at least a gross misdemeanor and/or felony level convicted charge, as a key goal of this study is to analyze the *packaging* of punishment, which requires cases where different forms of punishment are likely to coincide. Although petty and misdemeanor cases represent a significant aspect of the criminal legal system (e.g., Kohler-Haumann 2013), particularly in the imposition of fines and fees (Harris et. al 2017), they often do not entail any incarceration or probation terms, and therefore are not comparable to more serious cases. Further, cases with higher-level charges have a lower proportion of missing data on defendant demographic characteristics of gender and race due to the in-person nature of sentencing at higher levels. Minnesota maintains a “state payables list,” or a list of petty misdemeanor and some misdemeanor offenses with defined monetary sanction amounts that are payable without an appearance in court. Therefore, lower offense levels have substantial missing data on defendants (including missing race data), whereas more serious charges have more complete information on defendant characteristics. Although the sample restriction substantially reduces missingness on defendant demographic characteristics, we also impute race and gender information *within* defendants across cases, leveraging information from the defendants’ other cases to impute race and gender in the focal case. Because these measures are taken at each court appearance and/or sentencing, within-person racial and gender self-identification cannot be assumed to be static but instead can change over time (e.g., Liebler et al. 2017) and therefore we impute the modal demographic category when the auxiliary cases are not homogenous across cases within defendants. After this auxiliary information imputation strategy, the demographic data exhibit about 28 percent and 3 percent missingness amongst the restricted sample for race and gender respectively.

### Endogenous Measures

Our first key endogenous variable, total fine and fee order, is composed of all fines and fees levied against a defendant following sentencing (with the exception of restitution orders). Detailed ledger information on court fines and fees – otherwise known as legal financial obligations (LFOs) – is compiled from two data systems, the Minnesota Court Information System (MNCIS) and the Violations Bureau Electronic System (ViBES). We aggregate the total fines and fees ordered in the sentencing process to the case-level, and adjust all monetary sanction amounts to January 2018 dollars to adjust for inflation. We do not include restitution in our measure of LFOs, as restitution orders are missing in the two largest Minnesota counties, Hennepin and Ramsey, from 2004-2009. Therefore, to ensure comparability across the series our LFO measure does not include restitution.

Our second endogenous variable, ordered incarceration length, is measured as actual days in prison and/or jail sentenced, minus any jail credit, stayed time, or supervised release periods. The third axis of the punishment package, probation length, consists of the duration of the probation sentence, expressed in days. We also use the SCAO data to construct indicators of whether the case went to trial, and a proxy of criminal history that measures the number of prior cases a defendant has within the data extract. As Martin (2012) notes, models that only consider the likelihood rather than the *severity* of each sanction may mischaracterize the relationships among various sentencing outcomes. We therefore model each endogenous variable as a continuous amount.

### Exogenous Measures

To measure individual defendant characteristics, we use SCAO party information. Our focal variable in the analysis is the self-identified racial identity of the defendant as provided to the court or through a presentence investigation interview. We collapsed the SCAO racial categories into six groups: White, Black, Hispanic, Asian/Pacific Islander, Native American, and Other Race (which includes “Other,” “Multiracial,” “Unavailable,” “Unknown,” and “Refused”). We also include a dichotomous indicator for missing race, which adjusts our estimates for the presence of missing defendant race data. Our models also include age and a binary indicator for gender. Other legal and case characteristics are constructed from SCAO charging information. We include legal controls for the number of prior convictions to the current case, the amount of time served that is credited by the judge, and an indicator of whether the case went to trial. As a proxy for ability to pay, we include a public defender variable indicating whether a public defender appeared at any point in the case. Because cases can contain charges of multiple different levels and types, we treat our charging measures as indicators, effectively allowing each case to have multiple different charge types and levels. We include indicators for whether each case contained a felony or gross misdemeanor charge, as a control for the degree of charge in each case. We construct dichotomous indicators of offense type by flagging whether a case included a charge in the following categories: violent, drug, and alcohol/DUI. Finally, we also include controls for Judicial District and sentence year, to adjust for between-district heterogeneity in sentencing practice, as well as shared over-time changes in sentencing practice across districts.

Our instrumental variable, the jail capacity ratio, comes from The Vera Institute’s Incarceration Trends Dataset (Vera, 2020), which is merged at the county-year level to the SCAO extract. We calculate jail capacity ratios at the county and year level by taking the average daily number of confined persons in the jail and dividing by the jail-rated capacity. Values above 1 therefore indicate jail overcrowding, whereas values under 1 indicate jail vacancies relative to stated capacity limits. Minnesota includes a handful of regional jails, or jails that regularly house defendants from more than one county. Vera (2020) accounts for this scenario by providing a flag indicating whether a facility is a regional jail and subsequently allocating the capacity of these regional jails proportionally across participating county jurisdictions based on population. This instrumental variable is described in further detail in the Analytic Strategy section below. Descriptive statistics for all variables in the SCAO and Vera data are included in Table 1. Our sample is approximately 61 percent White, 16 percent Black, 6 percent Native American, and 6 percent Hispanic. After listwise deletion of missing values, this leaves us with 192,155 felony and gross misdemeanor level criminal cases.

[Insert Table 1 about here]

## Analytic Strategy

Our research design is threefold. We first begin with descriptive analyses of the “packaging” patterns in punishment. We examine the racial distribution of each of our focal endogenous punishment variables – confinement length, probation length, and monetary sanctions. This will allow for an examination of the raw, unadjusted racial differences in sentencing across multiple axes of punishment. We then present two forms of explanatory regression analysis, each of which models the relationship between defendant race and punishment amounts.

### The “Standard” Approach: Multivariate Model of Punishment

The standard modeling strategy for estimating the extra-legal effects of defendant demographics involves the classic regression-based approach, in which race effects are estimated conditional on other demographic, legal, and cases variables, with the remaining unexplained variation between racial categories and punishment attributed to “defendant race” (Baumer 2013). This approach effectively adjusts for selection into different types of cases (e.g., charge severity, criminal history), and makes statistical comparisons between “like” cases between defendants of different racial groups. We join contemporary scholars (e.g., Sewell 2016) in conceptualizing individual-level race estimates not simply as the impact of a simple demographic attribute in the sentencing phase. Rather we view such estimates as the product of the broader constellation of constructed race meanings and structures within the criminal legal system. In other words, wrapped up in this ostensibly “simple” coefficient is not just a difference in racial identification, but a plethora of associated social inequities, relationships to social institutions, and social interactional processes that play out during and after sentencing.

In the vein of this conventional extra-legal effects estimation strategy, we estimate a fixed-effects multivariate linear regression model, treating total fine/fee order, incarceration days, and probation days as outcome variables. This method simultaneously estimates the effects on multiple dependent variables using the same set of covariates. Although the estimated coefficients and standard errors are identical to those when the models are estimated separately, the multivariate method takes into account the covariance of predictors across models, as errors in one model may be correlated to errors in another. The model is parameterized as follows,

where is the *k*-th punishment response for the *i*-th observation, and represent the focal race effects, with White defendants as the referent category. is the *j*-th control’s regression slope for the *k*-th response. and represent fixed effects for judicial districts and sentence years respectively for each outcome equation. The inclusion of these terms restricts our comparisons to those occurring *within* sentencing districts and sentence years, as sentencing patterns may vary between judicial districts and across time (Stewart 2019). These fixed effects net out time-constant unobserved heterogeneity between districts (e.g., localized court culture and sentencing practices between districts), and time variation in sentencing patterns shared across districts (e.g., state-wide policy changes). represents the *j*-th case- or defendant-level control characteristics for the *i*-th observation. The covariance structure is a 3x3 matrix with error variances on the diagonals and error covariances on the off-diagonals. Because the punishment variables are strictly positive and are slightly positively skewed, the punishment variables are expressed using the log(X +1) transformation when included in the multivariate analysis, and therefore the coefficients below are interpreted in their exponentiated form, representing percentage changes in punishment in relation to unit changes in the independent variables.

The above approach is what we term the “standard” approach to the estimation of the effect of race on punishment amounts. This has also been called the “modal” approach in the criminological literature (Baumer 2013), and is quite common in quantitative administrative designs assessing the extra-legal effects of defendant demographic variables. This design has an appealing and intuitive logic: when statistically adjusting for characteristics such as charge severity, criminal history, and other legal, demographic, and contextual factors, this model attempts to isolate the impact of race on sentencing outcomes using “apples-to-apples” case comparisons, at least to the extent that it adjusts for other relevant determinants of sentencing. It should also be noted that this effect captures the “residual” rather than the total effect of race in sentencing. This “residual” effect of race in the sentencing process is often conceptualized by analysts as racial discrimination, though it does not represent the totality of the impact of race. Race also patterns distributions of criminal history (e.g., through the geography of police patrol), charging decisions, and other aspects of the criminal legal process (e.g., the presence of a public defender), some of which are essentially post-treatment controls in this model. This effect, however, is designed to capture the marginal change in sentence in response to a change in a defendant’s racial group, with all other observed variables held equal.

Despite the attractive design of the standard approach, these models may suffer from omitted variable bias to the extent that defendant race is also related to forms of sentenced punishment left *unspecified* within the model. The previous literature, in large part, only examines the extra-legal effects of one form of punishment (e.g., monetary sanctions) or considers multiple axes of punishment in the study but specifies separate models for each punishment outcome. From a statistical perspective, models that examine only a single aspect of punishment may be misspecified if that component influences another aspect of the punishment defendants receive. In statistical parlance, each mode of punishment may be endogenous to the other forms, and therefore not explicitly modeling these interrelationships would result in model misspecification and omitted variable bias. To the extent that punishment outcomes influence one another, *and are also correlated with race*, omitting other forms of punishment from the model could bias the estimated extra-legal race effects, resulting in ill-informed conclusions about the role of defendant race in sentencing. Previous scholarship indicates each axis of punishment considered here - incarceration, probation, and monetary sanctions - *are also raced* in and of themselves*.* Thus, a key innovation of our analysis is to account for the racial patterns in the other modes of punishment, to obtain not only a more complete, but a more *accurate*, estimation of the influence of race in the criminal sentencing process. Analyses that do not account for these interdependencies risk having an invalid estimation of the extralegal race effects in the criminal sentencing process. We therefore introduce an instrumental variable estimator to appropriately model the endogenous nature of sentencing.

### Instrumental Variables Model of Punishment

Our approach to gain purchase on the endogeneity of punishment forms is to model the effect of the incarceration component on both the monetary sanction and probation components, adjusting for simultaneity and omitted variables bias through an instrument variables design. This alleviates the bias that could result from key individual extralegal variables (i.e., defendant race) being collinear with incarceration sentences. Estimating the effect of incarceration length on fines/fees and probation is complicated by two sources of bias. First, if judges adjust their confinement length on the basis of monetary sanctions or probation sentences (or vice-versa), it creates a circular causal chain in which it is difficult to pin down the direction of the causal arrow, commonly known as simultaneity bias. If monetary sanctions and/or probation lengths are determined in this way, it poses an endogenous simultaneity bias problem that interferes with the identification of the impact of incarceration length on monetary sanctioning, as well as the identification of other effects of interest (e.g., race).

Even a specification that uses the standard approach while controlling for incarceration lengths is susceptible to bias as part of the effect of race would be “controlled away” with the inclusion of incarceration, effectively inducing a form of post-treatment bias. The second source of bias is the traditional case of an omitted variable. In this case, an unobserved factor that causes changes in both the sentencing of incarceration length and the sentencing of another punishment component may lead to the wrong conclusion that the former caused the latter. One example of an omitted variable would be a judge’s general level of punitiveness. Punitive judges may sentence more punitively on both components, thereby inducing a correlation, although a causal link between the two does not exist. Studies using the standard approach assume, often implicitly, that the omitted variables are uncorrelated with the control variables (e.g., other punishment axes), which is likely an untenable assumption given the dependent nature of punishment. Given the robust relationships exhibited between race and punishment in previous empirical work, having significant omitted variables bias in a key punishment control could bias the residual race effects that remain.

To deal with these endogeneity concerns, we develop an instrumental variable approach, instrumenting incarceration lengths with county-level jail capacity ratios to provide a better estimate of the causal effect of incarceration decisions on decisions regarding the other axes of punishment. Instrumental variables estimation allows for consistent estimation of causal effects in the presence of endogeneity by statistically isolating the variation in the endogenous predictor that is uncorrelated with the error term. In other words, the design partitions the variation in incarceration into plausibly exogenous variation, thereby allowing for causal inference. For example, Levitt (2002) instrumented the size of the police force with the number of municipal firefighters per capita to estimate the effect of police size on crime rates. Similarly, Sharkey et al. (2017) estimated the causal effect of community nonprofits on neighborhood crime by instrumenting the change in community nonprofits with the change in nonprofits that focused on the arts, medical research, and the environment.

We use the county-level time-varying change in jail capacity ratios as an instrument for confinement length. Essentially, this model specifies that changes in jail populations relative to capacity will be associated with changes in the length of incarceration sentences through perceptions of overcrowding or the availability to fill vacancies; in contrast, the capacity ratio will have no direct impact on monetary sanctions or probation apart from its indirect path through confinement length, net of other observed variables, thereby identifying the causal effect of incarceration on another axis of the punishment decision. To serve as a valid instrument, the capacity ratio must meet three conditions or assumptions. First, the *relevance condition* requires that the instrument must induce a change in the endogenous independent variable, incarceration length, and that this change will translate into a sufficiently strong relationship between them. Second, the *exogeneity assumption* requires that the change in capacity ratios should be uncorrelated with previous trends in the outcome variables. In other words, the values of the instrument should be independent of previous patterns in monetary sanction and probation sanctioning (i.e., the values should be distributed as though they are random), conditional on other variables in the model. Third, the *exclusion restriction* states that the instrument can only affect monetary sanctions and probation through its impact on confinement length.

We show that there is a strong relationship between jail capacity ratios and sentenced confinement length, which gives direct evidence on the validity of the relevance condition. We follow the convention in the literature and consider the instrument to be sufficiently strong if the F-statistic from a Wald test on the instrumental variable is statistically significant in the first stage regression (Stock and Yogo 2005). As Table 3 shows, the F-test on the instrument in the first-stage regressions yields a statistically significant F-statistic above 10. Although our instrument for incarceration reaches conventional levels of instrument strength, the standard errors in our model are somewhat inflated as our instrument is relatively weaker. We also examine whether lagged monetary sanction and probation patterns explain changes in the jail capacity ratio. We find little evidence that the changes in the jail capacity ratio are correlated with prior trends in monetary sanction sentencing or probation sentencing, with partial correlation coefficients of -.05 and -.06 for LFOs and probation respectively adjusting for lagged capacity ratios. Finally, we argue that the instrument meets the exclusion restriction because monetary sanctions and probation lengths are unlikely to be directly impacted by jail capacities, apart from any perceptions or concerns with capacity that impact sentenced confinement amounts. If the instrumental variable assumptions are satisfied, it is possible to estimate the causal effect of confinement length on the other aspects of the punishment package. This approach yields an estimate of the local average treatment effect (LATE) of confinement length. The estimated impact is local in that it is only estimated for the subset of cases for which the instrument – the capacity ratio – induces a change in incarceration lengths (Angrist, Imbens, and Rubin 1996).

We estimate the instrumental variable models using two-stage least squares (2SLS) which uses a system of equations, with a first and second stage, to estimate the causal impact of incarceration on the other axes of punishment. The “first stage” models, each of which regresses incarceration on the instrument, the county-level jail capacity ratio, are specified as follows:

where represents the sentenced incarceration amount, represents the county-level jail capacity ratio, and is the effect of the capacity ratio on incarceration amounts, net of the observed controls in the model. Akin to the multivariate model above, we include fixed effects for judicial district () and sentence year () to adjust for spatiotemporal heterogeneity in sentencing patterns.

The reduced form (“second stage”) models are specified as follows:

where , LFO or probation amounts, are specified as a function of the instrument (), the county-level jail capacity ratio, the observed case and defendant characteristics (), as well as the fixed effects for judicial district () and sentence year (). If the assumptions outlined above are met, the causal estimate of the impact of incarceration on each of the other punishment outcomes () can be obtained via the ratio of the reduced form coefficients over the first-stage coefficients:

where is the estimated causal effect of incarceration on each of the alternative punishment outcomes. The estimation procedure described here is done in one step, which yields standard errors adjusted for the strength of the relationship between the instrument and incarceration. In effect, this adjusts the standard errors for the fact that the incarceration regressor in the second stage is estimated, as opposed to observed. 2SLS estimates, in this study, effectively estimate the resulting movement in probation and LFO amounts as a result of the change in incarceration induced by jail capacities, allowing for more accurate estimation of the focal extra-legal race effects. All models are estimated using the ‘ivreg’ function in the R package ‘AER’ (Kleiber and Zerleis 2008).

# Results

## Descriptive Analyses

Figure 1 displays the mean punishment amounts for each axis by race. These means are unadjusted for offense mix and severity (among other variables), and represent the simple bivariate relationship between race/ethnicity and sentenced amounts of each form of punishment. The left-most panel of Figure 1 shows the mean incarceration days sentenced for each defendant racial group. Black defendants are sentenced to the most incarceration on average, with a mean of 348 days, followed by Hispanic (249 days), and Native American defendants (237 days). Conversely, White defendants are sentenced, on average, to lower incarceration lengths, with a mean of about 154 days.

[Insert Figure 1 about here]

A somewhat different pattern emerges for monetary sanctions, with White and Hispanic defendants sentenced to relatively higher LFO amounts per case. White defendants are sentenced to $490 of fines and fees on average, and Hispanic defendants on average face $437 in fines and fees. Native American defendants trail slightly behind Hispanic defendants at $371. Black defendants owe comparatively less at sentencing with mean fine and fee amounts at $212. Other Race and Asian defendants are ordered $359 and $344 per case respectively. To summarize these descriptive results thus far, Black and Native American defendants receive comparatively more incarceration and lower LFOs, whereas White defendants receive more LFOs and less incarceration on average.

Figure 1 also displays the race-specific means of our third dependent variable, probation length. White and Native American defendants have the highest average probation sentences at 829 days and 779 days respectively. In comparison, Hispanic (676 days), Asian (726 days), and Other Race (708 days) defendants have lower average probation lengths, with Black defendants having the lowest mean probation length (564 days). In sum, the overall racialized pattern in sentenced punishment reveals a bifurcation along the lines of race, with White defendants receiving longer community surveillance and larger monetary punishments, and non-White defendants receiving longer confinement sentences. Overall, the unadjusted disparities provide preliminary evidence for Hypothesis 1, but evidence *contrary* to H2 and H3 which predicted LFO and probation amounts for Black, Native American, and Hispanic defendants to be higher than for White defendants.

## Multivariate Model of the Package of Punishment

Table 2 displays results from a multivariate linear regression of incarceration length, total LFO (fine and fee) orders, and probation length — which we refer to as the standard approach to estimating the extra-legal race effects on punishment amounts. As discussed in the methodology section above, each dependent variable is log transformed, so we exponentiate each race coefficient, which then represents the multiplicative factor for each mode of punishment as compared to White defendants.

[Insert Table 2 about here]

The first column in Table 2 shows the estimates in the model predicting incarceration days. Relative to White defendants, Black, Native American, and Hispanic defendants receive 13 percent (exp(.124) = 1.13), 39 percent, and 17 percent lengthier incarceration sentences , respectively, net of the other covariates, which provides support for H1. In contrast, the coefficients for Asian and Other Race defendants are statistically nonsignificant and negative, indicating that, on average, Asian and Other Race incarceration lengths tend to be similar to White defendants, net of other factors.

Estimates in the second column predict the amount of legal financial obligations (LFOs), logged and adjusted for inflation to January 2018 dollars. In contrast to Model 1, Black, Hispanic, Native American, and Other Race defendants receive *lower* monetary sanctions, net of other factors, as compared to White defendants, consistent with the bivariate results in Figure 1. Specifically, Black defendants are associated with about 47 percent ((exp(-.631)-1)\*100) lower LFO orders as compared to Whites, and Native American, Other Race, and Hispanic defendants receive 46 percent, 21 percent, and 21 percent lower LFOs respectively. Although Asian and White defendants had comparable incarceration sentences, , the monetary sanctions Asian defendants received were about 7 percent lower than those of White defendants. This provides evidence contrary to H2, as Black, Hispanic, and Native American defendants have *lower* fine and fee amounts. This pattern of results largely parallels the descriptive racial patterns in Figure 1, albeit the disparities are attenuated when adjusted for legal and other factors. Although Black, Hispanic, and Native American defendants receive lower fines and fees on average, they are sentenced to longer incarceration sentences, net of other observed measures. These results suggest that the “punishment mix”, for similarly situated cases, is patterned in a bifurcated manner by defendant race.

The third column displays the multivariate estimates of probation length. The racial patterns in probation are generally opposite in direction to those observed for incarceration length. All non-White defendants receive significantly lower probation lengths relative to White defendants, net of other factors, apart from Asian defendants who receive statistically similar amounts of probation on average. In particular, Black, Hispanic, and Native American defendants are associated with 19 percent, 29 percent, and 21 percent shorter probation sentences respectively. Asian and Other Race defendants, similarly to Model 1, display statistically nonsignificant mean differences as compared to White defendants in terms of probation, net of other factors. This model provides no support for H3, as Black, Hispanic, and Native American defendants have lower probation loads for similarly situated cases.

In sum, the model in Table 2 suggest that Black, Native American, and Other Race defendants receive less punitive sentences in terms of financial punishment and community supervision, but more punitive sentences in terms of incarceration, as compared to White defendants. Overall, these results suggest that more carceral forms of punishment, such as incarceration, are levied more heavily against non-White defendants, whereas White defendants have the highest probation loads overall.

## Instrumental Variable Models of the Package of Punishment

It is clear from the results in Table 2 that race is associated with incarceration lengths, LFO amounts, and probation sentences. Furthermore, these results show clear variations in racialization at the sentencing stage, at least prior to adjustment for intercorrelations within the punishment matrix. If incarceration is associated with either LFOs or probation, however, then this relationship, left unspecified, will bias the residual race effects in the models and potentially lead to error-laden conclusions about the relationships between race and sentencing. To investigate this possibility regarding the confounding character of incarceration, we next present the instrumental variable estimates of monetary sanction amounts and probation days adjusted for instrumented confinement days.

The models in Table 3 introduce our instrumental variable estimates of LFO amounts ordered and probation length, and Figure 2 summarizes the race effects across the axes of punishment and compares the estimates between the standard approach and our IV design in a coefficient plot. As mentioned above, an F-test of our instrumental variable in the first stage indicates that jail capacity ratios are a sufficiently strong instrument of confinement length (F = 10.58, p < .01). Additionally, a Wu-Hausman test confirms our expectation that incarceration days are endogenous and correlated with the error term of the LFO and probation equations (LFO: F=136.08, p <.001; Probation: F=57.62, p <.001).[[3]](#footnote-3) To reiterate the discussion above, the IV estimates purge the simultaneity bias and threat of omitted variables from the estimation of the incarceration length effect, conditional on the IV conditions discussed in the Analytic Strategy section being satisfied. According to the IV estimates, the causal effect of incarceration days on monetary sanctions is negative, suggestive of a substitution effect, with a 1 percent increase in incarceration days resulting in about a 3.6 percent decrease in monetary sanctions. This is indicative of a “trade-off” or “substitution” relationship between the two forms of punishment, wherein sentencing packages with higher incarceration lengths are compensated with lower monetary sanction costs. This coefficient provides strong evidence for H4.

[Insert Table 3 about here]

[Insert Figure 2 about here]

 Importantly, the introduction of instrumented incarceration days to the model alters the race effects on LFOs as compared to the multivariate model in Table 2. Black, Hispanic, and Native American defendants, net of incarceration, *do not* receive lower LFOs than White defendants, suggesting that the statistically significant negative coefficient observed in Table 2 is due, in part, to the “trade-off” between incarceration and monetary sanctions. Thus, after adjusting for the substitution effect between incarceration and monetary sanctions, non-White defendants are ordered comparable fines and fees on average to White defendants, net of other observed characteristics. These findings suggest that part of the racial disparities in financial punishment in Table 2 were driven by racial differences in incarceration length and mask the similarity in LFO amounts for sentences that have comparable incarceration orders. Further, these findings illustrate that the racial disparities are primarily a function of the trade-off between different axes of punishment, as the race effects are diminished in the presence of incarceration. This suggests that the racial disparities of incarceration “bleed” into racial disparities in LFOs, and when like cases with comparable incarceration amounts are considered, White and non-White defendants receive comparable LFO orders.

Model 2 in Table 3, which presents an IV specification for probation days, shows that, contrary to the LFO model, incarceration has a positive causal effect on probation amounts, with a 1 percent increase in confinement length associated with a 2.3 percent increase in probation days, the patterns of which run contrary to H4. Rather than substitution of one punishment for another, this relationship is indicative of a “piling on” (Stewart and Uggen 2013), wherein sentences with higher incarceration amounts are packaged together with higher probation amounts.

 In terms of the extra-legal race effects, Black, Hispanic, and Native American defendants receive lower probation sentences, and the direction of these associations mirrors that of the standard multivariate approach depicted in Table 2. However, the magnitudes of the coefficients in the IV specification are larger comparatively: Black, Hispanic, and Native American defendants receive 39 percent, 50 percent, and 63 percent lower probation amounts on average, net of incarceration, as compared to White defendants. Although this finding may be unexpected, following our conceptual framework, Models 1 and 2 individually represent an incomplete account of the entire punishment package, thus interpreting them separately may not be intuitive. Nevertheless, this further suggests that failing to adjust for the compounding relationship between incarceration and probation *underestimates* the racial differences in probation.

Returning to our conceptual framework, we find evidence that the packaging of punishment is racialized (see Figure 2 for a comparison of the standard multivariate estimates with the IV estimates). Compared to White defendants, Black defendants receive punishment packages composed of comparatively longer incarceration terms, shorter probation terms, and similar or slightly lesser LFOs; the punishment package for Hispanic defendants also includes comparatively longer incarceration terms, shorter probation terms, but similar or slightly greater LFOs. Finally, for Native American defendants in Minnesota in our study period, the package of punishment is perhaps the most severe, consisting of much longer terms of incarceration, much shorter probation terms, and much greater LFOs. The standard multivariate approach would suggest that the opposite is true for LFOs, with non-White defendants ordered to lower monetary sanction amounts on average. However, the IV estimates show that this is due to the substitutive relationship between incarceration and LFOs, and most non-White groups receive comparable or potentially even larger LFOs. Comparatively, probation is also racialized, wherein non-White defendants receive lower probation amounts as compared to White defendants, even at the same levels of incarceration. In sum, these findings illustrate that the packaging of punishment a defendant receives is contingent in complex and bifurcating ways depending on the race of the defendant.

# Conclusion

Incarceration has been the principal focus of the sociological study of punishment, but it is only one of punishment’s institutional axes. Punishment and sentencing scholars have devoted far less attention to the broader punishment package. In this paper, we have examined how the racialization of punishment may depend on the particular facet of the punishment matrix being analyzed. Specifically, we find that the “mix” of punishment that defendants receive is patterned by race. Black, Hispanic, and Native American defendants, generally receive lower fine and fee amounts and probation sentences, but this is offset by longer incarceration sentences.

However, when we statistically account for incarceration in the sentencing of both probation and monetary sanctions using our IV design, non-White defendants tend to receive *comparable* monetary sanctions, and lower probation amounts than would be suggested using the standard multivariate regression estimator. Our findings on incarceration are largely consistent with previous work in other social contexts that finds Black, Native American, and Hispanic defendants receive longer sentences. In predicting monetary sanctions however, we may have reached an erroneous conclusion if we had failed to properly specify incarceration as an endogenous part of the model: that racial minority defendants received a “break” when it comes to monetary sanctions. To the contrary, our IV models indicate that, compared to White defendants, racial minority defendants receive statistically comparable LFOs once the incarceration sentence is taken into account. Importantly, the monetary sanction model demonstrates that the racial disparities in monetary sanctions are in large part explained by “trade-off” between different forms of punishment.

Our estimates suggest that the racial disparities in incarceration can have downstream consequences for disparities in LFOs. When extant levels of racial variation in defendant ability to pay are considered, the race effects in the model likely *understate* the differential impact monetary sanctions have on defendant experiences (e.g., debt loads) across racial groups. Our estimates here *do not* suggest an equal burden of monetary sanctions (e.g., Harris 2010); in light of extant racial differences in ability to pay, the seeming “equality” of LFO orders represents a racially disparate impact. between White and Asian defendants, on the one hand, and Black, Native American, and Hispanic defendants on the other. The combination of these debt burdens and large extra-legal disparities in incarceration suggests a pattern of pernicious race effects in the sentencing stage of the criminal legal system in Minnesota.

However, we do not find evidence for a “trade-off” between incarceration and probation. Non-White defendants generally receive shorter probation sentences on average, both before and after adjusting for incarceration in the IV models. Thus, it appears that probation is racialized above and beyond the existing disparities in incarceration, that is the package of punishment for Black, Hispanic, and Native American defendants contains relatively shorter probation lengths even at the same levels of incarceration. Thus, probation amounts are not a mere downstream consequence of racial inequities in incarceration lengths but are rather *a terrain amenable to racial differences in their own right*. Importantly, the lower probation amounts here are not mere reflections of a “trade-off” with incarceration but, rather, are patterned by race in and of themselves. In our view, this signals the advantage White defendants carry in the sentencing phase: Black, Hispanic, and Native American defendants receive a comparably more carceral package of punishment for similarly situated cases.

Although the reasons for these disparities in probation net of racial differences in incarceration are beyond the scope of our analysis, we can speculate about the reasons these disparities may exist. First, our analysis, and the SCAO data, does not account for the *qualities* of probation, only the quantity, and previous research suggests that Black defendants in Minnesota receive more restrictive terms of probation as compared to White defendants Anat Kimchi (2021), which may help explain the shorter relative length for Black defendants. Second, previous research has indicated that Black and Indigenous defendants have higher rates of probation revocation (Wilson 2023; Waif et. al. 2020), which judges may consider when deliberating in the sentencing phase. Finally, probation often includes some degree of support services such drug treatment, mental health counseling, and job search assistance. If judges and/or courtroom cultures perceive non-White defendants as less deserving or that the support will be less efficacious for non-White groups, they may reduce probations lengths commensurate with their extant racial assumptions.

In total, our analysis provides further evidence of the racialized character of modern punishment in America. Specifically, the results here are consistent with much research on the extra-legal impact of race on sentences to incarceration (e.g., King and Light 2019), and our models extend these effects to monetary sanctions, even net of incarceration sentences. These results also show that incarceration disparities “bleed into” decisions regarding monetary sanction orders, in which the trade-off between incarceration and LFOs results in a differential mix of punishment that is shaped by racial differences in incarceration. Further, our results highlight the persistent and ubiquitous sentencing disparities in incarceration. Not only do non-White defendants receive longer incarceration sentences, but they are also sentenced to comparable monetary sanctions as compared to more advantaged White defendants when controlling for the already existing disparities in incarceration. This is not to say that the use of monetary sanctions in the criminal legal system in Minnesota is equitable: coupling the null differences with extant racial group differences in ability to pay suggests that LFOs are more burdensome for non-White defendants. This is further evidence suggesting that the criminal legal system continues to play a prominent role as a racialized social control institution (e.g., Waquant 2009), as well as place a significant cost burden on disadvantaged communities of color (e.g., O’Neill et. al. 2021). However, these racial impacts are not solely the purview of Blackness, as we document consistent extra-legal effects for both Hispanic and Native American defendants in terms of incarceration and probation. In sum, these results illustrate that the “packaging” of punishment is racialized in complex and sometimes counterintuitive ways.

Additionally, the analysis here indicates that not only has crime become racially typified in American culture (e.g., Quillian and Pager 2001), but that punishment, at least in the Minnesota courts, has a racially typified character as well. Even in an era of sentencing guidelines and the standardization of sentences (Ulmer 1997), race continues to shape the modality and severity of punishment a defendant encounters. This has severe implications beyond sentencing, including considerable “collateral consequences” (Uggen and Stewart 2014) that accompany criminal punishment, and the role of these disparities in the reproduction of American racial stratification (Uggen and Wakefield 2010). Further, these processes can be conceptualized within a broader framework in which the criminal legal system plays a role in the social construction of race (e.g., Ray 2019) wherein racial ideologies, schemas, and assumptions become codified into formal and informal courtroom patterns in punishment decisions at the sentencing phase which have societal implications situated along lines of defendant race.

Our analysis here is not meant to replace existing models of the racial effects on punishment, but rather to extend them. We have illustrated the interrelationships between varied modes of punishment, and pointed toward a more inclusive approach to capturing the full *package* of punishment. Our analysis suggests that studies of race and incarceration would benefit from considering multiple forms of punishment in tandem. For example, studies of monetary sanctions may be incomplete unless they also consider their relationship to incarceration sentences. Similarly, studies of probation may underestimate racial differences if they do not also incorporate incarceration as part of the model. We believe our analyses are more consistent with how punishment is experienced by defendants, who often leave the courtroom with a large and unwieldy package of monetary and non-monetary sanctions.

Further, our analysis not only highlights the packaging of punishment by race, but how the estimation of racial and other effects on punishment can be misleading if the analyses do not account for other concurrent forms of punishment that are levied at sentencing. Controlling for the incarceration effect alters the magnitude, *and the direction*, of many of the race indicators. Therefore, by considering any facet of punishment in isolation risks missing out on how that punishment fits into the overall package of punishment, yielding a biased or distorted picture of how race and other factors shape punishment. Considering these parts of punishment in tandem expands our ability to understand how sentencing outcomes are shaped by race and other factors. In sum, our analysis suggests that researchers should consider multiple facets of the punishment nexus to get a more complete, and arguably more accurate, portrayal of punishment.

A limitation to the current study is that we only consider the confinement, probation, and monetary components of punishment, and do not consider other aspects such as other court-ordered requirements such as mental health treatment or drug testing. While some of these facets may remain charge-type specific, they could be collinear with key variables and the components of punishment, and therefore confound our race coefficients. Future research should expand the punishment outcomes to gain a more complete and resolute picture of the complete “punishment package” amongst different racial groups. Moreover, the SCAO data are limited in terms of measures at the defendant level, missing measures such as income and educational status. These measures could represent further axes of stratification within the sentencing stage of punishment, and are highly correlated with race (Manduca 2018; Kao and Thompson 2003). Minnesota also may be an outlier in terms of the use of LFOs and other forms of punishment, as other research shows Minnesota gives comparatively less fines and fees than many other states (Harris et. al. 2017). Finally, our instrumental variable models only consider the impact of incarceration on LFOs and probation. It is possible that each may also simultaneously impact incarceration, as well as each other. Therefore, our analyses here only describe one aspect to the broader matrix of the punishment package. Finding suitable instruments for probation and, in particular, LFOs (e.g., county-level fiscal data) that do not violate the exclusion restriction is a difficult task, but one that future research should broach.

The relative scarcity of research analyzing multiple components of punishment in tandem is likely due in part to the empirical modeling challenges discussed above, as well as access to complete and robust individual-level sentencing data. Notwithstanding the above caveats, our analysis provides a foundation for future work to consider the nexus of race and the myriad forms of punishment and illustrates that punishment should be modeled as it is often experienced: as a constitutive package of different forms and intensities of punishment.

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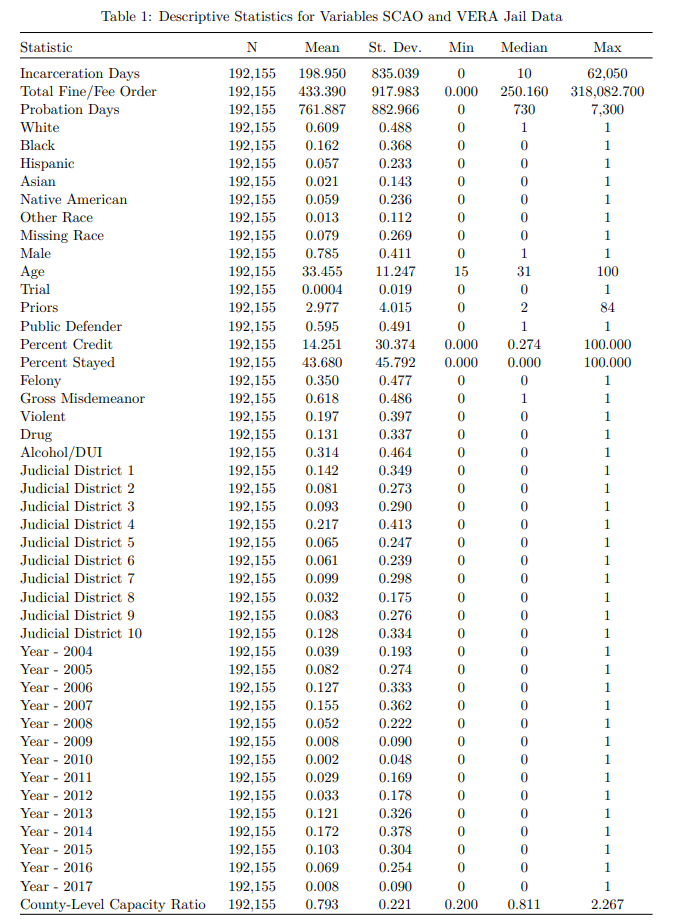
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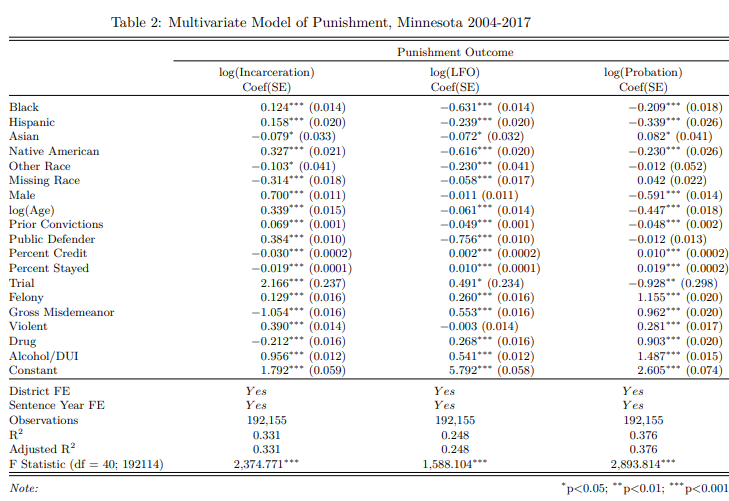
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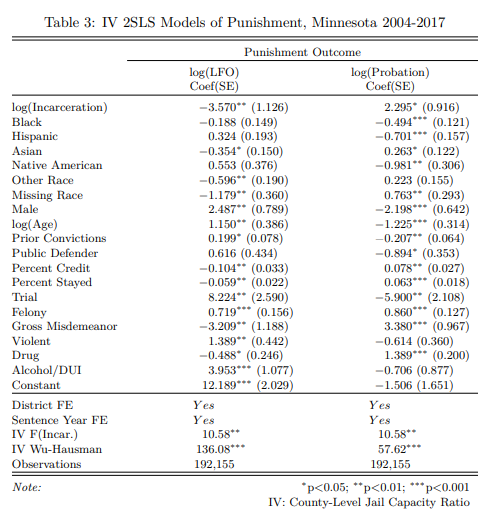
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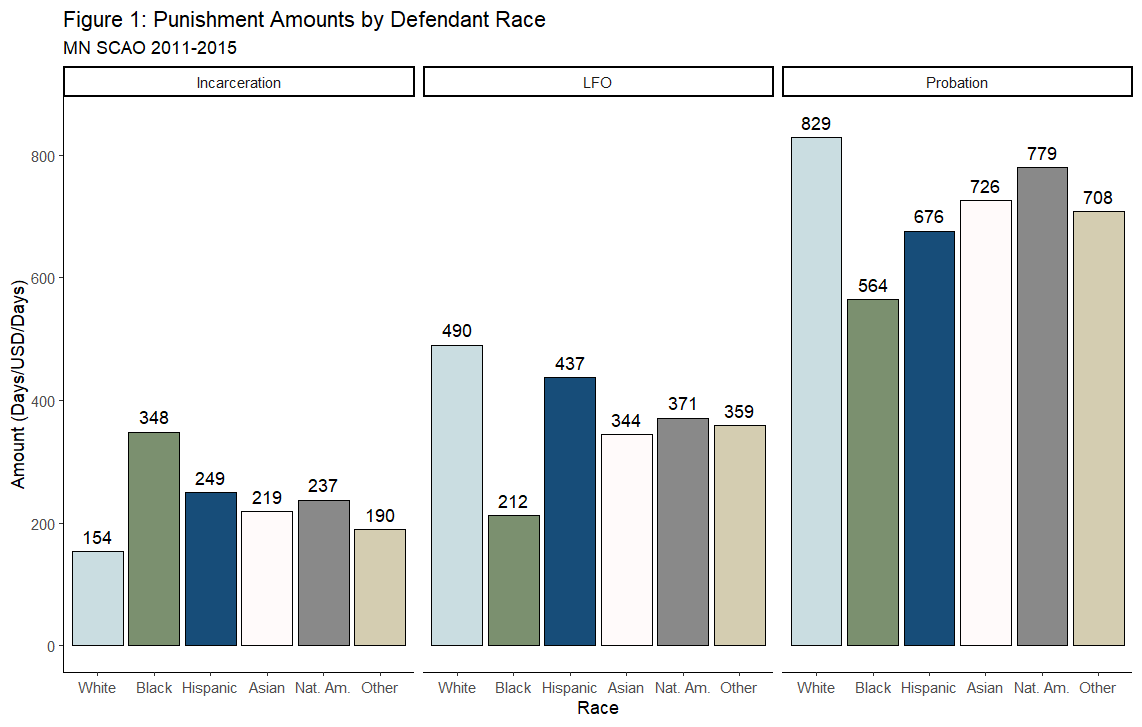
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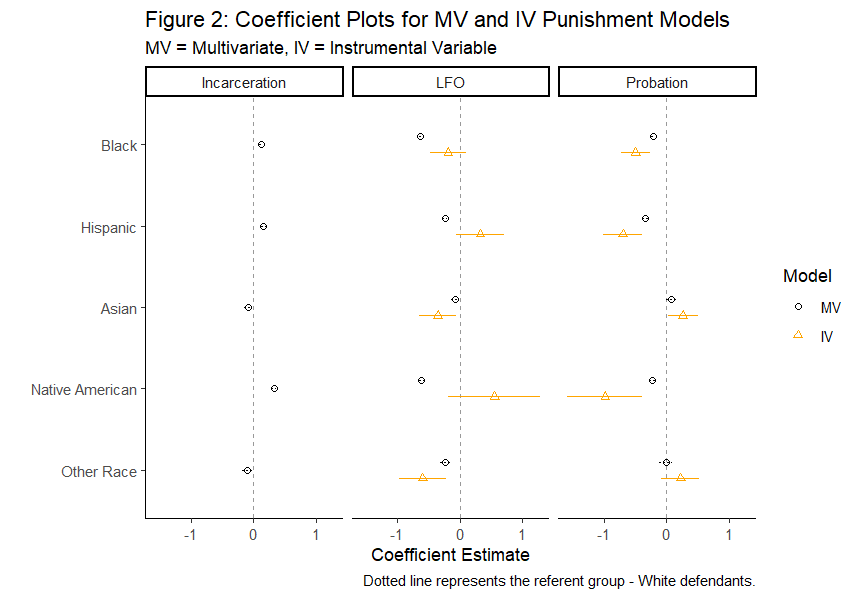
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1. Our courtroom observations indicated these statements made by legal actors held true during in-court sentencing practices as well. [↑](#footnote-ref-1)
2. This algorithm calculates record similarity using the affine gap distance on the full name and birthday string fields, then uses human-classified matched outcomes to estimate, via iterated regularized logistic regression, the probability of a match given the observed record similarity. [↑](#footnote-ref-2)
3. The Wu-Hausman test is an F-test of the second stage model but including the residuals from the first stage model. If the residuals from the first stage model (i.e, the variation in incarceration days hypothesized to be correlated with the error term) have a significant impact, that is evidence of endogeneity. The null hypothesis is that the increase in regression sum of squares in the second stage model upon introduction of the first stage residuals is equal to 0. [↑](#footnote-ref-3)