Racial Bias by Prosecutors: Evidence from Random Assignment

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Abstract

There is much interest in understanding the extent to which racial bias drives the large racial disparities in criminal justice outcomes. However, little is known about whether prosecutors exhibit racial bias, despite the widespread belief that prosecutors have more power and discretion than any other actor in the justice system. This paper uses data from New York County to test for racial bias in convictions by being the first to exploit the conditionally random assignment of prosecutors to cases. To overcome confounding factors associated with defendant and prosecutor race, I use a difference-in-differences to consider how much more black versus white defendants are convicted by white prosecutors, compared to the same difference for black prosecutors. Results indicate strong evidence of racial bias for property crimes, even after adjusting for multiple comparisons, but not for other crimes. Property crime results show white defendants have similar conviction rates regardless of prosecutor race. However, while prosecutors of both races convict black defendants at higher rates, the difference in conviction rates across white and black defendants is 5 percentage points (8 percent) higher for white prosecutors than black prosecutors. Additional results indicate this effect is driven by differences in dismissals and by defendants with no criminal history.

1 Introduction

In the United States, there is widespread recognition of racial disparities in criminal justice outcomes. Black Americans are more than three times as likely to have a criminal record and to have been incarcerated compared to non-blacks (Shannon et al., 2017). There are widespread perceptions that these disparities are due to a system that is unfair to black and Hispanic Americans (Rasmussen Reports, 2014; Pew Research Center, 2019). Recent work has estimated the impact of race in criminal justice by exploiting quasi-random assignment of police (e.g., Hoekstra and Sloan, 2020; West, 2018), judges (e.g., Arnold et al., 2018; Shayo and Zussman, 2011), and juries (e.g., Anwar et al., 2012; Flanagan, 2018). However, little is known about the extent to which prosecutors exhibit bias. This is critical given the consensus that prosecutors have more discretion than any other agent when it comes to the handling of alleged crimes (Luna and Wade, 2015; Pfaff, 2017; Sklansky, 2018; Stith, 2008). For example, according to the American Civil Liberties Union, "Prosecutors are the most influential actors in the criminal justice system"(American Civil Liberties Union, 2020). In particular, prosecutors choose whether and how to dismiss a case, assign charges, offer plea deals, strike potential jury members, and handle a case at trial. This has led legal scholars and judges to hypothesize that prosecutors could play a central role in perpetuating such racial disparities (Foster v. Chatman, 2016; State v. Monday, 2011; Pfaff, 2017; Rehavi and Starr, 2014; Smith and Levinson, 2011).

This study's primary advantage is that I can estimate prosecutor bias in a setting where cases are conditionally randomly assigned to white and black prosecutors. Nonrandom matching is commonplace, as prosecutors are often allowed to choose their cases or are assigned cases by a supervisor. To overcome this endogeneity concern, I exploit the random assignment—conditional on screening date—of defendants to prosecutors in New York County through the Early Case Assessment Bureau. During each shift at the Early Case Assessment Bureau, cases are assigned on a rotational basis, depending on a case's timestamp or when the case was received. The case assignment process works as follows: when

prosecutors arrive at the office, they are given the earliest timestamped case available by the office administrator, who strictly enforces this procedure. Prosecutors cannot screen or even look at the case before they begin to work on it. When they finish writing up their case, they return to the office administrator and are again assigned the earliest timestamped case available.

This as-good-as-random assignment of prosecutors implies that a prosecutor's race is uncorrelated with a defendant's underlying guilt. Consequently, some defendants are randomly assigned, conditional on the case-screening dates, to prosecutors of their own race, while others are paired with opposite-race prosecutors. I provide empirical evidence for this random assignment by showing that prosecutor race is uncorrelated with defendant and case characteristics. I use this quasi-random variation in prosecutor race to identify opposite-race effects. Specifically, I estimate opposite-race effects by differencing out the roles of defendant and prosecutor race, similar to other studies on racial bias (e.g., Price and Wolfers, 2010; West, 2018).

I identify effects using detailed administrative data from the New York County District Attorney's Office, which were collected by the Vera Institute (Kutateladze, 2017). The New York County District Attorney's Office prosecutes all cases originating in New York County (Manhattan). This totals over 100,000 cases per year from a jurisdiction of over 1.6 million people, making it the nation's fourteenth largest prosecutor's office (City of New York, 2015). The New York County District Attorney's Office also promotes itself as being especially progressive due to its commitment to criminal justice reform, community partnerships, and reducing bias (Manhattan District Attorney, 2018b). The data collected include information on the case assignment (as well as dismissal) process and conviction decisions for all cases assigned via the Early Case Assessment Bureau.

Results indicate strong evidence of racial bias for property crimes, even after adjusting for multiple comparisons, but not for other crimes. Property crime results show white defendants have similar conviction rates (50 percent) regardless of prosecutor race. However, while black and white prosecutors convict black defendants at higher rates (61 percent and 65

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percent, respectively), the difference in conviction rates across white and black defendants is 5 percentage points higher for white prosecutors than black prosecutors. Corresponding estimates thus illustrate that assignment to an opposite-race prosecutor increases the probability of guilt by 5 percentage points (8 percent) for property crimes. This difference represents 40 percent of the black-white gap in conviction rates for property crimes and is robust to multiple inference correction. Results are also not driven by prosecutors' responses to observed characteristics correlated with defendant race, but not necessarily defendant race itself. Additional results demonstrate that these differences are driven by decreased dismissal of cases by opposite-race prosecutors, and defendants with no criminal history. Further, an analysis of individual prosecutors suggests that many prosecutors may exhibit racial bias for property crime offenses. This indicates the results cannot be explained by a few bad apples; instead, bias is more systemic.

In addressing the role of opposite-race prosecutors, this paper contributes to the empirical literature on prosecutor behavior in general (Arora, 2019; Krumholz, 2019; Rehavi and Starr, 2014; Tuttle, 2019; Yang, 2016). Some existing papers focus on how prosecutors respond to financial and electoral pressures. Yang (2016) uses pension eligibility and judge deaths as instruments for judicial vacancies and resource constraints, concluding that these cause more prosecutor case dismissals. Using a regression discontinuity created by close elections, Arora (2019) and Krumholz (2019) find that when a District Attorney is Republican (versus a Democrat), defendants receive harsher punishments for felonies. Krumholz (2019) also finds that the election of a nonwhite District Attorney leads to fewer prison admissions, by comparing counties with and without a nonwhite District Attorney over time. In addition, there is a broader literature summarized by Kutateladze and Andiloro (2014) and Kutateladze et al. (2012) that uses selection-on-observables to address the impact of defendant race at various stages of the criminal justice process.

This paper is most closely related to work by Rehavi and Starr (2014) and Tuttle (2019). In a seminal paper, Rehavi and Starr (2014) use a selection-on-observables approach and report that prosecutors may be responsible for racial disparities in federal sentencing. How-

ever, it is difficult for the authors to rule out alternative interpretations such as non-random prosecutorial selection of cases or unobservable differences in defendants across race.

Tuttle (2019) examines abnormal bunching in crack cocaine amounts used for federal sentencing and shows that black and Hispanic defendants receive harsher drug sentences. These results are likely driven by prosecutors shifting drug amounts just over a quantity threshold, triggering mandatory minimum sentences.[1]

This present study makes several contributions relative to the aforementioned studies. The primary advantage is that, to my knowledge, it is the first to estimate bias using as-good-as-random assignment of prosecutors to cases. This enables me to overcome potential concerns that observed disparities could be due to unobserved differences across defendant race. Second, I can use data on individual prosecutors to examine whether the observed bias is driven by many prosecutors, or only a few. Third, this study differs from Tuttle (2019) in that I can test for racial bias in many prosecutor decisions across different types of cases, where the level of prosecutorial discretion—and thus, the scope for racial bias to matter—can differ. Importantly, this means that I consider the entire cumulative effect of prosecutor bias from case creation to disposition. Finally, in contrast to Rehavi and Starr (2014) and Tuttle (2019), I consider state rather than federal prosecutors. The behavior of state prosecutors is particularly relevant since interaction with the federal criminal justice system is relatively rare. For example, only 10 percent of incarcerated individuals are in federal jails or prisons (Sawyer and Wagner, 2020).

Even so, this approach also has limitations. The first is that this sample is composed of misdemeanors, rather than felonies, since felonies are assigned non-randomly. However, I note that many prosecutors in my sample later prosecute felonies—indeed, nearly all prose-cutors of felonies in this county begin their careers in the Early Assessment Bureau. Also, because actual guilt is unobserved, as with previous studies, it is not possible to know

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[1]In addition, there has been considerable research on racial and gender bias by police officers (e.g., Antonovics and Knight, 2009; Anwar and Fang, 2006; Fryer Jr, 2020; Goncalves and Mello, 2018; Grogger and Ridgeway, 2006; Horrace and Rohlin, 2016; Johnson et al., 2019; Knowles et al., 1999; Knox and Mummolo, 2020; Pierson et al., 2017; Sanga, 2009; Weisburst, 2019; West, 2018), judges (e.g., Abrams et al., 2012; Arnold et al., 2018; Depew et al., 2017; Eren and Mocan, 2018; Gazal-Ayal and Sulitzeanu-Kenan, 2010; Johnson, 2014; Knepper, 2017; Lim et al., 2016; Schanzenbach, 2005; Shayo and Zussman, 2011; Steffensmeier and Hebert, 1999), and juries (e.g., Anwar et al., 2012, 2018; Flanagan, 2018; Hoekstra and Street, 2018).

which prosecutors (white, black, or both) are biased without imposing strong assumptions. Instead, estimates presented here capture the combined bias of white prosecutors for and against white and black defendants, and of black prosecutors for and against black and white defendants.

The results of this paper have several important implications. First, my results imply that in-group bias can persist despite the widespread focus on equal treatment in prosecutor training. For example, the American Bar Association's Model Rules of Professional Conducts states, "The prosecutor should not manifest or exercise, by words or conduct, bias or prejudice based upon race" (American Bar Association, 2018). These guidelines even go so far as to advocate active resistance to bias: "A prosecutor's office should be proactive in its efforts to detect, investigate, and eliminate improper biases, with particular attention to historically persistent biases like race, in all of its work" (American Bar Association, 2018). This study's finding of racial bias for property crimes is particularly striking given that I study the New York County District Attorney's Office, which is known for actively trying to combat racial discrepancies in criminal justice outcomes (Manhattan District Attorney, 2018b). For example, in 2010, the New York County District Attorney's Office stopped prosecuting most low-level infractions and began offering a treatment program instead of probation for low-level drug crimes. Both policies are described as being particularly important for communities of color (Cyrus Vance For District Attorney, 2017). The New York County District Attorney's Office also employs a chief diversity officer and diversity committee because they believe a diverse staff can help reduce racial bias (Manhattan District Attorney, 2018a).

Second, as most defendants are black, and the majority of prosecutors are white, black Americans disproportionately bear the consequences of opposite-race bias. These costs often extend beyond penalties imposed by courts. Perhaps the most significant of these costs are the poor labor market outcomes attributed to more convictions and, thus, criminal records (Finlay, 2008; Mueller-Smith and Schnepel, 2017; Pager, 2003). Further, the estimated bias is largest for defendants with no criminal history. This means that for many defendants,

prosecutor assignment is particularly important because it could be the difference between a clean record and their first conviction. Last, the results of this paper have compelling implications for designing policies aimed at reducing racial disparities. Estimates presented here suggest that if white prosecutors were to treat defendants the same way as black prosecutors, the black-white gap in property crime convictions could be reduced by half.

Therefore, targeting prosecutor behavior could be a productive policy tool for reducing disparities. However, it is also important to recognize that for over half (61 percent) of the crimes in my sample, I do not find evidence of racial bias. Therefore, I note that many cases and defendants receive fair treatment already. In light of these differences across cases, it may be optimal to target specific crimes or case characteristics to better eliminate bias. This also highlights the need to understand further why bias only occurs in certain contexts.

2 Background and Data

2.1 Case Assignment and the Prosecutor's Role in New York County

One problem in assessing the effect of prosecutor race is the nonrandom matching of cases. To overcome this problem, I chose to study New York County, which gives prosecutors no discretion in case selection for certain crimes. In New York County, after a defendant is arrested, the police are responsible for recording all arrest charges and prior arrest history during booking. If the case is a less serious offense, such as an infraction or violation, the defendant is often given a desk appearance ticket or court summons, and the case is not assigned to a prosecutor. Next, the police fax or email misdemeanor and felony cases to the Early Case Assessment Bureau, where all misdemeanors and felonies in New York County are assigned to a prosecutor. Felony and misdemeanor cases follow a different assignment procedure. For felonies, a head prosecutor screens each case and assigns it to another prosecutor based on their experience with particular types of cases. Because the assignment of felony cases is not as-good-as random at the Early Case Assessment Bureau, I exclude them from my analysis.

In contrast to felonies, the assignment of misdemeanor cases is as-good-as random. During each shift at the Early Case Assessment Bureau, cases are assigned on a rotational basis depending on a case's timestamp, which is when the bureau received it. The assignment process works as follows: when prosecutors arrive at the office, the office administrator gives them the earliest timestamped case available. The timestamp on the case is essential. During my visit to the Early Case Assessment Bureau, multiple prosecutors and administrators mentioned the importance of handling cases in the order they arrived. To this end, the administration works 24 hours a day to handle arrests that come in outside of typical work hours, to ensure that timestamps are correct.[2] A prosecutor cannot screen, or even look at, a case before she begins working on it. When she is finished writing up her case, she will return to the administrator and is again assigned the earliest timestamped case available. I was able to observe this prosecutor case assignment when I visited the Early Case Assessment Bureau. The as-good-as-random assignment of cases was also confirmed by the researchers who originally collected these data. However, they do not consider the effects of opposite-race prosecutors, nor do they solely examine cases with as-good-as-random assignment (Kutateladze and Andiloro, 2014). In short, this assignment procedure means that the prosecutor and defendant pairing is as-good-as random throughout each screening day.[3]

Nearly all first-year prosecutors will work at the Early Case Assessment Bureau as part of their training. Each month, a group of first-year prosecutors is assigned to work at the Early Case Assessment Bureau to handle misdemeanor cases by a supervisor. Because of these rotations, I can observe the decisions of many different prosecutors. However, they are primarily less experienced. When first-year prosecutors are not working at the Early Case Assessment Bureau, they are also exposed to the many different bureaus and units within the District Attorney of New York County's Office. These bureaus and units specialize in specific

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[2]On average more than 250 cases come through the Early Case Assessment Bureau each day.

[3]One limitation of this dataset is that I do not observe which shift a prosecutor works within a screening day. Prosecutors do not get to explicitly choose their shift, but rather are assigned by a supervisor. In order for shift selection to explain my results, it must be the case that prosecutors with different race-specific unobservable characteristics are selected by their supervisors to work a specific shift, and defendants with race-specific unobservable characteristics commit crimes during their shift. This is particularly unlikely given that prosecutor do not typically select their shifts and that many cases come through ECAB everyday, so just because a crime was committed at 8 am (for example) does not mean that a prosecutor working at 8 am that same day will screen the case.

types of crimes, as prosecutors tend to believe that decision-making differs enough across case types to require specialization. After their first few years at the District Attorney of New York County, prosecutors will shift to working on more felony cases and begin to specialize in particular case types. Nearly all prosecutors who work on more specialized felony cases spent some time working at the Early Case Assessment Bureau with misdemeanors.

After a case is assigned to a prosecutor at the Early Case Assessment Bureau, the prosecutor has multiple opportunities to alter case outcomes. Specifically, the prosecutor can decide to decline to prosecute the case, change a defendant's charges, endorse pretrial detainment, pursue a case dismissal through adjournment in contemplation of dismissal, offer a plea deal, and design the plea deal. All of these decisions may alter a defendant's most crucial case outcome: guilty or not guilty.

The first decision a prosecutor makes is whether to decline to prosecute a case. In contrast to many other settings, prosecutors in New York County decline relatively few cases, likely due to the close relationship between the New York County's District Attorney's Office and the New York City Police Department (Kutateladze and Andiloro, 2014). This outcome is rare because most cases are only declined if the case has a complete lack of evidence or if the defendant was arrested for a crime that the District Attorney's Office has decided not to prosecute anymore.

Next, the prosecutor decides which charges to bring against a defendant at screening. Often this includes the option of increasing or decreasing the severity of charges assigned to a defendant's case.[4] For example, a defendant may be booked for a Class B misdemeanor crime, punishable by up to 90 days in jail, but a prosecutor may increase the crime at screening to a Class A misdemeanor punishable by up to 1 year in jail (New York State, 2018). The severity of charges is critical because prosecutors often choose to follow department norms for pretrial detainment, plea deals, and sentencing based on charge severity (Frederick and Stemen, 2012).

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[4]Prosecutors in Manhattan are specifically trained to be very careful in assigning screening charges. For example, prosecutors are told not to merely rerecord the arresting charges because the police officer may be unaware of a defendant's criminal history or the details of the characteristics of a specific charge.

The prosecutor also has the option of offering and designing a plea deal for all defendants. A plea deal can include charges that are higher or lower than the initial charges for which a defendant is booked. During plea bargaining, a prosecutor can also recommend a particular sentence to the judge. While a judge must approve of any plea or sentence, prosecutors play a significant role in designing the attributes of the plea deal and sentencing request. If a defendant accepts a plea deal, she will be considered guilty.

Instead of a plea deal, the prosecutor can also offer the defendant a particular type of dismissal, referred to as an adjournment in contemplation of dismissal. This acts as an agreement to dismiss a case in 6 to 12 months if there are no subsequent arrests. In New York, an adjournment in contemplation of dismissal is not a conviction or an admission of guilt.[5] It is also extremely rare that an adjournment in contemplation of dismissal will be reopened, let alone lead to a guilty outcome. During 2010 and 2011 in New York County, 36,411 court events had an adjournment in contemplation of dismissal outcome. Of these events, only 1 percent (384) had a later recalendaring. A recalendaring implies that the case could have been reopened, but not that the defendant was tried again and found guilty. Like a plea deal, an adjournment in contemplation of dismissal must be approved by a judge, but it cannot be offered without the approval of the prosecutor.[6]

Finally, a case can be disposed through a dismissal. A dismissal can be the result of a motion brought by a judge, defendant, or prosecutor. Misdemeanor cases can also be dropped unilaterally by a prosecutor (Kutateladze and Andiloro, 2014). For dismissals, charges against the defendant are immediately dropped. The most common reason for a dismissal in New York County is a lack of speedy prosecution, which makes up 34 percent of dismissals. A prosecutor's decision to prioritize certain cases could influence which cases are dismissed. Specifically, a prosecutor could choose to work on particular cases first, knowing that non-prioritized cases are more likely to be dismissed if the evidence is not gathered in time.

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[5]New York Criminal Procedure §170.55
[6]There are also special marijuana adjournment in contemplation of dismissals that can be offered without the approval of the prosecutor. These can only be offered in marijuana drug cases.

Cases may also be disposed through a trial. However, in my sample, which is primarily misdemeanors, only 0.03 percent of cases go to trial. Therefore, I do not separately investigate the probability of guilt through a trial or an acquittal. Cases with these outcomes are included in my measure of guilty or not.

Finally, for most cases, the New York County District Attorney's Office practices vertical prosecution, which means that the same prosecutor remains with the case from screening through disposition. Specifically, for 57 percent of misdemeanor cases, the prosecutor assigned to the case at the Early Case Assessment Bureau is the only one on the case. Other cases are reassigned to another prosecutor after arraignment. Importantly, in regard to those cases, I observe both prosecutors in my data. This allows me to conduct my entire study as an intent-to-treat analysis using the first assigned prosecutor to the case.

2.2 Data

I use data from the New York County District Attorney's Office, a large prosecutor's office responsible for prosecuting all crimes in the Manhattan borough of New York City. The dataset was compiled by the Vera Institute and is housed by the National Archive of Criminal Justice Data (Kutateladze, 2017).

I use the New York County District Attorney's Office's detailed administrative data on all misdemeanor cases disposed through the Early Case Assessment Bureau in 2010–2011 for New York County. All data were collected at the case level. I focus my analysis on black defendants, black prosecutors, white defendants, and white prosecutors, the majority of my sample. [7]

Police officers record their perceptions of defendant race on the New York Police Department's arrest reports. The New York County District Attorney's Office reports prosecutor race. Information on defendant and prosecutor race is missing for 1.6 percent and 4.9 percent of cases, respectively. I also do not observe defendant date of birth for 20 cases, defendant

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[7]If I consider the effect of minority prosecutors, I still find strong evidence of opposite-race bias for property crime. However, the bias estimate is of a smaller magnitude. Results for the minority sample are shown in Table A5. It follows that my estimates of opposite-race bias for only white and Hispanic prosecutors and defendants are not statistically different from zero (see Table A6.)

gender for 166 cases, and arrest zipcode for 94 cases. For the remaining analysis, I only show results for the sample of cases where I observe all case and defendant characteristics. Although these missing characteristics are likely the result of clerical mistakes and are not related to the race of the defendant, prosecutor, or case outcomes, I address this minor issue in Section A.2. Specifically, I show that my results are robust to the inclusion of cases with missing characteristics and to numerous assumptions about the value of missing characteristics.

Data from the New York County District Attorney's Office include the race of the defendant and prosecutor and other characteristics about the case, defendant, and prosecutor. For each case in the dataset, I observe arrest, screening, and sentencing charges, type of crime, prior arrest history, prior conviction history, prior incarceration history, gender, and age for the defendant. I also have information on the gender and race of the prosecutor, as reported by the New York County District Attorney's Office. Finally, I observe the disposition of every case that originated at the Early Case Assessment Bureau. Potential dispositions include conviction through trial, acquittal through trial, plea deal, decline to prosecute, dismissal, and dismissal through adjournment in contemplation of dismissal. Importantly, I also observe the screening date for each case. Because as-good-as-random variation in prosecutor race only requires I condition on the screening date of a case, I show in Section 4.1 that prosecutor race is uncorrelated with other case and defendant characteristics.

My primary outcome of interest is an indicator for whether the defendant was found guilty at the case level. This means that if a defendant is guilty of any charge on her case, she is considered guilty. Importantly, this includes all cases, even the dismissed ones. A defendant can be found guilty in one of two ways: by accepting a plea offer or by conviction through a trial. A defendant is considered not guilty if her case is declined or dismissed or if her trial ends in an acquittal. As mentioned before, the vast majority (99.9 percent) of guilty outcomes come from plea deals.[8]

Next, I also consider other decisions influenced by prosecutors that may determine a

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[8]Two hundred and eight cases go to trial, and 119 trial cases end in a conviction.

defendant's final case outcome (guilty or not guilty), to investigate what mechanism may drive the results. These outcomes include declined prosecution, case dismissal, dismissal through adjournment in contemplation of dismissal, charge increases, and pretrial detention. Declined prosecution means a case was dropped in the Early Case Assessment Bureau by a prosecutor, and case dismissal is a dismissal by a judge or prosecutor. An adjournment in contemplation of dismissal is an agreement to dismiss a case in 6 to 12 months if there are no subsequent arrests. Declined prosecution, case dismissal, and adjournment in contemplation of dismissal all directly lead to a not guilty outcome. Charge increases, meaning a case's charges are changed to a higher severity at any point before disposition, and pretrial detention may indirectly influence a case outcome. Pretrial detention means being detained after arraignment.

Crime types are defined by the researchers who originally collected the data according to New York law.[9] The three most common types are drug crimes, property crimes, and person crimes. All other crimes are classified as other.[10] Although I do not observe the specific crime type associated with a case, the most common drug misdemeanor in New York County is possession of marijuana (Kutateladze and Andiloro, 2014). Most property misdemeanors are petit larceny (theft of property worth less than \$1,000), and the most common person crime is third-degree assault (Kutateladze and Andiloro, 2014; Chauhan et al., 2014). Drug crimes account for 24 percent of all cases, property crimes 39 percent, person crimes 7 percent, and other crimes 30 percent. I am missing the crime type for 3.5 percent of cases. I also address this minor issue in Section A.2.

Table 1 displays summary statistics. I have a total of 75,666 cases, where the average defendant has been arrested and convicted of a crime more than four times, and nearly half have no prior arrests. On average, 20 percent of cases are dismissed, 20 percent are dismissed through adjournment in contemplation of dismissal (ACD), and 60 percent end with a guilty verdict. As my cases are primarily misdemeanors, 99.9 percent of convictions come from

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[9]Kutateladze et al. (2012) defines crime types using the New York Penal Law: person offenses, New York Penal Law §120.00–135.75; property offenses, §140.00–165.74; and drug offenses, §220.00–221.55.

[10]Unfortunately, I do not observe the specific crimes that fall into the other category. I do know that the most common crime types in the "other" category are escape and others relating to custody (PL §205), firearms, and other dangerous weapons (PL §265) and offenses against public order (PL §240).

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plea deals. The majority, 81 percent, of defendants are male with an average age of 35 years. Across all cases, 59 percent of prosecutors are female. Half of defendants have at least one prior arrest, and 45 percent have at least one prior conviction.

Black defendants make up 75 percent of my sample, and black prosecutors handle 14 percent of cases. Three percent of cases are comprised of white defendants and black prosecutors, 10 percent of cases have black prosecutors and black defendants, 65 percent of cases have white prosecutors and black defendants, and 21 percent of cases have white prosecutors and white defendants. In total, there are 90 black prosecutors and 533 white prosecutors.

Raw data for the proportion of cases with a guilty verdict is shown in Table 2 for the entire sample by defendant and prosecutor race. Panel A demonstrates that white defendants face very similar conviction rates across black and white prosecutors (48.59 percent and 50.45 percent, respectively). Panel B shows that both black and white prosecutors have higher conviction rates for black defendants (59.40 percent and 63.54 percent, respectively). However, the difference in conviction rates across white and black defendants is 4 percentage points higher for white prosecutors than black prosecutors.

Table 3 shows raw data for the proportion of cases with a guilty verdict for property crimes.[11] Here, the patterns in Table 3 are similar to Table 2. Again, white defendants have similar conviction rates no matter whether they are assigned a black or white prosecutor (50.16 percent and 50.21 percent, respectively). Black defendants are also more likely to receive a conviction no matter the race of their prosecutor. For black and white prosecutors, black defendants have conviction rates of 60.59 percent and 65.46 percent, respectively. Again, the difference in conviction rates across white and black defendants is higher for white prosecutors than black prosecutors. Specifically, the black-white conviction rate gap is 5 percentage points larger for white prosecutors than black prosecutors.

It is important to note this comparison does not reflect the research design because it does not account for selection into specific screening days. However, given that these data only include cases where prosecutors do not influence case selection, and since prosecutors

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[11]Summary statistics for drug, person, and other crimes are shown in Tables A2, A3, and A4.

of both races are assigned cases with black and white defendants at roughly the same rates (see Table 1) these tables are instructive as they serve to preview the main results of the paper.

3   Empirical Strategy

The conditional random assignment of cases to prosecutors provides an ideal context for investigating the effect of prosecutor race on defendant outcomes. I use a generalized difference-in-differences model to estimate the effect of being assigned an opposite-race prosecutor on conviction. I could compare just the conviction rates for black and white defendants. However, then my estimate would also capture the fact that black and white defendants might have different underlying probabilities of guilt to begin with. Instead, I first examine how much more likely black defendants are to be convicted than whites when prosecuted by a white attorney. I then compare this to how much more likely black defendants are to be convicted than whites when assigned a black attorney. In the absence of prosecutor bias, the expected difference in conviction rates between black and white defendants should be the same regardless of the prosecutor's race. Formally, I estimate the following:

$$Guilty_c = \beta_0 + \beta_1 I(BlackDefendant)_c + \beta_2 I(WhiteProsecutor)_c +$$

$$\beta_3 I(BlackDefendant * WhiteProsecutor)_c + \beta_4 X_c + ScreeningDate_c + \epsilon_c, \quad (1)$$

where *Guilty* is a binary variable equal to one when the defendant is considered guilty for case c and zero for all other case dispositions; *Black Defendant* takes on a value of one when the defendant is black and zero when the defendant is white; β_1 captures differences in the probability of guilt across defendant race; and *White Prosecutor* is equal to one when the prosecutor is white and zero when the prosecutor is black and controls for differences in probability of guilt across prosecutor race. The coefficient of interest, β_3, on *BlackDefendant * WhiteProsecutor* captures the effect of being assigned an opposite-race

prosecutor.[12] For ease of exposition and following Price and Wolfers (2010), I refer to this as the opposite-race effect, or opposite-race bias. X_c includes control variables at the case level. Specifically, X_c contains defendant age, date of birth, gender, number of arrest charges, arrest counts, number of prior arrests, felony arrests, convictions, felony convictions, jail sentences, prison sentences, and non-incarceration sentences; indicators for drug crime, property crime, person crime, a misdemeanor, b misdemeanor, type of other (secondary) charges on the case, arrest zipcode and prosecutor gender. All specifications include $ScreeningDate$ fixed effects.[13]

Robust standard errors are clustered at the prosecutor level to allow error terms to be correlated across cases for a particular prosecutor. As I present results for multiple subgroups of crime, I also correct standard errors for multiple comparisons, as suggested by Anderson (2008). I compute the FDR q-values using the method proposed by Anderson (2008), adjusting for four different crime categories (property, drug, person, and other). The FDR q-values can be interpreted as adjusted p-values from a two-sided test. The q-values account for the increased probability of estimating extreme coefficients when considering many subgroups.

Additionally, I also compute randomization inference p-values. To do so, I randomly reassign prosecutor race based on the observed distribution of prosecutor race (86 percent of prosecutors are white). Then I estimate the effect of an opposite-race prosecutor (β_3 from Equation (1)) for 10,000 replications, the result of which provides an empirical distribution of coefficients observed due to chance. I then calculate the fraction of these 10,000 coefficients that are more extreme than the absolute value of the coefficient from my actual result, which is interpreted as a two-sided p-value.

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[12]This paper focuses on the effect of opposite-race prosecutors. However, I also estimate the effect of prosecutor race on conviction. Results are shown in Table A7. Specifically, it captures the sum of the bias by white prosecutors for or against white and black defendants and by black prosecutors for and against black and white defendants. Here I regress $Guilty$ on indicators for prosecutor race. Overall, I some find evidence that white prosecutors increase the probability of defendant guilt by 1.75 percentage points (3 percent) for the entire sample. I also show that being assigned a white prosecutor increases the probability of guilt by 1.89 percentage points (3 percent) for property crimes only.

[13]One potential concern is that Equation (1) does not just leverage the quasi-random within-date variation in case assignment, but that it also uses variation across days. To address this concern I conduct two different analyses. First, I interact indicators for white prosecutor and black defendant with screening date. Second, I estimate Equation (1) using only screening dates where all four combination of prosecutors and defendants are observed. Results for each exercise are similar in magnitude and significance to my original estimates for property crimes in Table 6. Estimates for the first exercise range from 0.0462 to 0.0530 and are all significant at the one percent level. Estimates from the second exercise range from 0.0429 to 0.0516 and are all significant at the one percent level. These results illustrate effects are not driven by across day variation.

Intuitively, the difference-in-differences compares differences in the probability of guilt between black defendants and white defendants for black prosecutors and white prosecutors. This model allows for black defendants to be more or less likely to be found guilty than white defendants. Similarly, black prosecutors may have different propensities for acquiring convictions than white prosecutors.

The identifying assumption of this model is that the differences in the probability of guilt between black and white defendants across white and black prosecutors would be the same in the absence of opposite-race bias. Identification relies on the random assignment of cases to prosecutors. The identifying assumption could fail if prosecutor race is correlated with other factors that also alter the probability of conviction. For instance, in other settings, black prosecutors may choose to prosecute cases for white defendants only when they have a strong enough case to ensure a guilty verdict, but decide to accept any case with a black defendant. In this case, I would conclude that my treatment effect was due to opposite-race bias, when it could actually be attributed, in part, to the initial quality of the case. I avoid this problem by using the random assignment of prosecutors to cases conditional on screening date. I can illustrate empirically that prosecutor race is uncorrelated with many observed defendant and case characteristics that would alter conviction rates.

Also, I assess whether any nonzero estimate is due to bias based on race, versus bias based on factors correlated with race. For example, if black prosecutors always earn more guilty verdicts for drug crimes, and white defendants are more likely to commit drug crimes, I would find evidence of opposite-race bias. However, I note that there is some ambiguity about the importance of this distinction, given the net impact on defendants by race is the same as racial bias. Nevertheless, to examine the extent to which this can explain the findings, I interact all case and defendant characteristics with prosecutor race. If the inclusion of these interactions altered estimates, then I could conclude that the treatment effect could in part be attributed to prosecutors' responses to observed characteristics correlated with defendant race, but not necessarily defendant race itself. For example, if white defendants are more likely to commit drug crimes, and black prosecutors always earn more guilty verdicts for

drug crimes, some of the opposite-race treatment effect I estimate could be due to black prosecutors' differential treatment of drug crimes, but not defendant race.[14]

4   Results

4.1   Exogeneity of Prosecutor Race

I start this section by showing that prosecutor race is not correlated with confounding factors. While I expect this to be true based on the case assignment process at the New York County District Attorney's Office, I also provide empirical evidence. To begin, I regress defendant and case characteristics (determined before the case is assigned to a prosecutor) on prosecutor race. Each specification includes screening date fixed effects. Specifically, I examine whether defendant race, age, date of birth, gender, number of prior arrests, felony arrests, convictions, felony convictions, jail sentences, prison sentences, and non-incarceration sentences are correlated with the race of the prosecutor. I also examine whether a case's number of current arrest charges, number of current arrest counts, misdemeanor type, type of crime—drug, property, person, and other—are correlated with prosecutor race.[15]

Results are reported in Table 4. Of the 20 coefficients presented, only 1 is statistically significant at conventional levels, which is consistent with random chance. Additionally, the coefficients are also close to zero. For example, compared to white prosecutors, black prosecutors are 0.52 percentage points more likely to be on cases with a black defendant. I conclude that defendant and case characteristics are not correlated with prosecutor race. These results indicate that case and defendant characteristics are orthogonal to prosecutor race and are consistent with the institutional background that cases are as-good-as randomly assigned to prosecutors conditional on screening date.

I also include another test to show that race is not correlated with confounding factors.

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[14]Any nonzero estimate could also be explained by *unobserved* characteristics that are correlated with race. For this explanation to entirely explain a nonzero estimate, it must be the case that this unobserved characteristics is uncorrelated with all other observed case characteristics. Otherwise the inclusion of the interaction terms will capture at least some of the effect of the unobservable characteristic.

[15]Although I can observe the number of arrest charges and counts, I cannot test whether the crime type of each specific charge is uncorrelated with prosecutor race. This is because crime type is recorded at the case-level.

The intuition behind this test is to show that the underlying probability of guilt for a defendant, as predicted before her case is assigned to a prosecutor, is unrelated to the race of her prosecutor. To do so, I predict the probability of guilt for each defendant using all of the observable characteristics of the defendant and case except for the race of the prosecutor. Specifically, I predict *Guilty* (after removing screening date fixed effects) using column 2 controls for defendant race, age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, type of other (secondary) charges on the case, and arrest zipcode. Next, I compare the predicted probability of guilt for black and white defendants across white and black prosecutors. If the predicted values are the same for black and white defendants regardless of prosecutor race, then I provide further evidence that the underlying probability of guilty for defendants is not correlated with prosecutor race.

Results for the predicted values test are shown in Figure 1 for the full sample. The predicted probability of guilt is 51.4 percent for white defendants assigned to white prosecutors and 51.9 percent for white defendants assigned to black prosecutors. These predicted values are not statistically different from each other (p-value = 0.465).[16] Similarly, the predicted probability of guilt for black defendants assigned to white prosecutors and black prosecutors are not statistically different (62.6 percent and 62.2 percent, respectively, p-value = 0.539). Figure 1 is also replicated for property crimes only in Figure 2. Again, predicted values are similar for white and black defendants regardless of the race of the prosecutor (p-values = 0.813 and 0.449). This further suggests that prosecutor race is unrelated to a defendant's predetermined likelihood of guilt, which is consistent with the identifying assumption.

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[16]Formally, I regress the predicted probabilities of guilt for white defendants on an indicator for prosecutor race.

4.2 Effect of Opposite-Race Prosecutors on Defendant Guilt

Next, I present results for my entire sample of cases in Table 5. Each column includes screening date fixed effects along with standard errors clustered at the prosecutor level. The outcome variable for each column is the probability of guilt. *Guilty* takes on a value of one if the defendant is convicted of a crime in any manner and zero for all other case outcomes.

Column 1 presents the estimate for opposite-race prosecutors for all case types. The coefficient on $BlackDefendant * WhiteProsecutor$ is 0.0213 and is statistically significant at the 10 percent level. This coefficient shows that being assigned an opposite-race prosecutor increases conviction by 2.13 percentage points (3.5 percent).

Column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, type of other (secondary) charges on the case, and arrest zipcode, and gender of the prosecutor. The coefficient is somewhat smaller (0.0121) and is not significant at conventional levels.

Along with case-level controls, column 3 adds prosecutor fixed effects, which account for unobserved time-invariant prosecutor characteristics, having little effect on the magnitude of the coefficient. The coefficient of interest remains similar in magnitude—slightly increasing to 0.0125 and not significant at conventional levels—although it is not statistically different from the estimate in column 1.

Column 4 explicitly addresses the possibility that prosecutors respond to factors correlated with race, but not race itself. For example, if black defendants are more likely to commit drug crimes, and white prosecutors are more likely to win guilty verdicts for drug crimes, then I would incorrectly attribute differences in prosecuting drug crimes to opposite-race bias. However, I note that there is some ambiguity about the importance of this distinction, given the net impact on defendants by race is the same as racial bias. To directly investigate

this threat, I add a separate interaction for each case characteristic and defendant control added in column 2, interacted with prosecutor race; this allows black and white prosecutors to respond differently to case characteristics. The coefficient of interest remains about the same with the inclusion of interactions, slightly increasing from column 3 to 0.0187, and is significant at the 10 percent level. Taken together, these columns provide suggestive evidence that opposite-race prosecutors increase the probability of conviction by 1–2 percentage points (2 percent to 3.5 percent).

Next, I explore effects by crime type, as different types of crimes are also often handled uniquely based on their quality of evidence (Frederick and Stemen, 2012; Ratledge et al., 1982; Spohn and Holleran, 2001; Spohn and Spears, 1997). In general, property crimes also tend to have less physical evidence (Peterson et al., 2010; Schroeder and Elink-Schuurman-Laura, 2017). This means that I might expect greater bias for property crimes, which tend to have lower quality evidence and, therefore, have more room for discretion. Further, earlier research suggests that racial disparities may differ by crime type (e.g., Albonetti, 1997; Mustard, 2000; Steffenmeier et al., 2006). In particular, I consider effects for drug, property, person, and other crimes in Table 6.

In Table 6, each panel represents a different type of crime. The column layout of Table 6 is similar to Table 5. For each crime type, I first present results for the specification with screening date effects only. The second column adds controls, the third column adds prosecutor fixed effects, and the fourth column adds interactions.

I find little evidence of opposite-race bias for drug, person, or other offenses, as shown in panels A, B, and C.[17] Results in panel D present robust and significant opposite-race effects for property crimes. In column 1, the baseline estimate, including screening date fixed effects, of 0.0481 indicates that being assigned an opposite-race prosecutor increases the likelihood of a guilty outcome by 4.8 percentage points (8 percent) for property crimes. Column 2 adds controls for defendant and case characteristics, such as the criminal history

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[17]Alternatively, I could also group all non-property crime together and estimate the effect of opposite-race prosecutors. Estimates for all non-property crimes are 0.00447, -0.00900, -0.00737, and -0.00423 for columns 1, 2, 3, and 4, respectively. None are significant at conventional levels. Further, results for property versus non-property crimes are statistically different at the 5 percent level.

of the defendant and indicators for the type of crime committed. Specifically, column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, type of other (secondary) charges on the case, and arrest zipcode and gender of the prosecutor. Consistent with the identifying assumption, the coefficient remains similar in magnitude (0.0459) and is statistically significant at the 1-percent level. Column 3 adds prosecutor fixed effects to the case-level controls, which account for unobserved time-invariant prosecutor characteristics, having little effect on the magnitude of the coefficient. The coefficient of interest remains similar in magnitude— slightly increasing to 0.0469, and is again significant at the 1 percent level.

Finally, column 4 explicitly addresses the possibility that prosecutors respond to factors correlated with race, but not race itself. Here, I add a separate interaction for each case characteristic and defendant control, included in column 2 and interacted with prosecutor race; doing this allows black and white prosecutors to respond differently to case characteristics. The coefficient of interest remains about the same with the inclusion of interactions, slightly increasing from column 3 to 0.0537, and is significant at the 1-percent level. These results indicate that opposite-race prosecutors increase the probability of a guilty outcome by 4.4 to 5.4 percentage points (7 percent to 9 percent).

Because I report results for multiple types of crimes, I also include false discovery rate (FDR) adjusted q-values for the estimates presented in Table 6. I compute the FDR q-values using the method proposed by Anderson (2008), adjusting for four different crime categories. The FDR q-values can be interpreted as adjusted p-values. The FDR q-values for the property crime estimates in panel D are statistically significant at the 1-percent or 5-percent level for each specification.

Finally, I also compute randomization inference p-values. To do so, I randomly reassign defendant race and estimated the effect of an opposite-race prosecutor (β_3 from Equation (1))

for 10,000 replications, the result of which provides an empirical distribution of coefficients observed due to chance. I then calculate the fraction of these 10,000 coefficients that are more extreme than the absolute value of the coefficient from my actual result, which are interpreted as a two-sided p-value. Randomization inference p-values also confirm that the effects for Property Crimes are significant at conventional levels (p-value=0.009), while there is no significant effect for drug (p-value=0.662), person (p-value=0.655), and other crimes (p-value=0.662).[18] Therefore, I conclude that the effects I find are large enough not to be attributed to chance. Combined, these results show strong opposite-race bias for property crimes only.

4.3   Effect of Opposite-Race Prosecutors on Sentencing

Felonies often receive much harsher sentences than misdemeanors. For example, the most common sentence for misdemeanor property crimes is a conditional discharge which primarily consists of community service. When individuals do serve time in jail or prison it is fairly short. The median incarceration sentence for those incarcerated for property crimes is 15 days and only 10 percent of those sentenced to incarceration are assigned a sentence greater than 90 days. While the implications of a conviction are likely greater than the punishments imposed for a misdemeanor, I also consider the effects of opposite-race prosecutors on sentencing. Of defendants convicted, 36 percent are sentenced to a conditional release (most commonly community service), 34 percent receive a jail or prison sentence, 28 percent receive time served and 2 percent are fined.[19]

Results for the effect of opposite-race prosecutors are shown in Table 7. Each column includes controls, and interactions, as in Column 4 of Table 6. Overall in panel A, there is no strong evidence that opposite-race prosecutors lead to meaningful changes in sentencing. For time served the there is some evidence that when defendants receive an opposite-race prosecutor they are more likely to be assigned a time served sentence (1.3 percentage points

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[18]The distribution of estimates from this permutation exercise are reported in Figure A1.

[19]Because I categorize crimes based on their *initial* arrest charges there are some cases that begin as misdemeanor are disposed as felonies. Therefore, some individuals that are arrested for a misdemeanor can end up spending time in prison.

or 9 percent). However this is the only coefficient that is significant at conventional levels.

Panel B shows the effect of opposite-race prosecutors on sentencing for property crimes. First, there is some evidence that when defendants are assigned an opposite-race prosecutor, they are more likely to receive a conditional discharge. The magnitude of the estimate in Column 1, 2 percentage points, is in line with the finding we might expect given 36 percent of defendants receive a conditional release, and I estimate a 5 percentage point increase in conviction (i.e., 0.0537*.36=0.019), however, the estimate is not significant at traditional levels. Columns 2 and 3 show how opposite-race prosecutors increase the probability of any fine and the amount of the fine. Both estimates are significant at the 10 percent level, however, the amount of the fine increase (12 cents) is not economically meaningful, and fines are rare for property crime cases. The estimate in Column 4, 2.31 percentage points, shows that an opposite-race prosecutor increases the probability of a time served sentence by 13 percent and is significant at the 10-percent level. This estimate is about double the increase in time served expected if the marginal defendant were sentenced similarly to the average (i.e., 0.0537*0.28= 0.015). There is some evidence that opposite-race prosecutors decrease the probability of a jail or prison sentence for all crimes and property crimes by 6 percent and 5 percent, however, these estimates are not significant at conventional levels. Finally, there is some evidence that opposite-race prosecutors decrease incarceration length. For property crimes the estimate in panel B corresponds to a 3 percent or a 6 day decrease. Again, these results are suggestive and not significant at conventional levels. The time served, and incarceration results suggest that the marginal defendants affected by opposite-race bias are not sentenced quite as severely as the average defendant. Still, they are not always offered the lightest possible punishments (fine and conditional discharge).

4.4   Individual Prosecutor Results

Up to this point, I have established that there is opposite-race bias *on average* for property crimes. This is important because it is valuable to consider the typical bias a potential defendant with no choice over their prosecutor could face. However, what is less clear from

the results in Table 6 is whether the bias is driven by a handful of prosecutors or if it is systemic across prosecutors. Establishing whether the *average* bias I estimate is systemic could be important when designing policies aimed at reducing bias. For example, a district attorney's office may wonder if the best policy to reduce bias targets specific prosecutors or is office-wide.

I next analyze my data at the prosecutor level to investigate if bias is driven by only a handful of prosecutors, or if it is systemic. Put differently, are the effects I find due to differences in the middle of the distribution or are due to difference in the tails? To address this question, I estimate a mixed model where I calculate fixed effects for case controls and predict individual prosecutor random effects by defendant race for property crimes.[20] Then I graph the distribution of random effects, which can be interpreted an estimate of each individual prosecutor's leniency, for white and black prosecutors.[21] I do so only for prosecutors that see more than 25 property crime cases, which limits the sample to 136 prosecutors (22 black prosecutors), but allows me to keep 93 percent of cases.

Results comparing white and black prosecutors are shown in Figure 3. Figure 3a shows the distribution of white and black prosecutors for white defendants. Figure 3b shows the distribution of white and black prosecutors for black defendants. In Figure 3a, the distribution of prosecutor random effects is relatively similar, although there is a bit more variation in white prosecutors' distribution. However, Figure 3b shows a large rightward shift for white prosecutors. The shift in the distribution suggests the opposite-race effect documented in Table 6 is likely the result of differences among more than a few bad apple prosecutors for black defendants.

Next, motivated by the observable difference in distributions for Figure 3b, I consider how many white prosecutors would need to change their behavior to make the average leniency of black and white prosecutors similar for black defendants. I answer this question by replacing the leniency measure (random effect) for the harshest white prosecutors with zero until the

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[20]This means that each prosecutor will have two random effects (one for each defendant race).

[21]To do so, I used the Stata command *xtmixed* to compute the random effect for each prosecutor after controlling for screening date, defendant gender, age, date of birth, criminal history as well as, case characteristics and prosecutor gender using the specification in Column 2 of Table 6.

average leniency of both groups is the same. I begin by replacing the leniency value of the harshest white prosecutor (the prosecutor with the greatest random effect), and then the two harshest, and then the three harshest, and so on, until the average leniency of black and white prosecutors is the same. Results show that black and white prosecutors' average leniency is the most similar for black defendants after the 31 harshest prosecutors, or the top 27%, have been replaced. Again this is consistent with results being driven by more than a few prosecutors.

It is also natural to wonder whether prosecutor bias changes overtime. For example, there is at least anecdotal evidence that prosecutors are the harshest at the beginning of their careers (e.g. Wright and Levine, 2014). Although I do not observe experience level (i.e. number of years at the District Attorney of New York) directly for most prosecutors, I can investigate results by the number of cases to which a prosecutor has already been assigned. To do so, I estimate Equation (1) for different subsamples of previous cases assigned. Results are shown in Figure A2. Figure A2a shows results for the number of misdemeanor cases a prosecutor has already been assigned and Figure A2b shows results for all cases a prosecutors has already been assigned. Each coefficient is from a separate estimation of Equation (1). Standard errors are clustered at the prosecutor level. Taken together these two figures show no clear pattern in opposite-race bias by experience or number of cases previously assigned. It appears, at least in this scenario, that results are not being driven by very early-career prosecutors.

4.5   Potential Mechanisms

Given the strong evidence of opposite-race bias in the probability of guilt for property crimes, I next investigate potential mechanisms through which a prosecutor could affect the disposition of a case. As mentioned previously, there are many ways a prosecutor can alter the final outcome of a case. First, a prosecutor could indirectly affect whether a defendant is convicted by altering pretrial detainment or by increasing charges. A prosecutor can also directly affect whether a defendant is guilty or not through declining prosecution, dismissing

the case, or offering an adjournment in contemplation of dismissal. To examine the effect of opposite-prosecutors on potential mechanisms, I first estimate equation (1) using pretrial detainment, increasing charges, decline prosecution, pretrial detainment, case dismissal, and adjournment in contemplation of dismissal as outcome variables. Results are shown in Table 8.

Each specification in the table includes screening date fixed effects, case-level controls, and interactions, just as in column 4 of Tables 5 and 6. First, I consider pretrial detention in column 1 because prosecutors often have the power to recommend pretrial detention for defendants. Existing literature documents that pretrial detention can lead to increases in convictions for defendants because they are more likely to accept a plea deal while detained (Dobbie et al., 2018; Heaton et al., 2017; Stevenson, 2018). However, I only find suggestive evidence of opposite-race bias in pretrial detention for both the entire sample and the sub-sample of property crimes. As both coefficients are positive, but statistically insignificant, these results suggest opposite-race prosecutors might increase pretrial detention by 7.5 (all crimes) or 6 percent (property crimes).

Results for charge increases are shown in column 2. A prosecutor's decision to increase the severity of charges may make it more difficult for a defendant to be released pretrial or may make the prosecutor more likely to seek out a guilty plea based on the new higher charges (Frederick and Stemen, 2012). Results indicate that for all cases and property crimes, an opposite-race prosecutor could increase charge severity by 8.5 percent or 9 percent, although neither coefficient is statistically significant at conventional levels.

I also show results for declined prosecution in column 3. It is possible that prosecutors could exhibit bias by declining to prosecute certain cases for certain same-race defendants. In both samples, I find no strong evidence of this bias. The estimate in panel A suggests opposite-race prosecutors were 2 percent less likely to decline prosecution, and the estimate in panel B suggests an increase of 12.5 percent, but neither is statistically significant. This finding shows there is no meaningful pattern in the declining behavior of opposite-race pros-ecutors.

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Next, I consider case dismissal as a potential mechanism in column 4. Some misdemeanor dismissals are determined unilaterally by the case's prosecutor. Most dismissals are due to a lack of speedy prosecution, which is officially determined by a judge, but a prosecutor's prioritization decisions can alter how long it takes to gather evidence on a case. For example, a prosecutor could decide to first work on cases where the defendant is opposite race as opposed to their own race. For all cases and property crimes, an opposite-race prosecutor decreases the chance of a case dismissal by 4 or 5 percent, although neither coefficient is statistically significant at conventional levels. This indicates that prosecutors could be altering case outcomes through increased dismissals for opposite-race defendants. However, the small estimates for pretrial detention, charge increases, declined prosecution, and case dismissal suggest these effects are unlikely to be the primary mechanism through which prosecutors exhibit opposite-race bias.

In column 5, I present results for adjournment in contemplation of dismissal, the third most common case outcome (after a guilty plea and case dismissal). For the entire sample, the estimate of opposite-race bias is statistically insignificant, but its magnitude suggests that being assigned an opposite-race prosecutor decreases the likelihood of case dismissal through adjournment in contemplation of dismissal by 0.947 percentage points or 5 percent. Among defendants who have committed property crimes, being assigned an opposite-race prosecutor decreases the chance of dismissal through adjournment in contemplation of dismissal by 4.7 percentage points or 20 percent. This estimate is significant at the 1-percent level. These results suggest that a substantial portion of the opposite-race bias I estimate could be attributed to prosecutors not offering adjournment in contemplation of dismissals to defendants.

4.6 Effect of Opposite-Race Prosecutors by Defendant Criminal History

Last, I consider opposite-race bias separately for defendants with and without a criminal history. This is because the ramifications of a conviction are likely much greater for those facing their first conviction versus subsequent ones. For example, according to the U.S.

Equal Opportunity Commission, 92 percent of employers subjected all or some of their job applicants to criminal background checks, and unless an employer specifically specifies a felony background check these would include misdemeanors (Equal Employment Opportunity Commission, 2012).

Results for the full sample and property crimes for defendants with and without a criminal record are shown in Table 9. Specifically, each column in Table 9 reports the effect of being assigned an opposite-race prosecutor on the probability of defendant guilt from a separate regression. All specifications include case-level controls and interactions similar to column 4 of Table 6. Columns 1 and 2 only include defendants with no prior arrests or no prior convictions, respectively. For both panels, there is strong evidence of opposite-race bias for defendants with no criminal history. For defendants with no prior arrests, the coefficients in both panels (0.0169 and 0.0710) show that being assigned an opposite-race prosecutor increases the probability of defendant guilt by 4 percent (however, not statistically significant) for all crimes and 18 percent for property crimes. Column 2 focuses on another definition of no criminal history—defendants with no prior convictions—and indicates similar results. For defendants with no prior convictions, being assigned an opposite-race prosecutor increases the probability of defendant guilt by 3 percent (not statistically significant) and 16 percent for all crimes and property crimes, respectively. All estimates for defendants with criminal histories who commit property crimes are also statistically significant at conventional levels. Estimates in columns 3 and 4 show that being assigned an opposite-race prosecutor has a much smaller effect for defendants with a criminal history. For instance, for property crimes and defendants with prior arrests, the coefficient (0.00762) suggests that being assigned an opposite-race prosecutor increases the probability of defendant guilt by 0.9 percent. Further, none of the estimates in column 3 or 4 are significant at conventional levels.

I also investigate opposite-race bias for adjournment in contemplation of dismissals separately for defendants with and without a criminal history in Table 10. The layout of Table 10 is similar to Table 9, and each specification includes case-level controls and interactions. In panel A, all estimates indicate that there is no strong evidence of opposite-race bias in

adjournment in contemplation of dismissal any defendants. However, in panel B, there is strong evidence of opposite-race bias for defendants with no prior arrests and defendants with no prior convictions. Coefficients of -0.0717 and -0.0614 show that opposite-race prosecutors decrease adjournment in contemplation of dismissals by 17 percent and 14 percent, respectively. Both estimates are significant at the one-percent level. Columns 3 and 4 show there is no strong evidence of opposite-race bias for defendants with prior criminal history. These results indicate that opposite-race bias for property crimes is driven, nearly entirely, by defendants with no criminal history.

5 Discussion

The results in the previous section show strong evidence of opposite-race bias for property crimes, although not for other crime types. This raises questions as to why prosecutors exhibit bias for only one type of crime. Further, it is natural to wonder if these results matter for overall racial disparities in the criminal justice system, considering that prosecutors are only biased for one specific type of case.

While I cannot definitively conclude why prosecutor bias exists for property crimes only, one crucial factor may be evidence quality. When there is hard evidence on whether a crime occurred, prosecutors may have less ability to exhibit taste-based bias. Similarly, the availability of hard evidence may reduce the tendency of prosecutors to statistically discriminate.

Prosecutors and scholars agree that evidence quality is important for deciding how to prosecute a case. Based on one survey of two large urban district attorney's offices, researchers conclude that "the most important factor considered in determining whether a case will go forward is the strength of the evidence" (Frederick and Stemen, 2012). Other studies also confirm that prosecutors rely heavily on evidence strength when making case decisions (Spohn and Spears, 1997; Ratledge et al., 1982; Spohn and Holleran, 2001).

It is also generally believed that most property crimes have less hard evidence than other

types of crimes. For example, physical evidence is considered the most reliable kind of evidence by prosecutors, and prosecutors agree that physical evidence in property cases is typically weaker than in drug cases (Frederick and Stemen, 2012; Kutateladze et al., 2016). Using data from five different jurisdictions, Peterson et al. (2010) finds that for randomly selected property crimes (burglary and robbery in their setting), physical evidence is only collected for 9 percent to 17 percent of cases, compared to 22 percent to 83 percent of person crimes cases (homicide, assault, rape) and nearly 100 percent of drug cases. Schroeder and Elink-Schuurman-Laura (2017) also confirms that person crimes, such as homicides and rapes, tend to have higher evidence-collection rates than property crimes.

Without quality evidence on property crimes, prosecutor decisions may rely more on personal assessments of the likelihood of conviction, which could be altered by bias. In fact, some scholars have suggested that prosecutors may interpret weak evidence in a more "negative light" for minority defendants (Smith and Levinson, 2011; Kutateladze et al., 2016). Therefore, prosecutors may be able to exercise bias in the decision to dismiss a case through adjournment in contemplation of dismissal, as property cases may have more room for discretion. Suppose that a defendant is arrested for a property crime, but the case lacks solid evidence. In this case, the prosecutor would have more leeway to choose to push for a dismissal or a plea deal as compared to a case where a person is arrested with drugs, as hard evidence on them. In this context, at least, it seems as if prosecutors are more likely to fairly prosecute crimes when they lack room for discretion.

Prosecutors having greater potential for discretion and bias in crimes with lower quality evidence, like property crimes, would be less concerning if property crimes were uncommon. However, property cases are the most common type of crime in New York County. Further, in 2016 there were 7,919,035 property crime offenses in the nation, and 25 percent of jail inmates were incarcerated for property offenses (FBI: UCR, 2016; Sawyer and Wagner, 2019). Finally, although there are not many sources for nation-wide misdemeanor arrests, the best estimates suggest that over 1.4 million individuals were arrested for property crimes in 2014 (Stevenson and Mayson, 2018). This high number indicates that there are many cases with

greater room for discretion.

Also, in many ways, one might expect effects found in this setting to be a lower bound for racial bias in other prosecutors' offices across the country. This is because the Manhattan District Attorney has actively tried to address racial bias. For example, since 2010, the New York County District Attorney's Office stopped prosecuting most low-level infractions and started offering a treatment program, instead of probation, for low-level drug crimes. Both policies are described as being particularly important for communities of color (Cyrus Vance For District Attorney, 2017). It also employs a chief diversity officer and diversity committee because it believes a diverse staff can help reduce racial bias (Manhattan District Attorney, 2018a). For this reason, larger effects might be expected elsewhere.

Last, opposite-race bias for property crimes does not seem to be driven by a few prosecutors, or merely very early-career prosecutors. Given these results and considering that many prosecutors who begin their careers with misdemeanors go on to handle more complicated and serious cases, it is possible— although I cannot say certain—that opposite-race bias could occur in New York County felony cases too. Because of the prevalence of property crimes, the progressive nature of the Manhattan District Attorney of New York, and that many prosecutors could contribute to opposite-race bias in future cases, finding effects for misdemeanor property offenses is nontrivial.

Finally, the results I find in New York County have important implications for racial disparities in the criminal justice system. Opposite-race bias by prosecutors could account for about 40 percent ($\frac{Estimate of Opposite Race Bias * Pr(White Prosecutor)}{Estimated Black White Disparity} = \frac{0.048*0.86}{0.063+0.048*0.86}$) of the difference in guilt across race for property crimes.[22] Even if prosecutors are acting fairly in other types of cases, the magnitude of the opposite-race bias I estimate should warrant further

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[22] 0.86 is the probability of being assigned a white prosecutor for property crimes, 0.048 is my estimate of opposite-race bias for property crimes, and 0.063 is the β_1 I estimate in the same regression (Table 6). Referring to the model I present in equation (1), I estimate that the difference in conviction races between black and white defendants is $[(\beta_0 + \beta_1) * Pr(BlackProsecutor|BlackDefendant) + (\beta_0 + \beta_1 + \beta_2 + \beta_3) * Pr(WhiteProsecutor|BlackDefendant)] - [\beta_0 * Pr(BlackProsecutor|WhiteDefendant) + (\beta_0 + \beta_2) * Pr(WhiteProsecutor|WhiteDefendant)]$. Because cases are randomly assigned, $Pr(BlackProsecutor|WhiteDefendant) = Pr(BlackProsecutor|BlackDefendant)$, and similarly $Pr(WhiteProsecutor|WhiteDefendant) = Pr(WhiteProsecutor|BlackDefendant)$. Further, Pr(Black Prosecutor) = 1-Pr(White Prosecutor). Using this information to simplify, I determine the difference in black and white conviction rates is $\beta_1 + Pr(WhiteProsecutor)\beta_3$, where β_3 is my estimate of opposite-race bias. Therefore $\frac{\beta_3 * Pr(WhiteProsecutor)}{\beta_1 + \beta_3 * Pr(WhiteProsecutor)}$ represents the amount of the black-white gap explained by my estimate of opposite-race bias.

investigation into prosecutor bias.

6 Conclusion

In this paper, I test for opposite-race prosecutor bias in criminal convictions. To overcome potential endogenous case selection by prosecutors, I exploit the as-good-as-random assignment of cases to prosecutors in New York County, under which assignment is random conditional on screening date. The resulting variation in prosecutor race, combined with variation in defendant race, allows me to estimate the extent to which prosecutors are biased against opposite-race defendants.

My results indicate that the assignment of an opposite-race prosecutor leads to a 5 percentage point (8 percent) increase in the probability of being found guilty for property crimes only. Individuals we expect might be hurt the most by a conviction, defendants with no criminal history, drive this opposite-race estimate. In addition, I explore the potential mechanisms through which opposite-race bias affects the probability of guilt. I show that being assigned an opposite-race prosecutor decreases the likelihood that a case is dismissed through an adjournment in contemplation of dismissal. I interpret the reason for these findings as likely due to the fact that prosecutors can more easily exercise discretion for crimes with weaker evidence. However, I cannot rule out other interpretations.

The finding of prosecutor bias against opposite-race defendants lends support to recent movements to increase the training of prosecutors and to curb the ability of prosecutors to exercise race-based discretion (U.S. Department of Justice, 2016). Further, these results are striking because the New York County District Attorney's Office promotes itself as being especially progressive, expressed through its commitment to criminal justice reform, community partnerships, and reducing bias. My results add to existing evidence documenting opposite-race bias, though it is important to highlight that I find no evidence of bias in person, other, or drug crimes. However, it is possible that a meaningful portion of the black-white disparity in convictions—40 percent—could be attributed to prosecutors exhibiting

opposite-race bias, even if prosecutors do not display bias on all cases.

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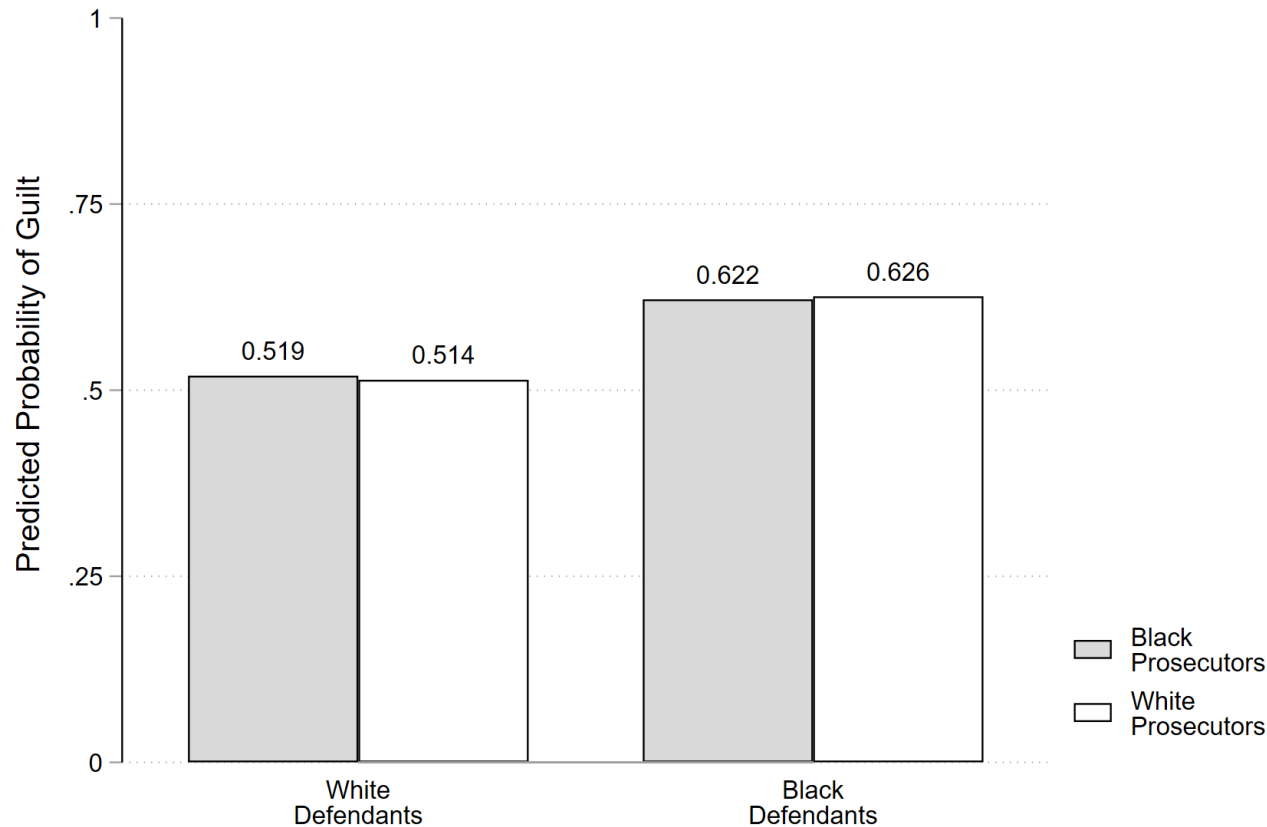
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7 Tables and Figures

Figure 1: Predicted Values of Guilt

Notes: This figure reports predicted guilt for black and white defendants assigned to black and white prosecutors. The predicted value is calculated by regressing *Guilty* on all observable characteristics (except for prosecutor race) about the defendant and case that were determined before the case was assigned to the prosecutor. Specifically, *Guilty* is predicted (after removing screening date fixed effects) using defendant race, age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, type of other (secondary) charges on the case, and arrest zipcode. There is no statistical difference in predicted guilt for white defendants assigned to white or black prosecutors. The same is true for black defendants.

Figure 2: Predicted Values of Guilt for Property Crimes

Notes: This figure reports predicted guilt for black and white defendants assigned to black and white prosecutors. The predicted value is calculated by regressing *Guilty* on all observable characteristics (except for prosecutor race) about the defendant and case that were determined before the case was assigned to the prosecutor. Specifically, *Guilty* is predicted (after removing screening date fixed effects) using defendant race, age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, type of other (secondary) charges on the case, and arrest zipcode. There is no statistical difference in predicted guilt for white defendants assigned to white or black prosecutors. The same is true for black defendants.

Figure 3: Random Effects by Prosecutor
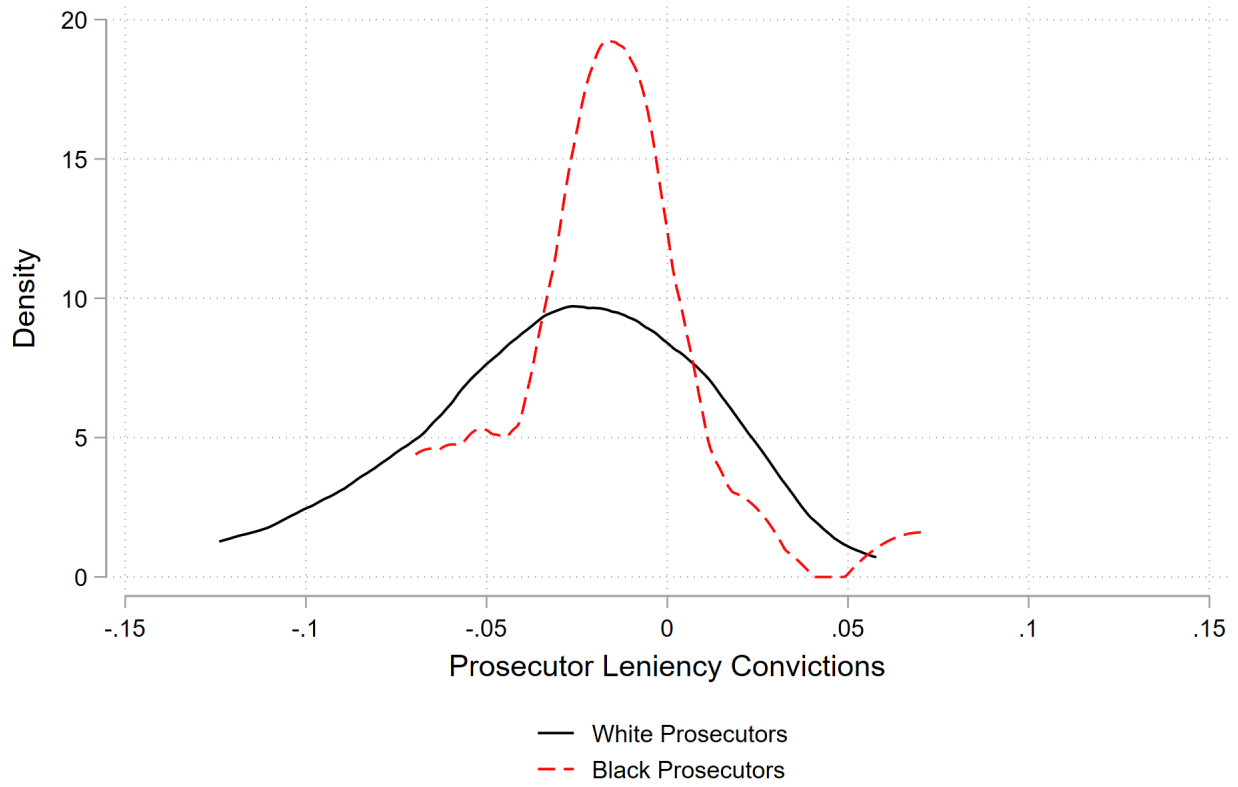
(a) White Defendants
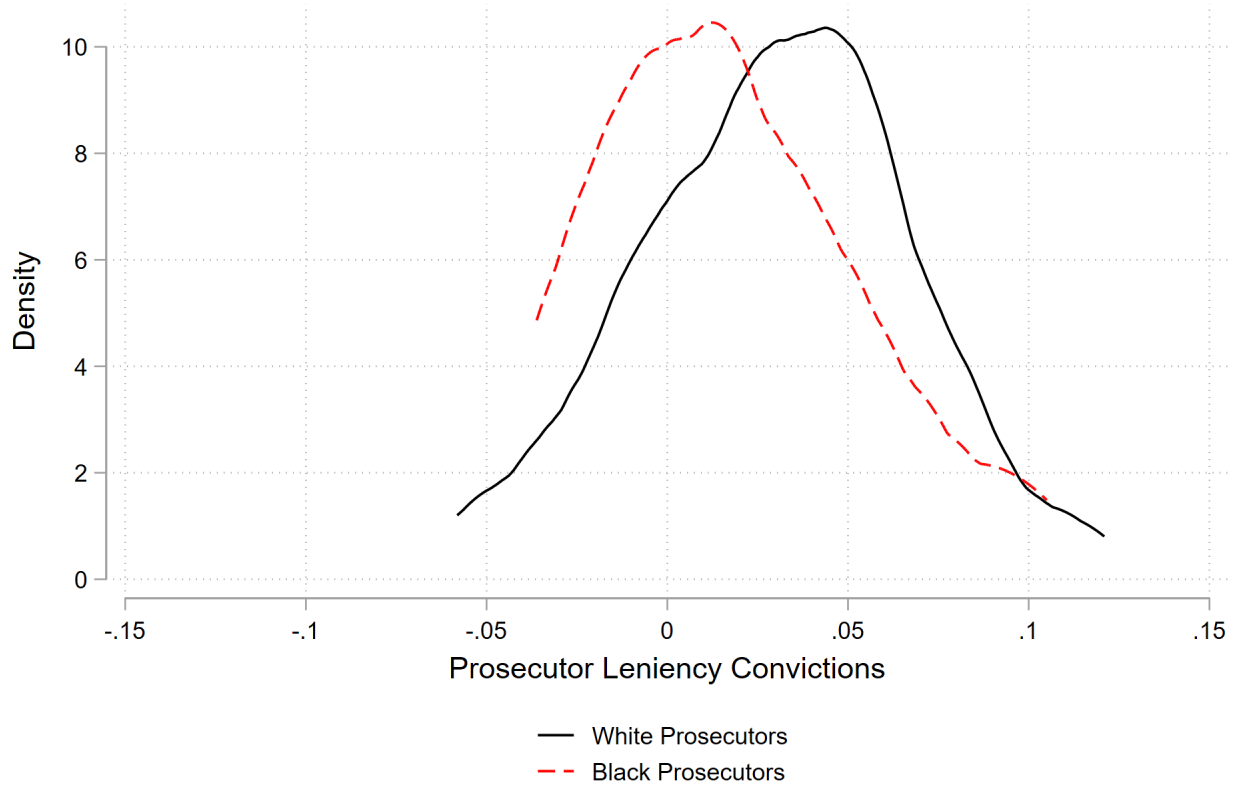
(b) Black Defendants

Notes: Figures represent the distribution of individual prosecutor effects (Bayes shrinkage) by prosecutor and defendant race.

Table 1: Summary Statistics

	(1) All	(2) Black Defendants	(3) White Defendants	(4) Drug Crimes	(5) Property Crimes	(6) Person Crimes	(7) Other Crimes
Panel A: Outcomes							
Decline to Prosecute	0.00333	0.00374	0.00209	0	0.00845	0	0
Charges Increased	0.0523	0.0547	0.0450	0.0220	0.0738	0.0885	0.0397
Pretrial Detention	0.0935	0.108	0.0505	0.0892	0.0894	0.218	0.0734
Case Dismissed	0.201	0.203	0.195	0.180	0.138	0.587	0.213
ACD	0.196	0.162	0.299	0.260	0.238	0.0962	0.112
Guilty	0.598	0.630	0.502	0.561	0.615	0.313	0.673
Panel B: Case Characteristics							
Black Defendant	0.754	1	0	0.753	0.773	0.728	0.734
Defendant Age	34.57 (12.90)	34.77 (13.06)	33.97 (12.35)	35.24 (12.78)	33.47 (13.37)	33.38 (12.40)	35.78 (12.31)
Defendant Male	0.813	0.817	0.801	0.864	0.750	0.775	0.864
Any Prior Arrests	0.500	0.581	0.250	0.594	0.523	0.420	0.412
Any Prior Convictions	0.450	0.528	0.214	0.530	0.473	0.354	0.379
Prior Arrests	4.218 (9.732)	5.046 (10.54)	1.685 (5.994)	5.543 (11.17)	4.658 (10.15)	2.201 (5.408)	3.045 (8.417)
Prior Convictions	4.452 (10.35)	5.334 (11.22)	1.752 (6.324)	5.869 (11.88)	5.085 (10.71)	1.858 (5.228)	3.082 (9.087)
Black Prosecutor	0.135	0.136	0.133	0.139	0.134	0.132	0.133
White Prosecutor	0.865	0.864	0.867	0.861	0.866	0.868	0.867
Female Prosecutor	0.592	0.592	0.593	0.604	0.591	0.600	0.584
Observations	75666	57028	18638	18061	29815	5231	22559

mean coefficients; sd in parentheses

Table 2: Proportion Guilty by Prosecutor and Defendant Race

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.4859	0.5045
Panel B: Black Defendants	0.5940	0.6354

Table 3: Proportion Guilty by Prosecutor and Defendant Race for Property Crimes

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.5016	0.5021
Panel B: Black Defendants	0.6059	0.6546

Table 4: Correlation Between Case Characteristics and Prosecutor Race

Panel A: Defendant Characteristics

	Black Defendant	Defendant Age	Defendant Date of Birth	Male Defendant	Number Prior Arrests	Number Prior Felony Arrests	Number Prior Convictions	Number Prior Felony Convictions	Number Prior Jail Sentences	Number Prior Prison Sentences	Number Prior Non-Incarcerative Sentences
Black Prosecutor	0.00520	0.00875	-4.965	-0.00432	-0.0733	0.00134	-0.150	0.00146	-0.0803	0.00127	-0.0700
	(0.00559)	(0.209)	(76.00)	(0.00556)	(0.182)	(0.0366)	(0.189)	(0.00727)	(0.0939)	(0.00524)	(0.0985)
Observations	75666	75666	75666	75666	75666	75666	75666	75666	75666	75666	75666
Outcome Mean	0.754	34.57	5440.8	0.813	4.218	0.820	4.452	0.221	2.014	0.142	2.277

Panel B: Case Characteristics

	Number Arrest Charges	Number Arrest Counts	Class A Misdemeanor	Class B Misdemeanor	Class U Misdemeanor	Drug Crime	Property Crime	Person Crime	Other Crime
Black Prosecutor	-0.0267*	-0.0202	-0.00557	0.00623	-0.000657	0.00632	0.00600	-0.00498	-0.00734
	(0.0144)	(0.0164)	(0.00728)	(0.00738)	(0.00539)	(0.0113)	(0.0151)	(0.00651)	(0.00949)
Observations	75666	75666	75666	75666	75666	75666	75666	75666	75666
Outcome Mean	1.686	1.754	0.626	0.219	0.155	0.239	0.394	0.0691	0.298

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on *White Prosecutor* from separate regressions of case and defendant characteristics on a binary variable representing prosecutor race. Each regression includes screening date fixed effects. Standard errors are clustered at the prosecutor level.

Table 5: Estimates of Opposite-Race Bias for Defendant Guilt

	(1)	(2)	(3)	(4)
Outcome: Guilty				
Black Defendant*White Prosecutor	0.0213*	0.0121	0.0125	0.0187*
	(0.0121)	(0.00962)	(0.00962)	(0.0113)
Observations	75666	75666	75666	75666
Outcome Mean	0.598	0.598	0.598	0.598
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	-	Y	Y	Y
Prosecutor FE	-	-	Y	-
Interactions	-	-	-	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. Each specification includes screening date fixed effects. Column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, arrest zipcode, type of other (secondary) charges on the case, and gender of the prosecutor. Column 3 includes the same controls as column 2, with the exception of prosecutor gender, and adds individual prosecutor fixed effects. Column 4 adds interactions for every case and defendant control added in column 2, interacted with prosecutor race. Standard errors are clustered at the prosecutor level.

Table 6: Estimates of Opposite-Race Bias in Defendant Guilt by Crime Type

	(1)	(2)	(3)	(4)
Panel A: Drug Crimes				
Outcome: Guilty				
Black Defendant*White Prosecutor	0.0103	0.00918	0.0103	0.0120
	(0.0249)	(0.0215)	(0.0233)	(0.0268)
Observations	18061	18061	18061	18061
Outcome Mean	0.561	0.561	0.561	0.561
FDR q-values	0.699	0.941	0.874	0.708
Panel B: Person Crimes				
Outcome: Guilty				
Black Defendant*White Prosecutor	-0.0218	-0.0355	0.00883	-0.0223
	(0.0564)	(0.0540)	(0.0555)	(0.0593)
Observations	5231	5231	5231	5231
Outcome Mean	0.313	0.313	0.313	0.313
FDR q-values	0.699	0.941	0.874	0.708
Panel C: Other Crimes				
Outcome: Guilty				
Black Defendant*White Prosecutor	-0.00932	-0.0228	-0.0234	-0.0140
	(0.0196)	(0.0183)	(0.0189)	(0.0230)
Observations	22559	22559	22559	22559
Outcome Mean	0.673	0.673	0.673	0.673
FDR q-values	0.699	0.866	0.437	0.708
Panel D: Property Crimes				
Outcome: Guilty				
Black Defendant*White Prosecutor	0.0481***	0.0459***	0.0469***	0.0537***
	(0.0159)	(0.0136)	(0.0136)	(0.0142)
Observations	29815	29815	29815	29815
Outcome Mean	0.615	0.615	0.615	0.615
FDR q-values	0.011	0.016	0.003	0.001
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	-	Y	Y	Y
Prosecutor FE	-	-	Y	-
Interactions	-	-	-	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. Each specification includes screening date fixed effects. Column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, arrest zipcode, type of other (secondary) charges on the case, and gender of the prosecutor. Column 3 includes the same controls as column 2, with the exception of prosecutor gender, and adds individual prosecutor fixed effects. Column 4 adds interactions for every case and defendant control added in column 2, interacted with prosecutor race. Robust standard errors are clustered at the prosecutor level. False discovery rate (FDR) *q*-values are adjusted for multiple inference given the four categories of crime examined. FDR *q*-values are estimated using the method proposed by Anderson (2008) and are interpreted as two-sided *p*-values.

Table 7: Sentencing

	(1)	(2)	(3)	(4)	(5)	(6)
	Conditional Discharge	Any Fine	IHS Fine Amount	Time Served	Jail or Prison Sentence	IHS Incarceration Length
Panel A: Entire Sample						
Black Defendant*White Prosecutor	0.0153	0.00244	0.0190	0.0131*	-0.0101	-0.00588
	(0.00967)	(0.00628)	(0.0347)	(0.00781)	(0.00728)	(0.0290)
Observations	75331	75331	75331	75331	75331	73353
Outcome Mean	0.187	0.101	0.544	0.151	0.160	0.606
Panel B: Property Crimes						
Black Defendant*White Prosecutor	0.0245	0.0135*	0.0772*	0.0231*	-0.0112	-0.0300
	(0.0172)	(0.00725)	(0.0406)	(0.0132)	(0.0125)	(0.0512)
Observations	29773	29773	29773	29773	29773	28993
Outcome Mean	0.221	0.0117	0.0635	0.174	0.212	0.795
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y	Y	Y
Case-Level Controls	Y	Y	Y	Y	Y	Y
Prosecutor FE	-	-	-	-	-	-
Interactions	Y	Y	Y	Y	Y	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Conditional Discharge*, *Any Fine*, *IHS Fine Amount*, *Time Served*, *Jail or Prison Sentence*, and *IHS Incarcertion Length* on indicators for prosecutor race, defendant race, and the interaction term. All specifications include screening date fixed effects, controls, and prosecutor race interactions. Robust standard errors are clustered at the prosecutor level. The average fine is $1.5 (Column 3 Panel B represents a 8 percent or 12 percent increase.) and the average incarceration length is 208 day (Column 6 Panel B represents a 3 percent or a 6 day decrease)

Table 8: Mechanism

	(1)	(2)	(3)	(4)	(5)
	Pretrial Detention	Charges Increased	Declined Prosecution	Case Dismissed	Adjournment in Contemplation of Dismissal
Panel A: Entire Sample					
Black Defendant*White Prosecutor	0.00701	0.00447	-0.0000556	-0.00757	-0.00947
	(0.00699)	(0.00582)	(0.00134)	(0.00857)	(0.0123)
Observations	75666	75666	75666	75666	75666
Outcome Mean	0.0935	0.0523	0.00333	0.201	0.196
Panel B: Property Crimes					
Black Defendant*White Prosecutor	0.00540	0.00697	0.00110	-0.00709	-0.0471***
	(0.0123)	(0.00905)	(0.00333)	(0.0110)	(0.0169)
Observations	29815	29815	29815	29815	29815
Outcome Mean	0.0894	0.0738	0.00845	0.138	0.238
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y	Y
Case-Level Controls	Y	Y	Y	Y	Y
Prosecutor FE	–	–	–	–	–
Interactions	Y	Y	Y	Y	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Pretrial Detention*, *Charges Increased*, *Declined Prosecution*, *Case Dismissed*, and *Adjournment in Contemplation of Dismissal* on indicators for prosecutor race, defendant race, and the interaction term. All specifications include screening date fixed effects, controls, and prosecutor race interactions. Robust standard errors are clustered at the prosecutor level.

Table 9: Estimates of Opposite-Race Bias in Defendant Guilt by Criminal History

	(1) Defendants with No Prior Arrests	(2) Defendants with No Prior Convictions	(3) Defendants with Prior Arrests	(4) Defendants with Prior Convictions
Panel A: All Crimes				
Outcome: Guilty				
Black Def.*White Prosecutor	0.0169	0.0133	0.00235	0.0101
	(0.0126)	(0.0121)	(0.0180)	(0.0188)
Observations	37859	41589	37807	34077
Outcome Mean	0.458	0.432	0.739	0.801
Panel B: Property Crimes				
Outcome: Guilty				
Black Def.*White Prosecutor	0.0710***	0.0629**	0.00762	0.0144
	(0.0260)	(0.0248)	(0.0227)	(0.0214)
Observations	14222	15717	15593	14098
Outcome Mean	0.404	0.391	0.807	0.864
Prosecutor & Def. Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	Y	Y	Y	Y
Prosecutor FE	-	-	-	-
Interactions	Y	Y	Y	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. All specifications include screening date fixed effects, controls, and prosecutor race interactions. Robust standard errors are clustered at the prosecutor level.

Table 10: Estimates of Opposite-Race Bias in Adjournment in Contemplation of Dismissal by Criminal History

	(1) Defendants with No Prior Arrests	(2) Defendants with No Prior Convictions	(3) Defendants with Prior Arrests	(4) Defendants with Prior Convictions
Panel A: All Crimes				
Outcome: Adjournment in				
Contemplation of Dismissal				
Black Def.*White Prosecutor	-0.0128	-0.00683	0.0164	0.00155
	(0.0131)	(0.0129)	(0.0157)	(0.0119)
Observations	37859	41589	37807	34077
Outcome Mean	0.312	0.324	0.0801	0.0395
Panel B: Property Crimes				
Outcome: Adjournment in				
Contemplation of Dismissal				
Black Def.*White Prosecutor	-0.0717**	-0.0614**	0.00856	-0.00477
	(0.0296)	(0.0251)	(0.0179)	(0.0137)
Observations	14222	15717	15593	14098
Outcome Mean	0.419	0.424	0.0734	0.0313
Prosecutor & Def. Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	Y	Y	Y	Y
Prosecutor FE	-	-	-	-
Interactions	Y	Y	Y	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Adjournment in Contemplation of Dismissal* on indicators for prosecutor race, defendant race, and the interaction term. All specifications include screening date fixed effects, controls, and prosecutor race interactions. Robust standard errors are clustered at the prosecutor level.

A Appendix

A.1 Tables and Figures

Figure A1: Permutation Results for Opposite-Race Bias by Crime Type
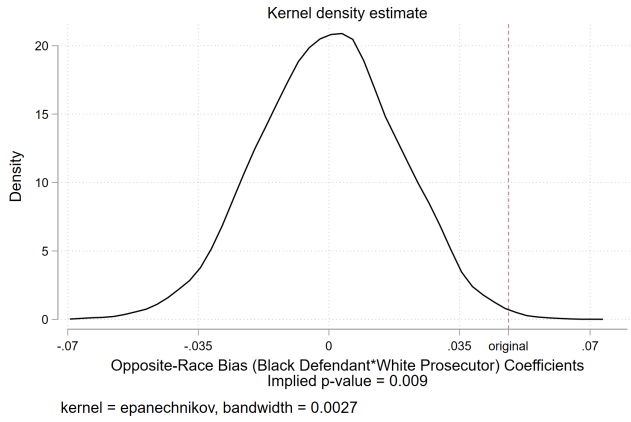
(a) Property Crimes
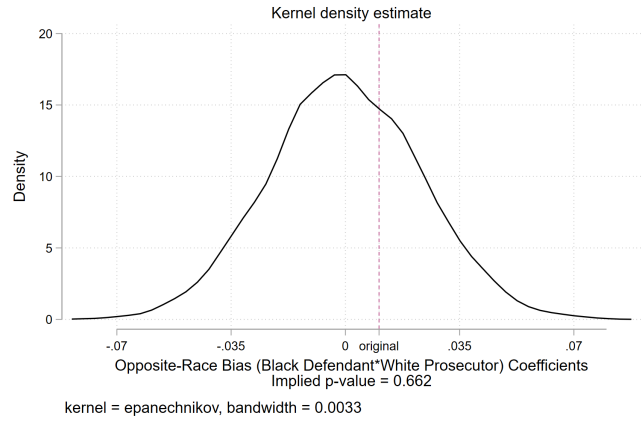
(b) Drug Crimes
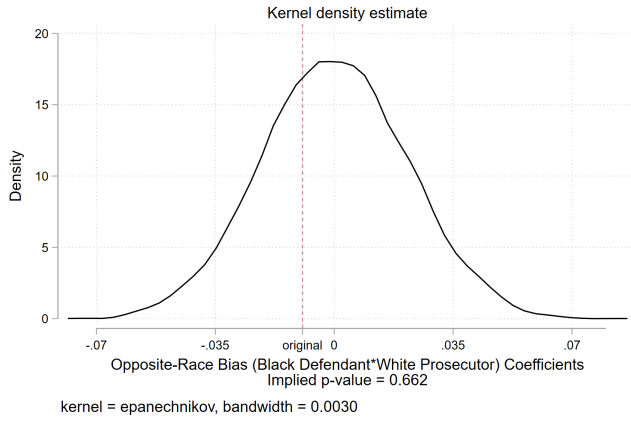
(c) Other Crimes
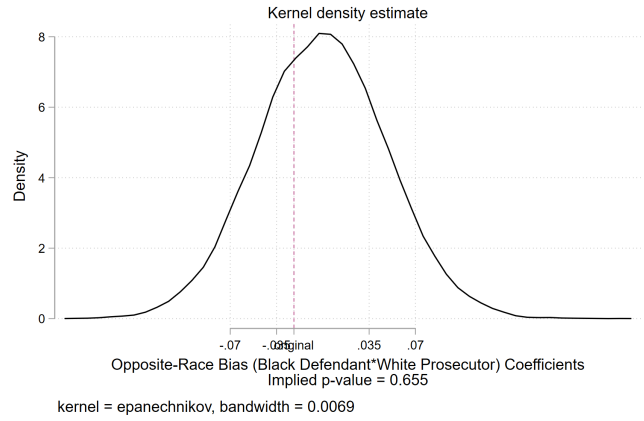
(d) Person Crimes

Notes: This figure presents the results from a permutation exercise where I randomly reassigned defendant race and estimated the effect of an opposite-race prosecutor (β_3 from Equation (1)) for 10,000 replications. The distribution of β_3 coefficients for each crime type are presented. The dashed line denotes the original estimate from column 1 of Table 6.

Figure A2: Opposite-Race Bias by Number of Cases
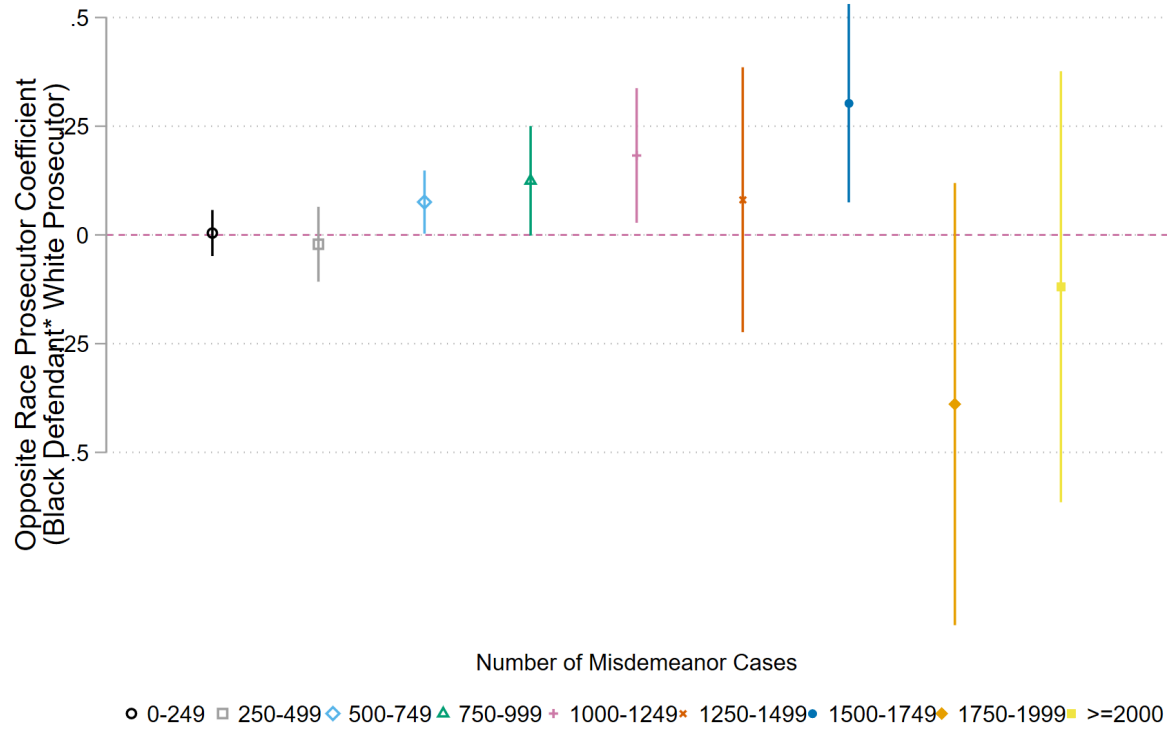
(a) Effects by Number of Misdemeanor Cases Assigned
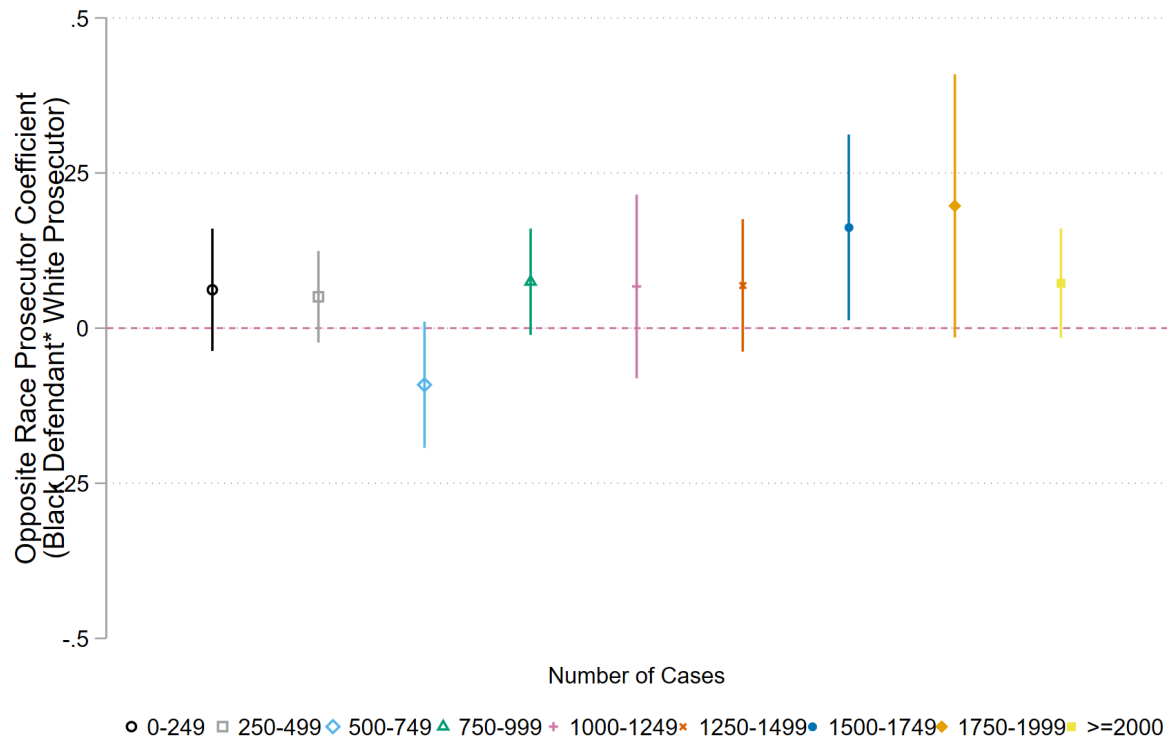
(b) Effects by Number of Cases Assigned

Notes: These figures show estimates of opposite-race bias for property crimes by the number of cases previously handled by prosecutors. Each coefficient is from a separate regression.

Table A1: Proportion Guilty by Prosecutor and Defendant Race for Property Crimes

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.5016	0.5021
Panel B: Black Defendants	0.6059	0.6546

Table A2: Proportion Guilty by Prosecutor and Defendant Race for Person Crimes

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.3129	0.3376
Panel B: Black Defendants	0.2887	0.3074

Table A3: Proportion Guilty by Prosecutor and Defendant Race for Drug Crimes

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.2915	0.3156
Panel B: Black Defendants	0.6012	0.6488

Table A4: Proportion Guilty by Prosecutor and Defendant Race for Other Crimes

	(1) Black Prosecutors	(2) White Prosecutors
Panel A: White Defendants	0.6430	0.6893
Panel B: Black Defendants	0.6448	0.6727

Table A5: Estimates of Opposite-Race Bias in Defendant Guilt by Crime Type for Minority Prosecutors and Defendants

	(1)	(2)	(3)	(4)
Panel A: Drug Crimes				
Outcome: Guilty				
Minority Defendant*White Prosecutor	-0.0117	-0.000703	-0.00407	-0.0102
	(0.0219)	(0.0179)	(0.0187)	(0.0201)
Observations	33493	33493	33493	33493
Outcome Mean	0.528	0.528	0.528	0.528
Panel B: Person Crimes				
Outcome: Guilty				
Minority Defendant*White Prosecutor	-0.0250	-0.0262	-0.0117	-0.0124
	(0.0317)	(0.0318)	(0.0327)	(0.0333)
Observations	10378	10378	10378	10378
Outcome Mean	0.294	0.294	0.294	0.294
Panel C: Other Crimes				
Outcome: Guilty				
Minority Defendant*White Prosecutor	-0.00606	-0.0127	-0.0135	-0.0124
	(0.0144)	(0.0137)	(0.0137)	(0.0150)
Observations	42663	42663	42663	42663
Outcome Mean	0.656	0.656	0.656	0.656
Panel D: Property Crimes				
Outcome: Guilty				
Minority Defendant*White Prosecutor	0.0401***	0.0305**	0.0306**	0.0301**
	(0.0120)	(0.0121)	(0.0121)	(0.0121)
Observations	54163	54163	54163	54163
Outcome Mean	0.584	0.584	0.584	0.584
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	-	Y	Y	Y
Prosecutor FE	-	-	Y	-
Interactions	-	-	-	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Minority Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. Minority includes all nonwhite defendants. Specifically, 55 percent of minority defendants are black, 40 percent are Hispanic, and 5 percent are Asian. Minority prosecutors are 49 percent black, 26 percent Hispanic, and 25 percent Asian. Each specification includes screening date fixed effects. Column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, arrest zipcode, type of other (secondary) charges on the case, and gender of the prosecutor. Column 3 includes the same controls as column 2, with the exception of prosecutor gender, and adds individual prosecutor fixed effects. Column 4 adds interactions for every case and defendant control added in column 2, interacted with prosecutor race. Robust standard errors are clustered at the prosecutor level.

Table A6: Estimates of Opposite-Race Bias in Defendant Guilt by Crime Type for Hispanic Prosecutors and Defendants

	(1)	(2)	(3)	(4)
Panel A: Drug Crimes				
Outcome: Guilty				
Hispanic Defendant*White Prosecutor	-0.0425	-0.00558	-0.0129	-0.0240
	(0.0480)	(0.0376)	(0.0400)	(0.0465)
Observations	14243	14243	14243	14243
Outcome Mean	0.431	0.431	0.431	0.431
Panel B: Person Crimes				
Outcome: Guilty				
Hispanic Defendant*White Prosecutor	-0.0590	-0.0706	-0.0393	-0.0160
	(0.0470)	(0.0440)	(0.0457)	(0.0577)
Observations	4539	4539	4539	4539
Outcome Mean	0.293	0.293	0.293	0.293
Panel C: Other Crimes				
Outcome: Guilty				
Hispanic Defendant*White Prosecutor	-0.0186	-0.0207	-0.0194	-0.0272
	(0.0272)	(0.0252)	(0.0252)	(0.0344)
Observations	17285	17285	17285	17285
Outcome Mean	0.656	0.656	0.656	0.656
Panel D: Property Crimes				
Outcome: Guilty				
Hispanic Defendant*White Prosecutor	0.0107	0.0128	0.0147	0.00435
	(0.0332)	(0.0300)	(0.0296)	(0.0255)
Observations	20032	20032	20032	20032
Outcome Mean	0.529	0.529	0.529	0.529
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	-	Y	Y	Y
Prosecutor FE	-	-	Y	-
Interactions	-	-	-	Y

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Hispanic Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. The sample includes only white and Hispanic prosecutors and defendants. Each specification includes screening date fixed effects. Column 2 adds controls for defendant age, date of birth, gender, number of arrest charges, number of arrest counts, number of prior arrests, number of prior felony arrests, number of prior convictions, number of prior felony convictions, number of prior jail sentences, number of prior incarcerations, number of prior non-incarceration sentences, misdemeanor type, drug crime, property crime, person crime, arrest zipcode, type of other (secondary) charges on the case, and gender of the prosecutor. Column 3 includes the same controls as column 2, with the exception of prosecutor gender, and adds individual prosecutor fixed effects. Column 4 adds interactions for every case and defendant control added in column 2, interacted with prosecutor race. Robust standard errors are clustered at the prosecutor level.

Table A7: The Effect of Prosecutor Race on Defendant Guilt

	(1) Guilty	(2) Guilty	(3) Guilty	(4) Guilty
Panel A: Entire Sample				
Black Defendant	0.114***	0.0819***	0.0820***	0.0812***
	(0.00519)	(0.00462)	(0.00463)	(0.00467)
White Prosecutor	0.0175	0.0164		
	(0.0120)	(0.0107)		
Observations	75666	75666	75666	75666
Outcome Mean	0.598	0.598	0.598	0.598
Panel B: Property Crimes				
Black Defendant	0.135***	0.109***	0.109***	0.109***
	(0.00657)	(0.00654)	(0.00652)	(0.00649)
White Prosecutor	0.0189	0.0135		
	(0.0135)	(0.0113)		
Observations	29815	29815	29815	29815
Outcome Mean	0.615	0.615	0.615	0.615
Prosecutor and Defendant Race Indicators	Y	Y	Y	Y
Screening Date FE	Y	Y	Y	Y
Case-Level Controls	-	Y	Y	Y
Prosecutor FE	-	-	-	Y
Interactions	-	-	Y	-

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on *Black Defendant* and *White Prosecutor* from the regression of *Guilty* on an indicator for prosecutor race and defendant race. Each specification includes screening date fixed effects. Column 2 adds controls for defendant age, date of birth, gender, , number of arrest charges, number of arrest counts, number of prior arrests, felony arrests, convictions, felony convictions, jail sentences, prison sentences, and non-incarceration sentences; indicators for drug crime, property crime, person crime, misdemeanor type, arrest zipcode, type of other (secondary) charges on the case, and prosecutor gender. Robust standard errors are clustered at the prosecutor level.

Table A8: Missing Values for Property Crimes

	Original Estimate	Missing Controls	Missing Crime Type		Missing Prosecutor Race			Missing Defendant Race				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Average [95% CI]							Average [95% CI]	
Outcome: Guilty												
Black Def*White Pros.	0.0537***	0.0529***	0.0537***	0.0541	0.0538***	0.0536***	0.0565***	0.0500***	0.0543***	0.0680***	0.0543	0.0589
	(0.0142)	(0.0142)	(0.0142)	[0.0512, 0.0570]	(0.0140)	(0.0132)	(0.0141)	(0.0142)	(0.0142)	(0.0179)	[0.0497, 0.0589]	[0.0506, 0.0596]
Observations	29815	29851	29815	29815	30132	30132	30248	30248	30248	29815	29815	29815
Outcome Mean	0.615	0.614	0.615	0.615	0.615	0.615	0.613	0.613	0.613	0.615	0.615	0.615
Pros. & Def. Race Ind.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Screening Date FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Case-Level Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Prosecutor FE	-	-	-	-	-	-	-	-	-	-	-	-
Interactions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Missing Control Indicators	-	Y	-	-	-	-	-	-	-	-	-	-
Missing Defendant Race	-	-	-	-	-	-	Black	White	.5 Black	.79 Black	Random	Random
Missing Prosecutor Race	-	-	-	-	White	Black	-	-	-	-	-	-

Standard errors in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Notes: This table reports the coefficient on the interaction of *Black Defendant* and *White Prosecutor* from the regression of *Guilty* on indicators for prosecutor race, defendant race, and the interaction term. All specifications include screening date fixed effects. Each specification also includes controls, and interactions, similar to column 4 in Tables 5 and 6. Column 1 repeats the estimate for Table 6 panel D, column 4. Standard errors are clustered at the prosecutor level. Column 2 includes indicators for missing defendant characteristics. Column 3 replaces all missing crime types as property crimes, and column 4 presents the average and 95 percent confidence interval from 10,000 iterations of randomly replacing crime type. Columns 5–6 replace missing prosecutor race as white or black respectively. Columns 7–10 replace missing defendant race as black, white, 0.5 black or 0.79 black (sample mean). Columns 11–12 present the average and 95 percent confidence intervals from 10,000 iterations of randomly replacing defendant race.

A.2   Missing Values

As described earlier, one limitation of the data is that I do not observe certain covariates for every case. In particular, defendant age, gender, and race; crime type and arrest zipcode; and prosecutor race are missing for some observations in my sample. In this section, I show that these minor data limitations do not alter the results of this paper.

First, I show that including cases with missing information on defendant age, defendant gender and arrest zipcode does not change my estimates for property crimes. Defendant age, defendant gender and arrest zipcode are missing for 0.02 percent, 0.2 percent and 0.1 percent of cases, respectively (20, 166, and 94 cases). Results are shown in Table A8. Each specification in the table includes screening date fixed effects, case-level controls, and interactions, just as in column 4 of earlier result tables. Column 1 repeats the result for property crimes in Table 6 for comparison. In column 2, I include dummy variables for missing defendant age, missing defendant gender, and missing zipcode. Then I interact each of these dummies with prosecutor race. I also replace the values of defendant gender, defendant age, and zipcode with zeros for observations where I do not observe the true value. My coefficient on *Black Defendant * White Prosecutor* is almost identical in magnitude and is significant at the 1-percent level. This coefficient indicates that missing information for defendant age and gender does not alter my results.

Next, I consider missing crime types. In column 3, I assume all missing crime types are Property Crimes. In column 4, I randomly assign case type based on the probability of property crime in my data (39 percent of cases are property crimes). Then I estimate my result using screening date fixed effects, case-level controls, and interactions. I then repeat this exercise 10,000 times. I present the average coefficient for these iterations and the 2.5th and 97.5th percentiles (95-percent confidence interval). In both columns, my estimate is similar in magnitude. I can also rule out zero in my confidence interval.

Third, I consider missing values of defendant and prosecutor race. Defendant race is missing for 1.6 percent of the sample (1550 cases), and prosecutor race is missing for 4.9 percent

of the sample (5 prosecutors and 4 cases). Next, I show that my results are robust to various assumptions about missing prosecutor and defendant race. First, I address missing values for prosecutors. Because 99 percent of cases with missing values come from 2 prosecutors, I simply replace prosecutor race with either white or black. In column 5, I replace missing prosecutor race as white and reestimate my results. In column 6, I replace missing prosecutor race as black. Both estimates (0.0538 and 0.0536, respectively) are very similar in magnitude to the original estimate and are statistically significant at the 1-percent level.

In columns 7–12, I make various reasonable assumptions about the race of defendants whose race is missing. In columns 7 and 8, I replace all missing defendant races as black and white, respectively. Next, I replace defendant race as 0.5 black and 0.79 black, the sample average, in columns 9 and 10. These results are, again, very similar in magnitude to my original estimate and are statistically significant at the 1-percent level.

Of course, there are many different combinations of defendant race that could occur beyond the results presented so far in Table A8. To address these possible scenarios, I conduct a simulation where I randomly replace defendant race based on the distribution of defendant race I observe in my data (79 percent of defendants are black). Specifically, I randomly assign defendant race and estimate my result using arrest category and prior arrest fixed effects, case-level controls, and interactions. I then repeat this exercise 10,000 times. I present the average coefficient for these iterations and the 2.5th and 97.25th percentiles (95-percent confidence interval) in column 11 and 12. I also assume all missing prosecutors are white in column 11 and black in column 12. The average coefficient for both columns (0.0543 and 0.0589) are close to the original estimate, and both confidence intervals do not include zero. These results show that, under reasonable assumptions about which cases have opposite-race pairings of prosecutors and defendants, there is still strong evidence of opposite-race bias for property crimes.