# THE IMPACT OF JURY RACE IN CRIMINAL TRIALS[*]

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This article examines the impact of jury racial composition on trial outcomes using a data set of felony trials in Florida between 2000 and 2010. We use a research design that exploits day-to-day variation in the composition of the *jury pool* to isolate quasi-random variation in the composition of the seated jury, finding evidence that (i) juries formed from all-white jury pools convict black defendants significantly (16 percentage points) more often than white defendants, and (ii) this gap in conviction rates is entirely eliminated when the jury pool includes at least one black member. The impact of jury race is much greater than what a simple correlation of the race of the seated jury and conviction rates would suggest. These findings imply that the application of justice is highly uneven and raise obvious concerns about the fairness of trials in jurisdictions with a small proportion of blacks in the jury pool. *JEL* Codes: H1, J71, K0, K14, K40, K41.

## I. INTRODUCTION

The Sixth Amendment to the U.S. Constitution establishes the right of a defendant charged with a crime to a trial by an impartial jury.[1] Yet the history of U.S. criminal justice is replete with cases where the abstract promise of jury impartiality has been called into question. Of special concern are settings where a minority member of a population is tried in a location in which few, if any, members of the same minority are likely to serve on the jury.[2] This concern has arisen repeatedly in the context of race, as blacks generally constitute a small fraction of the population, and therefore seated juries, in the majority of U.S. states and counties. Vastly unequal outcomes—the proportion of blacks in the prison population is almost four times that in the general population—along with anecdotal evidence from many cases have

1. The Sixth Amendment states: "In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed."

2. Sommers and Ellsworth (2003) highlight some of the higher profile cases where there have been questions about the role of race in jury decisions.

led numerous observers to question whether the criminal justice system treats black defendants (and victims) fairly.

The empirical evaluation of the effect of jury composition on trial outcomes is fraught with difficulties. Studies based on experimental evidence from mock trials are limited by numerous simplifications made for experimental expediency and, more fundamentally, by the substantially lower stakes compared to real criminal trials.[3] In addition, the few studies that examine the correlation between the composition of the seated jury and trial outcomes are problematic because the seated jury results from a nonrandom selection process.[4] In particular, in the vast majority of criminal trials in the United States, prosecution and defense attorneys are able to exclude a sizable number of potential jurors in the jury pool from the seated jury without explanation through the use of *peremptory challenges*. As a result, even if the initial jury pool is randomly drawn, the composition of the seated jury may be correlated with the nature of the charges and evidence in the case as well as the attributes of the defendant.

Given the limitations of the existing literature, the main goal of this article is to provide the first empirical evidence of the effects of jury composition on trial outcomes based on quasi-random variation in jury composition and data from real criminal trials.[5] We do so by combining a data set that provides information on both the seated jury and jury pool for each trial with a research

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3. For instance, mock jurors typically hear a substantially condensed version of a case, do not see a "defendant," and decide the verdict individually rather than coming to a unanimous decision as a group. In addition, they are rarely representative of the population and are often white college students. Sommers (2007) provides a recent review of this literature. He highlights (i) the fact that the findings are mixed, and (ii) that there is little research that looks at whether black and white jurors are differentially affected by defendant's race (two exceptions are Bernard 1979 and Skolnick and Shaw 1997).

4. See Bowers, Steiner, and Sandys (2001), who look at capital trials, and Daudistel et al. (1999), who look at nonfelony trials. Also of note, Lee (2009) finds evidence that states that switched from key-man jury selection procedures to more random selection procedures, which were meant to increase black representation on juries, saw a resulting drop in the share of nonwhites among new admissions to prison.

5. Studies providing compelling empirical research designs to estimate the effect of race in other areas include Bertrand and Mullainathan (2004) in employment; Ross and Yinger (2002) in mortgage lending; Knowles, Persico, and Todd (2001), Anwar and Fang (2006), and Antonovics and Knight (2009) in motor vehicle stops and searches; and Price and Wolfers (2010) and Parsons et al. (2011) in sports refereeing.

design that seeks to isolate a random source of variation in jury composition. Our data set consists of all felony trials for which jury selection began in Sarasota and Lake Counties, Florida, during 5.5- and 10-year periods, respectively, in the 2000s. The data are unusually rich in providing information on the age, race, and gender not only for each of the 6–7 members of the seated jury but also for the approximately 27 members of the jury pool for the trial from which the seated jury is selected. The data set also contains detailed information about the race and gender of the defendant, the criminal charge(s), and the final jury verdict.

Our research design exploits the variation in the composition of the jury pool across trials, which is driven primarily by which eligible jurors in the county are randomly called for jury duty on a given day.[6] In essence, we examine how conviction rates for white and black defendants vary with the composition of the jury pool rather than the seated jury. The day-to-day variation in the composition of the jury pool does in fact appear to be random—the composition of the pool is uncorrelated with the characteristics of the defendant and the criminal charges. Because the eligible jury population in both Sarasota and Lake Counties is less than 5% black, much of the variation in the sample is between pools in which there are no black potential jurors (36%) and those with at least one black member (64%).

The evidence regarding the impact of the jury pool on conviction rates is straightforward and striking: the presence of even one or two blacks in the jury pool results in significantly *higher* conviction rates for white defendants and *lower* conviction rates for black defendants. Specifically, in cases with no blacks in the jury pool, black defendants are convicted at an 81% rate and white defendants at a 66% rate. When the jury pool includes at least one black potential juror, conviction rates are almost identical: 71% for black defendants and 73% for white defendants. The estimated impact of the racial composition of the jury pool on trial outcomes is statistically significant and leads to three main conclusions: (i) there is a significant gap in conviction rates for black versus white defendants when there are no blacks in the

6. A handful of studies use random variation in other aspects of the criminal justice system. Abrams, Bertrand, and Mullainathan (2011) use the random assignment of judges to study racial disparities in sentencing. Kling (2006) uses random judge assignment as a source of exogenous variation in sentence length. Abrams and Yoon (2009) use the random assignment of felony cases to public defenders to study the effect of attorney ability on case outcomes.

jury pool, (ii) the gap in conviction rates for black versus white defendants is eliminated when there is at least one black member of the jury pool, and (iii) conviction rates for white defendants are significantly higher when there is at least one black member of the jury pool (versus all-white jury pools). The estimates are robust to a number of alternative specifications, such as the inclusion of other case and defendant characteristics interacted with jury race, and the same pattern holds in both Lake and Sarasota Counties independently.

Having established that the racial composition of the jury pool has a substantial impact on conviction rates, we consider a number of possible channels through which random variation in the composition of the jury pool might affect trial outcomes. Most obviously and directly, having at least one black member in the jury pool makes it feasible to have a black member on the seated jury. Black representation on the seated jury might affect trial outcomes not only through the jury deliberation and decision process but also by affecting how the case is presented and argued by the prosecution and defense attorneys.

Adding black potential jurors to the pool can also affect trial outcomes even when these jurors are not ultimately seated on the jury. This indirect effect comes about through the jury selection process if attorneys on each side use their peremptory challenges to strike the potential jurors most likely to be hostile to their case. We would expect the defense attorney, for example, to systematically strike those jurors with the highest ex ante probabilities of conviction (i.e., those in the upper tail of the distribution) based on their observable attributes and answers to pretrial questioning. In this way, whenever attorneys use peremptory challenges to strike black members of the pool (presumably when they are in the tail of the distribution), they forgo the possibility of excluding another potential juror with a similar ex ante probability of convicting. This pulls the likelihood of conviction for the seated jurors toward that excluded person's position even though he or she does not wind up serving on the jury.

In addition to illustrating how a member of the jury pool could affect trial outcomes even without being seated, this view of the selection process also provides an explanation for another striking fact from the data: that black and white potential jurors in the pool are about equally likely to be seated. Although attorneys may have additional motivations for seating black jurors in proportion to their representation in the pool—in particular, it

is illegal to consider race when using peremptory challenges—the distributions of ex ante likelihoods of conviction for white and black members of the jury pool may naturally overlap significantly when there is substantial within-race heterogeneity. Given this heterogeneity, the attorneys will effectively seat a significant number of black potential jurors whose ex ante likelihoods of conviction are not all that different than those of the seated white jurors.

That the presence of black members of the jury pool might have a substantial effect on trial outcomes even when no black jurors are actually seated for the trial is also consistent with the pattern of correlation of the composition of the seated jury with trial outcomes. Strikingly, ordinary least squares (OLS) estimates of the black–white conviction rate gap when there is at least one black member of the seated jury are almost identical to the estimated causal effect of having at least one black potential juror in the pool. That these point estimates are similar in magnitude despite the fact that a black juror is seated in only 40% of the cases in which there is a black member of the jury pool implies that jury race has a broader impact than what a naive OLS analysis of the effect of seated jury composition would suggest. That is, although the black–white conviction gap declines by an average of 16 percentage points in all trials in which there is at least one black member of the jury pool, a naive OLS analysis of the effect of the seated jury would instead appear to imply that such a decline occurred only in the smaller subset of cases in which a black juror was actually seated.

We conclude the article with a discussion of the implications of our findings regarding the fair and equal application of the law. Our main findings imply that the application of justice is highly uneven, as even small changes in the composition of the jury pool have a large impact on average conviction rates for black versus white defendants. They also show that defendants of each race do relatively better when the jury pool contains more members of their own race, raising obvious concerns about whether black defendants receive a fair trial in jurisdictions with a small proportion of blacks in the jury pool. The ability of our analysis to draw firm conclusions about the fairness of trial outcomes, however, is fundamentally limited by the fact that the strength of the evidence in cases brought against white and black defendants is not observed directly in the data. As a result, it is impossible to draw firm conclusions about what relative conviction rates should

be for black and white defendants. If, in fact, the strength of the evidence in cases involving black and white defendants is comparable, our results would imply that juries resulting from all-white jury pools require weaker standards of evidence to convict black versus white defendants, whereas juries resulting from jury pools with at least some black members apply comparable standards.

The remainder of the article proceeds as follows. Section II provides background information on jury selection in the United States and jury trials in Florida; Section III describes the data. Section IV presents our main analysis of the impact of jury racial composition on conviction rates for black and white defendants as well as a number of alternative specifications that establish the robustness of our main findings. Section V interprets our findings in the context of a number of additional empirical regularities and potential channels through which variation in the jury pool might affect trial outcomes. Section VI concludes by discussing the implications of our findings for the fair and equal application of the law.

## II. THE JURY TRIAL

### II.A. Overview of the Jury Selection Process

The jury trial is a prominent part of the U.S. justice system. Hannaford-Agor, Mize, and Waters (2007) estimate that there are 154,000 jury trials per year in the United States, 66% of which are criminal trials. They also estimate that 32 million people are summoned each year for jury service and that 1.5 million jurors are impaneled each year. Although many details are determined at the state level, the core elements of jury selection are fairly standard across jurisdictions. Each jurisdiction has a master jury list, which is a list of individuals considered to be potential jurors, often based on voter registration or driver's license records. Eligibility criteria for jury service are also fairly consistent across states: an individual must be a U.S. citizen, a resident of the geographic jurisdiction served by the court, able to speak/understand English, and not under a legal disability (felony conviction or incompetence) (Rottman and Strickland 2006). Individuals from the master jury list are randomly selected to receive a summons for jury service, which requests that the individual appear at the courthouse on a given date for jury selection (voir dire).

To give a brief overview of the process, let us suppose that 100 individuals receive a summons to appear (and they actually do appear) on a given day. For simplicity, assume that the jury for just one trial is to be chosen. Of the 100 potential jurors, suppose 30 are called into the courtroom to be in the venire, that is, the actual pool of jurors from which the jury is chosen. The prosecutor and defense attorneys (or the judge, depending on the state) then ask the potential jurors a series of questions, which are designed to determine whether the individual is fit to serve as an impartial member of the jury. Some are simply excused from service, perhaps because of a medical condition. Other individuals are removed for cause by the judge because they cannot be impartial or follow the law; for instance, they may have a personal relationship with the defendant or state that they are unwilling to impose a particular punishment, like the death penalty. Both prosecutor and defense attorneys can request a removal for cause, and there is generally no limit to the amount of such requests.

Finally, both the prosecutor and defense attorneys have the option to use peremptory challenges to strike potential jurors from the jury. Such challenges are differentiated from removals for cause in that the attorneys do not have to state the reason for the strike and there are a limited number of peremptory challenges available to both the prosecution and defense.[7] Though the attorneys do not have to provide a reason for dismissing a juror, a peremptory challenge cannot be used to strike a juror solely on the basis of race or gender.[8] Numerous studies, however, indicate that the use of the peremptory challenge is not race-neutral; rather, they often find that prosecutors are more likely to strike black venire members and defense attorneys are more likely to strike white venire members (Turner et al. 1986; Rose 1999; Baldus et al. 2001; Sommers and Norton 2007; Diamond

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7. The number of challenges allocated to both sides depends on the state and type of trial (criminal or civil, felony or misdemeanor, capital or noncapital); in some states, the prosecution and defense are allotted different numbers of strikes.

8. The Supreme Court first confronted the issue of race-based peremptory challenges in 1965 in *Swain v. Alabama*. The burden of proof on the defendant to demonstrate bias was significantly lessoned in *Batson v. Kentucky* (1986), which allowed a case for purposeful racial discrimination in jury selection to be made on the basis of the jury selection in a single case rather than historical averages for the entire jurisdiction.

et al. 2009).[9] Though race appears to play a role in the prosecutor's and defense's use of peremptory challenges, studies have also shown that these opposing challenges cancel each other out, in the sense that there is no overall effect on the racial composition of the jury (Rose 1999; Diamond et al. 2009). Importantly, however, even without affecting the number of seated jurors of each race, the use of peremptory challenges may affect trial outcomes by altering the attributes (potentially unobserved in the data) of the seated jurors of each race.

Thus, jury selection begins with a large pool (30 individuals in our running example); potential jurors are then interviewed in sequence and potentially excused, removed for cause, or struck via the peremptory challenge. Those who survive voir dire make up the jury, the size of which depends on the jurisdiction and type of trial. Historically, juries were composed of 12 individuals; 12-member juries are still used in many states and especially in serious criminal trials. In part to reduce court costs, however, many states now use smaller juries (six to eight jurors) for civil trials and less serious criminal trials (Waters 2004; Hannaford-Agor 2009). In addition, one or two alternates are often chosen at this time (through the same set of questioning and dismissing procedures).

### II.B. *Jury Trials in Sarasota County and Lake County, Florida*

In Florida, circuit courts have jurisdiction over felonies, family law matters, civil cases of over $15,000, probate/guardianship/mental health, and juvenile dependency and delinquency. County courts have jurisdiction over misdemeanors, small claims (up to $5,000), civil cases of $15,000 and less, and traffic offenses. We study felony jury trials in Sarasota County and Lake County and hence use data from two circuit courts. Chapter 913 of the 2009 Florida Statutes provides details about the jury trial in Florida. First, all noncapital cases have 6-person juries with 0–2

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9. Baldus et al. (2001) provide anecdotal evidence that race plays a role in jury selection, including the description of an attorney training video by Philadelphia prosecutor Jack McMahon, which provides jury selection strategy that focused on race and class. Stevenson and Friedman (1994) describe the trial of Albert Jefferson in Alabama, during which the prosecutor exercised his discretionary challenges against 24 of the 26 African Americans among the prospective jurors, resulting in an all-white jury. Long after the trial, the defense discovered the prosecution's juror ranking system: strong, medium, weak, and black (the least desirable category).

alternates; capital cases have 12-person juries. Second, the state and the defendant are allocated equal numbers of peremptory challenges, which depend on the type of offense. If the offense is punishable by death or life imprisonment, then there are 10 challenges; if the offense is punishable by imprisonment of more than 12 months, there are six challenges; for all other offenses, there are three challenges.

We obtained the following details specific to jury trials in Sarasota County Circuit Court and Lake County Circuit Court from the courts' websites and communications with administrators of the courts.[10] Both Sarasota and Lake Counties use one source list, driver's licenses from the Department of Highway Safety and Motor Vehicles, to compile the master jury list. Both counties use a jury management software program to randomly choose individuals from this master list to receive a summons requesting that they appear at the courthouse on a particular date. Some individuals who receive a summons are eligible for an automatic exemption and need not appear in court.[11] The eligibility criteria (also listed on the websites) are in line with those described in the general overview in the previous section.[12]

Individuals who do not excuse themselves based on the the eligibility reasons and who are eligible to serve check-in on the date summoned; on check-in, they are entered into the jury management software program. From the sample of checked-in individuals, this software randomly chooses individuals to participate in a particular panel. It is important to note that the jury management software program only uses data about jurors and does not have information about the defendants or case characteristics. Individuals whose names are called out enter the courtroom to participate in voir dire, during which questioning

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10. http://www.sarasotaclerk.com/default.asp?Page=68; http://lakecounty-clerk.org/courts/jury_management.aspx.

11. Individuals can be automatically excused if (i) they are an expectant mother, (ii) they are a parent who is not employed full-time and has custody of a child under age 6, (iii) they are a full-time law enforcement officer, (iv) they served as a juror in Sarasota county in the last 365 days, (v) they are responsible for the care of another who is incapable of caring for himself, or (vi) they are age 70 or older and wish not to report (at this time or permanently).

12. Individuals are eligible for jury duty if they are a legal resident of the State of Florida and Sarasota or Lake County and they possess a valid Florida driver's license or identification card. Thus, individuals who are permanent residents of other states but spend the winter months in Florida would not be eligible for jury duty.

is done by both the attorneys (defense and prosecution) and the judge.

## III. DATA

### III.A. *Description of Jury Data from Sarasota and Lake Counties*

Our analysis is conducted using felony jury trial data for Lake County and Sarasota County, Florida. As each county circuit court maintains their own records of jury trials, these data were obtained through separate requests to each county. To the best of our knowledge, Sarasota County and Lake County are the only two circuit courts in Florida (of reasonable size) that maintain information on the race of jurors and members of the jury pool. The inclusion of the race of each jury member, let alone each member of the jury pool, makes these data particularly rare.[13] Because a standardized record system is not used throughout Florida, the type of information and format of the data available vary somewhat across counties. Thus, the majority of our analysis is conducted with a single, combined data set of Lake and Sarasota County trials, using those variables that can be commonly identified in both counties. Following is a brief description of the data obtained for each county as well as the combined data set.

The office of the Clerk of the Sarasota County Circuit Court provided us with information on all felony trials for which jury selection began between January 1, 2004, and June 1, 2009. Note that because of the (often long) lag between the date at which an offense is filed with the courts and the date at which a verdict is rendered, our data set contains trials for offenses dating as far back as 1999. For each trial, we have data for both the defendant and the jury. The defendant data include the name, race, and gender of the defendant as well as information about the charged offenses, including a detailed crime code, the date the offense was filed, the date the judgment was handed down, and the verdict for each offense. For our main analysis, we restrict our sample to trials in which at least one of the charged offenses resulted

13. Generally, few courts maintain records that identify the race of each jury member and even fewer identify the race of the jury pool member; in fact, many do not even keep records of the jury pool. To obtain the data used in this article, we sent data request letters to every felony court in 15 states. Most indicated that they were unable to provide data because either judicial records are excluded from public records request or these data are not collected or maintained.

in a verdict of guilty or not guilty by the jury.[14] The jury data include the name, date of birth, gender, and race of each individual in the jury pool as well as whether they were seated. However, we cannot distinguish between individuals who are seated and those who became alternates; all of these individuals appear to be seated.

Data were also provided to us by the Lake County Clerk of Courts for all felony jury trials from March 1, 2000 to April 2, 2010. As in Sarasota County, we know each potential juror's name, race, gender, date of birth, and whether they were seated or assigned as alternates. In terms of the defendant information, the Lake County Clerk of Courts only provided the case number and defendant name. We used this information to manually collect the following information from the Lake County Clerk of Courts Online Court Records website: city of residence, sex, race, attorney, judge, the number of charges, the type of charge, and the verdict for each charge.[15] As in Sarasota, we restrict our sample to trials in which at least one of the charged offenses resulted in a verdict of guilty or not guilty by the jury.[16]

Because all felony trials in Florida other than capital trials have six-member juries, we exclude capital trials from our analysis. Because each jury should have six members plus up to two alternates, we drop those cases with fewer than six jurors/alternates identified in the data and those with more than eight. We also drop those cases with multiple defendants and those in which the defendant names do not match the online record (i.e., in Lake County).[17] We are left with a data set of

14. Charges for which the verdict was neither guilty nor not guilty had the following possible outcomes: dropped, *noelle prosequi*, filed, dismissed due to speedy trial, dismissed with no reason given, consolidated, adjudication withheld by judge, and unable to stand trial. We test the sensitivity of our results to the exclusion of these cases later.

15. The data were collected from the following website: http://www.lake-countyclerk.org/record_searches/court_records_agreement.aspx?to=%2Frecord%5Fsearches%2Fonline%5Fcourt%5Frecords%2Fonline%5Fcourt%5Frecords%2Easp?target%3D%5Fblank.

16. Other possible verdicts include: pled, *nolle prosequi*, no information, dismissed by judge, and mistrial. We test the sensitivity of our results to redefining pleas as decisions of guilty by the jury.

17. Specifically, we drop eight Sarasota cases that have too few or too many jurors; capital cases are thus dropped as a result of having more than eight jurors. Note that in Lake County, the capital cases were not provided in the same data set, and hence, we do not drop any capital cases. In Lake County, we drop 13 cases that do not have six seated jurors, that is, the jury is not correctly identified, 20 cases with multiple defendants, and 2 incorrectly labeled cases.

785 felony jury trials, 401 of which are from Sarasota County and 384 from Lake County. Our analysis focuses on the 712 trials in which the main dependent variables are defined and the defendant is identified as being either black ($n = 333$) or white ($n = 379$).

### III.B.  Summary Statistics

Table I presents descriptive statistics for both the defendant and jury variables for all 785 felony trials overall and separately for the black and white defendants used in our analysis.[18] Overall, 44% of defendants are black and the average number of charges is 2.99. We identify whether each defendant is charged with an offense in the following categories, regardless of the verdict associated with the charge: murder (noncapital), robbery, other violent offenses, property offenses, drug offenses, sex offenses, weapons offenses, and other offenses. Overall, the most common crime categories are other offenses (33%), other violent offenses (31%), and drug offenses (25%). There are some differences in the distribution of crime types across defendant race: 37% of black defendants have at least one drug charge compared with 14% of white defendants. In contrast, 8% of black defendants are charged with a sex offense compared to 18% of white defendants.

We consider two possible outcome measures or verdicts: whether the defendant was convicted of at least one offense and the percent of the first five offenses for which the defendant was convicted. For the first measure, 74.5% of black defendants and 70.2% of white defendants were convicted of at least one offense. On average, seated juries have 7 members (including alternates) drawn from jury pools with 27 individuals.[19]

Approximately 64% of cases had at least one black potential juror in the pool, whereas just 28% of trials had at least one black member on the seated jury. These percentages are driven

18. In Appendix A, we provide additional summary statistics separately for Lake and Sarasota Counties.

19. Though not reported in Table I, the average composition of the jury pools is 51% female, 25% age 40 or younger, and 27% age 60 or older. These statistics are identical for defendants of each race. The age and gender composition of the seated jury differs from these statistics by at most 2 percentage points.

TABLE I

SUMMARY STATISTICS

| | All Cases | | Black Defendants | | White Defendants | |
|---|---|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. | Mean | Std. dev. |
| *Defendant characteristics* | | | | | | |
| Black | 0.44 | 0.50 | 1 | 0 | 0 | 0 |
| Hispanic | 0.04 | 0.20 | 0 | 0 | 0 | 0 |
| White | 0.51 | 0.50 | 0 | 0 | 1 | 0 |
| Male | 0.92 | 0.27 | 0.95 | 0.21 | 0.89 | 0.32 |
| *Case characteristics* | | | | | | |
| Total charges | 2.99 | 3.57 | 2.79 | 2.33 | 3.26 | 4.55 |
| Any drug charge | 0.25 | 0.44 | 0.37 | 0.49 | 0.14 | 0.35 |
| Any murder charge | 0.05 | 0.22 | 0.06 | 0.25 | 0.05 | 0.21 |
| Any robbery charge | 0.09 | 0.29 | 0.15 | 0.36 | 0.05 | 0.21 |
| Any other violent charge | 0.31 | 0.46 | 0.31 | 0.46 | 0.30 | 0.46 |
| Any property charge | 0.23 | 0.42 | 0.21 | 0.41 | 0.25 | 0.43 |
| Any sex charge | 0.13 | 0.34 | 0.08 | 0.27 | 0.18 | 0.38 |
| Any weapons charge | 0.12 | 0.33 | 0.18 | 0.39 | 0.08 | 0.27 |
| Any other charge | 0.33 | 0.47 | 0.26 | 0.44 | 0.37 | 0.48 |
| *Dependant variables* | | | | | | |
| Proportion guilty convictions | 0.670 | 0.439 | 0.686 | 0.432 | 0.641 | 0.450 |
| Any guilty convictions | 0.728 | 0.445 | 0.745 | 0.437 | 0.702 | 0.458 |
| *Pool and seated jury characteristics* | | | | | | |
| Number of seated jurors | 7.11 | 0.483 | 7.12 | 0.476 | 7.11 | 0.496 |
| Number in jury pool | 27.3 | 7.3 | 26.9 | 7.0 | 27.6 | 7.6 |
| Any black in pool | 0.64 | 0.48 | 0.63 | 0.48 | 0.65 | 0.48 |
| Any black on seated jury | 0.28 | 0.45 | 0.29 | 0.45 | 0.26 | 0.44 |
| Proportion black on seated jury | 0.046 | 0.080 | 0.051 | 0.089 | 0.040 | 0.069 |
| Proportion black in pool | 0.039 | 0.040 | 0.040 | 0.043 | 0.038 | 0.038 |
| Observations | 785 | | 333 | | 379 | |

*Notes:* The first two columns report summary statistics for the full sample of 785 cases for which a jury was selected and the variable under consideration is defined. In particular, defendant race is defined for 774 cases, defendant gender for 776 cases, specific crime categories for 776 cases, total charges for 773 cases, the dependant variables for 750 cases, and the pool and seated jury variables for the full sample of 785 cases. The latter columns report summary statistics for cases with black defendants ($n = 333$) and white defendants ($n = 379$), respectively, in which a verdict of guilty or not guilty by the jury was returned for at least one of the charged offenses. Together, the observations in these columns make up the sample used in our main analysis. Summary statistics for the proportion variables (i.e., proportion guilty convictions, proportion black on seated jury, and proportion black in pool) were formed by measuring the proportion for each jury or jury pool and averaging across cases.

primarily by the small proportion of blacks in the jury pool—3.9%.[20] In fact, blacks are slightly more represented on seated juries (4.6%) than in the jury pool, implying that potential black jurors are slightly more likely to be seated than white jurors. Given the relatively small fraction of blacks in the population of Lake and Sarasota Counties, the primary source of variation in our study is between jury pools with zero versus a small number of black potential jurors. Because the population of the United States is approximately 12% black, such settings are more the norm than the exception. That said, it is important to emphasize that the findings presented herein may not be representative of the effect of jury race in jurisdictions with higher fractions of blacks in the population. Such settings are essentially "out of sample," and racial attitudes as well as juror interactions are likely to be different in jurisdictions with a much higher fraction of black residents.

Table II examines whether variation in the demographic composition of the jury pool across trials is uncorrelated with defendant and case characteristics, consistent with the notion that the jury pool varies quasi-randomly from trial to trial. Specifically, we regress a particular jury composition measure, such as whether there are any black jurors in the pool, on observable defendant and case characteristics.[21] If the jury pool were truly randomly assigned to cases, the regression coefficients should be close to 0 and statistically insignificant. This is essentially what we find, as just two of the 48 coefficients presented in this table are statistically significant at the 5% level and the magnitudes of all coefficients are quite small.[22] Although these regressions cannot rule out the possibility that the composition of the jury pool is related to attributes of the defendant or case that are unobserved to us, they suggest that this should not be a major concern. These

20. According to the U.S. Census Bureau, 9.4% of Lake County residents were black in 2009 compared to 4.8% in Sarasota County. Fukurai, Butler, and Booth (1991) and Sommers (2008) suggest numerous reasons that the jury pool is disproportionately less black than the population, including racial differences in (i) ineligibility due to criminal records, (ii) likelihood of having a driver's license or being registered to vote, (iii) responses to summons for jury duty, and (iv) residential mobility.

21. Note that 14 cases are dropped from these regressions due to incomplete charge information.

22. Additional regressions of the gender and age composition of the pool on the defendant and case characteristics, reported in Appendix B, provide further evidence of random assignment. Again, just 2 of 48 coefficients are significant at the 5% level.

TABLE II

THE RELATIONSHIP BETWEEN THE RACIAL COMPOSITION OF THE JURY POOL AND
DEFENDANT/CASE CHARACTERISTICS

| | (1) Indicator for any blacks in pool | (2) Proportion of blacks in pool | (3) Proportion of whites in pool | (4) Proportion of other races in pool |
|---|---|---|---|---|
| *Defendant characteristics* | | | | |
| Black | −0.008 | 0.003 | −0.004 | 0.001 |
| | [0.039] | [0.003] | [0.005] | [0.003] |
| Hispanic | 0.005 | 0.004 | −0.003 | −0.001 |
| | [0.088] | [0.008] | [0.011] | [0.006] |
| Male | 0.043 | 0.006 | −0.009 | 0.002 |
| | [0.067] | [0.005] | [0.007] | [0.004] |
| *Case characteristics* | | | | |
| Any drug charge | −0.029 | −0.0003 | 0.004 | −0.003 |
| | [0.051] | [0.004] | [0.006] | [0.004] |
| Any murder charge | 0.093 | −0.002 | −0.006 | 0.006 |
| | [0.076] | [0.006] | [0.008] | [0.005] |
| Any other charge | 0.007 | 0.002 | −0.004 | −0.0005 |
| | [0.040] | [0.004] | [0.005] | [0.003] |
| Any other violent charge | 0.0001 | 0.004 | −0.004 | −0.0003 |
| | [0.042] | [0.004] | [0.005] | [0.003] |
| Any property charge | 0.078 | 0.013*** | −0.006 | −0.008** |
| | [0.047] | [0.005] | [0.006] | [0.003] |
| Any robbery charge | −0.026 | −0.005 | 0.004 | 0.0001 |
| | [0.065] | [0.005] | [0.008] | [0.005] |
| Any sex charge | 0.07 | 0.002 | 0.001 | −0.004 |
| | [0.058] | [0.005] | [0.006] | [0.004] |
| Any weapons charge | 0.075 | −0.001 | 0.001 | 0.0002 |
| | [0.054] | [0.004] | [0.006] | [0.004] |
| Total charges | 0.008* | $5 \times 10^{-5}$ | 0.0002 | −0.0003 |
| | [0.003] | [0.000] | [0.000] | [0.000] |
| Constant | 0.541*** | 0.028*** | 0.942*** | 0.029*** |
| | [0.074] | [0.006] | [0.007] | [0.005] |
| Observations | 771 | 771 | 771 | 771 |
| *F*-statistic | 1.40 | 1.13 | 0.68 | 1.07 |
| *R*-squared | 0.02 | 0.02 | 0.01 | 0.01 |

*Notes:* Each column reports parameter estimates and heteroskedasticity-robust standard errors from OLS regressions using the variable in the column heading as the dependent variable. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The crime categories are not mutually exclusive, so there is no omitted crime category. *F*-statistics jointly testing whether all coefficients equal 0 are reported in the second to last row of the table. Fourteen observations from the full sample shown in Table I were dropped due to one or more missing values for the various defendant and case characteristics.

results are also consistent with the jury management software (i) randomly choosing potential jurors from the master list to receive summons for jury duty, and (ii) randomly choosing from the group of summoned individual those who will participate in voir dire for a particular trial.[23]

## IV. The Effect of the Racial Composition of the Jury Pool on Conviction Rates

In this section, we examine the impact of the racial composition of the jury pool on conviction rates for white and black defendants. The left panels of Table III present cross-tabulations that show how conviction rates vary with whether there are any blacks in the jury pool. When there are no potential black jurors in the pool, black defendants are significantly more likely than whites to be convicted of at least one crime (81% for blacks versus 66% for whites). However, as the number of blacks in the pool increases, this differential goes away: in fact, with at least one black member of the jury pool, conviction rates are almost identical (71% for blacks and 73% for whites). The right panels of Table III show how conviction rates vary with the number of blacks in the pool. Given the sample sizes, the data are fairly noisy once there are multiple black jurors in the pool and so, throughout the rest of the article, we focus on the variation between cases in which there are no blacks in the pool and cases in which there is at least one.

The first column of Table IV expresses these results in regression form: the dependant variable is an indicator for whether the defendant was convicted of at least one charged crime and the regressors include indicators for (i) whether the defendant is black, (ii) whether there are any black jurors in the pool, and (iii) the interaction of these two variables. Column (2) reports these key coefficients from a specification that includes additional control variables for the gender and age composition of the pool, a county dummy, and a set of dummy variables for the year of filing. Including controls for other characteristics of the jury pool accounts for potential correlations between jury race, gender, and

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23. Appendix C provides a direct comparison of the average of each demographic and case characteristic for jury pools with and without any black members. These means are only significantly different at the 5% level for one variable, total charges, supporting the notion that jury pools are randomly assigned to cases.

TABLE III

CROSS-TABULATIONS OF CONVICTION RATES AND RACIAL COMPOSITION OF JURY POOL

**Black defendants**

| | | No guilty verdicts | At least one guilty verdict | Conviction rate (%) |
|---|---|---|---|---|
| Any blacks in pool | No | 24 | 100 | 81 |
| | Yes | 61 | 148 | 71 |
| Number of blacks in pool | 0 | 24 | 100 | 81 |
| | 1 | 28 | 76 | 73 |
| | 2 | 24 | 51 | 68 |
| | 3 | 6 | 16 | 73 |
| | 4+ | 3 | 5 | 63 |

**White defendants**

| | | No guilty verdicts | At least one guilty verdict | Conviction rate (%) |
|---|---|---|---|---|
| Any blacks in pool | No | 45 | 86 | 66 |
| | Yes | 68 | 180 | 73 |
| Number of blacks in pool | 0 | 45 | 86 | 66 |
| | 1 | 38 | 109 | 74 |
| | 2 | 17 | 46 | 73 |
| | 3 | 11 | 19 | 63 |
| | 4+ | 2 | 8 | 80 |

*Notes*: Cross-tabulations are reported for the main analysis sample, which includes 333 cases with black defendants and 379 cases with white defendants. Conviction rate is the proportion of trials that resulted in at least one guilty verdict.

TABLE IV

REDUCED-FORM BENCHMARK REGRESSIONS

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  |  |  | Proportion guilty convictions | |
| Dependent variable | Any guilty conviction | | | |
| Black defendant | 0.150*** | 0.164*** | 0.156*** | 0.160*** |
|  | [0.056] | [0.058] | [0.055] | [0.057] |
| Any black in pool | 0.069 | 0.105** | 0.063 | 0.090* |
|  | [0.048] | [0.051] | [0.047] | [0.050] |
| Black defendant * any black in pool | −0.168** | −0.166** | −0.174** | −0.155** |
|  | [0.070] | [0.074] | [0.069] | [0.072] |
| Constant | 0.656*** | 0.627*** | 0.600*** | 0.576*** |
|  | [0.039] | [0.041] | [0.038] | [0.040] |
| Includes controls for: |  |  |  |  |
| Gender/age of pool | No | Yes | No | Yes |
| County dummy | No | Yes | No | Yes |
| Year of filing dummies | No | Yes | No | Yes |
| Observations | 712 | 712 | 712 | 712 |
| $R$-squared | 0.01 | 0.07 | 0.01 | 0.08 |

*Notes:* The dependent variable for each regression is shown in the row heading. All regressions are estimated on the main analysis sample using OLS and heteroskedasticity-robust standard errors are reported in brackets. The gender of the jury pool is measured as the proportion of the pool that is female, and the age of jury pool is controlled for with the proportion of the pool that is age 40 or less, and proportion of the pool that is between the ages of 40 and 60. For each of the controls (including county and year of filing dummies) both a demeaned version of the control variable and the interaction of this demeaned variable with whether the defendant is black are included in the specification. Because the control variables are demeaned, the coefficients on the variables reported in the table can be interpreted as the estimated effect at the mean and are comparable across columns. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

age and adding year dummies addresses the possibility that crime patterns or convictions rates may be trending systematically over time. In all cases, the additional control variables described above are fully interacted with the defendant's race. This allows for the possibility that these control variables have a differential effect for black and white defendants, just as we have allowed for the racial composition of the jury pool.[24]

The point estimates for the three key coefficients are remarkably robust and statistically significant in the specification that includes controls. For expositional convenience, we use the specification reported in column (2) as our *benchmark* specifi-

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24. In addition, each control variable is demeaned (prior to being interacted), which ensures that the main coefficients in Table IV are reported at the sample mean in each specification and therefore comparable; that is, there is no need to look at the coefficients on the interaction variables included in the vector of controls.

cation for the remainder of the article and discuss the results referring to this specification. The coefficient estimates in this benchmark specification support three main conclusions. First, there is a large gap (16 percentage points) in conviction rates for black versus white defendants when there are no blacks in the jury pool. Second, the gap in conviction rates for black versus white defendants is significantly lower when there is at least one black member in the jury pool. In fact, the point estimate implies that the entire gap is eliminated in this case. Third, conviction rates for white defendants are sharply higher (10.5 percentage points) when there is at least one black member of the jury pool (versus all-white jury pools).[25] The third and fourth columns of Table IV repeat the same structure as the first two columns using the fraction of the first five offenses on which the defendant was found guilty as the dependant variable. The results are similar in both magnitude and statistical significance.

Before considering the robustness of these findings to additional alternative explanations, it is worth emphasizing that the coefficient estimates reported in Table IV are not only significant in the statistical sense but are also large in magnitude.[26] Given that very few jury pools have more than two black members, the results presented above reveal large changes in conviction rates with the addition of just one or two black members to an otherwise homogeneously white jury pool. Moreover, it is important to bear in mind that the magnitude of these effects reflects the average impact potential black jurors have on conviction rates *regardless of whether they are actually seated on the trial jury*—in fact, each black member of the jury pool has about a one-third chance of being seated. In the next section, we discuss ways members of the jury pool might affect trial outcomes both when they are seated and when they are dismissed through peremptory challenges.

Table V reports estimates for a number of alternative specifications using whether the defendant was convicted of at

25. The findings from this benchmark specification are also qualitatively and quantitatively comparable when estimated via a probit model rather than a linear probability model. Specifically, the estimated marginal effects are: Black Defendant (0.18), Any Blacks in Pool (0.10), and Black Defendant*Any Blacks in Pool (−0.19). Each of these estimates is significant at the 5% or 1% level.

26. Although not reported in Table IV, the specifications reported in columns (2) and (4) here also provide estimates of the way that other aspects of jury composition affect racial gaps in convictions. It is worth noting that neither age nor gender has a significant (in magnitude or statistically) impact on the racial gaps in conviction rates.

TABLE V

ROBUSTNESS/SENSITIVITY CHECKS

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | | | | Dependent variable = any guilty conviction | | |
| Black defendant | 0.164*** | 0.149** | 0.126** | 0.134*** | 0.163*** | 0.142** |
| | [0.058] | [0.063] | [0.060] | [0.051] | [0.058] | [0.055] |
| Any black in pool | 0.105** | 0.092* | 0.098* | 0.075* | 0.086* | 0.07 |
| | [0.051] | [0.053] | [0.052] | [0.045] | [0.050] | [0.048] |
| Black defendant * any black in pool | −0.166** | −0.139* | −0.130* | −0.135** | −0.156** | −0.160** |
| | [0.074] | [0.080] | [0.076] | [0.065] | [0.073] | [0.070] |
| Constant | 0.627*** | 0.635*** | 0.636*** | 0.697*** | 0.613*** | 0.667*** |
| | [0.041] | [0.042] | [0.042] | [0.036] | [0.040] | [0.039] |
| Sample notes | Main sample | Main sample | Main sample | Includes Lake cases that are pled as guilty jury verdict | Includes Sarasota nonverdict cases as not guilty jury verdict | Includes Sarasota nonverdict cases as guilty jury verdict |
| Benchmark controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Defendant and case characteristics | No | Yes | No | No | No | No |
| Judge dummies | No | No | Yes | No | No | No |
| Observations | 712 | 710 | 709 | 845 | 737 | 737 |
| R-squared | 0.07 | 0.11 | 0.13 | 0.04 | 0.05 | 0.05 |

*Notes:* All regressions are estimated using OLS. Heteroskedasticity-robust standard errors are in brackets. The benchmark controls are the full set of controls included in the specifications reported in columns (2) and (4) in Table IV. Defendant and case characteristics include a male indicator, as well as indicators for each of the various crime categories. Each of these controls was demeaned and interacted with whether there were any blacks in the pool. Judge dummies were demeaned and interacted with whether the defendant was black. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

least one crime as the dependant variable. Column (1) repeats the benchmark specification (column (2) of Table IV). Column (2) of Table V reports estimates for a specification that includes controls for a set of additional defendant and case characteristics (gender, offense category, and number of offenses) fully interacted with the jury pool composition.[27] Controlling for defendant and case characteristics addresses the possibility that the effect of jury race on conviction rates is not driven directly by the race of the defendant but by other differences across cases (e.g., the type of offense the defendant is charged with) that are correlated with defendant race. In effect, the specification shown in column (2) compares outcomes by defendant and jury race within the same crime category. Despite adding 20 additional control variables to a regression with 712 observations, the point estimates for all three key coefficients remain similar to the benchmark specification and statistically significant at standard confidence levels. Column (3) adds a full set of judge fixed effects fully interacted with defendant race (50 variables in all) to the benchmark specification, again leading to essentially the same conclusions both qualitatively and quantitatively.[28]

Columns (4)–(6) consider the robustness of the results to alternative ways of categorizing trial outcomes that are not simple verdicts of "guilty" or "not guilty" by the jury. For instance, column (4) redefines as guilty 133 cases in Lake County that are pled by the defendant at some point after a jury pool is chosen (but before the case actually goes to the jury). It is theoretically ambiguous whether such cases should be included in the analysis (categorized as guilty verdicts). On one hand, it makes sense to include them if these plea bargains are reached because the composition of the jury implies that a guilty verdict is very likely. On the other hand, if these plea bargains are reached for reasons unrelated to the jury composition (as they would be if reached

27. As before, when interactions of the controls and jury composition are included, the point estimates are reported at the mean to ensure comparability across specifications.

28. Though it might seem preferable to use the specification that includes case and defendant characteristics and interactions (20 additional variables) or that includes judge fixed effects and interactions (50 additional variables) as the benchmark specification for all subsequent analyses, we are concerned that the limited size of our sample would lead to over-fitting the data when so many incidental parameters are added to the specification. As a result, we use the more parsimonious specification reported in columns (2) and (4) of Table IV as the benchmark specification throughout the rest of our analysis.

prior to jury selection), including them biases the coefficients toward 0 as the outcome is, by construction, the same for all of these trials regardless of the jury composition.[29] Column (5) recodes those 25 Sarasota cases that did not have guilty or not guilty jury verdicts associated with it (see note 14) as not guilty, and column (6) repeats the same exercise, coding these cases as guilty. In all cases, the results are very similar to the benchmark results reported in column (1) of Table V.

Table VI explores the heterogeneity of the results across a number of different subsamples. Given the relatively small number of observations in each of these specifications, we report results for the baseline specification (i.e., without any additional control variables). Column (1) repeats the baseline specification (column (1) of Table IV), and columns (2) and (3) report analogous specifications, estimated separately for Lake and Sarasota Counties, respectively. These specifications reveal a remarkably similar qualitative pattern of results in each county; the magnitude of the key coefficients is generally greater in Lake County.

The final three columns of Table VI examine heterogeneity across crime categories, reporting separate estimates for defendants charged with drug, violent, and property crimes, respectively.[30] Although the standard errors are larger than for the full sample due to the small number of observations in each crime category, many of the key coefficients are statistically significant and especially large for drug and violent crimes. The point estimates imply that all-white jury pools convict black defendants of drug crimes at an almost 25 percentage point higher rate than white defendants *and* that this gap is not only eliminated but reversed when at least one black potential juror is added to the pool. In this case, the gap closes both because conviction rates for white defendants rise whereas those for blacks fall significantly. A similar

29. It appears that many of the plea bargains included here are reached the day the case is scheduled to be heard in court but before voir dire begins. In particular, in about one-third of cases, we observe data characterizing the composition of the jury pool but not a seated jury, suggesting that voir dire did not actually occur in these cases.

30. Note that it is possible for defendants to be charged with multiple crimes. The dependent variable here is whether the defendant was found guilty of the crime in the corresponding category. These dependent variables are only defined, however, for those cases in which a jury verdict was reached in the given category. Given the small sample sizes, the large set of benchmark controls are excluded from these specifications; when they are included, the qualitative pattern of results remains but there is a decrease in precision.

TABLE VI
HETEROGENEITY ACROSS CHARGE CATEGORY (DRUGS, VIOLENT OFFENSES, PROPERTY OFFENSES) AND COUNTY

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Dependent variable | Any guilty convictions | Any guilty convictions | Any guilty convictions | Any drug convictions | Any violent convictions | Any property convictions |
| Black defendant | 0.150*** | 0.223** | 0.127** | 0.244** | 0.085 | 0.097 |
| | [0.056] | [0.101] | [0.063] | [0.114] | [0.097] | [0.140] |
| Any black in pool | 0.069 | 0.149* | 0.085 | 0.19 | 0.081 | −0.025 |
| | [0.048] | [0.084] | [0.057] | [0.128] | [0.088] | [0.108] |
| Black defendant * any black in pool | −0.168** | −0.201* | −0.160* | −0.474*** | −0.210* | 0.102 |
| | [0.070] | [0.116] | [0.088] | [0.152] | [0.119] | [0.167] |
| Constant | 0.656*** | 0.500*** | 0.730*** | 0.650*** | 0.675*** | 0.640*** |
| | [0.039] | [0.073] | [0.043] | [0.095] | [0.072] | [0.092] |
| Sample | All (baseline) | Lake County | Sarasota County | Drug charges that reach jury verdict | Violent crime charges that reach jury verdict | Property crime charges that reach jury verdict |
| Observations | 712 | 363 | 349 | 156 | 267 | 152 |
| R-squared | 0.01 | 0.02 | 0.01 | 0.09 | 0.02 | 0.03 |

*Notes:* All regressions are estimated using OLS. Heteroskedasticity-robust standard errors are in brackets. No additional controls were included in the regressions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

pattern emerges for violent crimes, although the only coefficient that is statistically significant in this case is the interaction term, which implies that adding at least one black potential juror to the pool decreases conviction rates for black defendants relative to whites. The impact of jury race is statistically insignificant for property crimes; if anything, the point estimates imply that jury pools with at least one black member are more favorable to white versus black defendants for these crimes.

## V. Understanding the Impact of Jury Race on Trial Outcomes

The evidence presented in Tables II–VI leads to a number of robust conclusions about the impact of the racial composition of the jury pool on trial outcomes. Having established these main results, we consider possible mechanisms through which the jury pool might affect conviction rates and attempt to distinguish which mechanisms are most consistent with the pattern of trial outcomes and jury selection observed in the data.

### V.A. Possible Mechanisms

The most direct way that the racial composition of the jury pool might affect trial outcomes is through its impact on the racial composition of the seated jury. It is, of course, impossible to have any black members on the seated jury if there are no black members in the jury pool. Black members of the seated jury might affect trial outcomes in a number of ways, including through (i) the jury deliberation and decision process, and (ii) the way the attorneys present the evidence in the case. In the deliberation and decision process, a black member of the seated jury could have an effect on the outcome either if she was generally more (or less) likely to vote to convict than the white juror that she replaced or if her presence changed the nature of the deliberations, thereby affecting the votes of the other white members of the jury. The latter could arise if the black member of the jury was able to contribute a different perspective during the deliberations or if white jurors were more concerned about appearing racially biased in the presence of a black colleague. For instance, Sommers (2002, 2006) found that racially mixed mock juries, compared to all-white juries, tended to deliberate longer, discuss more case facts, raise more questions about what
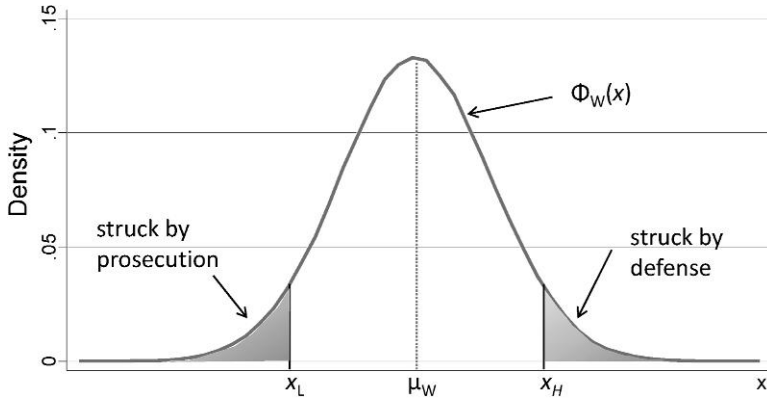
FIGURE I

The Distribution of $x$ for White Jurors in Pool

This distribution characterizes the ex ante likelihood of conviction for white potential jurors. Jurors with higher values of $x$ are more likely to convict, and thus the defense will use their peremptory challenges to strike jurors in the upper tail, whereas the prosecution will strike jurors in the lower tail.

was missing from the trials, and be more likely to discuss race issues, such as profiling, during deliberations.

The addition of one or two blacks to the jury pool could also have an *indirect* effect on trial outcomes even when no blacks are seated on the jury. If the attorneys can use observable attributes of potential jurors (e.g., age, appearance, race) along with their answers to pretrial questioning to form ex ante expectations of their likelihoods of conviction, we would generally expect the attorneys on each side to use their peremptory challenges to strike those potential jurors most likely to be hostile to their side. As a result, whenever an attorney uses a peremptory challenge to strike a black potential juror, she forgoes the possibility of excluding another potential juror with a similar ex ante likelihood of convicting. Put another way, even when black potential jurors are struck via peremptory challenges, they are essentially replaced on the jury by white jurors with similar attitudes toward the case.[31]

Figures I–III illustrate the logic of this indirect effect on trial outcomes. We begin by considering a setting in which the jury pool

31. The presence of black jurors in the pool might also affect trial outcomes indirectly if pretrial interactions among members of the jury pool alter the attitudes of the white jurors who are ultimately seated.
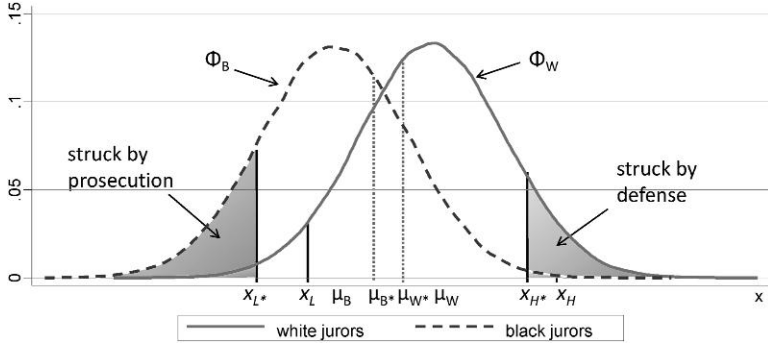
FIGURE II

The Distribution of $x$ for White and Black Jurors in Pool

This figure shows how the truncation points will change when black jurors are added to the pool. Based on our main empirical results, these black and white juror distributions might illustrate the situation for a black defendant. Compared to Figure I, where there were only white potential jurors, adding black jurors to the pool shifts the truncation points toward the location of the black distribution to $x_H{}^*$ and $x_L{}^*$.
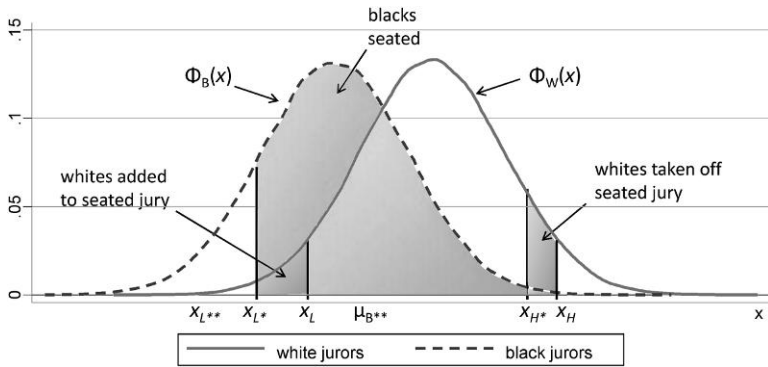


FIGURE III

The Impact of Adding Black Jurors to the Jury Pool.

This figure represents the same situation as Figure II but explicitly shows the direct and indirect effect of adding black jurors to the pool. A direct effect occurs because those blacks with values of $x$ between the truncation points $x_H{}^*$ and $x_L{}^*$ will be seated on the jury. An indirect effect occurs because the distribution of potential jurors shifts to the left when black jurors are added to the pool. This means the prosecution will not be able to remove as many white jurors in the lower tail as before, and the defense can now strike more white jurors in the upper tail. As a result, adding black jurors to the pool results in whites from the upper tail of the distribution being replaced on the seated jury by whites from the lower tail.

is homogeneously white. Figure I depicts a normal distribution $\phi_w(x)$ with mean $\mu_w$ that characterizes the ex ante likelihood of conviction for white potential jurors. Jurors with higher values of $x$ are more likely to convict; for example, the probability of conviction might be written $P(x) = \frac{exp(x)}{(1+exp(x))}$. To keep this illustration simple, we assume that jurors affect outcomes only through their position $x$ and that the attorneys use their peremptory challenges to strike the potential jurors that are most likely to be hostile to their side; we discuss the implications of relaxing these assumptions shortly. In this way, defense attorneys strike those potential jurors with ex ante probabilities of conviction in the upper tails of the distribution while the prosecution strikes potential jurors in the lower tail. If each attorney strikes a fixed percentage of the jury pool, the seated jury would consist of jurors drawn from truncated distributions with cutoffs $x_H$ and $x_L$.

Note that throughout this section, we ignore the fact that in actual trials a finite number of potential jurors are drawn from these distributions, so the truncation points will vary from case to case. Instead, for expositional simplicity, we assume that a continuum of jurors is in the pool and that attorneys on each side can strike a fixed percentage of jurors.

Figure II considers a setting with at least some black potential jurors in the pool. It depicts two normal distributions $\phi_w(x)$ and $\phi_B(x)$ with means $\mu_w$ and $\mu_B$ that determine the ex ante likelihood of conviction for white and black potential jurors, respectively. For expositional convenience, we have drawn normal distributions with the same variance and with $\mu_w > \mu_B$, which, given our main results, might illustrate the case of a black defendant. An analogous figure that is consistent with our findings for white defendants could be created by switching the locations of $\phi_w(x)$ and $\phi_B(x)$ in the figure.

As illustrated in Figure II, compared to a world with only white potential jurors, adding black potential jurors to the pool puts more weight in the overall distribution of the jury pool on lower levels of $x$, thereby shifting the truncation points toward the location of the black distribution: to $x_H*$ and $x_L*$.[32]

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32. In thinking about where the truncation points should be drawn in Figure II, it is important to keep in mind that the distribution function for the full jury will more closely resemble the distribution for whites because jury pools in the data are generally less than 5% black.

Figure III repeats Figure II but shades the regions of the distributions affected by the addition of some potential black jurors to the jury pool. There are two effects of adding blacks to the jury pool. First, those blacks with values of $x$ between the truncation points $x_H*$ and $x_L*$ are seated on the jury. The likelihood of conviction of the blacks that are seated on the jury forms the basis for the *direct effect* already described.[33] Second, because the prosecution now uses some of its peremptory challenges to strike black potential jurors drawn from the lower tail, it has fewer challenges left to remove potential white jurors with relatively low probabilities of conviction. As a result, white jurors between the lower truncation points $x_L$ and $x_L^*$ are now seated on the jury. The addition of these whites to the jury forms the basis for the *indirect effect* already described.

Relative to the case of the all-white jury pool, the new black and white jurors that are seated when blacks are in the pool are much less likely to convict than the set of white jurors they replace on the seated jury—those with ex ante likelihoods of conviction between truncation points $x_H$ and $x_H^*$. Moreover, notice that the average position of seated black jurors is actually significantly higher than the marginal white jurors that are added because the prosecution uses some of its peremptory challenges to strike potential blacks jurors in the lower tail of the distribution. This suggests that the indirect effect has the potential to be quite large, even compared to the direct effect.

In addition to illustrating the indirect mechanism through which the racial composition of the jury pool can affect trial outcomes, this simple description of the jury selection process can also help explain a number of patterns in the data. For example, the within-race heterogeneity depicted in Figures I–III provides a coherent potential explanation for why black members of the jury pool might be seated at rates roughly comparable to their white counterparts. In particular, as long as there is a significant amount of overlap in the ex ante probabilities of conviction for white and black potential jurors, the substantial fraction of black members of the pool with values of $x$ between

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33. Specifically, the average position of seated black jurors, $\mu_B*$, is lower than the average position of white jurors seated when the pool is all-white, $\mu_w$. Notice also that because the blacks least likely to convict are struck by the prosecution, the mean of the truncated distribution for blacks on the seated jury is higher than that for those in the jury pool: $\mu_B* > \mu_B$.

TABLE VII

COMPARING TO OLS ESTIMATE OF EFFECT OF RACIAL COMPOSITION OF SEATED JURY ON TRIAL OUTCOMES

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | OLS | OLS | OLS | OLS |
| | | | Proportion guilty | |
| Dependent variable | Any guilty convictions | | convictions | |
| Black defendant | 0.164*** | 0.101** | 0.160*** | 0.105*** |
| | [0.058] | [0.040] | [0.057] | [0.039] |
| Any black in pool | 0.105** | | 0.090* | |
| | [0.051] | | [0.050] | |
| Defendant black * any black in pool | −0.166** | | −0.155** | |
| | [0.074] | | [0.072] | |
| Any black on seated jury | | 0.06 | | 0.057 |
| | | [0.054] | | [0.053] |
| Defendant black * any black on seated jury | | −0.164** | | −0.162** |
| | | [0.078] | | [0.076] |
| Constant | 0.627*** | 0.681*** | 0.576*** | 0.621*** |
| | [0.041] | [0.027] | [0.040] | [0.027] |
| Observations | 712 | 712 | 712 | 712 |
| *R*-squared | 0.07 | 0.07 | 0.08 | 0.08 |

*Notes:* All specifications include the complete set of benchmark controls described in Table IV. Columns (1) and (4) in this table correspond to columns (2) and (4) of Table IV, respectively. *, **, and *** indicate statistical significance at the 10%, 5%, and 1 % levels, respectively.

the truncation points $x_H^*$ and $x_L^*$ will be seated. We discuss other motives that attorneys might have to seat black jurors—for example, to avoid charges of racial discrimination—in more detail later.

### V.B. *Comparing with Estimates of the Effect of the Seated Jury on Trial Outcomes*

Table VII examines how the conviction rates of white and black defendants are related to the proportion of blacks on the seated jury as well as the jury pool for our two main dependant variables. In all cases, the specifications include controls that correspond to the benchmark specification already described.[34] Columns (1) and (3) repeat the estimates of the impact of the racial composition of the jury pool on conviction from Table IV. Given the quasi-random variation in the composition of the jury pool, these

34. That is, they include controls for the gender and age of the jury pool, county, and year of filing.

estimates can be given a clear causal interpretation. The regressions reported in the columns (2) and (4) of Table VII condition on the composition of the seated jury, which is nonrandom, and, therefore, should not be given a causal interpretation. Instead, they should be viewed as simply describing how conviction rates vary with the composition of the seated jury.

Columns (2) and (4) report parameter estimates for OLS regressions that relate trial outcomes to the race of the seated jury. Strikingly, the coefficients that characterize the black–white conviction rate gap when there is at least one black member seated on the jury are almost exactly the same size as the estimated impact of having at least one black potential juror in the pool (e.g., 0.166 versus 0.164). That these point estimates are roughly the same size despite the fact that a black juror is seated only 40% of the time that there is a black member of the jury pool suggests that jury race has a broader impact than what a simple analysis of the effect of the seated jury would seem to imply. Put another way, our primary results imply that the black–white conviction gap declines by an average of 16 percentage points in all trials in which there is at least one black member of the jury pool. A naive OLS analysis of the effect of the seated jury, however, would instead appear to imply that such a decline occurred only in the smaller subset of cases in which a black juror was seated.[35]

### V.C. *Putting the Magnitude of the Estimated Effects in Context*

If the simple theoretical framework illustrated in Figures I–III approximates the jury selection process and trial outcomes are only a function of the $x$ positions of the members of the seated jury, the magnitudes of our main findings imply that the distributions of the ex ante conviction rates must be

35. Although it might seem natural to report instrumental variables (IV) estimates of the effect of the composition of the seated jury on conviction rates, instrumenting for the presence of blacks on the seated jury with the presence of blacks in the jury pool, such estimates could be interpreted as the causal LATE (Local Average Treatment Effect) under the strong assumption that the only channel through which the presence of blacks in the jury pool affects trial outcomes is by increasing the likelihood of having blacks on the seated jury. If, on the other hand, any of the indirect channels are important, the IV estimates do not have a clear interpretation, and so, to avoid confusion, we do not report IV estimates here. Because at least one black juror is seated in approximately 40% of the cases in which there is a black potential juror in the pool, the first stage of such an IV regression has a coefficient of about 0.40 and, as a result, the IV coefficients on jury race are about 2.5 times greater in magnitude than those reported for the OLS regressions reported in columns (2) and (4).

fairly diffuse. In particular, our results suggest that by randomly adding just 1 to 2 black jurors to a pool of 27 potential jurors, conviction rates for white defendants increase by 6–11 percentage points (depending on the exact specification) and decrease by a comparable amount for black defendants. We draw attention here to two considerations that have implications for interpreting the magnitudes of the effects.

First, it is important to note that of all the possible cases that a district attorney (prosecutor) could bring against potential defendants, a very small fraction go to trial and are decided by a jury verdict. On one hand, in cases where the quality of the evidence is insufficient to generate a reasonable ex ante probability of conviction, the prosecution is likely to drop the charges rather than bring the case to trial. This has the benefit of saving time spent preparing and presenting the case at trial and preserving reasonably high conviction rates for cases brought to trial, a metric on which prosecutors are often judged. Likewise, in many cases where both sides expect a guilty verdict, pretrial plea bargains are reached; these minimize the prosecutor's trial costs and ensure a guilty verdict, often in exchange for a lighter sentence. In fact, almost 90% of criminal defendants in U.S. District Courts plead guilty and 97% of all convictions are the result of plea rather than a conviction by a court or jury.[36] As a result of these pretrial selection mechanisms, the set of cases that go to trial are systematically more likely to be those where the quality of the evidence is in considerable dispute among the parties. Thus, it might not be terribly surprising if potential jurors have fairly diffuse ex ante conviction rates for this especially select subset of cases.

Second, as we mentioned, it may be possible for certain members of the jury to have an impact on the trial and deliberations that goes beyond the impact of their ex ante likelihood of conviction. If the inclusion of a black member on the seated jury impacts the way the trial is presented by the attorneys or the way white jurors deliberate, the seated black juror could essentially pull the other members of the jury toward his or her position, thereby strengthening the direct effect. Of course, we would generally expect the attorneys to take this into account and, therefore, be more likely to strike black jurors ceteris paribus. In the example illustrated in Figure III, this

36. See http://www.uscourts.gov/Statistics/JudicialFactsAndFigures/Judicial
FactsAndFigures2009.aspx.

would have the effect of shifting the threshold for black potential jurors higher, resulting in black potential jurors being seated at lower rates and those that were seated being more systematically selected from the upper portion of the distribution of ex ante conviction rates and, therefore, more similar to white jurors.

This rationale for striking more black potential jurors may be countered, however, by concerns among attorneys about not wanting to use (or to appear to be using) race as a factor in exercising their peremptory challenge. Specifically, prosecutors may want to avoid a claim by the defense that the trial should be invalidated on the grounds that there were no blacks selected onto the jury; such a challenge has come to be called a "Batson challenge." If attorneys in fact place some weight on seating black jurors roughly in proportion to their representation in the jury pool when using their peremptory challenges, they may set the ex ante conviction rate threshold for black potential jurors differently than they do for whites.[37] Returning to Figure III, by setting a threshold for seating black potential jurors at a value $x_L^{**}$ below $x_L^*$, prosecutors would seat a higher fraction of black jurors, thereby also lowering the mean position of the seated black jury members, $\mu_B^{**}$. This would tend to increase the size of the direct effect without having much impact on the indirect effect.

## VI. IMPLICATIONS AND CONCLUSION

Given the main findings presented in Section IV and the discussion of potential mechanisms in Section V, we conclude with a discussion of the implications of our results for the fair and equal application of the law. Most plainly, our main findings imply that conviction rates for black and white defendants are similar when there is at least some representation of blacks in the jury pool, but in the absence of such representation, black defendants are substantially more likely to be convicted. Defendants of each race do relatively better when the jury pool contains more members of their own race, and, as a result, black defendants are clearly disadvantaged relative to their white counterparts when the proportion of blacks in the jury pool is so small.

37. Note that if prosecutors had especially high rates of excluding black potential jurors when the defendant was black, this pattern would be straightforward to detect over time using a data set like the one used in our analysis.

Another immediate implication of our main findings is that the application of criminal justice in these Florida counties is highly uneven, as a small change in the composition of the jury pool (i.e., adding one black member) has a large impact on the conviction rates of black versus white defendants. Although heterogeneity in the jury pool is obviously unavoidable, a potentially desirable feature of a justice system is that jury verdicts are not arbitrary given the evidence. In this context, increasing the number of jurors on the seated jury would substantially reduce the variability of the trial outcomes, increase black representation in the jury pool and on seated juries, and make trial outcomes more equal for white and black defendants.

What our results imply regarding the fairness of jury trials for defendants of each race is much more difficult to say. As the discussion of Section V makes clear, when jurors have heterogeneous likelihoods of conviction, any random variation in the jury pool will affect the likelihood that the seated jury convicts the defendant. But such a model has nothing to say about which juror in the distribution is applying the most appropriate ex ante standard of evidence for defendants of each race. The problem is that without any direct measure of the objective strength of the evidence that is brought in cases with black versus white defendants, we have no way of discerning what relative conviction rates for black versus white defendants should be. If, in fact, the quality of the evidence brought in the cases of white and black defendants in our sample is comparable, our results would imply that juries formed from all-white jury pools require a weaker standard of evidence to convict black versus white defendants. This is a very serious potential implication of our analysis, but one that we cannot reach conclusively without knowing more about the quality of evidence presented in each case.

Although gauging the objective quality of the evidence in the cases in our sample is beyond the scope of this article, future research could use objective and subjective analyses of the trial transcripts in these cases to provide further insight into the fairness question. If, for example, experimental subjects were presented with trial transcripts (neutral as to the race of the defendants), it would be possible to measure whether the quality of the evidence in the cases with black defendants was in fact comparable to those with white defendants. Such an analysis could be done within crime category and could conceivably test whether

black and white experimental subjects respond differently to the evidence, when presented in a way that did not directly indicate the race of the defendant.[38]

A final implication of our analysis follows from the fact that trials with all-white jury pools result in *higher* conviction rates for black defendants and *lower* conviction rates for whites relative to jury pools with at least one black potential juror. This pattern is generally inconsistent with a world in which jurors of each race apply the same standard of evidence for defendants of both races. More specifically, if jurors of each race perceive the evidence presented in a trial identically and apply the same standard of evidence to white and black defendants, it may be possible for jurors of one race to require a higher (lower) standard of evidence to convict and, therefore, convict *defendants of both races* less (more) often. Importantly, in this case, if jurors are applying the same standards, it is impossible for conviction rates for defendants of one race to rise and those for defendants of the other race to fall *no matter what the distribution of quality of evidence is for defendants of each race* (Anwar and Fang 2006). Put another way, if jurors of one race are generally tougher, then they had better be tougher on all defendants or the evidence would suggest that they are not applying the same standards.

The crossing pattern exhibited by our main findings thus leads to our final conclusion: that jurors of at least one race (and possibly both) either interpret evidence differently depending on the race of the defendant or use a standard of evidence that varies with the race of the defendant. Either possibility implies that the interaction of defendant and jury race fundamentally alters the mapping of evidence to conviction rates and, thus, that the impact of the racial composition of the jury pool (and seated jury) is a factor that merits much more attention and analysis to ensure the fairness of the criminal justice system.

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38. Clearly such an analysis would be subject to concerns about the credibility of the evaluation of evidence by experimental subjects in a nontrial setting already discussed.

## APPENDIX A

SUMMARY STATISTICS STRATIFIED BY COUNTY

| | Lake County | | Sarasota County | |
|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. |
| *Defendant characteristics* | | | | |
| Black | 0.50 | 0.50 | 0.38 | 0.49 |
| Hispanic | 0.02 | 0.15 | 0.06 | 0.24 |
| White | 0.47 | 0.50 | 0.55 | 0.50 |
| Male | 0.93 | 0.25 | 0.91 | 0.29 |
| *Case characteristics* | | | | |
| Total charges | 3.47 | 4.57 | 2.55 | 2.18 |
| Any drug charge | 0.22 | 0.41 | 0.28 | 0.45 |
| Any murder charge | 0.08 | 0.27 | 0.03 | 0.16 |
| Any robbery charge | 0.10 | 0.30 | 0.08 | 0.28 |
| Any other violent charge | 0.35 | 0.48 | 0.27 | 0.44 |
| Any property charge | 0.26 | 0.44 | 0.21 | 0.41 |
| Any sex charge | 0.13 | 0.34 | 0.14 | 0.34 |
| Any weapons charge | 0.16 | 0.37 | 0.08 | 0.28 |
| Any other charge | 0.32 | 0.47 | 0.33 | 0.47 |
| *Dependant variables* | | | | |
| Proportion guilty convictions | 0.584 | 0.458 | 0.756 | 0.401 |
| Any guilty convictions | 0.653 | 0.477 | 0.803 | 0.399 |
| *Pool and seated jury characteristics* | | | | |
| Number of seated jurors | 7.31 | 0.50 | 6.93 | 0.38 |
| Number in jury pool | 27.0 | 7.4 | 27.6 | 7.2 |
| Any black in Pool | 0.76 | 0.43 | 0.53 | 0.50 |
| Any black on Seated jury | 0.36 | 0.48 | 0.19 | 0.39 |
| Proportion black on seated jury | 0.061 | 0.089 | 0.031 | 0.068 |
| Proportion black in pool | 0.051 | 0.044 | 0.028 | 0.032 |
| Observations | 384 | | 401 | |

*Notes:* This table reports summary statistics for the full sample (those reported in the first two columns of Table I) stratified by county. The first two columns report summary statistics for the 384 cases in Lake County, and the last two columns report statistics for the 401 cases in Sarasota County. Summary statistics for the proportion variables (i.e., proportion guilty convictions, proportion black on seated jury, and proportion black in pool) were formed by measuring the proportion for each jury or jury pool and averaging across cases.

APPENDIX B

THE RELATIONSHIP BETWEEN THE AGE AND GENDER OF THE JURY POOL AND
DEFENDANT AND CASE CHARACTERISTICS

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | | | Proportion | |
| | Proportion | Proportion | of pool b/w | Proportion |
| | of females in | of pool age | age 40 and | of pool older |
| | pool | 40 or less | 60 | than age 60 |
| *Defendant characteristics* | | | | |
| Black | 0.001 | 0.011 | −0.002 | −0.009 |
| | [0.008] | [0.008] | [0.008] | [0.008] |
| Hispanic | 0.025 | −0.016 | −0.011 | 0.028 |
| | [0.016] | [0.018] | [0.018] | [0.021] |
| Male | −0.002 | 0.025** | −0.007 | −0.018 |
| | [0.012] | [0.011] | [0.014] | [0.014] |
| *Case characteristics* | | | | |
| Any crug charge | 0.014 | −0.015 | 0.006 | 0.008 |
| | [0.010] | [0.010] | [0.011] | [0.010] |
| Any murder charge | 0.013 | 0.004 | −0.011 | 0.007 |
| | [0.014] | [0.013] | [0.014] | [0.014] |
| Any other charge | 0.002 | −0.005 | 0.01 | −0.005 |
| | [0.008] | [0.008] | [0.008] | [0.008] |
| Any other violent charge | 0.012 | −0.002 | −0.004 | 0.007 |
| | [0.009] | [0.008] | [0.008] | [0.008] |
| Any property charge | 0.007 | 0.004 | −0.007 | 0.003 |
| | [0.010] | [0.009] | [0.010] | [0.010] |
| Any robbery charge | −0.002 | −0.011 | −0.009 | 0.02 |
| | [0.014] | [0.012] | [0.013] | [0.013] |
| Any sex charge | 0.02 | −0.011 | −0.006 | 0.017 |
| | [0.012] | [0.012] | [0.012] | [0.012] |
| Any weapons charge | 0.005 | 0.001 | −0.003 | 0.002 |
| | [0.011] | [0.010] | [0.012] | [0.011] |
| Total charges | −0.0003 | 0.002* | −0.002** | −0.0001 |
| | [0.001] | [0.001] | [0.001] | [0.001] |
| Constant | 0.496*** | 0.221*** | 0.497*** | 0.282*** |
| | [0.013] | [0.012] | [0.015] | [0.015] |
| Observations | 771 | 771 | 771 | 771 |
| *F*-statistic | 0.78 | 1.43 | 1.24 | 0.76 |
| *R*-squared | 0.01 | 0.02 | 0.01 | 0.01 |

*Notes:* The regressions results reported in this table are exactly analogous to those shown in Table II estimated for the dependent variables shown in the column heading that characterize the age and gender of the jury pool. As in Table II, *F*-statistics jointly testing whether all coefficients equal 0 are shown in the table, and *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

APPENDIX C

COMPARISON OF DEFENDANT AND CASE CHARACTERISTICS FOR ANY BLACK
VERSUS NO BLACK POOLS

| | Any blacks in pool | | No blacks in pool | | *p*-value from testing if means are different |
|---|---|---|---|---|---|
| | Mean | Std. dev. | Mean | Std. dev. | |
| *Defendant characteristics* | | | | | |
| Black Defendant | 0.431 | 0.022 | 0.450 | 0.030 | 0.612 |
| Hispanic Defendant | 0.043 | 0.009 | 0.043 | 0.012 | 0.979 |
| Male Defendant | 0.924 | 0.012 | 0.908 | 0.017 | 0.420 |
| *Case characteristics* | | | | | |
| Any drug charge | 0.233 | 0.019 | 0.287 | 0.027 | 0.096 |
| Any murder charge | 0.059 | 0.011 | 0.039 | 0.012 | 0.222 |
| Any other charge | 0.325 | 0.021 | 0.330 | 0.028 | 0.895 |
| Any other violent charge | 0.305 | 0.021 | 0.309 | 0.028 | 0.912 |
| Any property charge | 0.256 | 0.020 | 0.199 | 0.024 | 0.072 |
| Any robbery charge | 0.088 | 0.013 | 0.096 | 0.018 | 0.717 |
| Any sex charge | 0.143 | 0.016 | 0.113 | 0.019 | 0.242 |
| Any weapons charge | 0.131 | 0.015 | 0.099 | 0.018 | 0.193 |
| Total charges | 3.188 | 0.187 | 2.663 | 0.134 | 0.049 |
| Observations | 489 | | 282 | | |

*Notes:* This table reports means and standard deviations of defendant and case characteristics stratified by whether there were any black potential jurors in the jury pool. Statistics are reported for the sample ($n = 771$) of cases for which a jury was selected and all defendant and case characteristics are observed. Relative to the full sample summarized in the first two columns of Table I, 14 observations were lost because they had missing values for one or more of the defendant and case characteristics.

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