The Effect of Own-Gender Jurors on Conviction Rates

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Abstract

Despite concerns about gender bias in general and jury gender in particular, little is known about the effect of jury gender on conviction rates. We identify the effect of own-gender jurors by exploiting random variation in the assignment to and ordering of jury pools in two large Florida counties. Results indicate a 10 percentage point increase in expected own-gender jurors results in an 18 percentage point reduction in conviction rates on drug charges, which is highly significant even after adjusting for multiple comparisons. This highlights how bias can occur even when impartiality is actively pressed on participants.

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1 Introduction

A central right of the accused in the U.S. criminal justice system is the right to a trial before an impartial jury. This right is enshrined in the 6th amendment of the Bill of Rights to the U.S. Constitution, and was inherited from the Magna Carta, which guaranteed that no man be punished without "the lawful judgment of his peers." There are ongoing concerns, however, about the actual impartiality of juries in general, and whether jurors favor those similar to themselves in particular. These concerns have resulted in court rulings that prohibit excluding potential jurors on the basis of race, ethnicity, or sex (Batson v. Kentucky, 1986; J.E.B. v. Alabama, 1994). However, while recent research has documented bias in favor of own-race defendants (Anwar, Bayer and Hjalmarsson, 2012; Flanagan, 2018), there is little evidence on whether modern juries favor own-gender defendants. The purpose of this paper is to test whether juries composed of more own-gender jurors affect criminal conviction rates and sentencing outcomes.

The primary difficulty in doing so is that seated juries are the outcome of a non-random jury selection process over which prosecutors, defense attorneys, and jurors have significant influence. As a result, it is difficult to distinguish the effect of own-gender jurors from confounding factors, such as defense attorney quality, that lead some cases to have more jurors of the same gender as the defendant. To overcome this selection problem, we use an approach similar to that of Anwar, Bayer and Hjalmarsson (2012), who examined the effect of at least one black juror being randomly assigned to the jury panel. Our analysis begins by performing a similar exercise with the proportion of potential jurors who are female. However, we augment this by being the first to exploit the random *ordering* of potential jurors within that pool. This gives us a better prediction of the proportion of females on the seated jury, since the seated jury consists of the first six (or twelve) ordered jurors who are not excluded by either a challenge for cause or a peremptory challenge (i.e., a challenge for which no reason must be given). We use these two sources of variation in jury composition to identify own-gender effects by differencing out the impact of defendant and jury gender, similar to studies on racial bias (e.g., Price and Wolfers, 2010; Shayo and Zussman, 2011; West, 2017).

To implement these two approaches, we use a new data set on juror characteristics and conviction and sentencing outcomes for Palm Beach and Hillsborough counties, which are the third and fourth most populous counties in Florida. These data include all felony and misdemeanor trials over a two year period, and contain detailed information on defendant characteristics as well as case characteristics measured at both the charge and case levels. The data also include demographic information on potential jurors in the pool, enabling us to replicate the spirit of previous papers on jury race. In addition, however, we observe the randomly-assigned ordering of each potential juror within the jury pool. We use this ordering and the empirical probabilities that jurors assigned a given number are seated on the

jury to predict the expected proportion of women on each jury. We then empirically document the extent to which each measure is correlated with the gender composition of the seated jury. We also show that these sources of variation are uncorrelated with defendant and case characteristics, and with expected conviction rates of male and female defendants as predicted using exogenous characteristics.

Results provide strong evidence that own-gender jurors affect conviction rates for drug offenses. Estimates indicate that a one standard deviation increase in own-gender jurors ($\sim$10 percentage points) results in an 18 percentage point reduction in conviction rates on drug charges. The effect seems largely driven by differential treatment of female defendants. Importantly, the effect is significant at the five percent level even after performing the multiple inference adjustment proposed by Anderson (2008). In contrast, we find no evidence of effects for driving, property, or violent crime offenses. Estimates on convictions are similar across the two methods of constructing jury gender, including proportion female for the entire jury panel and the weighted average that uses information on juror ordering. In addition, we show some evidence that the same change in jury gender leads to a 13 percentage point reduction in the likelihood of incarceration, though these coefficients are less precisely estimated.

We hypothesize that the large effects for drug offenses are consistent with a model in which jurors are more likely to exhibit bias in cases where they have significant disagreements with U.S. law. However, we emphasize that we cannot rule out other explanations for the heterogeneity in own-gender effects. In addition, we present evidence that effects are driven largely by cases in which the jury reaches a verdict, as opposed to cases in which a plea deal is reached prior to the trial. We note we do see some evidence of meaningfully smaller estimates in this case and for sentencing when using overall jury panel gender rather than our constructed measure of expected jury gender.

To our knowledge, this is the first paper to use random variation in jury gender to examine effects on convictions in modern criminal courts. In doing so, the paper contributes to two literatures. The first is the broad literature examining gender bias in education, labor, housing, and product markets.[1] More specifically, this paper complements a growing literature that documents and explains gender differences in sentencing (Bindler and Hjalmarsson, 2017; Butcher, Park and Piehl, 2017). It also relates to a broader literature on the impact of judge gender (Johnson, 2014; Knepper, 2018; Schanzenbach, 2005; Steffensmeier and Hebert, 1999) and other judge and jury characteristics.[2] Finally, in documenting how defendants who draw opposite-gender juries are more likely to be convicted and sentenced, this paper also complements recent papers documenting unfairness in conviction and sentencing based on other factors (Eren and Mocan, 2018; Philippe and Ouss, 2017).

[1] For example, see Abrevaya and Hamermesh (2012); Ayres and Siegelman (1995); Bagues and Esteve-Volart (2010); Bagues, Sylos-Labini and Zinovyeva (2017); Breda and Ly (2015); Dahl and Moretti (2008); De Paola and Scoppa (2015); Goldin and Rouse (2000); Lavy (2008); Neumark, Bank and Van Nort (1996); Moss-Racusin, Dovidio, Brescoll, Graham and Handelsman (2012)

[2] Examples include Anwar, Bayer and Hjalmarsson (2014; 2015); Mitchell, Haw, Pfeifer and Meissner (2005); Cohen and Yang (forthcoming); Depew, Eren and Mocan (2017); and George (2001).

This study is most closely related to a smaller body of research examining the impact of judge and jury characteristics on criminal trial outcomes. It is most similar to Anwar, Bayer and Hjalmarsson (2012) and Flanagan (2018), who show that having more own-race jurors in the jury panel affects felony conviction rates. It is also related to Anwar, Bayer and Hjalmarsson (forthcoming), who show that while the introduction of women on English juries in 1919 had no effect on overall conviction rates, it resulted in additional convictions for sex offenses and for violent crime cases with female versus male victims.[3] This paper differs from Anwar, Bayer and Hjalmarsson (2012) and Flanagan (2018) in that we focus on jury gender, rather than jury race. In addition, they study only felonies, while we observe both felony and misdemeanor charges. This paper differs from Anwar, Bayer and Hjalmarsson (forthcoming) in that we focus on the effect of jury gender in a modern context in which effects might well be significantly different than in 1919. Our paper also differs from these three papers in that we also examine effects on sentencing, in addition to convictions. Finally, an additional contribution of our study to this literature is to directly compare results from two empirical approaches. The first follows the existing literature in using average jury panel characteristics—independent of juror order—to predict the composition of the seated jury (Anwar, Bayer and Hjalmarsson (2012); Flanagan (2018)). The second uses empirical probabilities of being seated conditional on order to construct a weighted average of juror characteristics. This accounts for the fact that the probability of being seated for the first potential juror in a panel of 30 is 38%, compared to only 2% for the individual in the 30th spot. While we find some differences in estimates using the simpler approach, the similarity of our main estimates on convictions suggests it is likely sufficient for future work to use the less data-intensive approach.

The results of this study have important implications. First, they suggest that even in settings where participants are actively reminded of the importance and necessity of being fair and impartial, sizable gender biases can still occur. In addition, we note that there is evidence that higher conviction and incarceration rates can lead to increased recidivism and worsened labor market outcomes (Aizer and Doyle Jr, 2015; Mueller-Smith, 2015). This suggests that differential treatment by juries on the basis of gender can lead to significant long-run differences in defendant outcomes.

[3]While we focus on the effect of own-gender jurors in this paper, we also examine the effect of jury gender composition on overall conviction rates. Results are shown in Appendix Table A.1, in which we regress an indicator for conviction on our measure of expected proportion women on the jury. Overall, we find no evidence that additional female jurors are more or less likely to convict overall.

2 Background and Data

2.1 The Assignment of Potential Jurors to the Jury Pool and the Voir Dire Process

As described above, a critical feature of our research design is the random assignment of residents to panels of potential jurors, and the random ordering of residents within each panel. In the Florida counties we study, county court offices randomly mail jury summons to residents who have a driver's license or identification card. Potential jurors arrive at the courthouse on the assigned day and enter their information into a computer system. Each potential juror is then randomly assigned to a case. In addition, within each case each potential juror is assigned a number.

The potential jurors for a given case are then escorted to the courtroom for the voir dire, or jury questioning, process. As described by U.S. Supreme Court Justice Rehnquist, "Voir dire examination serves to protect [the right to an impartial jury] by exposing possible biases, both known and unknown, on the part of the jurors. Demonstrated bias in the responses to questions on voir dire may result in a juror's being excused for cause; hints of bias not sufficient to warrant challenge for cause may assist parties in exercising their peremptory challenges" (McDonough Power Equipment, Inc. v. Greenwood, 1984, page 464). Prosecutors and defense attorneys are allowed unlimited challenges for cause, though meeting the requirements for removing a potential juror is difficult, and such requests are not always granted by the judge. In Hillsborough and Palm Beach Counties, each side is typically allowed up to three peremptory challenges to remove jurors they believe unlikely to be favorable toward their side of the case. The final jury thus consists of the first six or twelve jurors not struck by either side, beginning with the potential juror assigned number one. Any remaining potential jurors are then excused or returned to jury services to be reassigned.

2.2 Data

We obtained detailed administrative data for all misdemeanor and felony cases that were assigned potential juror pools in preparation for trial in Palm Beach and Hillsborough Counties from 2014 to 2016.[4] These are the third and fourth largest counties in Florida, respectively, each with a 2016 population of over 1.3 million people.[5] Importantly, these data include comprehensive information on the voir dire process along with case attributes. Specifically, we observe the pool of jurors randomly assigned to each case including name, seat number, and outcome of the selection process.

[4] There are 32 cases in Palm Beach County and 1 case in Hillsborough County where there should be a jury panel but the information was not in the case file. Only two of these cases involve drug related charges.

[5] We acquired the data by contacting the five largest counties in Florida. We were unable to obtain records from Miami-Dade, Broward, and Orange County.

Data from Hillsborough County also include the gender of potential jurors, as well as date of birth, race, and address. For Palm Beach County, we infer gender on the basis of the first name. We do so using an online application programming interface called genderize.io. The application predicts gender based on first name using a large dataset comprised of user profiles from several major social networks. Using this approach, we are able to predict probabilistic genders for 92% of potential jurors. For the names that we do not predict, we assign 0.5 to the female gender indicator variable under the assumption that the missing name is equally likely to be male or female. To verify the accuracy of this approach to inferring gender, we compare predicted gender to actual observed gender in Hillsborough County, and find that we accurately predict gender 94.38% of the time. We then combine potential juror order and the gender of each potential juror to predict the number of women we would expect to serve, on average, for each trial.

From these data we construct two measures of expected jury gender. The first is the proportion female of the entire jury panel, which implicitly assumes the probability of being seated on the jury is unaffected by juror ordering. The second is to construct a more informed estimate of the likely gender composition of a seated jury that accounts for differences in the ordering of women in the panel. To do so, we compute empirical probabilities of being seated on the jury for each spot in the order in the jury panel using a leave-one-out approach.[6] We do so based on the size of the potential jury pool and the number of jurors being seated.[7] Importantly, jury panel size and number of jurors are decided prior to the assignment of the jury pool, and thus should not affect the internal validity of our approach.

These probabilities are shown in Figure 1, where panel a shows the probability of being seated on the jury for six-person juries, and panel b shows the same for twelve-person juries. For example, for six-person jury trials with a panel size of 20 or less, the probability of being selected for the jury is around 40 percent for the first 10 or so potential jurors, and then declines to around 20 percent for the 20th-ordered potential juror. By comparison, for 12-person juries selected from panels of 50 to 100 potential jurors, the probability of being seated ranges from 25 to 30 percent for the first 40 jurors to close to zero for the potential juror assigned last (e.g., 100th) in the jury pool. We note that these probabilities are necessarily constructed based on outcomes from (other) cases that went to trial. While this is a subset of all cases, we argue these probabilities are the best estimate of juror selection for prosecutors and defendants if a case were to go to trial, especially as compared to assuming each prospective juror will be seated with the same probability regardless of order.

[6] In some cases, a second panel of potential jurors was used. Our understanding is this sometimes occurred because the first panel did not result in enough seated jurors, and sometimes because the judge chose not use the first panel at all for some reason. However, we still observe the first (and subsequent) juror panels in those cases, and we order the jurors accordingly. For example, if each of the first two panels had 50 potential jurors, we assign number 51 to the first ordered juror in the second panel, and number 100 to the last juror in that second panel. We do so even if no jurors from the first panel were seated on the jury.

[7] Standard juries in Florida consist of six jurors, though capital crimes consist of 12 jurors. While we exclude murder charges from our main analysis, we include other charges in those cases. Neither of these decisions affects results, as shown in Appendix Table A3.

To predict the number of women that will be seated on the jury, we interact the estimated probabilities shown in Figure 1 with a gender indicator variable equal to one for females.[8] Summing this over the pool of potential jurors gives the expected number of females seated. Since trials in our data consist of both six and 12 person juries, we divide by the jury size to get the expected proportion of females. This enables us to make meaningful comparisons across jury panel sizes.[9] In Section 3.1 we demonstrate that both measures of expected jury panel gender are highly correlated with the actual proportion of women on the jury. In addition, in Section 3.2 we show that the expected proportion of women on the jury is uncorrelated with case and charge characteristics, which is consistent with random assignment to panels and random ordering within panels.

For each case in our data, we observe the charges brought against the defendant and the outcome of each charge including verdict and sentencing. Our primary outcome of interest is an indicator for whether the defendant is convicted of the charge. In addition, as a robustness exercise we also perform the analysis at the case level, for which the outcome is defined as the proportion of guilty charges in the case. Importantly, our data include guilty and innocent verdicts issued for all cases for which a jury panel was assigned in preparation for trial. For example, we observe guilty pleas that arise after the jury pool was assigned as well as verdicts found by the jury. This precludes the possibility of selection bias, since some cases settle after the prosecutor or defense attorney observes the composition of the potential jury pool or the actual seated jury. In addition, we note that for some charges in Florida, a verdict can be given in which adjudication is withheld. In that case the defendant is assigned a term of probation, and upon successful completion of that term is spared a conviction on his or her record. This is the outcome in only 3.56 percent of all charges in our sample, and only 4.05 percent of drug charges. For the main analysis we treat this outcome as guilty, though in Table 7 we show that estimates are similar if we instead classify it as not guilty. Our second outcome of interest is whether and for how long a defendant is sentenced to be incarcerated upon the conclusion of the trial. We define this outcome at the case level, rather than charge level, since the sentences of individual charges are often served concurrently. In each case we observe the defendant's gender and race along with additional case characteristics including the severity of charges and the judge assigned to the case.

Finally, we note that because the purpose of this paper is to examine the effect of own-gender jurors, we exclude charges in which fewer than 10 percent of defendants are female. Consequently, we only consider charges related to a drug, driving, property, or violent crime. In addition, we limit violent crimes to domestic crimes, assaults, and robberies. This is due to the low number of female defendants in other violent crime categories, such as sexual assault and murder, which gives us little variation in

[8] The probability of a potential juror being female is used for panels in Palm Beach County.

[9] In Appendix Table A.6, we show our estimates are robust to including only six-person juries, which effectively excludes all cases in which there is a murder charge.

defendant gender. In Appendix Table A.5 we show results are robust to the inclusion of these cases and to alternative classifications.

Summary statistics are shown in Table 1, where Panel A shows characteristics at the case level, and Panel B shows characteristics at the charge level. We have a total of 1,539 cases/defendants, representing 3,069 separate charges. Sixty-seven percent of defendants are convicted of at least one charge, while men are convicted at somewhat higher rates than women (67 versus 63 percent). Across all cases, on average defendants are sentenced to 1,668 days in jail, though men are sentenced for significantly longer than women (1,923 versus 269 days).[10] Fifteen percent of our defendants are female, 48 percent are white, and the average age is 37.

3 Methods

In order to identify the effects of own-gender jurors, we use a generalized difference-in-differences approach. Specifically, we estimate the following linear probability model:

$$\begin{aligned} Convict_{ct} =& \beta_1 DefFemale_t + \beta_2 E(PropFemale)_t + \beta_3 DefFemaleXE(PropFemale)_t \\ &+ X_t + County_t + CountyXCrime_{ct} + \epsilon_{ct} \end{aligned} \tag{1}$$

where the outcome of interest $Convict_{ct}$ is a binary variable equal to one if the defendant is convicted guilty of charge c in trial t. $DefFemale_t$ an indicator variable equal to 1 if the defendant in trial t is female, controls for differences in conviction based on defendant gender. Similarly, $E(PropFemale)_t$, the expected proportion of females seated on the jury for trial t. This is defined in one of two ways (i.e., average jury panel gender or a weighted average based on probabilities of being seated), and accounts for differences in the decision to convict due to the gender of jurors. The coefficient of interest, β_3, measures the effect of own-gender jurors on the outcome. X_t is the set of control variables at the case level including defendant's age and race, the total number of charges against the defendant, if the case involves a violent charge, the predicted age of the jury pool, and judge gender. All specifications include county fixed effects along with county-by-crime fixed effects when considering more than one crime category.[11] Observations are weighted by the inverse of the total number of charges in a trial.

In estimating the effect of the predicted jury gender (and its interaction) on convictions, we are estimating a reduced-form instrumental variable equation. Specifically, we instrument for actual jury gender with predicted jury gender. We estimate this reduced-form specification, rather than two-stage-least-squares, because expected jury gender could impact conviction outcomes through mechanisms

[10] We assign a sentence of zero days to those defendants who are sentenced to time served.
[11] Charges are grouped into four crime categories, namely drug, driving, property, or violent.

other than the gender of the jury actually seated.

Robust standard errors are clustered at the defendant level to allow for errors to be correlated across charges and trials for a given defendant. In addition, for our main estimates of interest, we also report two-sided p-values from randomization inference. Specifically, we randomly re-assign juror gender to each ordered slot for each case, assuming 50% of potential jurors are female and 50% are male. We then re-estimate our main results. We repeat this process 10,000 times, the result of which gives us an empirical distribution of t-statistics observed due to chance. We report the fraction of these 10,000 t-statistics that are more extreme than the absolute value of the t-statistic from our actual result, which we interpret as a two-sided p-value.

We also report False Discovery Rate (FDR) adjusted Q-values to adjust for the fact we test for effects by crime severity (felony vs. misdemeanor), and by crime type (drug, driving, property, and violent). These are computed using the method proposed by Anderson (2008), and adjust for the fact that we examine effects on conviction for six different categories of crime.[12] These are interpreted similarly to p-values from a two-tailed test, and explicitly adjust for the increased likelihood of estimating extreme coefficients when making multiple comparisons.

We perform our main analysis of convictions at the charge level rather than the case level for several reasons. The first is that juries decide guilt on a per-charge basis, rather than at the case level, and so it seems sensible for the analysis to do the same. Second, there are several ways one can assign guilt at the case level, and we would prefer to avoid making decisions about which is best. These include whether there is at least one conviction in the case, the proportion of charges that result in conviction, the proportion of charges that result in conviction weighted by severity of the charge, or whether all charges are found guilty. Third, defining subgroups of crimes at the case level is somewhat arbitrary. For example, should a drug case be defined as one in which there is at least one drug charge, or where a drug charge is the most serious charge, or where all charges in the case are drug-related? For these reasons, our analysis is performed at the charge level, though in Appendix Tables A3 and A4 we show similar results when looking at the proportion of charges that result in conviction.

In addition, we also test whether the effect of own-gender jurors on conviction translates to differences in sentencing, which is decided by a judge rather than the jury. For that reason, we focus primarily on the category of charges for which we find an effect on conviction. Due to the discrete nature of prison sentences, the presence of many zero observations, and the wide dispersion of sentence lengths, we estimate the effect of own-gender jurors on the distribution of sentences using binary indicators. This is done at the case level as the sentences for individual charges are often served concurrently. Formally

[12] While we also test for sentencing effects, the focus of the paper and therefore the multiple inference adjustment is on convictions. This is because in these counties, conviction is the only outcome over which juries have direct control. Sentencing decisions are made by judges based on those conviction outcomes.

we estimate the following ordinary least squares regression for each binary sentence length:

$$\begin{aligned} AtleastXDays_t =& \beta_1 DefFemale_t + \beta_2 E(PropFemale)_t + \beta_3 DefFemaleXE(PropFemale)_t \\ &+ X_t + County_t + CountyXCrime_t + \epsilon_t \end{aligned} \tag{2}$$

where $AtleastXDays_t$ is a binary indicator for X days sentenced in trial t with X starting with at least 1 day and increasing by 6 month increments to 10 years. The covariates are defined as in the previous equation where β_3 is interpreted as the degree of own gender juries. We allow for correlation in errors among trials with the same defendant by clustering at the defendant level.

The intuition of this generalized difference-in-differences approach is to compare the difference in how male and female defendants are judged by less-female juries to the difference in how male and female defendants are judged by more-female juries. This approach allows more-female juries to convict at different rates than more-male juries, so long as this difference is constant across male and female defendants. Equivalently, we allow male defendants to be "more guilty" than female defendants, though we require this difference in underlying guilt to be similar for more-male and more-female juries.

The identifying assumption of this approach is that while male defendants may have different underlying likelihood of conviction than female defendants, in the absence of a treatment effect the difference in their conviction rates should be the same for more-male juries as for more-female juries. This assumption could be violated in a couple of different ways. The first is if our measure of jury gender is correlated with other factors that affect conviction rates. For example, if skilled defense attorneys are able to strike opposite-gender jurors at higher-than-average rates, then we might observe lower conviction rates when there are more same-sex jurors and falsely attribute it to own-gender jurors. To overcome this problem, we construct a measure of expected jury gender composition that is based on the random assignment of individuals to jury pools and the random ordering of individuals within the jury pool. We show that this measure of jury gender is both strongly correlated with the composition of the seated jury, and is orthogonal to other observed determinants of conviction rates such as defendant and case characteristics. We also show that the difference in the guilt propensity of male and female defendants, as predicted using all exogenous characteristics, does not vary with the gender composition of the jury.

The second way in which the identification assumption can fail is if female jurors tend to be more likely to convict defendants of certain crimes (or when certain other crimes are also being charged), and if those crimes are disproportionately committed by certain genders. For example, if women are more likely to convict on a theft charge when a violent crime was also committed at the same time, and if male defendants are more likely than female defendants to be charged with both theft and violent crime, this approach could overstate the effect of own-gender jurors. Similarly, if women are more likely than men to convict blacks, and if there is a higher proportion of black male defendants than black female

defendants, then our estimated could be biased. To address this possibility, we show the robustness of our estimates to the inclusion of controls that interact the (expected) gender composition of the jury with various case characteristics, such as race and whether the defendant is also being charged with a violent crime. In addition, we include controls that interact the gender composition of the jury with other defendant characteristics, such as race. If the inclusion of these interactions were to result in a decline in our estimate of interest, it suggests that at least some of the effect is due not to own-gender bias, but to differential treatment of some other defendant characteristic correlated with defendant gender.

4 Results

4.1 Correlation between expected jury gender and actual jury gender

We begin by demonstrating that our two measures of jury gender are predictive of actual jury composition. Note that in contrast to the main analysis, this exercise can only be performed for those cases in which a jury was seated for the trial. The underlying data are shown in Figure 2, which graphs the actual proportion of women seated on the jury against the our two measures of expected proportion of women seated on the jury. Figures 2a and 2b each show strong positive correlations for both 6-person juries and 12-person juries. In each case the slope is close to one, suggesting that our (exogenous) measures of jury gender composition are strongly correlated with observed jury gender composition.

Regression results are shown in Table 2. Specifically, we estimate an equation of the same form as equation (1) above in that we regress the actual proportion of females on the predicted proportion of females, along with county-by-crime fixed effects. Panel A shows results for the proportion of females in the pool, while Panel B shows results for the expected proportion female based on the empirical probabilities of being seated. Results across both panels are consistent with Figure 2 in showing strong correlations between actual and expected gender composition. Results in column 1 for Panels A and B show correlations of 1.035 and 1.049 for all cases, both of which are significant at the 1 percent level. The remaining columns show that this correlation remains strong for felonies, misdemeanors, and cases that include infractions related to drugs, driving, property crime, and violent crime. Correlations range from 0.964 for violent cases using average jury panel gender (Panel A) to 1.078 for misdemeanor cases in Panel B. All estimates are statistically significant at the 1 percent level. As a result, it is clear that more women being assigned to a jury pool (Panel A), and the combination of that and women being assigned earlier in the ordering (Panel B) leads to large subsequent differences in the actual gender composition of the seated jury.

4.2 Exogeneity tests of the measure of expected jury gender composition

The validity of our empirical approach depends on the assumption that predicted jury gender composition is uncorrelated with confounding factors. While we expect this assumption to hold based on our understanding of how potential jurors are assigned to and ordered within jury pools, we can also provide some empirical evidence. To do so, we regress exogenous defendant and case characteristics on the expected proportion of jurors who are female. These characteristics include jury panel size as well as defendant gender, race, age, the number of offenses, and whether the defendant is being charged with a felony, drug, driving, property, or violent crime. In addition, we also test whether average juror age (available only for Hillsborough County) or judge gender is correlated with our measure of the expected proportion of women on the jury.

Results are shown in Table 3, with estimates at the case level shown in Panel A, and at the charge level in Panel B. Overall, there is little evidence that these exogenous characteristics are correlated with our measure of expected jury gender composition. Within each panel, we show results for our two measures of expected jury gender. Of the 48 estimates shown, two are significant at the 10 percent level, and one is significant at the five percent level, which is consistent with random chance. This contrasts with results from the same exercise using actual proportion of women on the seated jury, rather than our measure of expected jury gender composition. In that exercise, the results of which are shown in Appendix Table A.2, nine of the 24 estimates are significant at the 10 percent level, and three are significant at the five percent level.[13] This reflects the fact that the actual proportion of women seated for the jury is the outcome of the non-random jury selection process.

In addition, we also provide another test. The intuition of the test is to use all of the exogenous case and defendant characteristics shown in Table 3, along with county-by-crime fixed effects, to predict conviction rate for each charge for each individual. This predicted conviction rate is thus a linear combination of all observable characteristics about that case and individual, where the weights are optimally chosen to best predict the likelihood of being convicted on that charge. We graph these predicted conviction rates for male and female defendants against our measure of expected jury gender composition. Our identifying assumption requires that the difference in the underlying propensity for guilt of male and female defendants be orthogonal to jury gender.

Results for all charges are shown in Figure 3, which shows results for jury panel gender (panel a) and expected jury gender using empirical probabilities (panel b). The symbols represent local averages for charges against male and female defendants, and are grouped into 6 equal-sized bins within defendant gender. In addition, we fit separate lines to the underlying data for male and female defendants. Figure

[13] In cases where no jury is seated, we assign actual proportion female to be the expected proportion female. If we instead limit the sample to those trials in which jurors were seated, five estimates are significant at the 10 percent level with four estimates significant at the 5 percent level.

3 shows that while male defendants are predicted to be found guilty more often than female defendants, this difference is constant across jury gender for each of our two measures of jury gender. This suggests that there is little reason, based on observable case and defendant characteristics, to expect a nonzero difference-in-differences estimate in the absence of an effect of own-gender jurors.

Results in Figure 4 show predicted conviction rates for drug charges, where we later show large effects of own-gender jurors. Results indicate that male and female defendants are predicted to have similar conviction rates. More importantly, this is true across expected jury gender. This is consistent with the identifying assumption, and suggests that any nonzero difference-in-difference estimate of the effect of jury gender will be due to the effect of jury gender, rather than some confounding factor.

4.3 Effect of own-gender jurors on conviction rates

Next, we turn to estimating the effect of jury gender on convictions. Before presenting formal estimates, we first show the raw data. Panels a and b of Figure 5 graph the conviction rates of male and female defendants across all charges. Figure 5a does so using the proportion female of the entire jury panel, while Figure 5b shows results for expected proportion female. Both figures indicate that conviction rates of male defendants decline slightly as the proportion of female jurors increases. By comparison, the conviction rates of females seem to decline somewhat more as the expected proportion of female jurors increases, though the difference in slopes is relatively subtle.

Conviction rates for drug offenses are shown in Figure 6. Conviction rates for male defendants appear roughly flat as the expected proportion of female jurors increases. In contrast, both figures indicate that conviction rates of female defendants decline sharply as the expected proportion of female jurors increases. In short, female defendants are much less likely to be convicted of a drug charge as the jury is more female, while male conviction rates seem largely unaffected by jury gender.

Estimation results are shown in Table 4. All specifications control for the expected proportion of female jurors as well as an indicator for whether the defendant is female. In addition, all specifications control for county-by-crime fixed effects. As before, Panel A shows results for the proportion of females in the pool, and Panel B shows results for the expected proportion of females seated on the jury. Column 1 shows the estimate of own-gender jurors for all crimes. The coefficients are -0.330 and -0.266 in Panels A and B, respectively; neither is statistically significant. The magnitude of the coefficients implies that a 10 percentage point increase in the number of own-gender jurors is associated with a 2.7 to 3.3 percentage point reduction in the conviction rate.

Column 2 additionally controls for other defendant and case characteristics such as the defendant's age and race, judge gender, the number of charges in the case, and whether the defendant was also charged with a violent crime such as assault. Consistent with the identifying assumption, the coefficients change little and remain insignificant.

As discussed earlier, a major threat to identification is the possibility that more male or more female juries are responding not to defendant gender, but to a feature of the case or defendant that is systematically correlated with defendant gender. For example, if women convict at higher rates for all charges when the defendant is also charged with a violent crime, and if male defendants are more likely to be charged with violent crimes along with other crimes, then we can estimate a nonzero own-gender effect even if women apply this standard equally across all defendants. In order to address this concern, in the third column we examine the robustness to our estimate to the inclusion of controls that interact case characteristics with defendant gender and the expected proportion of female jurors. Specifically, we include interactions of the proportion of female jurors with defendant race, age, judge gender, number of charges in the case, whether the individual is being charged with a violent crime, and whether the defendant is being charged with a felony. This allows for the possibility that jurors are responding differentially to defendant characteristics that may be correlated with defendant gender.

Results from a specification that includes these pairwise interactions are shown in column 3 of Table 4. As shown there, the coefficients of interest become somewhat larger in both Panels A and B, (-0.403 and -0.332), but are still statistically insignificant.

Columns 4 – 6 of Table 4 show results for felonies, which are the subset of criminal cases studied in previous work on jury race. Estimates range from -0.382 to -0.628, though none are statistically significant at conventional levels. Similarly, results in columns 7 – 9 show results for misdemeanor charges. Again, all estimates are negative ranging from -0.227 to -0.432 and none are statistically significant. Importantly, due to the fact that we report results for several different subcategories of crime, we also report False Discovery Rate (FDR) adjusted Q-values for each estimate in Table 4. These are computed using the method proposed by Anderson (2008), and adjust for the fact we examine a total of six subcategories of crime (felony, misdemeanor, drug, driving, property, and violent). The adjusted Q-values, which are interpreted similarly to two-sided p-values, range from 0.373 to 0.655 for the estimates in columns 4 – 9.

Next, we examine effects by category of the criminal charge. Specifically, we examine effects on conviction for driving, property, violent, and drug crime charges.[14] Results are shown in Table 5. The format is similar to Table 4 in that the first column for each category includes only county fixed effects, the second column adds controls for defendant and case characteristics, and the third column adds controls for interactions between jury gender and defendant and case characteristics.

Results in columns 1 – 9 suggest there is little evidence that own-gender jurors affect convictions

[14] In Appendix Table A.5, we classify another 1,189 charges that were difficult to classify into groups into these four categories and re-estimate results. In addition, we show results just for the subgroup of charges we were unable to classify into the four categories of Table 5 ("All Other") and those that we were still unable to classify into a category in Table A.5 ("Still Other"). Results are similar.

for driving, property, or violent crimes. In contrast, results in columns 10 - 12 in both panels indicate there is strong evidence of own-gender jurors on conviction for drug charges. In addition, results are similar across Panels A and B, suggesting that the way in which one predicts the seated jury does not impact estimates. The estimates of -2.141 and -2.139 in Panels A and B of column 10 suggests that a 10 percentage point change in the expected own-gender composition of the jury results in a 21 percentage point reduction in the conviction rate of defendants. Adding controls in Panel B changes estimates only slightly to -2.172 and -2.151; all four estimates are significant at the one percent level. In addition, further adding interaction controls reduces estimates only slightly to -1.752 and -1.768, both of which are significant at the five percent level. This suggests that a 10 percentage point increase in the proportion of own-gender jurors leads to an 18 percentage point reduction in the conviction rate. To put this estimate in perspective, we note that Anwar, Bayer and Hjalmarsson (2012) estimate that the impact of having one black potential juror in the jury pool (and thus much less than a 10 percentage point increase in the expected proportion of jurors that are black) results in a 16 percentage point reduction in the conviction rates for black defendants.

In addition to reporting robust standard errors clustered at the defendant level, we also report two-sided p-values from randomization inference in which we randomly assign males and females to jury panels in our data, and compare the t-statistics from our main coefficients to the distribution of 10,000 empirical t-statistics from the permutation exercise. Results in columns 10 - 12 of Panel B indicate p-values of 0.0179, 0.0187, and 0.0929, respectively. We also report FDR-adjusted Q-values in columns 10 - 12, which are 0.003, 0.003, and 0.065, respectively. This indicates that even after accounting for the multiple statistical tests across the six major categories of crime charges in Tables 4 and 5, the coefficients in columns 10 – 12 of Table 5 are sufficiently extreme as to be unlikely to arise due to chance.

Finally, we also perform the analysis at the case level. As discussed earlier, this requires making subjective decisions about how to define guilt in the presence of multiple charges, and how to classify cases by crime type given charges of different types. Tables A.3 and A.4 replicate Tables 4 and 5 except at the case level, rather than the charge level.[15] Results are similar in that we find no evidence of effects except in drug cases. For example, in our preferred specification in column 11, we estimate that a 10 percentage point increase in female jurors results in an 19 percentage point increase in the proportion of charges leading to conviction. The estimate is significant at the one percent level using conventional inference, has an FDR Q-value of 0.012, and a randomization-inference p-value of 0.0453.

In summary, we have two primary findings. First, we find no effects of own-gender jurors on convic-

[15]We define the outcome as the proportion of charges that are guilty, and define subgroups as cases that have at least one charge within that subgroup.

tions overall for either misdemeanors or felonies, or for driving, violent, or property offenses. However, we show that a 10 percentage point increase in own-gender jurors leads to an increase of 18 - 22 percentage points in convictions on drug charges, and that this effect is significant even after adjusting for multiple inference.

4.4 Effects of own-gender jurors on sentencing decisions

Next, we turn to the question of whether own-gender jurors affect sentencing. While one may expect increased convictions to result in additional incarceration, we note that this link is *a priori* ambiguous for two reasons. The first is that the additional convictions may be for charges that do not result in incarceration. In addition, while juries make conviction decisions, in these counties judges decide sentencing. On the one hand, if judges treat all convictions similarly, we would expect to observe own-gender effects on sentencing for drug cases. On the other hand, if judges exercise discretion in sentencing based on either the facts of the case or even on the gender composition of the jury, we may not see evidence of own-gender effects in sentencing outcomes.

Results for all cases—including those in which there are no convictions—are shown in Figure 7, with panels a and b showing results for our two measures of jury gender. Each panel shows estimates of the effect of own-gender jurors in which the outcome of interest is whether the defendant was sentenced for at least one day, at least six months, at least one year, at least 18 months, etc., up to at least 10 years. The left-most point estimate suggests that additional own-gender jurors resulted in reduced likelihood of incarceration; none of the other estimates are statistically significant.

Figure 8 shows results for cases in which there was at least one drug charge. Results indicate suggestive evidence that an increase in own-gender jurors reduces the probability a defendant will be incarcerated for at least one day. The coefficient of -1.3 in Figure 8b indicates that a 10 percentage point increase in own-gender jurors reduces the probability of incarceration by 13 percentage points. The estimate in Figure 8a is somewhat smaller at -1.1. Somewhat surprisingly, estimates for the intensive margin of sentencing are positive, though only two of the 40 intensive margin estimates are statistically significant at the 5 percent level.

These results are shown more formally in Table 6, which shows estimates of the effect of own-gender jurors on the probability of being sentenced to at least some jail time. Consistent with Figure 7, estimates in columns 1 - 3 for all charges are negative but not statistically significant. In contrast, estimates are larger for cases that include at least one drug charge. These estimates are shown in columns 4 - 6 and range from -0.846 to -1.141 in Panel A when using overall jury panel gender; none are significant at conventional levels. Estimates in Panel B corresponding to expected jury gender are -1.396 and -1.403 and -1.239, which are significant at the 10 percent level. Again, the larger estimates in Panel B are consistent with the use of a jury gender variable measured with less error than that

used in Panel A, which assumes the probability of being seated is independent of one's spot in the order. Overall, these estimates suggest a 10 percentage point shift in jury gender results in around a 14 percentage point change in the likelihood of being incarcerated.

The large economic magnitude of these point estimates suggests that additional own-gender jurors likely results in increased incarceration, even when those sentencing decisions are made by judges. This mean that judges are either unwilling or unable to exercise discretion in an effort to offset the effect of jury gender composition on conviction decisions. In addition, existing research on the effect of conviction and incarceration on recidivism and employment suggests increases in incarceration can result in significant long-term harm to defendants facing drug charges (Aizer and Doyle Jr, 2015; Mueller-Smith, 2015).

5 Robustness

We now test the robustness of our main finding that additional own-gender jurors leads to large reductions in conviction rates on drug charges. Results are shown in Table 7, where column 1 replicates our main estimates for drug charges of -2.172 and -2.151 from our preferred specification in column 11 of Table 5. We begin by showing estimates separately for Hillsborough and Palm Beach Counties in columns 2 and 3, respectively. Estimates are larger and more significant for Hillsborough County (-2.776 versus -1.457 in Panel B), though both estimates imply economically large effects.

Next, we return to a main threat to identification. As discussed earlier, that threat is the possibility that jurors of a given gender are responding not to the defendant's gender, but to some other defendant or case characteristic correlated with defendant gender. We tested for this by including interactions of jury gender with the number of charges in the case, whether there was a charge for a violent crime in the case, judge gender, and defendant race and age. Results in column 12 of Table 5 indicate our estimates are robust to the inclusion of these interactions, which provides evidence the effects are due to the interaction of jury and defendant gender and not something else. However, one may also be concerned that jurors of different gender could respond differently to the type of drug charge in the case, which could be correlated with defendant gender. To test for this, we additionally include interactions of expected jury gender with indicators for marijuana possession, possession of other drugs, and possession of drug paraphernalia, where drug trafficking is the excluded group. Results are shown in column 4 of Table 7. Results show that including these interactions *increases* the magnitude of the estimates to -2.199 and -2.188. This provides further evidence that the effects shown are due to the interaction of defendant and jury gender, rather than the interaction of jury gender with some other characteristic correlated with defendant gender.

In addition, we also test the robustness of our estimates to different specifications as well as to

alternative ways of constructing our predicted jury gender measure. In column 5 of Table 7 we estimate the effect controlling for predicted juror age, which we only observe in Hillsborough County. The estimate in Panel B is similar to that in column 2 at -2.475, and is significant at the one percent level. Column 6 shows the estimate from our main specification when we classify outcomes in which adjudication was withheld as not guilty rather than guilty, which occurs in 4.05 percent of the drug charges. The magnitude of the estimate is reduced slightly to -1.793, but is still statistically significant at the one percent level.

In columns 7 – 9 of Table 7, we estimate the own-gender effect when we classify the gender of potential jurors differently. Specifically, we classify jurors for whom we could not identify gender using genderize.io as either all female (column 7) or all male (column 8), respectively, rather than as having an equal likelihood of being male as female. Estimates in Panel B are qualitatively similar at -1.728 and -2.465, respectively; both are significant at the one percent level. In addition, in column 9 we classify the gender of jurors based on the names and genders recorded in Florida by the Social Security Administration. The resulting estimate is -2.038, which is similar to the baseline estimate of -2.151.

Lastly, in columns 10 – 12 of Table 7 we show that our estimate of own-gender jurors shown in Panel B is robust to alternative methods of predicting jury gender. In column 10 we estimate the effect when we do not smooth the probability of being seated on the jury for a given jury and panel size using a local linear estimation with epanechnikov kernel, as we did for our main results. Instead, we use the raw probability that a juror assigned that number in a panel in a given range was seated on the jury. The estimate is -2.067 and is significant at the one percent level. The estimated effect is also similar if we use probit instead of local linear estimation, as shown by the estimate of -2.315 in column 11. The same is true when we use a local linear smoother but do not condition on jury panel size (-2.066), as shown in column 12.

In addition, in appendix Table A.5 we show results for charges that were excluded in the primary analysis. We begin by showing effects for all charges in column 1, including charges that were excluded due to a low proportion of female defendants and those that were not easily classified as either a violent, property, driving, or drug offense. We also show effects for this larger sample separately for felonies and misdemeanors in columns 2 and 3. Estimates are similar to our main results in Tables 4 and 5; none of the estimates is significant. We then show estimates for the subset of charges that were excluded for the main analysis (column 4), and those that we are still unable to classify into one of the four groups (column 5). Finally, in columns 6 - 9 we show estimates for driving, property, violent, and drug offenses when we classify additional charges into those categories. The only such charge for drug cases is disorderly intoxication. Estimates in columns 4 - 8 are insignificant, though importantly our estimate for drug charges in column 9 is -1.878 and is significant at the one percent level. We conclude that our main findings are robust to the inclusion or exclusion of charges that have few female defendants, or

that are difficult to classify into a category.

In addition, in Table A.6 we show our results are robust to estimating effects exclusively using six-person juries, which effectively drops all cases in which there was a capital murder charge. Similarly, Table A.7 shows similar effects of estimating the effect of number of own-gender jurors, rather than proportion. Specifically, we estimate that an additional own-gender juror reduces conviction rates for drug charges by a statistically significant 26 percentage points.

In summary, we find no evidence that our estimated effect of own-gender jurors on convictions in drug cases is unique to one of the two counties used in the analysis, or to male or female jurors responding differentially to a characteristic correlated with defendant gender, rather than defendant gender itself. In addition, we find that this own-gender effect is robust to alternative ways of defining the treatment and outcome and predicting jury gender, and to alternative methods of categorizing charges and constructing the sample.

6 Discussion and Interpretation

There are several potential mechanisms through which own-gender jurors could cause these large effects on conviction outcomes. The first is that seated jurors may exhibit own-gender bias when making conviction decisions on drug charges. Given that we do not observe true guilt, it is difficult for us to assess which jurors – male or female – are biased, and in what direction. Under the interpretation of juror bias, the results would be due to male and/or female jurors being either too lenient to own-gender defendants, being too tough (i.e., wrongfully convicting) on opposite-gender defendants, or both.

Relatedly, effects could be due to the expectation of juror bias in criminal drug trials. For example, a defendant may be more likely to accept an otherwise unappealing plea deal if the expected jury composition is largely opposite-gender. It is also possible that prosecutors or defendants falsely believe jurors will engage in gender bias during the trial, resulting in a change in plea deal behavior prior to the start of the trial.

Finally, an increase in the number of opposite-gender jurors could lead the defense to use their peremptory challenges on opposite-gender potential jurors. This would mean the attorney would have fewer peremptory challenges to use on other unfavorable jurors, thereby weakening the defendant's chances at acquittal. We note that doing so would violate the legal standard set by Batson v. Kentucky (1986) and J.E.B. v. Alabama (1994). In addition, the fact that predicted jury gender is so highly correlated with actual jury gender provides empirical evidence that the attorneys are unable to significantly offset random changes in expected jury gender.

Data limitations make it difficult for us to distinguish between these potential mechanisms with any certainty. What we know based on Figure 6 is that effects are driven by differential conviction rates of

female defendants by juries of differing gender, rather than of male defendants. To shed additional light on this question, we estimate effects separately for cases that did and did not get to trial.[16] Results are shown in Appendix Tables A.8 and A.9, which again show estimates for overall jury panel gender in Panel A, and expected jury gender in Panel B. In Table A.8, we first ask whether having a jury with more own-gender jurors affects the likelihood the case goes to trial. Estimates are economically small and statistically insignificant, suggesting there is no effect. This gives us some confidence that estimating effects separately by trial status is not confounded by selection into jury status. Estimated effects by trial status are shown in Table A.9, where columns 1 - 3 show estimates for cases that were not resolved via trial. We conclude two things from Table A.9. First, while estimates are economically large and statistically significant for cases that were not resolved via trial—estimates in Panel B range from -2.411 to -2.956—estimates are even larger for those cases in which a jury decided the outcome. Second, estimates for cases that went to jury trial are much larger for our measured of expected jury gender (Panel B) compared to overall jury panel gender. For example, the estimate in column 5 in Panel B is -6.317, compared to -3.724 in Panel A. This is consistent with attenuation bias in Panel A due to measurement error in the overall jury panel gender measure. Overall, we interpret these results as suggestive evidence that effects are largely driven by changes during or after the trial, such as gender bias by juries. We note, however, that the potential for selection into trial status by (unobservable) case characteristics makes it difficult to interpret these differences with certainty.

A second question regarding the interpretation of this study's findings relates to the strength of the effects for drug charges compared to driving, property, and violent crime.[17] Unfortunately, our data are not well-suited for explaining this difference across crime types. We speculate it is because even though Americans are supportive of existing and even stronger penalties for DUIs, violent crime, and property crime, Americans are critical of the prosecution of drug crimes. For example, recent surveys indicate that 40 percent of Americans believe the prison sentences for non-violent drug crimes are too harsh, and 64 percent support the full legalization of marijuana (YouGov/Huffington Post, 2015; Gallup News Service, 2017). Two-thirds of American adults believe the government should focus more on treatment for illegal users, compared to only 26 percent who believe more focus should be on prosecuting illegal users (Pew Research Center, 2014). A nontrivial proportion of Americans even disagree with the prosecution of "harder" drug crimes; 16 percent favor decriminalization of cocaine possession, and 9 percent favor legalization (Morning Consult, 2016). This shift in attitudes on drug laws is also reflected in recent state policy changes regarding drug possession.[18]

[16] For this analysis we exclude the 67 cases representing 150 charges where the records did not indicate whether the case was decided by trial or prior to the start of the trial.

[17] We can reject the null hypothesis that our driving and violent crime estimates in Table 5. We can also reject that the combined estimate for driving, property, and violent charges (0.004 (se=0.328) for the specification corresponding to column 2 in Panel B of Table 5) is equal to that for drug charges.

[18] The National Conference of State Legislatures (NCSL) reports that from 2011 to 2016, at least nine states have lowered

In contrast to drug laws, there is little to no public support for weakening the enforcement of non-drug laws, and significant support for even strengthening enforcement. While surveys of Americans' perceptions of non-drug offense prosecution are less common, what evidence there is contrasts sharply with views on drug crime enforcement. For example, only 11 and 1 percent of adults believe that the sentences typically given for non-violent property crimes and violent crimes, respectively, are too harsh (Huffington Post/YouGov, 2013).

This divergence in views is particularly relevant given the drug charges in our sample, over half of which are for possession of drugs or drug paraphernalia without intent to distribute. Indeed, our findings are driven nearly entirely by less serious drug charges, the enforcement of which is most controversial. Appendix Table A.10 shows large estimates of juries with own-gender jurors for all marijuana-related charges (estimates of -2.1 and -2.2 in column 2, both significant at the 5 percent level) and drug possession charges except marijuana (estimates of -3.2 and -3.0 in column 5, both significant at the one percent level). In contrast, estimates are small and insignificant for other, more serious drug charges (estimates of -0.3 and -0.2 in column 8).

For these reasons, we interpret this study's findings as most consistent with a model in which jurors fairly enforce the laws with which they mostly agree, but disproportionately favor own-group defendants when deciding whether to enforce laws with which they might not agree. That is, while a juror may be willing and able to convict out-group defendants who break a law with which the juror disagrees, he is sometimes less willing to convict in-group defendants of the same crime. We emphasize, however, that there could be other explanations for the difference in results for across crime types.

7 Conclusion

In this study, we test for the effect of own-gender jurors on conviction and sentencing outcomes. To overcome potential bias due to non-random jury selection, we exploit the fact that potential jurors are randomly assigned to jury pools for each case, and are randomly ordered within each jury pool. This enables us to predict the gender composition of each jury for each case set to go to trial. We do so using two approaches. The first replicates the approach used in the literature on jury race, where we proxy for jury gender with the overall proportion female in the entire jury panel, independent of juror ordering. The second approach relaxes the assumption that the probability of being seated is independent of juror order by using the empirical probabilities of being seated across juror order. We combine these sources of variation with variation in defendant gender to estimate the effect of own-gender jurors.

some drug possession crimes from felonies to misdemeanors, and another nine have reduced mandatory sentences for some drug offenders (National Conference of State Legislatures , NCSL). In addition, as of 2018 over 20 states have decriminalized certain marijuana possession offenses (National Organization for the Reform of Marijuana Laws , NORML). While Florida is not among the states making these changes, jurors there are likely experiencing similar shifts in their views about drug laws.

Results provide strong evidence that an increase in own-gender jurors results in lower conviction rates for drug offenses. We estimate that a ten percentage point change in the expected own-gender composition of the jury results in an 18 percentage point decline in conviction rates on drug charges. Point estimates suggest that a similar change in jury gender results in a 13 percentage point reduction in the likelihood of being sentenced to at least some jail time. These are large effects, though we note this is consistent with prior research on the effect of juror race (Anwar, Bayer and Hjalmarsson, 2012).[19]

We hypothesize that the reason we see such strong own-gender effects for drug charges but not others is because many Americans disapprove of the prosecution of drug crimes. We emphasize, however, that we cannot rule out other interpretations. Similarly, while we show evidence that effects are largest for cases that go to trial, it is difficult for us to determine which part of our effect is due to gender bias by jurors when deciding to convict, and what is due to changes in the offering or acceptance of plea deals based on perceptions of jury bias.

Our results are important for the debate over the use of peremptory challenges in selecting a jury. By documenting the significant harm that can arise to defendants who draw opposite-gender juries, we highlight the potential benefits to the prosecution of removing same-gender individuals from the jury pool. Similarly, defendants in drug cases stand to benefit if their attorneys are able to successfully remove opposite-gender jurors from the jury pool. As a result, our results provide support for recent court rulings that disallow prosecutors or defense attorneys to strike potential jurors from the jury pool on the basis of gender.

In addition, our results add evidence to a growing literature documenting own-gender bias in decision-making. Our findings suggest that such bias can arise even in settings where the objective of impartiality is heavily emphasized and protected. Specifically, throughout the juror selection process the necessity of being impartial and fair is actively pressed on potential jurors. In addition, the process explicitly allows for both sides to remove potential jurors from the jury if they are shown or believed to be unfair. We find that even in this process, the similarity in gender of the jury to the defendant can have a significant effect on convictions.

[19] They find that one black individual in the jury pool – and thus in expectation much less than one black juror on the seated jury – results in a 16 percentage point change in conviction rates.

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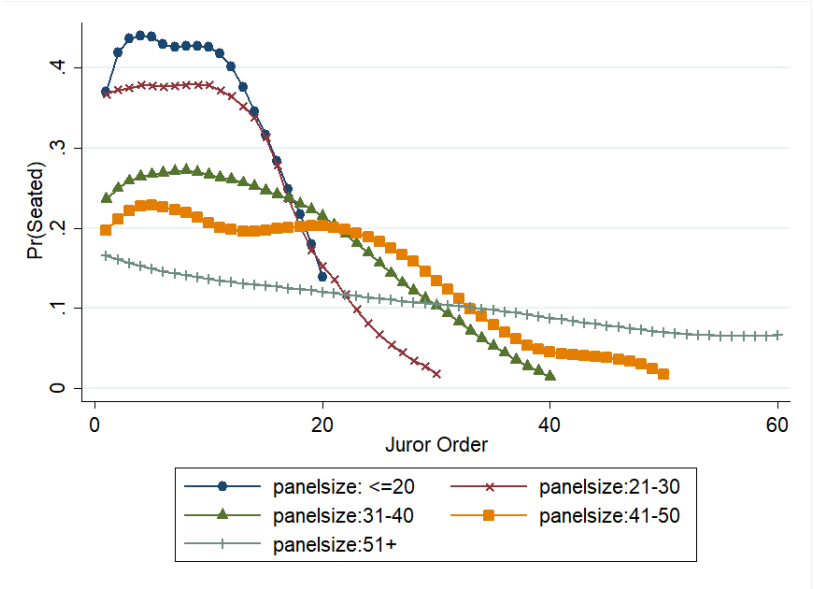
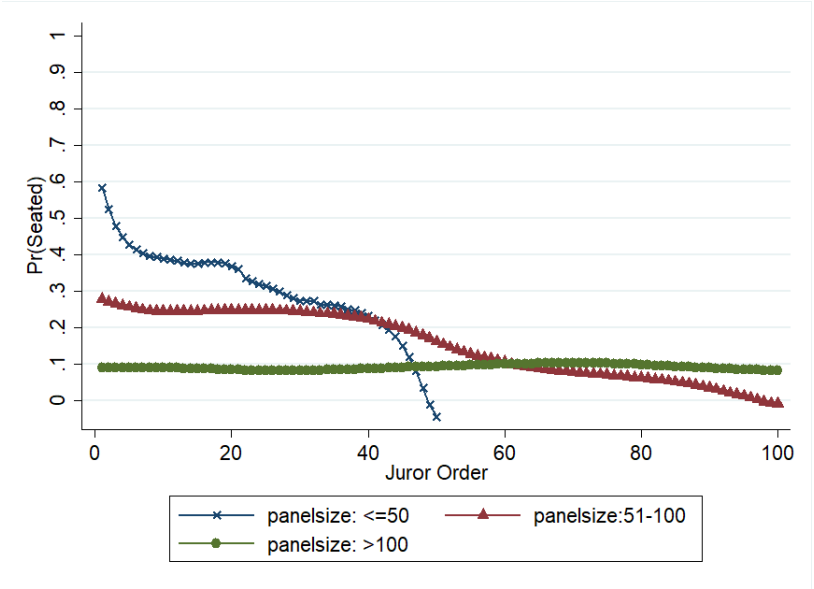
Figures and Tables

Figure 1: Probability seated

(a) jury trials with 6 jurors



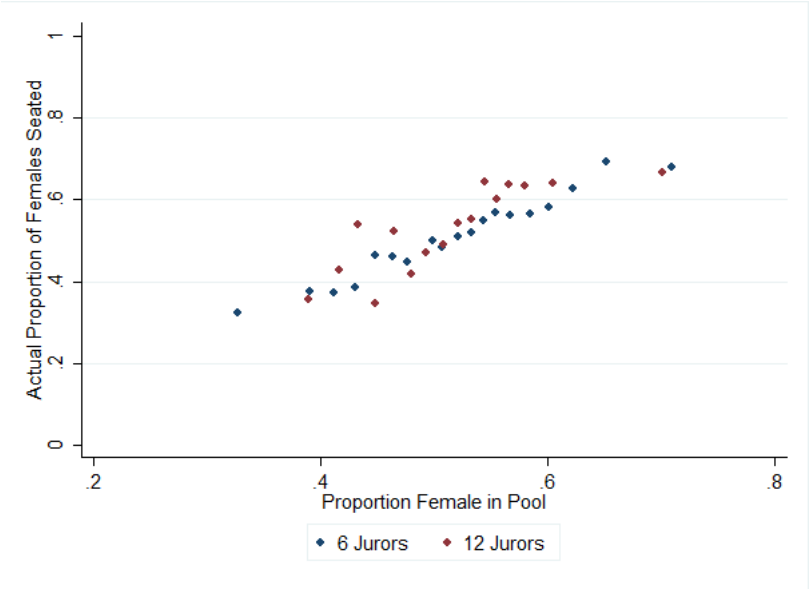
(b) jury trials with 12 jurors



Notes: Each line is fit with a local linear polynomial at each panelist position using a epanechnikov kernel with varying Rule-of-Thumb (ROT) bandwidths. Figure 1a from smallest to largest panel size uses a one-sided bandwidth of 1,1,2,2, and 10. Figure 1b from smallest to largest panel size uses a one-sided bandwidth of 4, 6, and 14.

Figure 2: Correlation between actual jury gender composition and expected gender composition

(a) proportion female in pool



(b) expected proportion female

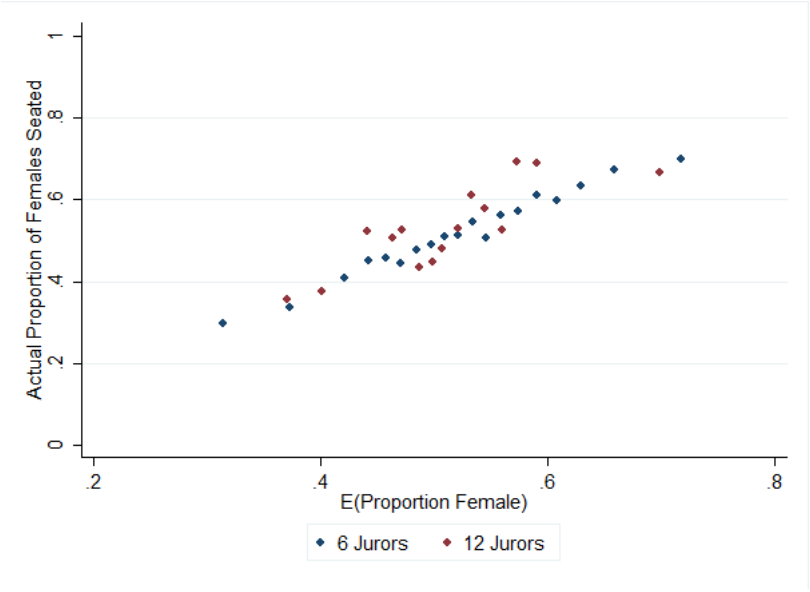
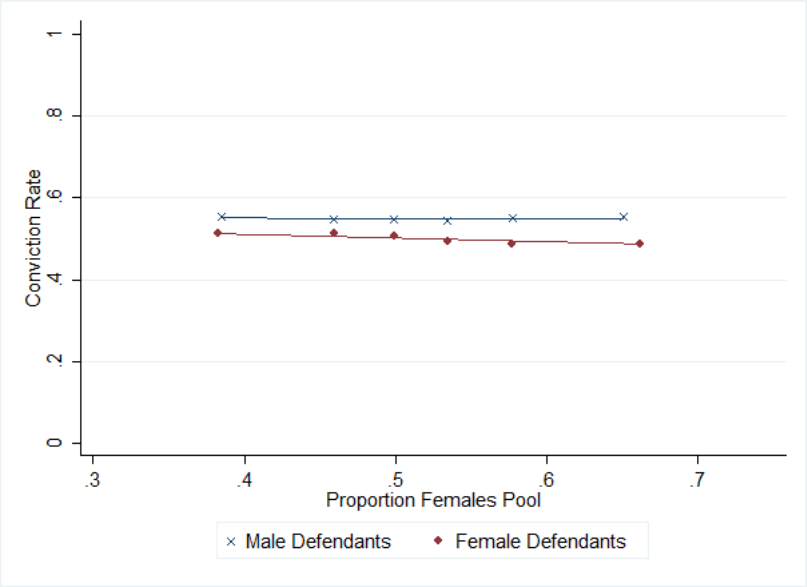
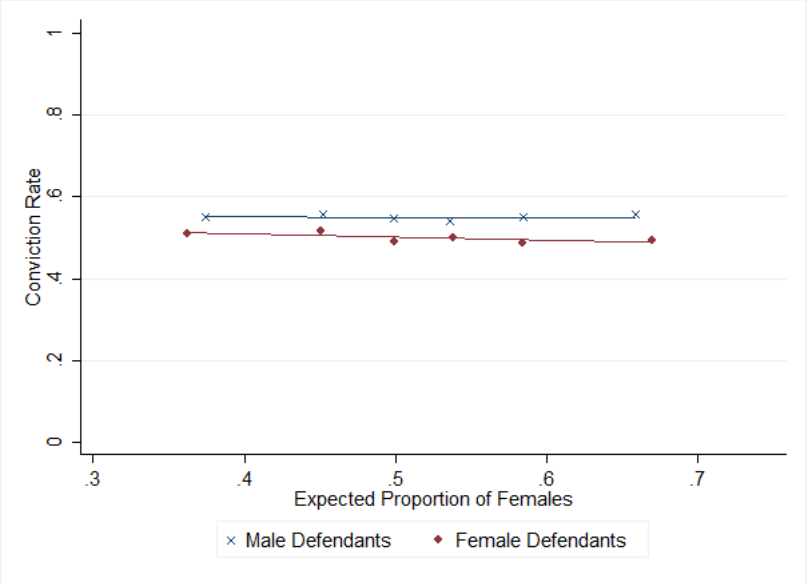


Figure 3: Predicted conviction rates for male and female defendants, all charges

(a) proportion female in pool



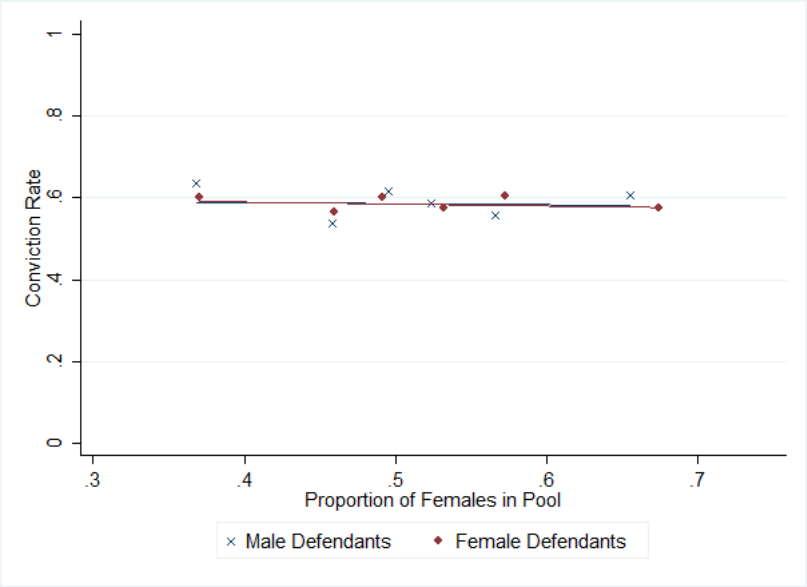
(b) expected proportion female



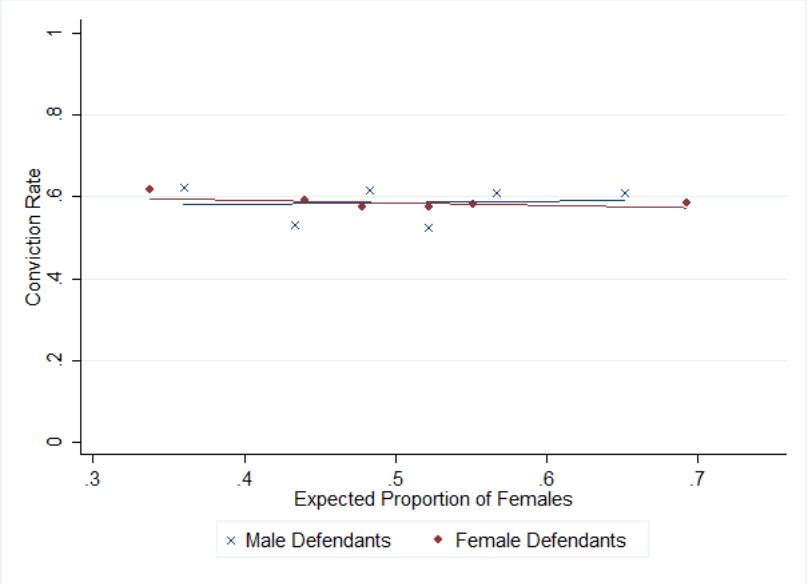
Notes: For each charge, we predict the probability of conviction using all observable characteristics. The line represents a linear fit across all predicted conviction rates.

Figure 4: Predicted conviction rates for male and female defendants, drug charges

(a) proportion female in pool



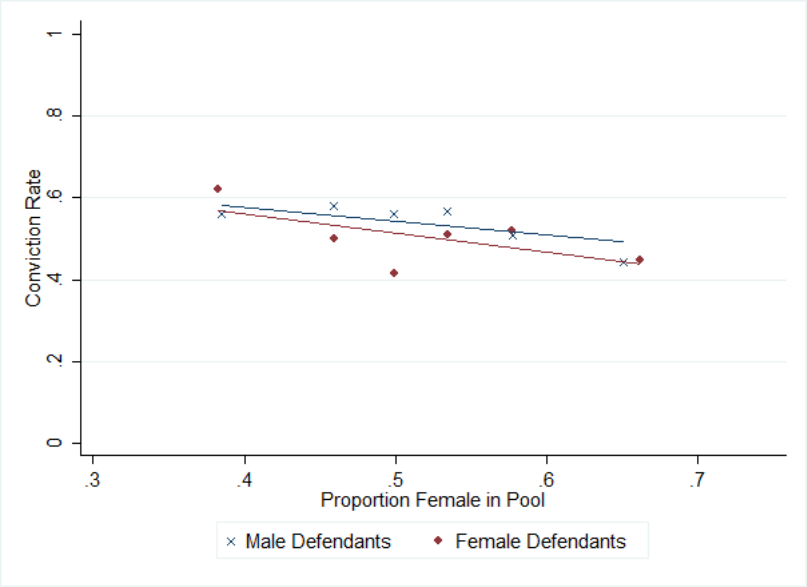
(b) expected proportion female



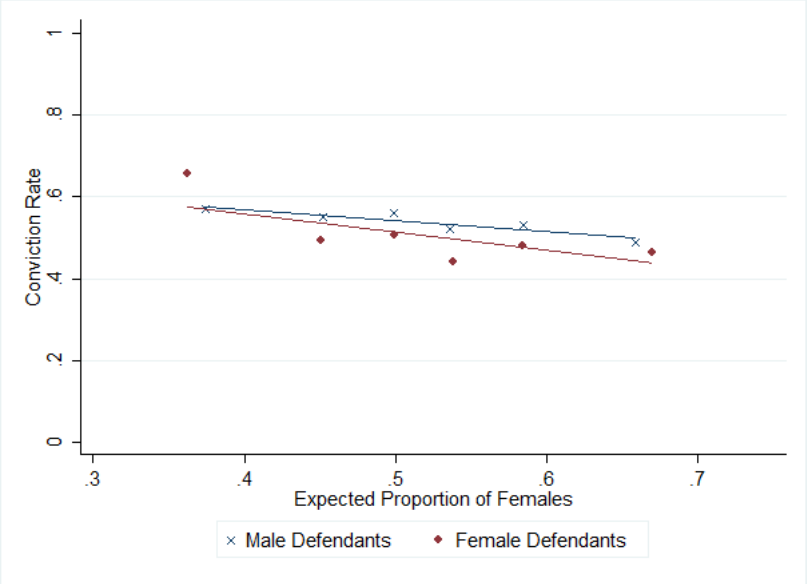
Notes: For each charge, we predict the probability of conviction using all observable characteristics. The line represents a linear fit across all predicted conviction rates.

Figure 5: Actual conviction rates for male and female defendants, all charges

(a) proportion female in pool



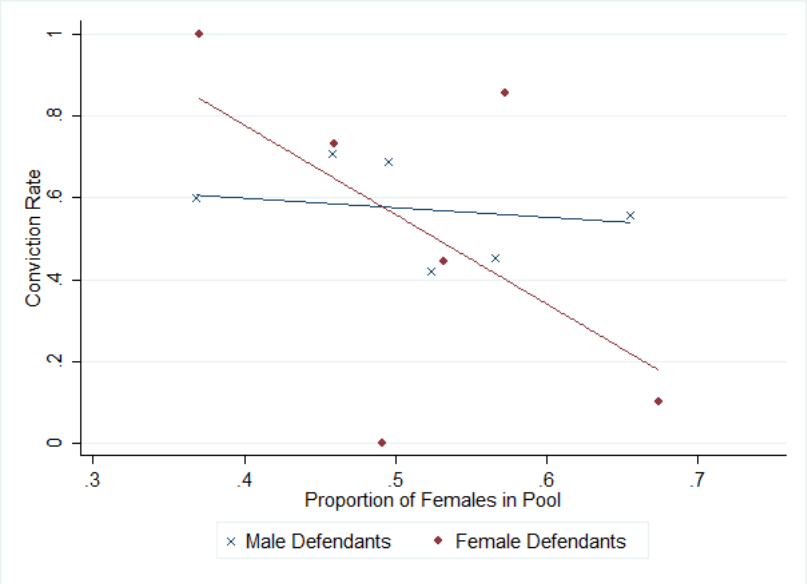
(b) expected proportion female



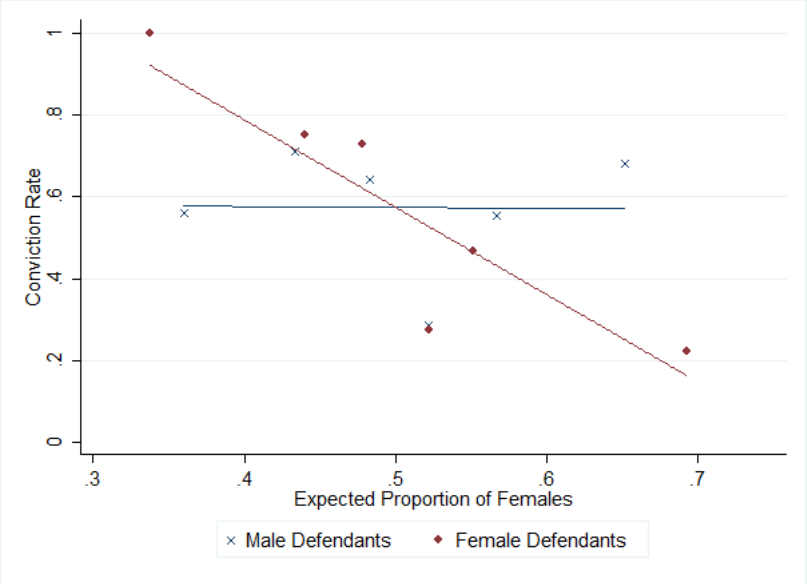
Notes: Each figure graphs the actual conviction rates for male and female defendants against the expected gender composition of the jury. Observations are grouped such that each circle represents an equal number of charges.

Figure 6: Actual conviction rates for male and female defendants, drug charges

(a) proportion female in pool



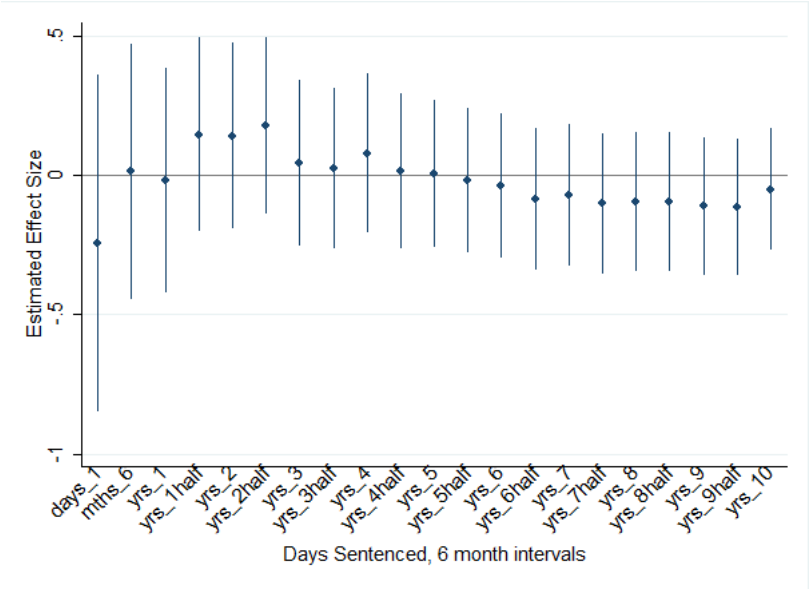
(b) expected proportion female



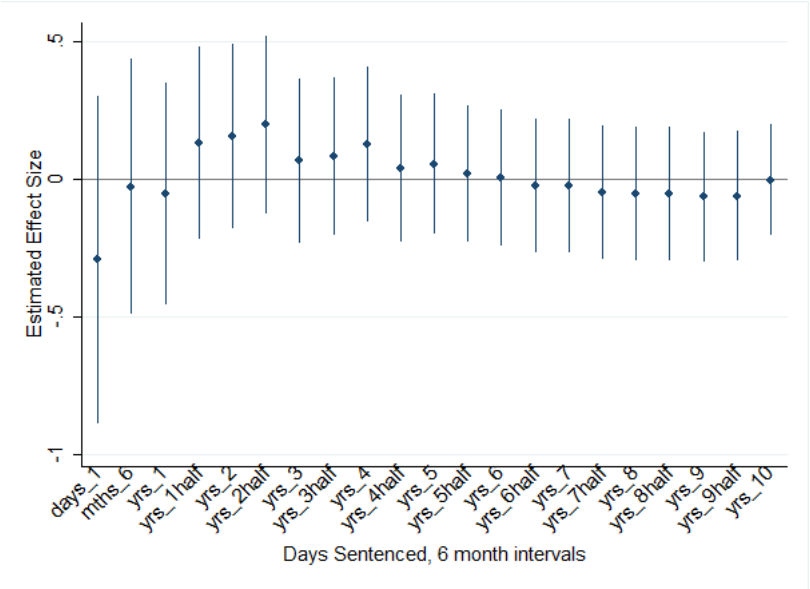
Notes: Each figure graphs the actual conviction rates for male and female defendants against the expected gender composition of the jury. Observations are grouped such that each circle represents an equal number of charges.

Figure 7: Estimated effects of own-gender jurors on sentencing, all cases

(a) proportion female in pool



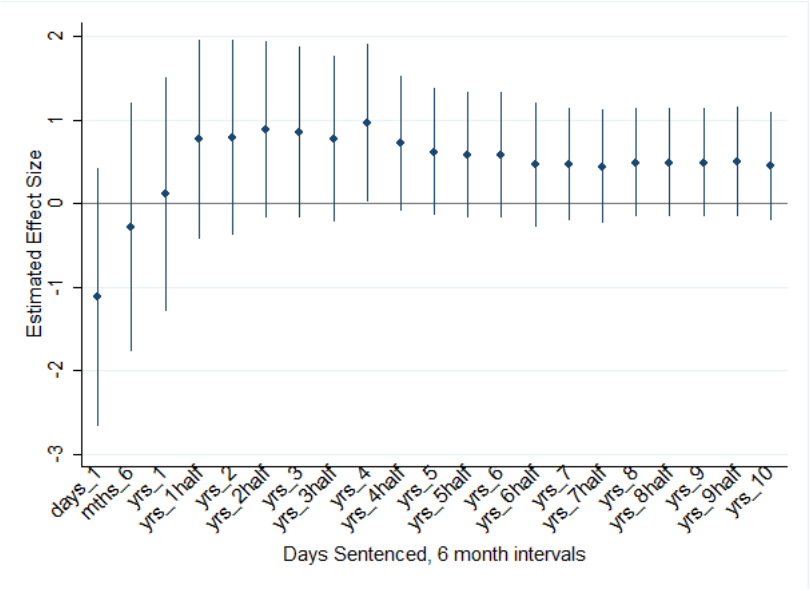
(b) expected proportion female



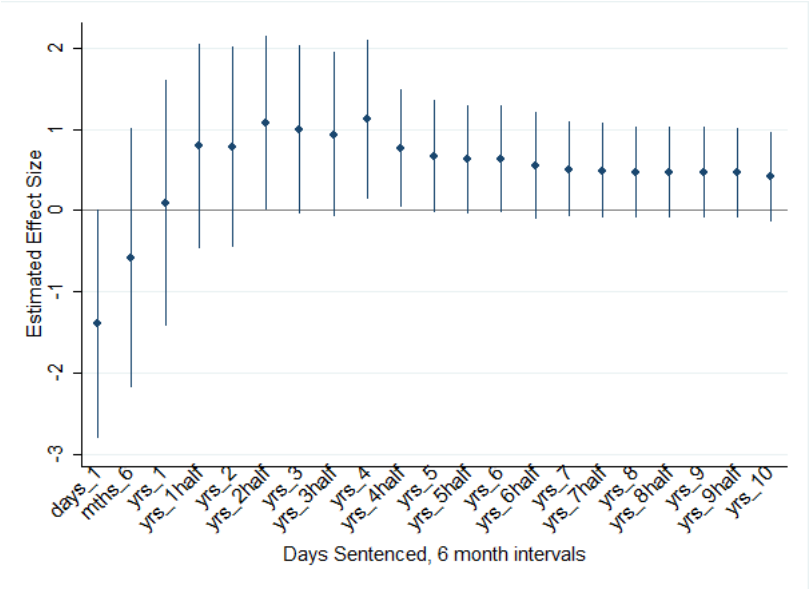
Notes: Each estimate shown represents the effect of own-gender jurors on total sentencing in the case. The outcomes of interest, from left to right, are a set of indicators for sentenced to at least one day, sentenced to at least six months, 1 year, 1.5 years, 2 years, etc., up to at least 10 years. The sample includes all drug, driving, property, and violent crime cases.

Figure 8: Estimated effects of own-gender jurors on sentencing, at least one drug charge

(a) proportion female in pool



(b) expected proportion female



Notes: Each estimate shown represents the effect of own-gender jurors on total sentencing in the case. The outcomes of interest, from left to right, are a set of indicators for sentenced to at least one day, sentenced to at least six months, 1 year, 1.5 years, 2 years, etc., up to at least 10 years. The sample restricts to cases with at least one drug charge.

Table 1: Summary Statistics

Panel A: By Case

	All	Male	Female	Felony	Misdem.	Driving	Property	Violent	Drug
Outcomes									
Convict Any	0.67	0.67	0.63	0.67	0.65	0.75	0.75	0.59	0.74
Proportion Guilty	0.54	0.55	0.50	0.56	0.49	0.55	0.61	0.49	0.60
Total days sentenced, including zeros	1668.29 (5366.66)	1923.15 (5779.18)	269.23 (1127.79)	2367.00 (6320.03)	104.64 (594.60)	458.08 (3160.50)	2244.93 (5489.33)	2767.96 (7435.61)	830.84 (1771.77)
P(sentenced $\geq$ 1 days), including zeros	0.42	0.45	0.27	0.49	0.26	0.34	0.54	0.43	0.50
P(sentenced $\geq$ 1 years), including zeros	0.26	0.30	0.09	0.37	0.04	0.10	0.40	0.31	0.34
P(sentenced $\geq$ 5 years), including zeros	0.16	0.18	0.04	0.23	0.01	0.04	0.24	0.23	0.13
Case Characteristics									
Defendant female	0.15	0.00	1.00	0.13	0.21	0.19	0.16	0.13	0.13
Defendant white	0.48	0.46	0.55	0.43	0.58	0.67	0.42	0.41	0.38
Defendant age	36.84	37.13	35.23	36.54	37.51	37.74	36.31	35.94	37.43
Number of Charges	2.35	2.45	1.84	2.51	2.00	2.43	2.95	2.31	2.83
Violent charge in case	0.47	0.49	0.39	0.57	0.25	0.07	0.27	1.00	0.10
Felony charge in case	0.69	0.71	0.58	1.00	0.00	0.38	0.84	0.83	0.74
Judge female	0.33	0.32	0.38	0.37	0.25	0.29	0.30	0.38	0.35
Jury Characteristics									
Actual Prop Female	0.51 (0.18)	0.51 (0.18)	0.54 (0.18)	0.51 (0.18)	0.52 (0.19)	0.52 (0.19)	0.52 (0.17)	0.50 (0.19)	0.52 (0.19)
Proportion Female in Pool	0.52 (0.10)	0.51 (0.09)	0.52 (0.11)	0.51 (0.09)	0.52 (0.10)	0.52 (0.10)	0.52 (0.09)	0.51 (0.09)	0.51 (0.10)
E(Proportion Female)	0.51 (0.10)	0.51 (0.10)	0.52 (0.11)	0.51 (0.10)	0.52 (0.10)	0.52 (0.10)	0.52 (0.09)	0.51 (0.10)	0.51 (0.11)
Predicted Average Juror Age	45.00 (3.50)	45.09 (3.50)	44.45 (3.42)	45.02 (3.57)	44.90 (3.22)	44.55 (3.38)	45.21 (3.22)	45.05 (3.56)	44.82 (3.60)
Observations	1539	1302	237	1064	475	412	377	711	248

Panel B: By Charges

Outcomes									
Guilty	0.53	0.54	0.50	0.56	0.47	0.53	0.56	0.50	0.57
Case Characteristics									
Defendant female	0.13	0.00	1.00	0.11	0.19	0.17	0.11	0.12	0.13
Defendant white	0.50	0.49	0.59	0.43	0.67	0.71	0.45	0.40	0.48
Defendant age	37.37	37.49	36.55	36.66	39.06	37.97	37.62	35.38	40.42
Number of Charges	4.21 (4.87)	4.47 (5.14)	2.44 (1.38)	4.45 (4.89)	3.61 (4.75)	3.26 (2.42)	5.77 (6.44)	3.29 (3.59)	5.28 (6.38)
Violent charge in case	0.43	0.43	0.37	0.54	0.16	0.09	0.18	1.00	0.09
Felony charge in case	0.71	0.73	0.58	1.00	0.00	0.29	0.90	0.87	0.72
Judge female	0.32	0.31	0.40	0.34	0.28	0.30	0.28	0.37	0.33
Jury Characteristics									
Actual Prop Female	0.51 (0.18)	0.51 (0.18)	0.52 (0.17)	0.51 (0.18)	0.52 (0.19)	0.52 (0.19)	0.53 (0.17)	0.50 (0.18)	0.51 (0.19)
Proportion Female in Pool	0.52 (0.09)	0.52 (0.09)	0.52 (0.10)	0.51 (0.09)	0.52 (0.09)	0.52 (0.09)	0.52 (0.08)	0.51 (0.09)	0.51 (0.09)
E(Proportion Female)	0.52 (0.10)	0.52 (0.10)	0.52 (0.10)	0.52 (0.10)	0.52 (0.10)	0.52 (0.10)	0.53 (0.09)	0.51 (0.10)	0.50 (0.10)
Predicted Average Juror Age	44.87 (3.47)	44.94 (3.47)	44.40 (3.43)	44.87 (3.50)	44.84 (3.25)	44.52 (3.25)	44.69 (3.62)	45.06 (3.37)	44.88 (3.59)
Observations	3069	2663	406	2166	903	789	742	1060	487

Table 2: Correlation between actual jury gender composition and expected gender composition

	All	Felony	Misdemeanor	Driving	Property	Violent	Drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Proportion Female in Pool							
Prop Fem in Pool	1.035***	1.001***	1.058***	1.096***	0.966***	0.964***	1.088***
	(0.044)	(0.052)	(0.078)	(0.081)	(0.088)	(0.067)	(0.106)
Observations	1371	929	416	380	325	638	208
F stat	59	38	20	92	61	107	57
Panel B: E(Proportion Female | Potential Juror Order)							
E(Prop Fem)	1.049***	1.019***	1.066***	1.078***	0.988***	1.024***	1.006***
	(0.040)	(0.047)	(0.073)	(0.077)	(0.081)	(0.061)	(0.093)
Observations	1371	929	416	380	325	638	208
F stat	73	49	22	99	76	146	64

Notes: Each column represents a separate regression. Columns 2 - 4 restrict the sample to cases with at least one charge in that category. All regressions include county fixed effects and columns 1-3 include county-by-crime fixed effects. Robust standard errors are in parentheses.
*p<0.10, **p<0.05, ***p<0.01

Table 3: Exogeneity Tests

Panel A: Case-Level								Case has at least one charge that is classified as:				
	female	white	age	avg juror age	panel size	judge female	number charges	felony	driving	property	violent	drug
Panel A.1: Proportion Female in Pool												
Prop Fem in Pool	0.103	0.197	-3.391	-1.673	-1.701	-0.032	-0.106	0.012	-0.016	0.150	-0.037	-0.074
	(0.106)	(0.129)	(3.383)	(1.156)	(3.474)	(0.125)	(0.408)	(0.103)	(0.120)	(0.108)	(0.135)	(0.099)
Observations	1539	1539	1539	839	1539	1539	1539	1539	1539	1539	1539	1539
Panel A.2: E(Proportion Female | Potential Juror Order)												
E(Prop Fem)	0.078	0.174	-2.283	-1.115	-0.453	-0.048	-0.041	-0.018	-0.012	0.215**	-0.042	-0.089
	(0.098)	(0.122)	(3.227)	(1.071)	(3.260)	(0.117)	(0.386)	(0.095)	(0.112)	(0.103)	(0.127)	(0.096)
Observations	1539	1539	1539	839	1539	1539	1539	1539	1539	1539	1539	1539
Panel B: Charge-Level												
	female	white	age	avg juror age	panel size	judge female	number charges	felony	driving	property	violent	drug
Panel B.1: Proportion Female in Pool												
Proportion Female in Pool	0.110	0.198	-3.738	-1.546	-2.401	-0.026	-0.108	-0.021	-0.012	0.128	-0.026	-0.075
	(0.106)	(0.129)	(3.386)	(1.150)	(3.433)	(0.125)	(0.425)	(0.102)	(0.113)	(0.098)	(0.130)	(0.091)
Observations	3069	3069	3069	1510	3069	3069	3069	3069	3069	3069	3069	3069
Panel B.2: E(Proportion Female | Potential Juror Order)												
E(Proportion Female)	0.085	0.174	-2.643	-0.998	-1.119	-0.043	0.038	-0.067	-0.016	0.159*	-0.042	-0.084
	(0.098)	(0.122)	(3.233)	(1.069)	(3.180)	(0.118)	(0.405)	(0.095)	(0.105)	(0.092)	(0.123)	(0.088)
Observations	3069	3069	3069	1510	3069	3069	3069	3069	3069	3069	3069	3069

Notes: Each column in each panel reports estimates from a separate regression in which we regress observable characteristics on the expected proportion of females on the jury. Columns 1 - 7 include county-by-crime fixed effects, and columns 8 - 12 include county fixed effects. The first three columns show results for defendant characteristics. Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table 4: Effect of own-gender jurors on conviction rates, by severity

	All Charges			Felony Charges			Misdemeanor Charges		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Proportion Female in Pool									
Prop Fem Pool x Def Fem	-0.330	-0.334	-0.403	-0.497	-0.495	-0.628	-0.251	-0.259	-0.227
	(0.303)	(0.303)	(0.309)	(0.407)	(0.410)	(0.408)	(0.419)	(0.421)	(0.440)
FDR Adjusted q-values				[0.445]	[0.455]	[0.373]	[0.553]	[0.539]	[0.655]
Observations	3069	3069	3069	1737	1737	1737	1332	1332	1332
Panel B: E(Proportion Female | Potential Juror Order)									
E(Prop Fem) x Def Fem	-0.266	-0.269	-0.332	-0.382	-0.387	-0.527	-0.421	-0.432	-0.394
	(0.306)	(0.306)	(0.310)	(0.415)	(0.416)	(0.408)	(0.409)	(0.410)	(0.422)
FDR Adjusted q-values				[0.519]	[0.643]	[0.590]	[0.519]	[0.643]	[0.598]
Observations	3069	3069	3069	1737	1737	1737	1332	1332	1332
Mean Dependent Variable	0.53	0.53	0.53	0.56	0.56	0.56	0.47	0.47	0.47
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CountyXCrime Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes	No	No	Yes

Notes:All specifications include controls for defendant gender and expected gender composition of the jury, as well as county-by-crime fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors and the defendant's gender.

Standard errors are in parentheses and are clustered at the defendant level. False discovery rate (FDR) adjusted Q-values adjust for multiple inference given the six subcategories of crime examined. They are constructed using the method proposed by Anderson (2008) and are interpreted as two-sided p-values.

*p<0.10, **p<0.05, ***p<0.01

Table 5: Effect of own-gender jurors on conviction rates, by crime type

	Driving Charges			Property Charges			Violent Charges			Drug Charges		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Proportion Female in Pool												
Prop Fem Pool x Def Fem	-0.292	-0.361	-0.522	0.922	0.865	0.852	-0.403	-0.330	-0.231	-2.141***	-2.172***	-1.752**
	(0.492)	(0.498)	(0.529)	(0.696)	(0.711)	(0.662)	(0.516)	(0.527)	(0.515)	(0.592)	(0.583)	(0.675)
FDR Adjusted q-values	[0.553]	[0.539]	[0.487]	[0.445]	[0.455]	[0.399]	[0.553]	[0.539]	[0.655]	[0.003]	[0.002]	[0.061]
Permutation based p-values										{0.0355}	{0.0353}	{0.1325}
Observations	789	789	789	742	742	742	1060	1060	1060	487	487	487
Panel B: E(Proportion Female | Potential Juror Order)												
E(Prop Fem) x Def Fem	0.067	0.018	-0.060	0.607	0.537	0.536	-0.392	-0.301	-0.244	-2.139***	-2.151***	-1.768**
	(0.517)	(0.512)	(0.541)	(0.665)	(0.676)	(0.634)	(0.498)	(0.513)	(0.504)	(0.592)	(0.591)	(0.688)
FDR Adjusted q-values	[0.897]	[0.973]	[0.912]	[0.519]	[0.643]	[0.598]	[0.519]	[0.669]	[0.755]	[0.003]	[0.003]	[0.065]
Permutation based p-values										{0.0179}	{0.0187}	{0.0929}
Observations	789	789	789	742	742	742	1060	1060	1060	487	487	487
Mean Dependent Variable	0.53	0.53	0.53	0.56	0.56	0.56	0.50	0.50	0.50	0.57	0.57	0.57
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors and the defendant's gender.
Standard errors are in parentheses and are clustered at the defendant level. False discovery rate (FDR) adjusted Q-values adjust for multiple inference given the six subcategories of crime examined. They are constructed using the method proposed by Anderson (2008) and are interpreted as two-sided p-values.
*p<0.10, **p<0.05, ***p<0.01

Table 6: Effect of own-gender jurors on being sentenced to jail, at the case level

	All Cases			Cases with One or More Drug Charge		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Proportion Female in Pool						
Prop Fem Pool x Def Fem	-0.243	-0.171	-0.225	-1.126	-1.141	-0.846
	(0.307)	(0.298)	(0.300)	(0.786)	(0.808)	(0.693)
Permutation based p-values				{0.2542}	{0.2489}	{0.4007}
Observations	1538	1538	1538	248	248	248
Panel B: E(Proportion Female | Potential Juror Order)						
E(Prop Fem) x Def Fem	-0.295	-0.226	-0.286	-1.396*	-1.403*	-1.239*
	(0.304)	(0.295)	(0.298)	(0.716)	(0.745)	(0.705)
Permutation based p-values				{0.1211}	{0.1209}	{0.1813}
Observations	1538	1538	1538	248	248	248
Mean Dependent Variable	0.42	0.42	0.42	0.50	0.50	0.50
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes

Notes: All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors and the defendant's gender.
Standard errors are in parentheses.
*p<0.10, **p<0.05, ***p<0.01

Table 7: Robustness of estimates of own-gender jurors on conviction rates - drug charges only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Proportion Female in Pool												
Prop Fem in Pool x Def_Fem	-2.172***	-2.688***	-1.960	-2.199***	-2.456***	-1.781***	-1.731***	-2.487***	-2.000***			
	(0.583)	(0.602)	(2.019)	(0.627)	(0.639)	(0.625)	(0.586)	(0.584)	(0.578)			
Observations	487	312	175	487	303	487	487	487	487			
Panel B: E(Proportion Female | Potential Juror Order)												
E(Prop Fem) x Def Fem	-2.151***	-2.776***	-1.457	-2.188***	-2.475***	-1.793***	-1.728***	-2.465***	-2.038***	-2.067***	-2.315***	-2.066***
	(0.591)	(0.635)	(2.095)	(0.614)	(0.667)	(0.619)	(0.585)	(0.601)	(0.570)	(0.585)	(0.605)	(0.623)
Observations	487	312	175	487	303	487	487	487	487	487	487	487
Mean Dependent Variable	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County	Both	Hills	PB	Both	Hills	Both	Both	Both	Both	Both	Both	Both
Drug Type Controls & Interactions	No	No	No	Yes	No	No	No	No	No	No	No	No
Juror Age Control & Interaction	No	No	No	No	Yes	No	No	No	No	No	No	No
Adjudication Withheld=Not Guilty	No	No	No	No	No	Yes	No	No	No	No	No	No
Missing Genders	half	half	half	half	half	half	female	male	half	half	half	half
Predicted Genders	API	API	API	API	API	API	API	API	SS	API	API	API
Pr(Seated)	LL	LL	LL	LL	LL	LL	LL	LL	LL	Raw	Probit	LL
Pr(Seated—Panelsize)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Notes: Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

A Appendix (For Online Publication)

Table A.1: Effect of own-gender jurors on conviction rates

	All	Felony	Misdemeanor	Driving	Property	Violent	Drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Proportion Female in Pool							
Proportion Female in Pool	-0.160	-0.162	-0.147	-0.038	-0.477*	-0.050	-0.115
	(0.121)	(0.157)	(0.171)	(0.204)	(0.266)	(0.192)	(0.320)
Observations	3069	1737	1332	789	742	1060	487
Panel B: E(Proportion Female | Potential Juror Order)							
E(Proportion Female)	-0.129	-0.140	-0.058	0.083	-0.415*	-0.049	-0.043
	(0.114)	(0.146)	(0.159)	(0.195)	(0.243)	(0.181)	(0.289)
Observations	3069	1737	1332	789	742	1060	487

Notes: Each column represents a separate regression. Columns 1 - 3 include county-by-crime fixed effects, and columns 4 - 7 include county fixed effects. Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.2: Exogeneity tests with actual proportion of female jurors

Panel A: Case-Level								Case has at least one charge that is classified as:				
	female	white	age	avg juror age	panel size	judge female	number charges	felony	driving	property	violent	drug
Actual Prop Fem	0.114**	0.126*	-1.092	-1.237*	1.243	0.020	-0.233	-0.056	0.056	0.079	-0.144**	0.010
	(0.052)	(0.069)	(1.774)	(0.645)	(2.171)	(0.066)	(0.256)	(0.053)	(0.063)	(0.057)	(0.071)	(0.053)
Observations	1539	1539	1539	839	1539	1539	1539	1539	1539	1539	1539	1539
Panel B: Charge-Level												
	female	white	age	avg juror age	panel size	judge female	number charges	felony	driving	property	violent	drug
Actual Prop Female	0.116**	0.130*	-1.142	-1.198*	0.846	0.014	-0.235	-0.040	0.036	0.092*	-0.120*	-0.005
	(0.052)	(0.069)	(1.771)	(0.637)	(2.167)	(0.067)	(0.261)	(0.052)	(0.060)	(0.050)	(0.069)	(0.048)
Observations	3069	3069	3069	1510	3069	3069	3069	3069	3069	3069	3069	3069

Notes: Each column in each panel reports estimates from a separate regression in which we regress observable characteristics on the actual proportion of females on the seated jury. If a jury is not seated, the expected proportion of females seated is used. Columns 1 - 7 include county-by-crime fixed effects, and columns 8 - 12 include county fixed effects. The first three columns show results for defendant characteristics. Standard errors are in parentheses and are clustered at the defendant level. Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.3: Effect of own-gender jurors on conviction rates at the case level, by severity

	All Charges			Felony Charges			Misdemeanor Charges		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Proportion Female in Pool									
Prop Fem Pool x Def Fem	-0.261	-0.259	-0.344	-0.376	-0.356	-0.390	-0.217	-0.240	-0.307
	(0.299)	(0.298)	(0.303)	(0.383)	(0.385)	(0.385)	(0.475)	(0.477)	(0.498)
FDR Adjusted q-values				[0.655]	[0.656]	[0.653]	[0.713]	[0.656]	[0.653]
Observations	1539	1539	1539	1064	1064	1064	475	475	475
Panel B: E(Proportion Female | Potential Juror Order)									
E(Prop Fem) x Def Fem	-0.199	-0.191	-0.287	-0.304	-0.295	-0.372	-0.180	-0.250	-0.250
	(0.300)	(0.300)	(0.303)	(0.382)	(0.383)	(0.381)	(0.482)	(0.492)	(0.492)
FDR Adjusted q-values				[0.708]	[0.727]	[0.659]	[0.709]	[0.727]	[0.659]
Observations	1539	1539	1539	1064	1064	1064	475	475	475
Mean Dependent Variable	0.67	0.67	0.67	0.67	0.67	0.67	0.65	0.65	0.65
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CountyXCrime Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes	No	No	Yes

Notes: Each column is replicated for Table 4 at the case level. The outcome is the proportion of guilty charges in the case. All specifications include controls for defendant gender and expected gender composition of the jury, as well as county-by-crime fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors and the defendant's gender.

Standard errors are in parentheses and are clustered at the defendant level. False discovery rate (FDR) adjusted Q-values adjust for multiple inference given the six subcategories of crime examined. They are constructed using the method proposed by Anderson (2008) and are interpreted as two-sided p-values.

*p<0.10, **p<0.05, ***p<0.01

Table A.4: Effect of own-gender jurors on conviction rates at the case level, by crime type

	Driving Charges			Property Charges			Violent Charges			Drug Charges		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Proportion Female in Pool												
Prop Fem Pool x Def Fem	-0.181	-0.239	-0.403	1.004	0.919	0.823	-0.300	-0.229	-0.137	-1.757***	-1.891***	-1.603**
	(0.492)	(0.495)	(0.531)	(0.682)	(0.684)	(0.659)	(0.494)	(0.512)	(0.478)	(0.635)	(0.605)	(0.685)
FDR Adjusted q-values	[0.713]	[0.656]	[0.653]	[0.427]	[0.539]	[0.653]	[0.713]	[0.656]	[0.775]	[0.037]	[0.012]	[0.121]
Permutation based p-values										{0.0632}	{0.0453}	{0.1353}
Observations	412	412	412	377	377	377	711	711	711	248	248	248
Panel B: E(Proportion Female | Potential Juror Order)												
E(Prop Fem) x Def Fem	0.196	0.177	0.060	0.880	0.796	0.645	-0.340	-0.248	-0.240	-1.740***	-1.837***	-1.509**
	(0.508)	(0.506)	(0.534)	(0.655)	(0.655)	(0.632)	(0.473)	(0.493)	(0.472)	(0.640)	(0.620)	(0.738)
FDR Adjusted q-values	[0.709]	[0.727]	[0.910]	[0.541]	[0.674]	[0.659]	[0.708]	[0.727]	[0.735]	[0.043]	[0.021]	[0.253]
Permutation based p-values										{0.0383}	{0.0299}	{0.1176}
Observations	412	412	412	377	377	377	711	711	711	248	248	248
Mean Dependent Variable	0.75	0.75	0.75	0.75	0.75	0.75	0.59	0.59	0.59	0.74	0.74	0.74
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: Each column is replicated for Table 5 at the case-level. The outcome is the proportion of guilty charges in the case. All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors and the defendant's gender.
Standard errors are in parentheses and are clustered at the defendant level. False discovery rate (FDR) adjusted Q-values adjust for multiple inference given the six subcategories of crime examined. They are constructed using the method proposed by Anderson (2008) and are interpreted as two-sided p-values.
*p<0.10, **p<0.05, ***p<0.01

Table A.5: Effect of own-gender jurors on conviction, other charges

	All	Felony	Misdemeanor	All Other	Still Other	Driving	Property	Violent	Drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Proportion Female in Pool									
Prop Fem Pool x Def Fem	-0.267	-0.295	-0.253	0.612	7.039	-0.474	0.824	0.013	-1.879***
	(0.300)	(0.402)	(0.397)	(0.882)	(6.905)	(0.531)	(0.651)	(0.478)	(0.666)
	(0.37376)	(0.46331)	(0.52396)	(0.48782)	(0.31069)	(0.37202)	(0.20598)	(0.97791)	(0.00516)
Observations	4268	2399	1869	1199	124	807	772	2143	489
Panel B: E(Proportion Female | Potential Juror Order)									
E(Prop Fem) x Def Fem	-0.278	-0.265	-0.443	0.324	-0.267	-0.061	0.511	-0.056	-1.878***
	(0.299)	(0.405)	(0.390)	(0.837)	(2.075)	(0.543)	(0.630)	(0.460)	(0.679)
	(0.35309)	(0.51277)	(0.25597)	(0.69868)	(0.89771)	(0.91075)	(0.41767)	(0.90280)	(0.00612)
Observations	4268	2399	1869	1199	124	807	772	2143	489
Mean Dependent Variable	0.53	0.56	0.47	0.69	0.65	0.53	0.56	0.59	0.58
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column replicates the third specification from Table 4 and Table 5 for the listed sample including charges that are not clearly classified into one of the four primary crime categories. Each column includes controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case.

Other charges added in each category:
Drug: disorderly intoxication
Driving: fleeing police
Property: littering, corruption, official misconduct, possession of snook, second hand metal recyclers, falsely reporting a crime, falsely impersonating a person, perjury, prostitution, racketeering
Violent: murder, manslaughter, sexual assault, sexual activity with a minor, molestation, shooting into a building, improper exhibition of firearm/weapon, felon in possession of firearm, carrying concealed firearm/weapon, violation of domestic injunction, resist/obstruct/oppose police officer, stalking, harassing telephone calls, child abuse, animal abuse, dangerous dog causing injury
Charges still not in a crime category: failure of sexual offender to register, escape from jail, tampering with witness, false name to law enforcement, traveling to meet a minor, loitering, interference with custody, failure of caregiver to ensure school attendance, unlawful misuse of 911 system, violation of pretrial conditions, indecent exposure, lewd conduct, transmission of harmful material to minor, rico violation, disrupting school functions, abuse of dead human body, accessory after the fact

Table A.6: Effect of own-gender jurors on conviction rates, only six-person juries

	All	Felony	Misdemeanor	Driving	Property	Violent	Drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Proportion Female in Pool							
Prop Fem Pool x Def Fem	-0.354	-0.472	-0.316	-0.450	0.869	-0.344	-2.179***
	(0.303)	(0.408)	(0.423)	(0.507)	(0.712)	(0.527)	(0.578)
Observations	2978	1668	1310	787	727	999	474
Panel B: E(Proportion Female | Potential Juror Order)							
E(Prop Fem) x Def Fem	-0.282	-0.355	-0.490	-0.055	0.546	-0.312	-2.166***
	(0.305)	(0.414)	(0.415)	(0.521)	(0.677)	(0.512)	(0.587)
Observations	2978	1668	1310	787	727	999	474
Mean Dependent Variable	0.53	0.56	0.47	0.53	0.56	0.50	0.57
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column includes controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.7: Effect of own-gender jurors on conviction rates, expected number

	All	Felony	Misdemeanor	Driving	Property	Violent	Drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: E(Number Female) from Proportion Female in Pool							
Number Females in Pool x Def Fem	-0.057	-0.087*	-0.030	-0.019	0.052	-0.056	-0.266***
	(0.037)	(0.051)	(0.053)	(0.058)	(0.090)	(0.060)	(0.063)
Observations	3069	1737	1332	789	742	1060	487
Panel B: E(Number Female | Potential Juror Order)							
E(Num Fem) x Def Fem	-0.048	-0.071	-0.045	0.013	0.022	-0.053	-0.278***
	(0.036)	(0.050)	(0.053)	(0.049)	(0.085)	(0.060)	(0.070)
Observations	3069	1737	1332	789	742	1060	487
Mean Dependent Variable	0.53	0.56	0.47	0.53	0.56	0.50	0.57
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each column includes controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.8: Effect of own-gender jurors on jury trial status, for drug charges only

	Outcome: Non-Trial			Outcome: Jury Trial		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Proportion Female in Pool						
Prop Fem Pool x Def Fem	-0.025	0.106	-0.504	0.131	-0.019	0.782
	(1.010)	(0.949)	(1.100)	(1.010)	(0.954)	(1.112)
Observations	342	342	342	342	342	342
Panel B: E(Proportion Female | Potential Juror Order)						
E(Prop Fem) x Def Fem	0.909	1.047	0.977	-0.827	-0.983	-0.729
	(0.953)	(0.857)	(1.021)	(0.953)	(0.858)	(1.032)
Observations	342	342	342	342	342	342
Mean Dependent Variable	0.37	0.37	0.37	0.34	0.34	0.34
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes

Notes: All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors.
Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.9: Effect of own-gender jurors on conviction rates, by jury trial status, for drug charges only

	Non-Trial			Jury Trial		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Proportion Female in Pool						
Prop Fem Pool x Def Fem	-2.152***	-2.231***	-2.556*	-3.545*	-3.724*	-1.950
	(0.659)	(0.716)	(1.296)	(1.875)	(1.902)	(2.494)
Observations	178	178	178	165	165	165
Panel B: E(Proportion Female | Potential Juror Order)						
E(Prop Fem) x Def Fem	-2.411***	-2.487***	-2.956**	-5.732***	-6.317***	-5.623**
	(0.663)	(0.731)	(1.402)	(1.302)	(1.315)	(2.493)
Observations	178	178	178	165	165	165
Mean Dependent Variable	0.55	0.55	0.55	0.69	0.69	0.69
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes

Notes: All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors.
Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01

Table A.10: Effect of own-gender jurors on convictions, by drug charge type

	Marijuana or Paraphernalia			Possession or Paraphernalia			Other Drug Charges		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Proportion Female in Pool									
Prop Fem Pool x Def Fem	-2.202***	-2.204**	-1.393	-3.050***	-3.167***	-3.621***	0.071	-0.322	-3.206**
	(0.835)	(0.845)	(0.962)	(0.638)	(0.611)	(0.829)	(1.393)	(1.399)	(1.487)
Observations	164	164	164	201	201	201	203	203	203
Panel B: E(Proportion Female | Potential Juror Order)									
Prop Fem Pool x Def Fem	-2.202***	-2.204**	-1.393	-3.050***	-3.167***	-3.621***	0.071	-0.322	-3.206**
	(0.835)	(0.845)	(0.962)	(0.638)	(0.611)	(0.829)	(1.393)	(1.399)	(1.487)
Observations	164	164	164	201	201	201	203	203	203
Mean Dependent Variable	0.63	0.63	0.63	0.63	0.63	0.63	0.48	0.48	0.48
Def & Jury Gender Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Interactions	No	No	Yes	No	No	Yes	No	No	Yes

Notes: All specifications include controls for defendant gender and expected gender composition of the jury, as well as county fixed effects. Additional controls include defendant age, the number of charges in the case, and indicators for defendant's race, judge's gender, and whether there was charge for a violent crime in the case. Interactions include controls for each of those characteristics interacted with the expected proportion of female jurors. Columns 1-3 estimate effects for all marijuana-related and paraphernalia charges. Columns 4-6 estimate the effect for possession and paraphernalia charges (not including marijuana possession). The last three columns restrict to drug charges that are not marijuana related, any type of possession, or drug paraphernalia.
Standard errors are in parentheses and are clustered at the defendant level.
*p<0.10, **p<0.05, ***p<0.01