# Who's the Fairest in the Land?
# An Analysis of Who Makes Death Penalty Decisions

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**Abstract**

 The fairness of the application of the death penalty has come under question in recent years amid growing number of minority death row inmates. This paper uses the the Supreme Court decision Ring v. Arizona, which changed the death penalty sentencing phase in the 13 states, to identify the different case and defendant characteristics that affect the decision to apply the death penalty. Using data which links the homicide incidents to defendant trial coutcomes in states with the death penalty, estimates suggest that juries are both more likely to apply the death penalty and more influenced by the race and age of the victim and of the offenders than are judges. These results raise concerns over the recent shift from judicial to jury-based sentencing in capital cases. Broader implications in terms of the deterrence capacity of the death penalty are also discussed.

# 1 INTRODUCTION

The execution of individuals, even for the most heinous of crimes, has been highly controversial and political sensitive issue in the United States ever since the reinstatement of capital punishment as a legal form of sentencing in 1976.[1] In general, concern about the arbitrary application of so serious a penalty has risen in recent years as an apparently large fraction of the death row populations appears to be poor minorities. Empirical evidence also suggests that the race of the victim has a strong effect on the probability of receiving the death penalty further fueling concerns over its fairness. The recent Supreme Court Decision *Ring v. Arizona* (2002) ruled that juries rather than judges were required under the Sixth Amendment to decide facts that raise the maximum penalty.[2] However, the emphasis on juries relies on the underlying assumptions that decision imposed by juries are in some sense more fair

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[1]Capital punishment was suspended in the United States between 1973 and 1976 as a result of several decisions of the United States Supreme Court. The seminole case of *Furman v. Georgia*, 408 U.S. 238 (1972). held that the application of the death penalty to be unconstitutional, on the grounds of cruel and unusual punishment in violation of the eighth amendment to the United States Constitution. In Furman, the United States Supreme Court specifically struck down Georgia's "unitary trial" procedure, in which the jury was asked to return a verdict of guilt or innocence and, simultaneously, determine whether the defendant would be punished by death or life imprisonment.

In 1976, the Court decided *Gregg v. Georgia*, 428 U.S. 153 (1976) which upheld a procedure in which the trial of capital crimes was bifurcated into guilt-innocence and sentencing phases. Executions resumed on January 17, 1977 when Gary Gilmore went before a firing squad in Utah.

[2]This decision was intended to reconcile capital sentencing with the previously decided *Apprendi v. New Jersey* decision. In particular, the decision centers around "The Fourteenth Amendment right to due process and the Sixth Amendment right to trial by jury, taken together, entitle a criminal defendant to a jury determination that he is guilty of every element of the crime with which he is charged, beyond a reasonable doubt" (Summary of findings, *Apprendi v. New Jersey* (99-478)

than those imposed by judges. One way to interpret this is that juries are able to make fact-based emotionally neutral decisions when faced with a set of complex facts. In such situations, the fairness of the application of the death penalty relies on juries dispassionately allocating death sentences on fact rather than bias-based measures. This paper uses the change in decision-making power from judges to juries following *Ring* to test the importance of non-fact based factors in influencing decisions.

The results of this paper suggest that juries are more willing to apply the death penalty, especially in more recent years. Despite the general downward trend in the propensity to sentence defendants to death, juries have remained relatively more willing to apply a capital sentence when compared to judges. Interestingly, this stands in direct contrast the view opponents of the death penalty held immediately after the decision–viewing *Ring* as a restriction on the application of the death penalty. Jury decisions are also more strongly correlated with demographic factors relating to the victim and the defendant and the interaction between these characteristics. In contrast, judges appear to be more likely influenced by the choice of weapon, the circumstances of the murder and the relationship between the victim and the defendant.

It is useful to differentiate the contribution of this paper from those of pre-

vious studies. The data presented in this paper represents a significant effort to systematically link homicide incidents with their ultimate trial outcome over a long period time and across many states. Previous work by Blume, Eisenberg and Wells (2004) moved in this direction by linking murder rates, death sentences, and race. I continue in the vein by identifying which murders appear to have resulted in a capital sentence allowing a linkage between the initial event of murder and the ultimate consequence imposed by the government. This paper thus provides some insight into the interaction between various factors regarding a crime, various characteristics regarding the defendant and victim, and the behavior of juries. While not directly responsive to the ongoing debate about the deterrent effect of the death penalty (e.g. Donohue and Wolfers, 2006), this paper highlights that the costs of the real-world application of the death penalty–that is the systematic assignment of minorities to more serious sentence–is particularly unpalatable absent any significant deterrent effect. Finally, this paper contributes to a growing literature on the way decisions are made in legal contexts and provides some new empirical evidence about the way in which juries in particular make decisions.

The rest of this paper proceeds as follows. Section 2 presents background information regarding existing literature and the structure of the legal system vis-a-vis capital punishment. Section 3 describes the data and estimations methods used

in this paper. Section 4 presents the results and major findings. Finally, Section 5 presents a discussion of results and their broader implications, and concluding remarks.

# 2    BACKGROUND INFORMATION

## 2.1    Literature Review

### 2.1.1    Death Penalty and Deterrence

The death penalty as a concept is highly controversial and there is a particularly large literature regarding its efficacy at deterring murders. Indeed a broad set of papers have focused their attention on the size or nature of this deterrent effect. Overall, there appears to be a relatively small effect (if any) of the death penalty on the decision to commit a murder. Donohue and Wolfers (2006) provide a useful overview and detailed discussion of the empirical evidence While this paper does not deal with the deterrence debate directly, the results do since arbitrariness in the application of the death penalty could dilute any potential deterrence effect

### 2.1.2 Race and the Death Penalty

An extensive body of reserach deals with the racial composition of the death row population and the relationship between any racial imbalance and sentencing bias. For example Garvey finds that jurors report valuing all victims equally, regardless of race, sex or age. Obviously, this result should be interpreted with caution as what jurors report on surveys and what they actually do appears to be different. Recent work by Blume, Eisenberg, and Wells (2004) sheds some light on the relationship between a jury's decisions and the demographic composition of death row inmates. Blume, Eisenberg, and Wells find that the racial disparity on death row is due to a racial hierarchy in which black defendants who murder white victims are most likely to receive the death penalty and black defendants who murder white victims are least likely to receive the death penalty. Their findings indicate that blacks are indeed underrepresented on death row when you consider the fraction of death penalty eligible crimes black appear to commit. Moreover, Blume, Eisenberg, and Wells provide additional evidence that suggests the ultimate sentencer matters. That is, they find that judges are significantly more likely to apply the death penalty than juries are, and this is particularly true when there is political pressure generated by election of judges.[3]

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[3]For a summary of this literature see Blume, Eisenberg and Johnson (1998) figure 7. Tehere is more generally evidence on political decisionmaking and the application of the death penalty. See

More broadly, within economics the behavioral economics literature decision-making literature there has been work reference-dependent decisionmaking as well as decisions over uncertainty, both of which are tied in a straightforward manor to juror deliberations. In particular, jurors may make decisions with respect to reference points regarding evidence on guilt or innocence. Indeed both the legal instructions requiring the balancing of aggravating and mitigating circumstances and some limited empirical evidence suggest that jurors decide using a sort of "mental accounting." Given that jurors are seeking regarding the emotional state of defendants, it is possible that differences in behavior between races might tend to obscure the clarity of signals between races increasing the racial bias in decisionmaking.[4] Note however, this would not fully explain differences observed based on the race of the victim and in particular the relationship between victim-offender race differences and the probability of receiving the death penalty. [5]

Within the behavioral economics literature on decision-making, there has been work on reference-dependent decision-making as well as decisions–making under uncertainty, both of which are tied in a straightforward manor to juror deliberations.

for example Kubik and Moran (2003).

[4]Indeed a study by Baldus et al (1998), finds serious racial bias in decisionmaking which may be related to jurors ability to recognize remorse or other mitigating circumstances across races.

[5]A host of studies from the eighties demostratedt hat blacks who killed whites were many more times likely to receive death sentences than were other murders. See for example Henderson and Taylor, 1985; Smith, 1987; Nakell and Hardy, 1987; Keil and Vito, 1989.

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### 2.1.3  Jury Behavior and Decisionmaking

A separate and more relevant strand of literature focuses on how jurors make decisions in general and specifically regarding the death penalty. Many of these studies pay particular attention to fact finding with regards to aggravating and mitigating circumstances. A variety of theoretical models have been offered to understand jury behavior in a broader context. Several approaches have been taken to explain how individual jurors process trial-related information and arrive at their verdicts, including Bayesian probability, algebraic weighing, stochastic choice, and cognitive processes ( see Hastie, 1993 ; Pennington & Hastie, 1981 ; Penrod & Hastie, 1979 respecitvely). While there are many operating models of jury behavior that may explain a great number of the observed phenomenon in juror decision-making,

the empirical literature is substantially more limited.

Much of the empricial literature involves small surveys and sample sizes that prohibit precise estimation or much generalizability.[6] Nevertheless, this work provides important insight into the characteristics of the crime and the defendant that influence juries during their deliberation process. Numerous studies have also examined the relationship between jury verdicts and a wide variety of defendant characteristics, including race, gender, SES, attitudes, physical attractiveness, relation to victim, similarity to jury, remorse, testimony at trial, and prior criminal record. With regard to race, there is conflicting evidence of direct effect ( Barnett, 1985 ; McGuire & Bermant, 1977 ; Shaw & Skolnick, 1995 ), but several studies have yielded interactions between jury race composition and defendant race, consistent with the defendent similarity bias ( Daudistel et al., 1999 ; McGowen & King, 1982 ; Perez et al., 1993 ). Consistent with a higher-order interaction, studies searching for main effects of defendant SES have produced conflicting results. One study found that low-SES defendants (i.e., bluecollar) were more likely to receive the death sentence ( Judson, Pandell, Owens, McIntosh, & Matschullat, 1969 ), a second laboratory study produced no effect for defendant SES ( Gleason & Harris, 1976 ), and two other studies found that high-SES defendants were treated more

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[6]See for example, Allen Mabry and McKelton (1998) which provides a meta-analysis of jurors attitudes and their willingness to convict and apply the death penalty.

severely ( Blanck, 1985 ; Bray, Struckman- Johnson, Osborne, McFarlane, & Scott, 1978 ). In contrast, several interactions have been observed between SES and other factors ( Adler, 1973 ; McGowen & King, 1982 ; Niedermeier et al., 1999 ). Two of these studies have been described previously; in the third study involving a medical malpractice case, Niedermeier et al. (1999) found that a lower-status defendant (i.e., a medical resident) was convicted less often when remorse was displayed, whereas a higher-status defendant (i.e., a medical director) was convicted more often. One interpretation of this finding is that juries were treating a dissimilar defendant (i.e., the medical director) more harshly. [7]

There is also an extensive literature on the normative nature of jury versus judge decision making both in the context of criminal cases and more broadly. For instance, the discussion of juror decision making in the context of punitive damages has illustrated the importance of values and preferences in determining outcomes (Sunstein, Kahneman and Schkade, 1998). Similarly, there is some evidence that decisionmaking during sexual harassment cases is affected by the content of the cases themselves (Hirsch and Iyengar, 2008). More recent changes in the role of mandated sentencing guidelines and the roles and responsibilities of juries has provided some cause for concern about the risk of juries to making inefficient and error-prone deci-

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[7]For a detailed discussion of both empirical and theoretical work on jury decisionmaking, see Devine, et al. (2000)

sions (see for example Prescott and Starr, 2006). To this author's knowledge, there has been little empirical evidence comparing the decisions make by judges and juries in a systematic way and attributing differences to casaul channel.

## 2.2 Legal Environment

### 2.2.1 Current Trial Procedures

The criminal procedural requirements for the determination of guilt and sentencing of an individual charged with a capital offense is slightly more complicated than the standard criminal system. As in most settings, individuals are formally charged and bound over for trial. If necessary they are also assigned appropriate government funded legal representation. In order to be eligible to receive the death penalty, an individual must have committed a sufficiently serious offense for which there was sufficient evidence to indict. The list of eligible offenses by state is provided in Table 1.

The first stage of the trial is the guilt determination phase. In this stage, the prosecutor must meet the standard of guilty beyond reasonable doubt in order to convict the defendant. At the end of the evidence of guilt, the jury deliberates to determine if the defendant is indeed guilty. If the jury finds the defendant guilty, the trial moves to the second stage, called the sentencing phase. The sentencing phase

is intended to be entirely distinct from the guilt determination phase. In particular, in the sentencing phase the prosecution presents evidence of the existence of aggravating factors (if required by law) while the defense presents evidence of mitigating circumstances. While the set of aggravating factors vary by state, some factors may include whether the defendant had a history of violent crime, the brutality of the crime, and the circumstances of the crime (such as premeditation). Similarly, factors which mitigate against the death penalty vary by state but include evidence the defendant had a difficult life (extreme poverty, abuse, etc.) and demonstrated remorsefulness on behalf of the defendant.

### 2.2.2  Deliberative Bodies

States vary in which body they allowed to deliberate on aggravating and mitigating circumstances and determined whether to apply the death penalty until 2002. In some states, the determination was made by the guilt phase jury while in others a single judge or panel of judges weighed the sentencing evidence. Tables 1and 2 provide the breakdown of state procedures prior to 2002 in *Ring* affected and unaffected states respectively.

The Supreme Court case *Ring v. Arizona*, 536 U.S. 584 (2002) changed the sentencing requirements. The case was based on  a crime committed in November

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1994, where Timothy Ring and two accompices robbed and killed a truck driver. Ring was charged with capital first-degree murder and was convicted by a jury of first-degree murder under a felony murder theory. Under Arizona law, however, Ring could not be sentenced to death without further fact-based findings, and Arizona law allowed the judge alone to make this decision. In his sentencing hearing, the judge found that two aggravating factors applied: that Ring had committed the murder in expectation of pecuniary gain, and that he had committed the murder in an especially heinous, cruel, or depraved manner. Although he agreed that Ring had a "minimal" criminal record, the judge concluded that this mitigating factor did not outweigh the aggravating factors, and sentenced Ring to death. However, by the time Ring's case was decided by the Arizona Supreme Court, *Apprendi v. New Jersey*, 530 U.S. 466 (2000), had also been decided. In *Apprendi*, the Court had held that any fact that increases the punishment for a crime above the statutory maximum punishment must be either submitted to a jury and proved beyond a reasonable doubt or admitted by the defendant. A competing issue was the decision under *Walton v. Arizona*, 497 U.S. 639 (1990) in which the Supreme Court had explicitly ruled that the Sixth Amendment did not require jury finding of aggravating factors in Arizona's capital sentencing scheme. Thus while *Apprendi* undercut the holding of *Walton*, *Walton* was directly controlling precedent from a higher court on a matter of

federal constitutional law and the Arizona Supreme Court affirmed Ring's conviction

and death sentence. The U.S. Supreme Court granted Ring's petition for *certiorari*.[8]

In Arizona prior to 2002, individuals convicted of capital-punishment eligible but

not premeditated murders could only be sentenced to death after a sentencing hearing

in which the judge determined that at least one aggravating and no sufficiently

mitigating factors were present. In short the majority (led by Ginsburg) believed

that the fact finding served the "functional equivalent of an element of a greater

offense" as per the Court's previous decision in *Apprendi v. New Jersey* 530 U.S.

494 (2000).[9]

Tables 1 and 2 also present the states whose decision procedures were affected

by Ring v. Arizona. The change in sentencing law from *Ring* was quite dramatic.

As is described in Table 1, judges had sole sentencing discretion in Arizona and

Idaho. A 3-judge panel decided the sentence in Colorado and Nebraska. Judges made

sentencing decision after the jury offered a recommendation in Alabama, Delaware,

Florida, and Indiana.Table 2 lists death penalty statues in states that were unaffected

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[8]This description of events is drawn directly from the Supreme Court summary of the case *Ring v. Arizona*, No. 01-488 (2002)

[9]Ginsberg's majority opinion stated that that *Walton v. Arizona*, 497 U.S. 639, was not compatible with the ruling of *Apprendi v. New Jersey*, 530 U.S. 494 (2000). Part of the Court's earlier decision in *Walton* was thus overruled, and it was confirmed that a sentencing judge, sitting without a jury, could not find an aggravating circumstance necessary for imposition of any penalty greater than the statutorily allowed maximum. In her dissent, O'Conner renewed her objection to the reduced judicial discretion in sentencing and argued for an overruling of *Apprendi* rather than *Walton*.

by *Ring*. Montanta is the only state among those listed in Table 2 which had a judge-based system in recent year. Montana changed its capital sentencing procedure prior to *Ring* (the change was enacted in 2001) and thus robustness checks excluding Montana from the control sample are performed for all analyses.

# 3  DATA AND METHODS

## 3.1  Database of Murders with Capital Sentencing Outcomes

### 3.1.1  The Universe of Murders: Incident-Level Data

In order to observe all of the incidents of murder in the relevant time period, I use the Federal Bureau of Investigation Supplementary Homicide Reports (SHR). The SHR is an incident-level dataset for all (or nearly all) murders committed in a given year. I use the SHR's from all 50 states and the District of Columbia from 1976 through 2003. This data provides detailed information on the nature of the crime committed as well as identifying information about victims and offenders. Information about the circumstance of the crime and demographic information about victims is collected regardless of whether a suspect is identified. The data also contains geographic coding as well as the month and year in which the crime was committed.

Using the SHR data to analyze offender characteristics is made more difficult and potentially problematic by the growing number of unsolved homicides contained in the data file. Overall, 26 percent of the SHR offender records describe the perpetrator as unknown (based on situation codes), and this percentage has grown from just under 20 percent in 1976 to nearly 30 percent by the mid-1990s (Fox and Zawitz, 2004). This is of particular concern if the types of homicides that remain unsolved are changing over time and if such changes are correlated with changes in death penalty sentencing propensities.

For the purposes of this paper, unsolved homicides are not highly relevant because they do not present a group of death penalty eligible cases. In order to understand what factors might influence juries, I wish to compare murder cases brought to trial that result in the death penalty to those that do not. Thus, because unsolved cases are not brought to trial, they do not constitute a portion of the eligible cases. However, for the broader discussion of the effect of indeterminacy of the death penalty, the probability of detection is highly relevant and thus I will leave the issue of unsolved homicides until the discussion section.[10]

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[10]For a discussion of options for the treatment of unsolved homicides, see Iyengar (2007). The appendix provides a detailed discussion of the trends in and corrections for unsolved homicides.

### 3.1.2 Capital Case Data

Separate from the universe of murders, I construct an extensive death row inmate database. Taking the Bureau of Justice Statistics Capital Punishment in the United States, I matched cases from the state level data on offenders on death row.[11] This is contructed as follows: for all states with the death penalty, I obtained a listing of all death row inmates since *Furman*. Using this state-level roster, I can then collect detailed description of a set of potentially aggravating circumstances (based on case descriptions) which are attached to the set of details on the date of crime, the date of sentencing, the county of crime, and the investigative agency available from the BJS data. This information allows me to construct variables similar to those in the FBI Supplementary Homicide Reports regarding weapon usage, number of offender and situation during which the murder occurred. At the end of this collection, I have a detailed offender-level dataset on the characteristics of the crime, victim, and offender of all current death row inmates. I believe this is the among the most complete and detailed data sources of capital punishment available.[12]

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[11]The data appendix describes the matching criteria and process by state.

[12]Individuals interested in access to the data should contact the author. State level aggregated data is available at the author's webpage: www.people.rwj.harvard.edu/~riyengar

### 3.1.3 Merging Incident Reports to Offender Data

The capital case data is useful in describing offenders but in order to conduct an analysis of what murder cases end up as capital cases, I match my capital case dataset with the SHR. This is accomplished using the month and date of offense, the race of the offender, the sex of the offender, the age of the offender, and the county and state of the offense.[13] The brief description of this procedures is as follows: Because theSHR data is at the incident level, I reshape it so that an individual observation was at the offender level. This means that single incidents committed by multiple offenders now appear as multiple incidents with as many observations as there are offenders. If a single offender committed more than one murder in a single incident report, this remains a single observation. Incidents with multiple offenders and incidents with multiple victims are both observable in the final merged dataset. Because I cannot link offenders across incidents in the SHR, I cannot observe if an individual commits multiple incidents. As such, murderers committing multiple incidents are not controlled for in the subsequent analysis.[14] This dataset involves 431,562 observations of murders. In order to match the data, I matched at the state-year of offense level based on the characteristics of the crime and defendant. To the

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[13]There are some differences in the ways in which the data are merged, depending on the information available in the state level deathrow information. A detailed description of the matching process is presented in the Data Appendix.

[14]The distinction between recidivist murders and serial killers is a fine one and beyond the scope of the paper. For a detailed analysis see Fox and Levin (2005).

largest extent possible this was done by using the race, sex and age of the offender, and the county, state, and offense month of the offense. However, for some of the cases this vector of characteristics matched more than one incident. In these cases, I used the added characteristics of the crime, such as weapons used or circumstances of the crime to match each incident uniquely to an offender. The merged data includes all homicides from January 1977 until December 2003. This includes 7,184 death penalty cases which constitute about 1.66 percent of the overall sample.[15] A small fraction (2.4 percent) of the death penalty inmates in the database (178 inmates) were not able to be matched to the Supplementary Homicide data. These were some of the older cases with fewer details on the nature of the offense, making it more difficult to determine an accurate match. There were no cases after 1995 which remained unmatched. As reported in Table 3 Panel A, in the matched sample, the probability of receiving the death penalty after 1976 is about 1.7 percent. It is less than half this (about 0.6 percent) in the 2000-2004 time period during which the analysis in this study is conducted.

Panels B and C of Table 3 provides a list of summary statistics of the death penalty versus non-death penalty murders. Panel B presents some summary

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[15]Note this number includes all individuals ever sentenced to death row. Currently there are 3,370 (according to recent estimates from "Capital Punishment in the United States"). Since 1976, 1,036 inmates have been executed. The rest of the death penalty eligible population was sentenced and never executed.

statistics of victim and offender characteristics. About 40 percent of capital cases involve non-white offenders compared to about 52-54 percent of non-capital cases. Offenders in capital cases appear to be younger as do their fictims. Victims in all murder cases, capital or non-capital, are more likely to be men (nearly 80 percent of cases). Most cases are between same-race victim and offenders (ether white-white or non-white-non-white). However, capital cases are more likely to involve non-white offenders both on non-white and on white victims. Case characteristics, presented in Panel C, also have some notable differences. The number of offenders and the number of victims are both higher in capital relative to non-capital cases–which is consistent with the aggravating circumstances criteria used in many states. The use of the gun does not differ significantly between the case types. Capital crimes are significnatly more likely to involve rape and property crimes than non-capital cases. Capital cases are also less likely to involve an intimate partner and signficantly more likely to involve a known non-relative.

## 3.2   Demographic, Economic and Other Crime Data

In order to control for various socio-economic factors which may influence the application of the death penalty, I use several control variables. First, I control for wealth dynamics which might affect the crime rate, the enforcement rate, and other

factors related to application of the death penalty. I use estimates of median family income by county to control for household wealth. I employ a host of demographic controls including fraction white, fraction black, fraction Hispanic, age distribution, and sex distribution. I collect demographic and economic variables from two sources. For data at the state level, I use the Current Population Survey March demographic data. While this data provides an accurate state level estimate, because jury pools are drawn more locally, it is preferable to have county level data. I therefore obtain similar data at the county level from the American Community Survey and the 2000 Census. In order to use this county-level data, I must restrict the analysis using demographic controls to the period from 2000 to 2004. I also wish to control for other criminal activity. In order to do this, I use county level Uniform Crime Reports data. I construct a non-homicide violent crime index. This includes counts, per 100,000 inhabitants, of reported rapes, robberies, and assaults. I also use the property crime index which includes a count, per 100,000 inhabitants, of reported burglaries, larcenies and motor vehicle thefts. I use measures of both the white and the black incarceration rates, as reported in the Bureau of Justice Statistics, Prison and Jail Inmates Report. Finally, to ensure that states affected by the *Ring* decision are not simply more or less politically liberal than those that are unaffected, I include data collected by Besley and Case about the fraction of delegates in the state house

that are democrats and the fraction that are women. These two measures have both been linked with the progressivity of a state.

Table 4 reports summary statistics for the control variables for the Ring-affected and Ring-unaffected states. In terms of socioeconomic factors there are few significant differences between the two groups. However, there are noticable and significant differences in the crime variables. *Ring* affected states have higher violent crime rates, particularly in the 2000-2004 time period. They also appear to have slightly higher, although insignficantly so, black incarceration rates. While there is no reason to believe that these differences imply differences in trends, they do suggest that the two groups of states are not wholly comparable.

## 3.3   Estimation Strategy

### 3.3.1   Universe of Death Penalty Eligible Crimes

Understanding how the death penalty is applied requires comparing eligible cases which do and do not receive the death penalty. However, simply comparing murder trial sentencing outcomes has limited information because of prosecutorial discretion regarding criminal charges and plea outcomes. Thus, using a point further along in the criminal justice system has added discretionary effects which might bias estimates. For example, suppose prosecutors only prosecuted very heinous cases against

young men under capital statutes but prosecuted all cases against older men. In this example, if we used the cases tried for capital murder as the entire universe from which death penalty cases were drawn it might appear that capital sentence decision makers were biased against young men who they disproportionately sentenced to death. However, if we looked at all murders committed by each age group, we might conclude that the appropriate fraction of young versus old individuals were sentenced to death. Thus, when considering the propensity to apply the death penalty it is critical to consider what the base group of non-death sentence cases should be.

Following this logic, I use the incident-level data with known offenders from the supplementary homicide reports. While there is a non-trivial risk that cases involving minority victims are more likely left unsolved and thus more likely excluded from analysis, the SHR data provides the most comprehensive set of plausible cases. I can use a refined sample by restricting cases to more "serious" homicides. The "serious" homicide classification is based solely on case-characteristics (not victim or offender demographics) and are intended to more closely resemble a set of capital punishment eligible offenses. Characteristics used for this category are those homicides which involve more than one victim, more than one offender, or involve a concurrent felony (rape, robbery, arson, kidnapping, etc.)

### 3.3.2  Identification of the Causal Effect of Juries

In general, comparing jury and judge sentencing is difficult because of the underlying differences in crimes decided by the two different entities. In situations where defendants opt for a bench trial, the nature of the crime and the characteristics of the victim and offender may be very different than those presented to a jury. Moreover, state differences in the demographic composition of offenders, coverage of offenses under capital murder statutes, and attitudes towards offenders and victims makes it difficult to separate state-specific, time-specific, or offense-specific effects from judge or jury specific effects.

Becaue the change in law inducde by *Ring v. Arizona* forced states with judge based sentencing were to change their law independent of any public perception regarding the efficacy or fairness of judges versus juries, this forms a nature basis from which to compare how the judges versus juries decided cases that are relatively comparable on the observables. Note that because of the downward trend of death sentencing that occurs concurrently with the switch from judges to juries, the group of states which had death penalty sentencing procedures that complied with the *Ring* requirement of jury determination form a natural comparison group. This estimation strategy would control for aggregate trends so long as they do not disproportionately affect either group.

In particular the parallel trend assumption is more palatable in this case than in

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many settings for several reasons. First, the decision to consider the *Ring* case and the subsequent ruling were largely unexpected. For instance, Florida prosecutors had largely expected *Ring* uphold their statute.[16] Second, the change induced by *Ring* required rapid change in state laws. The changes to state law, as described in the last column of Table 1, occurred relatively quicly. For example, the Arizona Legislature in special session passed an emergency measure (S.B. 1001) that requires a jury, rather than a judge, to determine whether the death penalty will be imposed. In Arizona, the state's death penalty was essentially put on hold, with courts delaying scheduled murder trials, appeals and sentencings in capital cases in the interim between the Supreme Court ruling and the August 1 enactment. Similarly, in Delaware also acted just days after the Court's ruling (S.B. 449) which barred the court from imposing a death sentence unless an unanimous jury has determined that at least one statutory aggravating circumstance for capital punishment exists.[17] Thus, we can test whether the application of the death penalty occurred in similarly (or at least predictably differently) prior to *Ring*. Finally, because the law change under consideration should result in convergence, rather than divergence, factors that generate

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[16]For example, even the consideration of the Arizona case was met with shock. The Orlando Sentinal (February 7, 2002) reported that "Ray Marky, the former assistant attorney general who presented the state's current death-penalty statutes to the state and federal courts for approval, said the Tuesday move caught him by surprise. 'I'm really confused by all this,' Marky said."

[17]The issue of retroactivity of *Ring* is not of central import in the subsequent analysis and thus is not described in detail. The issue of retroactivity resulted in a circuit split between the 9th and 11th circuit which was resolved in Schriro v. Summerlin, 124 S. Ct 2519 (2004). For details see Fergesun 2005.

differences ought to bias estimates away from convergence rather than towards.

# 4   RESULTS

## 4.1   Evidence on the Propensity to apply Capital Sentences

I begin analyzing the differences between judges and juries by comparing the propensities to apply the death penalty. On average, it appears that juries are more willing to apply the death penalty though this varies a great deal by region. Figure 1 presents a plot of the trends from 1977 to 2004. While the differences between jury and judge states varies a great deal over time, it appears that judges are less willing to apply the death penalty and when they do so. In general states in which judges determine the sentencing after a capital trial are more likely to apply the death penalty.

This general result is confirmed through a more systematic estimation presented in Table 5. I estimate a probit regression with the variable of interest being an indicator variable that is one in *Ring* affected states after 2001. Because there are relatively few observations in any given state-year and especially after 2001, I conduct an initial analysis using regional fixed effects and 5-year year interval fixed

effects.[18] Column (1) reports the results of this regressions, controlling only for these geographic and temporal effects. It appears that juries are about 6 percentage points or 7 percent more likely to apply the death penalty. The effect is substantially I conduct a similar analysis restricting attention to from January 2000 to December 2003. Column (2) reports the results adding demographic, economic, and other crime control variables. This reduces difference between *Ring* affected and unaffected states to about 4 percentage points. In addition, it reduces the coefficient on southern states to nearly half its previous value and eliminates any significant effect from western states. It appears that areas with a higher percentage of whites are more likely to apply the death penalty while lower income areas are significantly less likely to apply the death penalty. Restricting the analysis to the 2000-2004 time period, I conduct a similar analysis of the propensity to apply the death penalty. These results are reported in Columns (5). In these regressions the size of the effects is relatively large and the standard errors are substantially larger making it difficult to interpret the results of these regressions. However, several of the coefficients are still significant. The benefit of this restriction is that allows a more precise match of county level demographics to the capital sentencing data. The effect of the race

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[18]Regional fixed effects are South (which includes AL, AR, DE, FL, GA, KY, LA, NC, OK, SC, TN, TX, VA, WV), West (CO, ID, NM, UT, WY), Northeast (CT, ME, MA, NH, NJ, NY, PA, VT), MW (IL, IN, IA, MI, MN, MO, ND, OH, SD, WI), and Pacific (CA, WA, OR). Half-decade fixed effects include controls for 1977, 1982, 1987, 1992, 1997, 2002.

of the defendant is still signficant and at about 2-4 percentage points in columns (5) and (6) but becomes insignificnatly afterwards. Including year effects (reported in column (3) and column (7)) and state fixed effects reduces most of the variation used to identify the *Ring* affected versus unaffected states and thus nearly all of the coefficients are insignificant. Noteably though, in all specifications but the last, the fraction of the county that is white is highly significnatly suggesting community level demographics

## 4.2   Evidence of differential decisionmaking

In addition to understanding the overall propensity to apply the death penalty, judges and juries may differ on the factors which they consider important in influencing their decision. In order to better understand the effects of crime and offender characteristics, I estimate a probit similar to that in the previous section but I partition the sample into four subgroups–Ring-affected states before 2001, Ring-affected states after 2001, Ring-unaffected states before 2001, and Ring-unaffected states after 2001. I then test whether the coefficients between these four groups differ systematically.

The results presented in columns (1) and (2) report the correlates of death penalty

decisions in states affected by the Ring decision. The difference between these two columns measures the effect of shifting the death penalty decision from judges to juries. This difference is reported in column (3). It appears that juries are more likely to give the death penalty to non-white offenders who murder white victims and less likely to give the death penalty to white offenders who murder non-white victims. In contrast, juries appear less influenced by the nature of the crime. For example, juries appear less inclined to give the death penalty based on the use of a firearm or the relationship between victims and offenders. Similarly, juries do not seem strongly influenced by the circumstances surrounding the homicide, such as whether the homicide occurred during another crime.

The results reported in columns (4) and (5) measure the effect of the Ring decision on states that were unaffected by the decision. Unsurprisingly, there is little pre-post difference in this group, as reported in column (7). For example, while we observe a 2.8 percentage point increase in the propensity to assign the death penalty to non-white offenders with white victims when states switch from judge to jury determination systems, there appears to be only a 0.11 percentage point change. The notable exception to this appears to be the age of the victim and offender which appears to matter relatively little in Ring affected states, but appears to play an increasingly important role in unaffected states.

Column (7) reports the difference-in-difference estimate (the difference between column (3) and column (6). Overall the main effect of the shift from judges to juries appears to be the heightened importance of the interaction between the victim and offenders race. In contrast, the shift to juries appears to reduce the importance of the nature and circumstances of the crime, although the size of the effect is smaller than the race effect.

# 5 CONCLUSION

This article uses a new data set to present evidence regarding the consequences of the Supreme Court decision Ring v. Arizona in 2002. The analysis presented uses data which matches death row inmate data to the full universe of murders available in the Supplementary Homicide Reports from 1976-2003. Using a difference-in-differences estimation strategy, I first compared the propensity to assign the death penalty before and after the Ring decision. It appears that juries are more willing assign the death penalty overall. While this is somewhat surprising, it is uncertain if it is socially beneficial for this to occur. More concerning is the fact that juries appear to be more influence by the victim's and offender's race when assigning the death penalty. This difference appears even while controlling for regional effects and appears to be relatively robust to controls for other crime related factors.

These estimates may overstate the effect race has on jury decisions if there are unobservable crime characteristics or (what is more likely) unobserved mitigating/aggravating factors are correlated with the race of the victim. Moreover, if juries are more likely swayed by certain types of mitigation that leads offenders to choose same-race victims, then this estimate does estimate a prejudice by juries but rather a different emphasis on who "deserves" the death penalty. To the extent that this is not true, however, then the findings of this paper have important implications both for the administration of the death penalty and the overall potential deterrent effect of the death penalty.

The Ring v. Arizona decision is in part premised on the notion that due process requires decisions requiring interpretation of fact require jury deliberation rather than determinations by single or panels of judges. Underlying this is the concept that jury decisions are fairer in the sense that they are based on perceptions by peers of the offenders as opposed to government employees such as judges. However, the results of this paper suggest that while juries may be required from the due process sense of fairness, they appear to make decisions which are more influenced by the race of the victims and offender than do judges. Moreover, while concepts of equal protection and cruel and unusual punishment do not necessarily hinge on group discrimination, the systematic bias of juries against non-white offenders who

murder white individuals is likely socially detrimental.

Another implication of the results of this paper is related to the ongoing debate about whether the death penalty indeed deters. While bias in the death penalty application is both widely known and hotly contested, this paper provides some insight into factors which might mitigate any theoretical deterrent effect that exists. If the application of the death penalty by juries is sufficiently arbitrary or targeted at a small subset of the death-penalty eligible population, then aggregate estimates of the deterrent effect are likely to miss localized deterrence in communities or upon certain types of murders which are more likely to receive the death penalty from juries. The link between the probability of receiving the death penalty and the deterrence effect is left as a topic for future research.

Despite the seemingly procedural nature of the change, this paper provides evidence that who decides who shall receive the death penalty matters a great deal. Juries do appear to be more influence by race suggesting a society which places value on either lower overall death penalty sentencing or an ex-post racially neutral sentencing might prefer judicial sentencing for capital punishment. Moreover, this paper calls into question the default assumption that juries are more fair and less biased than judges when determining sentencing or more broadly criminal sanctions.

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Table 1.  Death Penalty Sentencing Statutes for States Affected by *Ring v. Arizona*

| State | Death Penalty Eligible Crimes | Statute | Known Post-*Ring* Changes |
|---|---|---|---|
| Arizona | First-degree murder accompanied by at least 1 of 10 aggravating factors | A.R.S 13-703(F) | Require jury to determine whether aggravating and mitigating circumstances exist and if the death penalty will be imposed |
| Colorado | First-degree murder with at least 1 of 17 aggravating factors; treason. | CRS 16-11-103(5)(n) | sentence determined by a unanimous jury |
| Delaware | First-degree murder with aggravating circumstances. | 11 Del. C. § 4209 | jury to unanimously decide death eligibility |
| Florida | First-degree murder; felony murder; capital drug trafficking; capital sexual battery. | Fla. Stat. Ann. 782.04(1)(a)(2) | jury must recommend death penalty in order for judge to impose death sentence (no override) |
| Idaho | First-degree murder with aggravating factors; aggravated kidnapping, perjury resulting in death. | IC 18-4004 (1987) | jury sentencing in capital cases [as of February 2003] |
| Indiana | Murder with 16 aggravating circumstances | IC 35-50-2-9 | jury's unanimous vote for life or death binding [as of July 1, 2002] |
| Maryland | First-degree murder, either premeditated or during the commission of a felony, provided that certain death eligibility requirements are satisfied | Art. 27, 412 | *de facto* Death Penalty moratorium as of 2006 requiring revision of Administrative Procedures Act |
| Missouri | First-degree murder | 565.020 RSMO 2000 | Jury decides sentencing but a judge may decide if the jury is deadlocked |
| Nebraska | First-degree murder with a finding of at least 1 statutorily-defined aggravating circumstance. | R.R.S. Neb. Sect. 28-105. | A jury must find beyond a reasonable doubt that a crime meets one of the state's nine aggravating circumstances before a death sentence is imposed |
| Nevada | First-degree murder with at least 1 of 15 aggravating circumstances | NRS 200.030, 200.033, 200.035 | sentence determined by a jury |
| New Jersey | Murder by one's own conduct, by solicitation, committed in furtherance of a narcotics conspiracy, or during the commission of the crime of terrorism | NJSA 2C:11-3C | Instituted Moratorium (2005). Repealed death penalty (December 2007) |
| New Mexico | First-degree murder with at least 1 of 7 statutorily-defined aggravating circumstances | Section 30-2-1 A, NMSA | sentence determined by a jury |
| North Carolina | First-degree murder | NCGS ¤14-17 | sentence determined by a jury |

Notes: Source of statutes from Blume, Eisenberg, and Wells when available. Otherwise, statutes drawn from West (2005). Determination of *Ring* applicability based on author's own evaluation and on the Death Penalty Information Center's assessment. Changes are those listed in statutes or popular media sources where listings not available in statutes

Table 2.  Death Penalty Sentencing Statutes for States not Affected by *Ring v. Arizona*

| State | Death Penalty Eligible Crimes | Statute |
| --- | --- | --- |
| Alabama | Intentional murder with 18 aggravating factors | Ala. Stat. Ann. 13A-5-40(a)(1)-(18) |
| Arkansas | Capital murder with a finding of at least 1 of 10 aggravating circumstances; treason. | Ark. Code Ann. 5-10-101 |
| California | First-degree murder with special circumstances; train wrecking; treason; perjury causing execution. | California Penal Code § 3604 |
| Connecticut | Capital felony with 8 forms of aggravated homicide | C.G.S. 53a-54b |
| Georgia | Murder; kidnapping with bodily injury or ransom when the victim dies; aircraft hijacking; treason. | OCG §§ 16-5-1, 17-10-30 |
| Illinois* | First-degree murder with 1 of 21 aggravating circumstances | 720 ILCS 5/9-1 (2000) |
| Kansas | Capital murder with 8 aggravating circumstances | KSA 21-3439 |
| Kentucky | Murder with aggravating factors; kidnapping with aggravating factors | KRS 532.025 |
| Louisiana | First-degree murder; aggravated rape of victim under age 12; treason | La. R.S. 14:30, 14:42, and 14:113 |
| Mississippi | Capital murder; aircraft piracy | 97-3-19(2) MCA, 97-25-55(1) MCA |
| Montana | Capital murder with 1 of 9 aggravating circumstances; capital sexual assault | 46-18-303 MCA;45-5-503 MCA |
| New Hampshire | Six categories of capital murder | RSA 630:1, RSA 630:5 |
| Ohio | Aggravated murder with at least 1 of 10 aggravating circumstances | O.R.C. secs. 2903.01, 2929.02, and 2929.04 |
| Oklahoma | First-degree murder in conjunction with a finding of at least 1 of 8 statutorily defined aggravating circumstances. | Okla.Stat., Tit. 21, § 701.10 |
| Oregon | Aggravated murder | ORS 163.095 |
| Pennsylvania | First-degree murder with 1 of 18 aggravating circumstances. | 42 Pa.C.S. §9711(d)(17) |
| South Carolina | Murder with 1 of 11 aggravating circumstances | 16-3-20(C)(a)) |
| South Dakota | First-degree murder with 1 of 10 aggravating circumstances; aggravated kidnapping. | SDCL 23A-27A |
| Tennessee | First-degree murder with 1 of 15 aggravating circumstances | Tenn. Code Ann. Sec. 39-13-204 |
| Texas | Criminal homicide with 1 of 8 aggravating circumstances | TX Penal Code 19.03 |
| Utah | Aggravated murder | UT Code annotated 76-5-202 |
| Virginia | First-degree murder with 1 of 13 aggravating circumstances | VA Code 18.2-31 |
| Washington | Aggravated first-degree murder. | RCW 10.95 |
| Wyoming | First-degree murder. | W.S.  6-2-102(h) |

Notes: Source of statutes from Blume, Eisenberg, and Wells when available. Otherwise, statutes drawn from West (2005). Determination of *Ring* applicability based on author's own evaluation and on the Death Penalty Information Center's assessment.

*State issued a death penalty moratorium.  Date of moratorium in parentheses

Table 3.  Summary Statistic from Murder-Capital Case Linked Database

| | Mean | State-year Min | State-year Max |
|---|---|---|---|
| *Panel A: Outcomes* | | | |
| Probability of receiving a Death Sentence 1976-2004 (N = 401,747) | 0.0167 | 0 | 0.0523 |
| Probability of receiving a Death Sentence between 2000-2004 (N = 44,191) | 0.0063 | 0 | 0.0436 |

| *Panel B: Victim/Offender Demographics* | | | |
|---|---|---|---|
| | Capital Cases | Non-Capital Cases (1977-2003) | Non-Capital Cases (2000-2003) |
| Fraction of Non-white Offenders | 0.43 | 0.54 | 0.52 |
| Age of Offender | 25.95 | 34.9 | 35.47 |
| Fraction of Male Offenders | 0.89 | 0.88 | 0.91 |
| Fraction of Non-white Victims | 0.41 | 0.62 | 0.47 |
| Age of Victim | 30.62 | 32.68 | 31.75 |
| Fraction of Male of Victims | 0.81 | 0.78 | 0.77 |
| Non-white Offender and Non-white Victim | 0.55 | 0.45 | 0.43 |
| Non-white Offender and White Victim | 0.096 | 0.087 | 0.094 |
| White Offender and Non-white Victim | 0.044 | 0.045 | 0.053 |
| White Offender and White Victim | 0.31 | 0.42 | 0.42 |

| *Panel C: Case Characteristics* | | | |
|---|---|---|---|
| Number of Offenders | 1.53 | 1.22 | 1.17 |
| Number of Victims | 1.26 | 1.05 | 1.11 |
| Use of Gun | 0.64 | 0.65 | 0.64 |
| Use of Knife | 0.18 | 0.17 | 0.13 |
| Type of Circumstance | | | |
| Rape | 0.009 | 0.006 | 0.003 |
| Property Crime | 0.137 | 0.126 | 0.110 |
| Arson | 0.003 | 0.004 | 0.003 |
| Drugs or Vice | 0.047 | 0.042 | 0.047 |
| Gang | 0.050 | 0.039 | 0.062 |
| Argument | 0.394 | 0.390 | 0.326 |
| Other | 0.360 | 0.392 | 0.448 |
| Victim-Offender Relationship | | | |
| Intimate Partner | 0.120 | 0.154 | 0.143 |
| Family | 0.077 | 0.087 | 0.087 |
| Non-relation Known | 0.525 | 0.501 | 0.461 |
| Stranger | 0.278 | 0.259 | 0.309 |

Notes:

Table 4. Summary Statistics for States Affected and Not Affected by *Ring v. Arizona*

| | *Ring*-Affected States | *Ring*-Unaffected States |
|---|---|---|
| *Panel A: Economic Control Variables* | | |
| Unemployment Rate | 0.057 | 0.061 |
| | (0.021) | (0.023) |
| Mean Household Income | 41,318.19 | 40,149.77 |
| | (1,163.06) | (1,098.91) |
| Fraction of the population that is at or below poverty | 0.13 | 0.14 |
| | (0.04) | (0.04) |
| *Panel B: Demographic Variables* | | |
| Fraction of population that is married | 0.49 | 0.50 |
| | (0.21) | (0.22) |
| Fraction of population that is white | 0.84 | 0.84 |
| | (0.11) | (0.10) |
| Fraction of population that have at least high school diploma | 0.76 | 0.75 |
| | (0.059) | (0.07) |
| Fraction of households that are female-headed | 0.06 | 0.06 |
| | (0.02) | (0.02) |
| *Panel C: Crime Variables* | | |
| Non-Homicide Violent Crime Index | 576.24 | 503.25 |
| (per 100,000 population) | (392.29) | (224.91) |
| Non-Homicide Violent Crime Index (2000-2003) | 558.99 | 480.82 |
| (per 100,000 population) | (227.12) | (398.27) |
| Property Crime Index | 4858.88 | 4460.189 |
| (per 100,000 population) | (1075.22) | (1302.56) |
| Property Crime Index (2000-2003) | 4228.66 | 3739.80 |
| (per 100,000 population) | (911.82) | (1083.94) |
| White Prison and Jail Incarceration Rate | 332.61 | 336.12 |
| (per 100,000 population) | (102.73) | (114.23) |
| Black Prison and Jail Incarceration Rate | 2409.57 | 2156.46 |
| (per 100,000 population) | (613.61) | (426.61) |
| *Panel D: Political Variables* | | |
| Fraction of State House and Senate that are Democrats | 0.51 | 0.57 |
| | (0.18) | (0.14) |
| Fraction Female in State House | 0.20 | 0.18 |
| | (0.08) | (0.08) |

Notes: Ring unaffected states include states with the death penalty as of 2003 including states which have never executed . Economic and Demographic Control Variables obtained from the Current Population Survey. Crime Index variables obtained from the FBI Uniform Crime Reports. Incarceration rate variables obtained from Bureau of Justice Statistics, Prison and Jail Inmates. Political Variables from data collected by Besley and Case (1997)

Table 5. Probit Estimates of the Probability of Receiving the Death Penalty in *Ring v. Arizona* Affected and Unaffected States

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | Pr(Death Penalty = 1) | | | | Pr(Death Penalty = 1) | | |
| | | Years: 1977-2003 | | | | Years: 2000-2003 | | |
| | | mean = 0.016 | | | | mean = 0.0063 | | |
| *Ring Affected States * 100* | 0.0670*** | 0.0421** | 0.0410*** | 0.0133 | 0.0428* | 0.0231* | 0.0064 | 0.0018 |
| (=1 in states *Ring* affected states) | (0.0088) | (0.0181) | (0.0200) | (0.0195) | (0.0175) | (0.0221) | (0.0263) | (0.0295) |
| *South * 100* | 0.1739*** | 0.0911*** | 0.0914** | -- | 0.0891*** | 0.0771*** | 0.0321 | -- |
| (=1 in Southern States) | (0.0052) | (0.0086) | (0.0112) | | (0.0171) | (0.0296) | (0.0294) | |
| *Midwest* | 0.0546*** | 0.0499*** | 0.0501*** | -- | 0.0546*** | 0.0499*** | 0.0501*** | -- |
| (=1 in Midwestern States) | (0.0058) | (0.0115) | (0.0178) | | (0.0058) | (0.0115) | (0.0178) | |
| *West * 100* | -0.0123** | -0.0009 | -0.0003 | -- | -0.0218 | -0.0071 | -0.0019 | -- |
| (=1 in Western States) | (0.0058) | (0.0066) | (0.0168) | | (0.0141) | (0.0148) | (0.0227) | |
| *% White * 100* | -- | 0.0311*** | 0.0249*** | 0.0006 | -- | 0.0416** | 0.0418** | 0.0217 |
| | | (0.0026) | (0.0051) | (0.0131) | | (0.0121) | (0.0169) | (0.0176) |
| *Mean Household Income * 100* | -- | -0.0199*** | -0.0137** | -0.0002 | -- | -0.0092 | -0.0076 | -0.0001 |
| | | (0.0035) | (0.0041) | (0.0092) | | (0.0126) | (0.0152) | (0.0145) |
| Region Fixed Effects | Y | Y | Y | N | Y | Y | Y | N |
| State Fixed Effects | N | N | N | Y | N | N | N | Y |
| Year Fixed Effects | N | N | Y | Y | N | N | Y | Y |
| 5-year Fixed Effects | Y | Y | N | N | Y | Y | N | N |
| Demographic, Economic and Crime Controls | N | Y | Y | Y | N | Y | Y | Y |

Notes: Standard errors are reported in parentheses. Marginal effects reported are evaluated at the mean marked with at ** (*,***) are significant at the 0.05 (0.1, 0.01) level. The dependent variable is an indicator for the whether the defendant received a death sentence. Regional fixed effects are South (which includes AL, AR, DE, FL, GA, KY, LA, NC, OK, SC, TN, TX, VA, WV), West (CO, ID, NM, UT, WY), Northeast (CT, ME, MA, NH, NJ, NY, PA, VT), MW (IL, IN, IA, MI, MN, MO, ND, OH, SD, WI), and Pacific (CA, WA, OR). Half-decade fixed effects include controls for 1977, 1982, 1987, 1992, 1997, 2002. Control variables not reported include unemployment rate, mean per capita income, fraction of population that is married, fraction of population that is white, fraction of population that is 25-45, fraction of population that is 45-65, fraction of population that is greater than 65, non-homicide violent crime index, property crime index, and average incarceration rate

Table 6. Correlates of the Probability of Receiving the Death Penalty Affected and Unaffected States

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | States Affected by *Ring* (Judge decided prior to 2001) | | Before-After | States Unaffected by *Ring* (Jury decided prior to 2001) | | Before-After | Difference-in-Differences Estimate |
| | Before 2001 | After 2001 | | Before 2001 | After 2001 | | |
| Non-white and Non-white Victim | -0.0378*** (0.0057) | -0.0557*** (0.0026) | 0.0179*** (0.0062) | 0.0101** (0.0047) | 0.0104** (0.0047) | -0.0003 (0.0051) | 0.0182* (0.0103) |
| Non-white Offender- White Victim | -0.0025 (0.0076) | -0.0314*** (0.0033) | 0.0289** (0.0102) | -0.0061 (0.0063) | -0.0072 (0.0066) | 0.0011 (0.0121) | 0.0278* (0.0155) |
| White Offender- Non-white Victim | 0.0070 (0.0096) | 0.0386*** (0.0043) | -0.0316** (0.0105) | -0.0055 (0.0079) | -0.0051 (0.0083) | -0.0004 (0.0153) | -0.0312** (0.0173) |
| Male Victim | 0.0054 (0.0034) | -0.0062 ** (0.0031) | 0.0116 (0.0065) | -0.0177*** (0.0016) | - 0.0095*** (0.0030) | -0.0082** (0.0041) | 0.0198 (0.0125) |
| Age of Victim | -0.0004 (0.0001) | 0.0001 (0.0001) | -0.0005 (0.0003) | -0.0013** (0.0004) | -0.0176 ( 0.0055) | 0.0163** (0.0061) | -0.0178* (0.095) |
| Crime involved a Firearm | -0.0284*** (0.0039) | -0.0105*** (0.0019) | -0.0179** (0.0053) | -0.0007 (0.0033) | -0.0006 (0.0028) | 0.0001 (0.0056) | -0.0180 (0.0104) |
| Victim and Offender were Intimate Partners | -0.0328*** (0.0042) | -0.0424*** (0.0022) | 0.0096 (0.0061) | 0.0080* (0.0043) | 0.0077* (0.0033) | 0.0003 (0.0071) | 0.0093 (0.0135) |
| Victim and Offender were Related | -0.0245*** (0.0055) | -0.0227*** (0.0027) | -0.0018 (0.0074) | -0.0041 (0.0053) | -0.0039 (0.0051) | -0.0002 (0.0101) | -0.0016 (0.0193) |
| Victim and Offender were Strangers | 0.0311*** (0.0040) | 0.0119*** (0.0018) | 0.0192*** (0.0062) | -0.0012 (0.0036) | -0.0011 (0.0033) | 0.0001 (0.0082) | 0.0191** (0.0094) |
| Homicide occurred during a rape | 0.0708*** (0.0130) | 0.0556* (0.0290) | 0.0152 (0.0361) | 0.0611** (0.0304) | 0.0600* (0.0311) | 0.0011 (0.0713) | 0.0141 (0.0325) |
| Homicide occurred during a theft crime | 0.0401*** (0.0104) | 0.0209 (0.0228) | 0.0192 (0.0312) | 0.0079 (0.0305) | 0.0072 (0.0316) | 0.0007 (0.0534) | 0.0185 (0.0535) |
| Homicide occurred during a drugs/vice related crime | 0.0503*** (0.0108) | 0.0508** (0.0234) | -0.0005 (0.0373) | 0.0075 (0.0310) | 0.0069 (0.0299) | 0.0006 (0.0325) | -0.0011 (0.0432) |
| % White | 0.0232* (0.0133) | 0.0402** (0.0116) | -0.017 (0.0291) | 0.0418* (0.0129) | 0.0415** (0.0196) | 0.0003 (0.0241) | -0.0173 (0.0233) |

Notes: Marginal effects reported are evaluated at the mean. Standard errors are reported in parentheses. Coefficients marked with at ** (*,***) are significant at the 0.05 (0.1, 0.01) level. The dependent variable is an indicator for the whether the defendant received a death sentence. All regressions include regional and half-decade fixed effects. Regional fixed effects are South (which includes AL, AR, DE, FL, GA, KY, LA, NC, OK, SC, TN, TX, VA, WV), West (CO, ID, NM, UT, WY), Northeast (CT, ME, MA, NH, NJ, NY, PA, VT), MW (IL, IN, IA, MI, MN, MO, ND, OH, SD, WI), and Pacific (CA, WA, OR). Half-decade fixed effects include controls for 1977, 1982, 1987, 1992, 1997, 2002. Omitted category for victim-offender race is white victim and offender. Omitted category for victim-offender relationship is unrelated acquaintances. Included by not reported are homicide occurred during gang-related crime, during an argument, and during arson. Also included but not reported are crime involved a knife. Control variables not reported include unemployment rate, mean per capita income, fraction of population that is married, fraction of population that is white, fraction of population that is 25-45, fraction of population that is 45-65, fraction of population that is greater than 65, non-homicide violent crime index, property crime index, and average incarceration rate.