

Whom the State Kills

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INTRODUCTION

An unexpected feature of the modern death penalty is the fact that most persons sentenced to death are not executed. Between 1973 and June of 2019, more than 8,000 persons have been sentenced to death, but about 1,500 persons have been executed.¹ Death sentences are remarkably poor predictors of who will ultimately be executed.²

An even more salient feature of the death penalty is the fact that race matters.³ Three decades ago in the most important empirical research on the death penalty to date, David Baldus, George Woodworth, and Charles Pulaski published a landmark book, *Equal Justice and the Death Penalty*, which documents the effect of race on capital sentencing.⁴ Specifically, Baldus’s Charging and Sentencing Study (“CSS”) showed that, in Georgia, the odds of a death sentence were about four times greater in murder cases involving at least one white victim than those involving only non-white victims.⁵

¹ See FRANK R. BAUMGARTNER ET AL., *DEADLY JUSTICE: A STATISTICAL PORTRAIT OF THE DEATH PENALTY* 139 (2018); Brendan O’Brien, *Georgia Carries Out 1,500th U.S. Execution Since Penalty Was Reinstated*, REUTERS (June 20, 2019, 7:09 PM), <https://www.reuters.com/article/us-usa-georgia-execution/georgia-to-carry-out-1500th-us-execution-since-capital-punishment-reinstated-idUSKCNITL1A3>, archived at <https://perma.cc/XX8T-S7PT> (explaining that, on June 20, 2019, the state of Georgia executed the 1,500th person, Marion Wilson, since the nation’s death penalty was reinstated in 1976).

² Rather than predicting a likely execution, “by far the most common outcome following a death sentence is that the sentence is vacated on appeal.” BAUMGARTNER ET AL., *supra* note 1.

³ The history of the death penalty in the South is particularly linked to slavery and racism. CAROL S. STEIKER & JORDAN M. STEIKER, *COURTING DEATH: THE SUPREME COURT AND CAPITAL PUNISHMENT* 7 (2016) (noting that, whereas the list of capital offenses in the Massachusetts Bay Colony reflected “theological concerns” and was often used to “promote religious purity,” in the southern colonies the penalty was designed to “protect the slave economy”); *id.* at 79 (“Nobody with even a modicum of historical awareness could have missed the salience of race to the American practice of capital punishment.”).

⁴ See generally DAVID C. BALDUS ET AL., *EQUAL JUSTICE AND THE DEATH PENALTY: A LEGAL AND EMPIRICAL ANALYSIS* (1990).

⁵ *Id.* at 316. As we explain in Appendix C, based on refinements to statistical methods developed in the decades since Baldus published his research, it is probable that Baldus actually understated the impact of the race of the victim on the sentencing outcome by overfitting the model. Based on the current best practices for research of this type, it appears that the odds of a death sentence are almost five times greater for persons convicted of killing a white victim. This is not to discredit Baldus’s work, but rather to show how well it has stood the test of time. *Id.*; cf. Samuel R. Gross, *The Death Penalty, Public Opinion, and Politics in the United States*, 62 ST. LOUIS U. L.J. 763, 771 (2018) (describing Baldus’s work as the seminal research in the field).

Rarity and race, then, stand as hallmarks of the American death penalty. But until now the interaction of these two phenomena has not been studied. This Article examines whether race is relevant for understanding the fate of the unfortunate few—that is, whether race plays a role in predicting who among the condemned is actually executed. To analyze this question, our research picks up where Baldus and his colleagues left off by updating and expanding the CSS to include data on executions. While Baldus focused on the impact of the victim’s race on death sentencing, he could not examine executions because the ultimate outcome was not yet known. Having determined the ultimate outcome, we present original quantitative research showing that Baldus actually *understated* the race problems inherent to the operation of modern death penalty jurisprudence. Baldus’s seminal research showed that the race of the victim was relevant to sentencing outcomes, and now we present the first controlled study demonstrating that racial disparities persist and indeed are magnified during the appellate and clemency processes.

By combining Baldus’s sentencing data with original execution data, we demonstrate that the overall execution rate is substantially greater for defendants convicted of killing a white victim than for those convicted of killing a Black victim. Specifically, 2.26% (22/972) of the defendants who were convicted of killing a white victim were ultimately executed, compared to just 0.13% (2/1503) of the defendants convicted of killing a Black victim.⁶ Thus, the overall execution rate is a staggering seventeen times greater for defendants convicted of killing a white victim. In addition, our data confirms the general supposition that executions have become extraordinarily rare events; the overall execution rate among the cases studied by Baldus is less than 1% (24/2475).

This evidence upends current jurisprudence because in *Gregg v. Georgia*⁷ the Supreme Court downplayed racial disparities or potential unfairness at sentencing by emphasizing the role of appellate review.⁸ Specifically, the Court emphasized its trust in the ability of the appellate system to intervene to correct unfairness through mandatory appellate and proportionality review.⁹ The Court believed that the neutral adjudication of appellate courts would moderate the unpredictability and biases of jurors, prosecutors and police, and ensure that the death penalty was consistently reserved for the most culpable offenders.¹⁰ The conventional wisdom was—and remains—that appellate procedures, particularly proportionality review like that employed in Georgia, would mitigate disparities and unfairness in the trial process. However, we now show that appellate and post-conviction procedures, perhaps because they typically only offer retrials through the same procedures, do not offer meaningful mitigation for the type of racial disparities demonstrated in prior empirical research. In fact, our research shows that post-sentencing

⁶ See *infra* Table 1.
⁷ *Gregg v. Georgia*, 428 U.S. 153 (1976).
⁸ *Id.* at 206; see also *id.* at 161 (explaining that appellate review required that death sentences be reviewed to ensure they were free from “prejudice or any other arbitrary factor and were not excessive or disproportionate to the penalty applied in similar cases”).
⁹ *Id.* at 206.
¹⁰ *Id.* at 187–207.

proceedings exacerbate, rather than remediate, the problems of arbitrariness identified at earlier stages of criminal proceedings.¹¹

I. PUTTING THE BALDUS DATA IN CONSTITUTIONAL CONTEXT

In 1972 when the Supreme Court invalidated the death penalty in *Furman v. Georgia*,¹² Justice Douglas identified the discriminatory operation of the death penalty as constitutionally problematic:

A law that stated that anyone making more than \$50,000 would be exempt from the death penalty would plainly fall, as would a law that in terms said that blacks, those who never went beyond the fifth grade in school, those who made less than \$3,000 a year, or those who were unpopular or unstable should be the only people executed. A law which in the overall view reaches that result in practice has no more sanctity than a law which in terms provides the same.¹³

Other Justices reached a similar conclusion and held that the death penalty in America was “so wantonly and so freakishly imposed” as to be unconstitutional.¹⁴

Yet, only four years later in *Gregg v. Georgia*, the Court revisited the constitutionality of the death penalty following a string of newly adopted state statutes. With a degree of idealism that looks more than a touch naïve in hindsight, the Court predicted that the revised death penalty statutes would eliminate the twin problems of arbitrariness and discrimination that had previously plagued the operation of the death penalty.¹⁵ Celebrating the requirement of legislatively defined aggravating factors as a prerequisite for a death sentence, the Court speculated that,

¹¹ Arbitrariness, as used in this Article, is a term of art. Generally, in law, and particularly in the context of the Eighth Amendment, arbitrary does not mean random. Instead, the term arbitrary is used to describe circumstances when something other than the appropriate criteria is used for selecting a legal consequence. Thus, in the death penalty context systems are said to be arbitrary if outcomes are based on anything other than culpability—that is, if death sentences turn on factors other than who is the worst of the worst. BALDUS ET AL., *supra* note 4, at 14–15 (explaining that in this context arbitrary can mean random or patterned by illegitimate factors such as race). See *Tuilaepa v. California*, 512 U.S. 967, 982 (1994) (Stevens, J., concurring) (recognizing as related concerns about arbitrariness and discrimination, and noting that “risk of arbitrary and capricious sentencing, specifically including the danger that racial prejudice would determine the fate of the defendant”); see also Steven F. Shatz & Nina Rivkind, *The California Death Penalty Scheme: Requiem for Furman?*, 72 N.Y.U. L. REV. 1283 (1997) (“California has adopted a death penalty scheme which defines death–eligibility so broadly that it creates a greater risk of arbitrary death sentences than the pre–*Furman* death penalty schemes.”); *id.* at 1285 (“[R]elative infrequency of its application created the risk that it would be applied arbitrarily.”).

¹² *Furman v. Georgia*, 408 U.S. 238 (1972).

¹³ *Id.* at 256 (Douglas, J., concurring).

¹⁴ *Id.* at 309–10 (Stewart, J., concurring).

¹⁵ *Gregg v. Georgia*, 428 U.S. 153, 222–23 (1976).

[a]s the types of murders for which the death penalty may be imposed become more narrowly defined and are limited to those which are particularly serious or for which the death penalty is peculiarly appropriate as they are in Georgia by reason of the aggravating-circumstance requirement, it becomes reasonable to expect that the unconstitutional arbitrariness that animates the *Furman* decision would be eliminated.¹⁶

Underlying the *Gregg* decision, then, was a confidence in the ability of new procedures to serve as an antidote to the arbitrariness that had permeated death sentencing procedures and had resulted in the *Furman* finding of an Eighth Amendment violation.¹⁷

Baldus's research, however, serves as a potent example of how modern death penalty procedures failed to cure the discrimination and arbitrariness rampant in the capital punishment system.¹⁸ Baldus's research tends to confirm a longstanding intuition about capital punishment in America: it is not so much that the death penalty has a race problem as it is that the race problems of America manifest themselves through the implementation of the death penalty.¹⁹

In the decades since *Gregg*, researchers have shown time and again that the revised death penalty systems are not fulfilling the constitutional promise of ensuring a capital sentencing system that is free from discrimination and arbitrariness.²⁰ First, research has shown that the use of aggravating factors has failed to achieve the objective of narrowing the class of death-eligible defendants.²¹ Numerous studies across multiple states have

¹⁶ *Id.* at 222.

¹⁷ As one scholar put it, *Gregg* “expressed confidence that the states’ newly revised procedures should work to curb the arbitrariness and capriciousness that had earlier troubled the *Furman* majority.” John Charles Boger, McCleskey v. Kemp: *Field Notes from 1977–1991*, 112 NW. U. L. REV. 1637, 1637 (2018).

¹⁸ The problem of racial disparity and discrimination in the administration of the death penalty is so persistent as to be regarded as inextricable by many leading scholars. Susan Bandes has observed that issues of race are “at the heart” and the origins of the U.S. death penalty, and racial disparities present some of the most “formidable challenges to its fair implementation.” Susan A. Bandes, *Courting Death: The Supreme Court and Capital Punishment*, 116 MICH. L. REV. 905, 906 (2018); see also Michael J. Klarman, Powell v. Alabama: *The Supreme Court Confronts “Legal Lynchings”*, in CRIMINAL PROCEDURE STORIES 1 (Carol Steiker ed., 2006); STEIKER & STEIKER, *supra* note 3, at 17.

¹⁹ BOB WOODWARD & SCOTT ARMSTRONG, *THE BROTHERS: INSIDE THE SUPREME COURT* 205 (1979) (noting that the Supreme Court’s first African American Justice, Thurgood Marshall, ultimately concluded that the American death penalty was the embodiment of “the ultimate form of racial discrimination” in this country).

²⁰ The failure of the death penalty statutes to adequately narrow the class of persons who are eligible for the ultimate sentence is well-documented at this point. See, e.g., Chelsea Creo Sharon, *The “Most Deserving” of Death: The Narrowing Requirement and the Proliferation of Aggravating Factors in Capital Sentencing Statutes*, 46 HARV. C.R.-C.L. L. REV. 223, 247 (2011).

²¹ See David C. Baldus, George Woodworth, Catherine M. Grosso, Michael Laurence, Jeffrey A. Fagan, & Richard Newell, *Furman at 45: Constitutional Challenges from California’s Failure to (Again) Narrow Death Eligibility*, 16 J. EMPIRICAL LEGAL STUD. 693, 693 (2019).

shown that death eligibility rates are just as high as they were at the time of *Furman* (and, correspondingly, death sentencing rates are just as low or even lower).²² Second, and more relevant for the purposes of this Article, dozens of studies have documented the impact of race in modern death sentencing decisions.²³ Baldus’s foundational work in this field, *Equal Justice and the Death Penalty*, demonstrated that dramatic racial disparities in sentencing patterns persisted in the wake of *Furman*, particularly when the race of the victim was considered.²⁴

Put differently, *Gregg* reinstated the death penalty on the assumption that the statutory changes to the death penalty would cure the previously documented arbitrariness and noted the absence of any “facts to the contrary”—yet Baldus’s research provided precisely such contrary facts.²⁵ Baldus showed that while the *defendant’s* race was not predictive as to death sentencing outcomes, the *victim’s* race was a critical indicator of the likelihood of a death sentence.²⁶ The odds of a death sentence, after controlling for other factors,²⁷ were 4.3 times greater for persons who murdered white victims than persons who murdered Black victims.²⁸ Aya Gruber observed that the Baldus study “revealed a disparity that would forever mark the death penalty as racist.”²⁹

²² Central to the Court’s decision in *Furman* to strike down the death penalty was the seeming infrequency of death sentences relative to the high rates of eligibility for the penalty; the infrequency of death sentences among those eligible for the ultimate penalty suggested an arbitrariness and the potential for discrimination. See *Furman v. Georgia*, 408 U.S. 238, 309–10 (1972) (Stewart, J., concurring). Yet death sentencing rates still hover well below 20%, just as they were prior to *Furman*, and in some states death sentence rates among death-eligible defendants are lower than 1%. Baldus, Pulaski & Woodworth, *infra* note 24, at 699.

²³ See David C. Baldus & George Woodworth, *Race Discrimination and the Legitimacy of Capital Punishment: Reflections on the Interaction of Fact and Perception*, 53 DEPAUL L. REV. 1411, 1411 (2004) (compiling research on the topic).

²⁴ See BALDUS ET AL., *supra* note 4, at 150. Baldus studied charging and sentencing decisions in Georgia, the very state which had its death penalty reinstated by the Court based on its statutory reforms and which served as the template for many states looking to revive their capital punishment systems. David C. Baldus, Charles Pulaski & George Woodworth, *Comparative Review of Death Sentences: An Empirical Study of the Georgia Experience*, 74 J. CRIM. L. & CRIMINOLOGY 661, 664 (1983) (explaining that Georgia’s statute “served as a model for many other states,” and that it was a statute explicitly deemed “constitutional on its face”).

²⁵ Boger, *supra* note 17, at 1667.

²⁶ BALDUS ET AL., *supra* note 4, at 150.

²⁷ Appendix C, Table 1 (listing and defining the variables in Baldus’s core model).

²⁸ BALDUS ET AL., *supra* note 4, at 316, 401. Such findings tend to vindicate the narrative that in our culture white lives matter more. Or, in a slightly more legalistic parlance, perhaps this reveals the death penalty as a badge of slavery. Justice Harlan famously observed that because racial discrimination “lay at the very foundation of the institution of slavery,” it is appropriately viewed as “a badge of servitude” under the Thirteenth Amendment. *The Civil Rights Cases*, 109 U.S. 3, 43 (1883) (Harlan, J., dissenting).

²⁹ Aya Gruber, *Equal Protection Under the Carceral State*, 112 NW. U. L. REV. 1337, 1345 (2018).

In *McCleskey v. Kemp*,³⁰ the Supreme Court considered a challenge to Georgia’s death penalty based on Baldus’s research.³¹ In one of the most derided decisions in modern times,³² the Court held that Baldus’s findings of racial disparity at the sentencing stage of capital cases were irrelevant to the constitutionality of capital punishment. As the Court explained, “[a]t most, the Baldus study indicates a discrepancy that appears to correlate with race,” and it does not prove actual discrimination.³³ The study, reasoned Justice Powell, could not demonstrate that “racial considerations actually enter into any sentencing decisions in Georgia,” because the most empirical data can do is “demonstrate a risk that the factor of race entered into some capital sentencing decisions.”³⁴ Summarizing its conclusions, the Court explained that “the Baldus study is insufficient to support an inference that any of the decision makers in his case acted with discriminatory purpose,”³⁵ and “decline[d] to assume that what is unexplained is invidious.”³⁶ Commentators have lamented that *McCleskey* stands for the proposition that “courts should no longer entertain statistical cases demonstrating even strong patterns of discrimination, but only cases involving smoking gun confessions or individualized evidence of racial misconduct or malice.”³⁷

Baldus’s research, then, ran headlong into a constitutional roadblock. But times are changing with regard to the Court’s willingness to consider well-controlled empirical studies, and leading scholars predict that, as with other divisive social issues such as gay marriage, the Court is likely to pivot away from the overtly moral debates of the twentieth century in favor of more instrumental or utilitarian assessments of the costs and benefits of the modern death penalty.³⁸ The ultimate constitutional validity of the death penalty may

³⁰ *McCleskey v. Kemp*, 481 U.S. 279 (1987).

³¹ *Id.* at 286.

³² Boger, *supra* note 17, at 1683 n.198 (2018) (compiling scholarly sources that describe the decision “as a modern *Dred Scott*”).

³³ *McCleskey*, 481 U.S. at 312.

³⁴ *Id.* at 328.

³⁵ Justice Powell is correct that a regression model cannot demonstrate purposeful discrimination in a particular case, as Baldus acknowledged. Baldus notes that a regression coefficient “is an estimate of the average impact of the variable across all cases in the study” and therefore “the probability that race was a decisive factor in a given case cannot be inferred from the regression coefficient for race.” BALDUS ET AL., *supra* note 4, at 382. By demanding evidence of “discriminatory purpose” in *McCleskey*’s case, the Court moved the goal line beyond the realm of statistics. Nonetheless, Baldus’s research provides ample evidence that the race of the victim influenced death sentencing at the broader level of the system. Indeed, Baldus demonstrated that the odds of being sentenced to death were substantially greater for defendants convicted of killing a white victim even after controlling for a range of confounding variables (for a list and description of the factors Baldus included in the regression model, see Appendix C, Table 1).

³⁶ *McCleskey*, 481 U.S. at 280, 313.

³⁷ Boger, *supra* note 17, at 1678. See also Anthony G. Amsterdam, *Opening Remarks: Race and the Death Penalty Before and After McCleskey*, 39 COLUM. HUM. RTS. L. REV. 34, 55–56 (2007) (“[T]he error that lies at the heart of a decision like *McCleskey* [is] . . . the error of supposing that conscious racial bigotry on the part of public officials is the sole significant form of government-supported racial inequality in this country today.”).

³⁸ STEIKER & STEIKER, *supra* note 3, at 250–53.

hinge on an assessment of emerging “empirical evidence on capital punishment,” particularly research detailing racially disparate death penalty outcomes—precisely the outcomes presented in this Article.³⁹

II. EXPANDING DEATH PENALTY DATA TO INCLUDE EXECUTION OUTCOMES

Baldus’s research is particularly well-known and revered,⁴⁰ and his findings have never been seriously contradicted,⁴¹ but his research certainly does not stand alone in

³⁹ Baldus found that the race of the defendant did not influence sentencing. BALDUS ET AL., *supra* note 4, at 328. We found that the race of the defendant did not influence executions either: 19.4% (13/67) of the condemned Black defendants were executed, compared to 21.2% (11/52) of the condemned white defendants. *Cf. infra* Part IV.

⁴⁰ *See, e.g.*, Evan Tsen Lee & Ashutosh Bhagwat, *The McCleskey Puzzle: Remediating Prosecutorial Discrimination Against Black Victims in Capital Sentencing*, 1998 SUP. CT. REV. 145, 146–47 (1998); Randall L. Kennedy, *McCleskey v. Kemp: Race, Capital Punishment, and the Supreme Court*, 101 HARV. L. REV. 1388, 1398–1400 (1988).

⁴¹ The Supreme Court accepted as valid Baldus’s empirical methods, as have most published reviews of Baldus’s work. The notable exceptions tend to come from commentators who rely on the district court’s reasoning in *McCleskey*. *See* *McCleskey v. Zant*, 580 F. Supp. 338, 360 (N.D. Ga. 1984) (“[T]he court is of the opinion that the data base has substantial flaws and that the petitioner has failed to establish by a preponderance of the evidence that it is essentially trustworthy.”). For example, quoting a portion of the district court decision and treating it as conclusively undermining the Baldus research, one commentator starts an essay, “[t]he best models which Baldus was able to devise which account to any significant degree for the major non-racial variables, including strength of the evidence, produce no statistically significant evidence that race plays a part in either [the prosecutor’s or the jury’s] decisions in the State of Georgia.” Kent Scheidegger, *Rebutting the Myths About Race and the Death Penalty*, 10 OHIO ST. J. CRIM. L. 147, 147, 154 (2012) (describing this as the “least-known holding from the best-known case on race and the death penalty”). There is good reason for the lack of historical attention to this lone district court judge’s opinion: it has been shown to be patently inaccurate. In his book, Baldus painstakingly responds to the challenges by Judge Forrester in Appendix B entitled, “*McCleskey v Kemp: A Methodological Critique of the District Court's Decision*.” BALDUS ET AL., *supra* note 4, at 450–78. Moreover, most scholars have found the critique of Baldus’s research thoroughly unconvincing if you “happen to know something about the record in the case or about statistics.” Samuel R. Gross, *David Baldus and the Legacy of McCleskey v. Kemp*, 97 IOWA L. REV. 1905, 1913 (2012) (“[M]ost of the criticisms of Professor Baldus’s research are unfair and inaccurate, and many of the statements about statistics are simply false, [thus] there is little reason to pay attention to the district court opinion.”); *see also* SAMUEL R. GROSS & ROBERT MAURO, *DEATH & DISCRIMINATION: RACIAL DISPARITIES IN CAPITAL SENTENCING* 153 nn.20–21 (1989) (rebutting challenges to the Baldus methodology as unfair and unfounded). Professor Gross has also noted that “[a] brief filed in the Supreme Court by several of the country’s preeminent criminologists described the Baldus study as ‘among the best empirical studies on criminal sentencing ever conducted.’” Gross, 97 IOWA L. REV. 1916 n.61; *id.* at 1915–16 (positing that the reason the district court’s methodological critique was not reiterated in the Supreme Court was that as the litigation proceeded, “it became increasingly clear that the Baldus study could not be rejected on its own terms”). Notably, the district court’s reasoning was not endorsed by either the court of appeals or the Supreme Court. Indeed, a careful

documenting racial problems with the implementation of the death penalty. Numerous well-designed studies have documented racial disparities in the application of the death penalty across the U.S.⁴² In fact, the Government Accounting Office (“GAO”) conducted a review of the twenty-eight research projects studying the relevance of race in death sentencing from 1976 to 1990 and found that in twenty-three of the studies, “race of victim was found to influence the likelihood of being charged with capital murder or receiving a death sentence. . . . This finding was remarkably consistent across datasets.”⁴³ A team of scholars updated the GAO report in 2014 and found that thirty-one of the thirty-six studies published since 1990 reported racial disparities in death sentencing based on the race of

reading of Justice Powell’s majority opinion, and even Justice Scalia’s notes on the case, suggests that the Justices recognized that Baldus’s data showed a racial-disparity problem with the system, but regarded it as a problem that lacked a judicial remedy. *Id.* at 192 (referencing a memo from Justice Scalia to the other Justices); *see also* Callins v. Collins, 510 U.S. 1141, 1153–54 (1994) (Blackmun, J., dissenting) (“[A]s far as I know, there has been no serious effort to impeach the Baldus study. Nor, for that matter, have proponents of capital punishment provided any reason to believe that the findings of that study are unique to Georgia.”); Gruber, *supra* note 29, at 1346 (“[T]he district court decision reminds us that faith can always triumph over fact. Just as the extremely religious characterize evolution as a ‘theory’ that lacks exacting proof while simultaneously eschewing the need for evidence of creation, those with colorblind faith that criminal punishment is fair demand undeniable, ironclad, and, indeed, unobtainable proof of discrimination, while offering none that the system is just.”).

⁴² John J. Donohue, *Empirical Analysis and the Fate of Capital Punishment*, 11 DUKE J. CONST. L. & PUB. POL’Y 51, 85 (2016); *see, e.g.*, David C. Baldus et al., *Arbitrariness and Discrimination in the Administration of the Death Penalty: A Legal and Empirical Analysis of the Nebraska Experience (1973–1999)*, 81 NEB. L. REV. 486, 590 (2002); Meg Beardsley, Sam Kamin, Justin Marceau & Scott Phillips, *Disquieting Discretion: Race, Geography & the Colorado Death Penalty in the First Decade of the Twenty-First Century*, 92 DENV. U. L. REV. 431, 444 (2015); John Blume, Theodore Eisenberg & Martin T. Wells, *Explaining Death Row’s Population and Racial Composition*, J. EMPIRICAL L. STUD. 165, 169 (2004); Barbara O’Brien, Catherine M. Grosso, George Woodworth & Abijah Taylor, *Untangling the Role of Race in Capital Charging and Sentencing in North Carolina, 1990–2009*, 94 N.C. L. REV. 1997, 2043–44 (2016); Raymond Paternoster et al., *Justice by Geography and Race: The Administration of the Death Penalty in Maryland, 1978–1999*, 4 U. MD. L.J. RACE, RELIGION, GENDER & CLASS 1, 13–14 (2004); Glenn L. Pierce & Michael L. Radelet, *The Impact of Legally Inappropriate Factors on Death Sentencing for California Homicides: 1990–1999, The Empirical Analysis*, 46 SANTA CLARA L. REV. 1, 36–37 (2005). Similarly, research in Oklahoma has shown that persons in that state suspected of killing white victims, particularly white females, are much more likely to be sentenced to death. Data show that there “is virtually no difference in the probability of a death sentence” based exclusively on the “race of defendant, with 3.2% of the white offenders sentenced to death and 3% of the non-white defendants,” but the probability of being sentenced to death is twice as high for those charged with killing white victims. Glenn L. Pierce, Michael L. Radelet & Susan Sharp, *Race and Death Sentencing for Oklahoma Homicides 1990–2012*, 107 J. CRIM. L. & CRIMINOLOGY 733, 747 (2017).

⁴³ GENERAL ACCOUNTING OFFICE, DEATH PENALTY SENTENCING: RESEARCH INDICATES PATTERN OF RACIAL DISPARITIES 3, 5, 6 (1990), <http://archive.gao.gov/t2pbat11/140845.pdf>, archived at <https://perma.cc/M25X-2ACZ>.

the defendant, the race of the victim, or the race of the defendant and victim in combination.⁴⁴

Notably absent from existing research is a parallel body of work regarding post-sentencing outcomes—that is, an examination of who among those sentenced to death is actually executed. Although there is a small body of academic literature focused on race and execution, existing studies have notable limitations. Before turning to our methodology for testing the impact of victim race on post-sentencing outcomes, the following section identifies the need for such research and provides a review of the existing literature on race and execution.

A. *The Absence of Rigorous Data About the Impact of Race on Executions*

In one of his final death penalty decisions, Justice Scalia seemed to assume that the imposition of the penalty was the one place where consistency and fairness could be taken for granted, writing that “it is [death penalty] *convictions*, not *punishments*, that are unreliable.”⁴⁵ In fact, however, the imposition of the punishment may be the most arbitrary aspect of the current system.⁴⁶ While researchers have tirelessly documented the front-end problems associated with capital sentencing systems,⁴⁷ virtually no attention has been paid to the back-end question of who *actually gets executed*.

In a groundbreaking recent publication, death penalty scholar Lee Kovarsky has observed that there “are two American death penalties” and criticized what he views as the overly myopic focus of researchers on only the charging and sentencing phases.⁴⁸ Kovarsky has instructed scholars to direct their research to the reality that death sentences and executions are “legally and temporally distinct events,”⁴⁹ and has noted that execution selection has not been subject to a controlled study that could quantify the arbitrariness occurring at this stage of the death penalty system.⁵⁰ He predicts that controlled studies would find pervasive arbitrariness in “execution selection.”⁵¹ Our research validates Kovarsky’s hypothesis.

⁴⁴ Catherine M. Grosso, Barbara O’Brien, Abijah Taylor & George Woodworth, *Race Discrimination and the Death Penalty: An Empirical and Legal Overview*, in AMERICA’S EXPERIMENT WITH CAPITAL PUNISHMENT: REFLECTION ON THE PAST, PRESENT, AND FUTURE OF THE ULTIMATE PENAL SANCTION 525–76 (James R. Acker, Robert M. Bohm & Charles S. Lanier eds., 3d ed., 2014). For a list of the five studies that did not report a race effect, see *id.* at 538.

⁴⁵ *Glossip v. Gross*, 135 S. Ct. 2726, 2747 (2015) (Scalia, J., concurring).

⁴⁶ As Justice Breyer observed, there is data suggesting that as many as 75% of persons sentenced to death are not actually executed: “Consider, for example, what actually happened to the 183 inmates sentenced to death in 1978. As of 2013 (35 years later), 38 (or 21% of them) had been executed; 132 (or 72%) had had their convictions or sentences overturned or commuted; and 7 (or 4%) had died of other (likely natural) causes. Six (or 3%) remained on death row.” *Glossip*, 135 S. Ct. at 2768 (Breyer, J., dissenting).

⁴⁷ See, e.g., Donohue, *supra* note 42.

⁴⁸ Lee Kovarsky, *The American Execution Queue*, 71 STAN. L. REV. 1163, 1165 (2019).

⁴⁹ *Id.* at 1166–67.

⁵⁰ *Id.* at 1182 n.118.

⁵¹ *Id.*

To put this in context, the existing literature documents implicit bias infecting the work of prosecutors, police, jurors, and even public defenders.⁵² John Donohue has noted that there is “an expansive empirical literature—analyzing numerous states across the country—presenting compelling evidence that race influences the death penalty decisions of *prosecutors and jurors*.”⁵³ This bias is so well-documented that one might surmise that appellate courts conducting an independent review of death sentences (as required under the Georgia system upheld in *Gregg*) would play an important role in mitigating arbitrariness in the imposition of the death penalty.⁵⁴ Courts and commentators have taken for granted that opportunities for post-sentence relief would reduce, if not eliminate, arbitrariness and discrimination that arose in the sentencing process of capital cases.⁵⁵ By this logic, if juries and lawyers are producing death sentences tinged with disparate racial impact, the processes for revisiting the death sentences will ameliorate some of these unseemly results.⁵⁶

⁵² Song L. Richardson, *Arrest Efficiency and the Fourth Amendment*, 95 MINN. L. REV. 2035, 2039–45 (2011).

⁵³ Donohue, *supra* note 42, at 84 (emphasis added).

⁵⁴ To this day Georgia has retained a requirement of appellate proportionality review. GA. CODE ANN. § 17–10–35 (2019).

⁵⁵ *Gregg v. Georgia*, 428 U.S. 153, 206 (1976) (Stewart, J., concurring) (“The provision for appellate review in the Georgia capital-sentencing system serves as a check against the random or arbitrary imposition of the death penalty. In particular, the proportionality review substantially eliminates the possibility that a person will be sentenced to die by the action of an aberrant jury.”); *see also* Pulley v. Harris, 465 U.S. 37, 59 (1984) (Stevens, J., concurring) (“[S]ome form of meaningful appellate review is an essential safeguard against the arbitrary and capricious imposition of death sentences[.]”); Traci Smith, *The Outlier Case: Proportionality Review in State v. Rhines*, 42 S.D. L. REV. 192, 209 (1997); Joseph T. Walsh, *The Limits of Proportionality Review in Death Penalty Cases*, 21 DEL. LAW., 13, 13 (2003) (“[P]roportionality review offers state appellate courts a theoretical non-federal mechanism for determining whether the death penalty has been arbitrarily imposed.”); Penny J. White, *Can Lightning Strike Twice? Obligations of State Courts After Pulley v. Harris*, 70 U. COLO. L. REV. 813, 869 (1999) (“[P]roportionality review helps to reduce the risk of discrimination.”); Brooks Emanuel, *North Carolina's Failure to Perform Comparative Proportionality Review: Violating the Eighth and Fourteenth Amendments by Allowing the Arbitrary and Discriminatory Application of the Death Penalty*, 39 N.Y.U. REV. L. & SOC. CHANGE 419, 421 (2015) (understanding the role of appellate review as eliminating “arbitrary and discriminatory death sentencing”).

⁵⁶ Implicit bias in policing is well-documented. *See, e.g.*, Stewart J. D’Alessio & Lisa Stolzenberg, *Race and the Probability of Arrest*, 81 SOC. FORCES 1381, 1381–83 (2003) (compiling sources); Joshua Correll et al., *The Police Officer's Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals*, 83 J. PERSONALITY & SOC. PSYCOL. 1314, 1328 (2002); L. Song Richardson, *Arrest Efficiency and the Fourth Amendment*, 95 MINN. L. REV. 2035, 2036 (2011); *see also* L. Song Richardson & Phillip Atiba Goff, *Implicit Racial Bias in Public Defender Triage*, 122 YALE L. REV. 2626, 2632–34 (2013); John Tyler Clemons, *Blind Injustice: The Supreme Court, Implicit Racial Bias, and the Racial Disparity in the Criminal Justice System*, 51 AM. CRIM. L. REV. 689, 691 (2014) (compiling the research showing that while Black and white Americans abuse and sell illegal drugs at similar rates, the drug arrest rate for Black people more

What Kovarsky describes in qualitative terms—the arbitrary construction of “execution queues”—we demonstrate as an empirical matter by expanding and updating Baldus’s dataset. The sort of arbitrariness that Baldus documented in the realm of sentencing outcomes is exacerbated when it comes to assessing who is actually executed.

B. Limitations of Prior Research Analyzing Execution Arbitrariness

Whereas research regarding race and *death sentencing* is vast, there are only a handful of studies that have examined race and *execution* in the modern era.⁵⁷

The initial research on the topic was published by David Jacobs and colleagues in 2007 and examined execution outcomes for defendants who were sentenced to death between 1973 and 2002 in sixteen states.⁵⁸ The authors of that study noted that “whether victim race continues to explain the fate of condemned prisoners after they have been sentenced remains *a complete mystery*.”⁵⁹ Drawing on event history models, Jacobs found that Black defendants convicted of killing white victims had a higher risk of execution.⁶⁰ The Jacobs study is a pivotal step toward analyzing executions. Importantly, the study examined a large number of states over a long period of time and controlled for key confounding variables at the case-level (whether the defendant had a prior conviction) and the state-level (including whether the defendant was sentenced to death in a Southern state, the state’s racial composition, and the state’s murder rate). However, the findings are limited in several ways. To begin, the study was missing data on the victim’s race in a

than quadrupled in the period from 1980 to 2000, while the drug arrest rate for white people remained virtually constant).

⁵⁷ We review studies that consider victim race and execution, the focus of our research. Baldus and colleagues examined the relationship between victim race and the continuing risk of execution among condemned defendants in the Armed Forces, but not execution itself. David C. Baldus, George Woodworth, Catherine M. Grosso & Richard Newell, *Racial Discrimination in the Administration of the Death Penalty: The Experience of the United States Armed Forces (1984-2005)*, 101 J. CRIM. L. & CRIMINOLOGY 1227, 1227 (2011). For pre-*Furman* studies regarding defendant race and execution, see Elmer H. Johnson, *Selective Factors in Capital Punishment*, 36(2) SOC. FORCES 165 (1957); Marvin E. Wolfgang, Arlene Kelly & Hans C. Nolde, *Comparison of the Executed and the Commuted Among Admissions to Death Row*, 53(3) J. CRIM. L. & CRIMINOLOGY 301 (1962); Hugo A. Bedau, *Death Sentences in New Jersey, 1907–60*, 19 RUTGERS L. REV. 1, 1 (1964). For post-*Furman* studies regarding defendant race and execution, see John Blume & Theodore Eisenberg, *Judicial Politics, Death Penalty Appeals, and Case Selection: An Empirical Study*, 72 S. CAL. L. R. 465, 503 (1992); Stephen J. Spurr, *The Future of Capital Punishment: Determinants of the Time from Death Sentence to Execution*, 22 INT’L REV. ECON. 1, 23 (2002); Michael L. Radelet & Margaret Vandiver, *The Florida Supreme Court and Death Penalty Appeals*, 74 J. CRIM. L. & CRIMINOLOGY, 913, 913–26 (1983) (examining the effect of race on the outcome of direct appeals).

⁵⁸ David Jacobs, Zhenchao Qian, Jason T. Carmichael & Stephanie L. Kent, *Who Survives on Death Row? An Individual and Contextual Analysis*, 72 AM. SOC. REV. 610, 617 n.8 (2007) (studying the following states: Arizona, California, Delaware, Florida, Georgia, Illinois, Kansas, Kentucky, Maryland, Missouri, New Jersey, Ohio, Tennessee, Texas, Virginia, and Washington).

⁵⁹ *Id.* at 611 (emphasis added).

⁶⁰ *Id.*

large number of cases.⁶¹ Additionally, the study's non-execution category merges immiscible cases: defendants who secured judicial relief and could not be executed, and defendants who remained on death row at the close of the study window and could be executed.⁶² Finally, the research does not include information about the proceedings leading up to a death sentence. Thus, the authors were unable to draw conclusions about whether racial disparities in execution introduced disparities that did not exist at the sentencing phase or exacerbated disparities from the sentencing phase.

The next quantitative study of execution was conducted by Michelle Petrie and James Coverdill, who studied men sentenced to death in Texas from 1974 through 2009.⁶³ Petrie and Coverdill's event history analysis represents a significant advance insofar as the researchers obtained race of victim data for almost all of the cases, controlled for confounding variables regarding the defendant's prior criminal record and the heinousness of the crime,⁶⁴ and distinguished between non-execution cases where the defendant secured judicial relief and non-execution cases where the defendant remained on death row at the close of the study window.⁶⁵ Interestingly, the authors did not find any racial disparities in judicial relief or execution. Petrie and Coverdill concluded that Texas may have eliminated post-sentencing racial disparities in execution by limiting juror discretion, defining death eligibility more narrowly than most states, and executing a larger proportion of condemned inmates than most states.⁶⁶ However, it is important to remember that the researchers did not have data about the sentencing phase. If the sentencing stage was marred by racial disparities, then such disparities remained unabated.⁶⁷

⁶¹ *Id.* at 626. The authors have data on the race of the victim for all 548 executions but are missing data on victim race in 2,585 of the 3,597 non-execution cases. The authors acknowledge that missing data is a limitation ("We nevertheless must acknowledge that we were forced to use advanced statistical techniques to overcome data limitations. Although there are good reasons to believe that the reported estimates are unbiased and consistent, superior data always are preferable to such statistical alternatives In particular, we hope that subsequent researchers can obtain more exhaustive information on victim race . . .").

⁶² See Michelle A. Petrie & James E. Coverdill, *Who Lives and Dies on Death Row? Race, Ethnicity, and Post-Sentence Outcomes in Texas*, 57 SOC. PROB. 630, 633–34 (2010) (noting that two very different possibilities exist: Black defendants convicted of killing white victims are more likely to be executed, or Black defendants convicted of killing white victims are merely executed sooner).

⁶³ *Id.* at 630.

⁶⁴ To control for the heinousness of the crime, the authors considered whether the victim was vulnerable, whether the defendant killed multiple victims, and whether the crime also involved robbery, burglary, auto theft, abduction, or rape. *Id.* at 636.

⁶⁵ *Id.*

⁶⁶ *Id.* at 646.

⁶⁷ *Id.* Jacobs and colleagues, as well as Petrie and Coverdill, use event history analysis. Such models examine the time to an event (execution) and are appropriate for addressing right censored data. See DAVID W. HOSMER, STANLEY LEMESHOW & SUSANNE MAY, *SURVIVAL ANALYSIS: REGRESSION MODELING OF TIME-TO-EVENT DATA* (2d ed. 2008). In this case, a defendant is right censored if he/she remains on death row at the close of the study window because the ultimate outcome—execution—is unknown. Rather than examining time to execution, we examine who was executed among a set of defendants for whom the ultimate outcome is known.

The final set of empirical studies regarding racial disparity in the post-sentencing phase of capital cases was conducted by a team of researchers led by Frank Baumgartner.⁶⁸ In 2018, Baumgartner compared homicides in the United States from 1975 to 2005 with executions from 1976 to 2015.⁶⁹ Using this approach, the authors report that 51% of homicide victims were white, yet 76% of the defendants who were executed killed a white victim.⁷⁰ In contrast, 46% of homicide victims were Black, but only 15% of the defendants who were executed killed a Black victim.⁷¹ They conclude that defendants convicted of killing white victims were over-represented among those who were executed, and defendants convicted of killing Black victims were under-represented.⁷² Using the same methodology, the authors found a similar pattern in: Alabama, Arkansas, Arizona, Florida, Georgia, Louisiana, Missouri, North Carolina, Ohio, Oklahoma, South Carolina, Texas, and Virginia.⁷³ Baumgartner’s research is vitally important, as it provides a “big picture” overview of race-of-victim disparities in the modern era of the death penalty. Nonetheless, the strength of Baumgartner’s research is also its limitation—the broad-brush inquiry precludes precision. For example, the nationwide homicide data includes defendants who committed murder in states that did not have the death penalty.

The nationwide homicide data also includes defendants convicted of murder in states that had the death penalty, but some of the defendants would not have been death-eligible.⁷⁴ Thus, while the authors compare numbers of homicides with numbers of executions, many of the homicides could not possibly have given rise to an execution. In addition, the authors cannot determine the stage of the process that produced racial disparities; the execution stage could have amplified, ameliorated, or made no difference in the observed disparities. Finally, the researchers could not control for confounding variables. To be fair, the approach Baumgartner used is the only realistic strategy for examining nationwide patterns during the entire modern era of the death penalty—an issue worth addressing even if the answer is necessarily approximate.

⁶⁸ BAUMGARTNER ET AL., *supra* note 1.

⁶⁹ *Id.* at 69–86; *see generally* Frank R. Baumgartner, Amanda J. Grigg & Alisa Mastro, #BlackLivesDon’tMatter: Race-of-Victim Effects in US Executions, 1976–2013, 3 POL., GROUPS, & IDENTITIES 209 (2015); Frank R. Baumgartner, Emma Johnson, Colin Wilson & Clarke Whitehead, These Lives Matter, Those Ones Don’t: Comparing Execution Rates by the Race and Gender of the Victim in the U.S. and in the Top Death Penalty States, 79 ALB. L. REV. 797 (2015); Frank R. Baumgartner & Tim Lyman, Race-of-Victim Discrepancies in Homicides and Executions, Louisiana 1976–2015, 17 LOY. J. PUB. INT. L. 129 (2015).

⁷⁰ BAUMGARTNER ET AL., *supra* note 1, at 72.

⁷¹ *Id.*

⁷² Baumgartner and colleagues note “[t]he data clearly allow us to see the emergence of a racialized and gendered victim hierarchy in determining who receives the death penalty and who does not. The hierarchy places a premium on white lives over black, and female victims over males.” *Id.* at 71–72.

⁷³ *See* Baumgartner, Johnson, Wilson, & Whitehead, *supra* note 69, at 809–60; *see generally* Baumgartner & Lyman, *supra* note 69 (focusing specifically on Louisiana data).

⁷⁴ Baumgartner et al. cite research documenting substantial variation across death penalty states in the percentage of cases that are death-eligible, ranging from about 20% in South Carolina to about 90% in Colorado. BAUMGARTNER, *supra* note 1, at 93 tbl.5.

Our above discussion is not meant to diminish the importance of prior research; such studies shed light on an aspect of the death penalty that had been opaque. But we do attempt to build upon and substantially improve existing research on this topic. We focus only on death-eligible cases as determined by Baldus, and our research follows a cabined set of cases from sentencing through the final resolution: post-sentencing relief or execution. Moreover, we have complete race data for all of the cases in our study, we controlled for numerous confounding variables including the heinousness of the crime, and we have documented how sentencing and execution contribute independently, and jointly, to racial disparities in capital punishment.

III. RESEARCH METHODS

Baldus and others have documented racial disparities in the charging and sentencing phase of the death penalty process,⁷⁵ but what happens after one is sentenced to death? The question we set out to answer was whether appellate processes are effectively mitigating any sentencing-level arbitrariness by ensuring that only the worst of the worst are actually executed. Using the Baldus dataset of persons sentenced to death in Georgia, and expanding it to include actual executions, we were able to assess whether post-sentencing appellate processes did in fact have this salutary effect. Importantly, the dataset contains a closed set of persons who were sentenced to death, and for whom enough time has passed that we can determine the final resolution of their cases.⁷⁶

A. *Expanding Baldus’s Charging and Sentencing Study to Assess Execution Arbitrariness*

To answer the question of whether condemned individuals convicted of killing white victims were more likely to be executed, we procured and expanded the data from Baldus’s original Charging and Sentencing Study (“CSS”).⁷⁷ The CSS includes a random sample of defendants who were indicted for and subsequently convicted of murder or voluntary manslaughter in Georgia between 1973 and 1979.⁷⁸ Importantly, though, Baldus modified the research design to “ensure full coverage of death-sentence cases,” and thus the CSS includes *all* defendants who were sentenced to death—the population of 127 condemned defendants.⁷⁹

In order to assess whether race impacted the actual selection of who was executed, we updated the CSS with new data regarding executions. Specifically, we set out to ascertain who among the 127 defendants sentenced to death was actually executed. This relatively simple sounding question proved quite challenging, as the publicly available version of Baldus’s data is anonymized such that individual cases are identified only by the defendant’s study number. Accordingly, in order to determine who was executed, we

⁷⁵ Kovarsky, *supra* note 48, at 17 n.17 (noting that to date researchers have failed to “quantify arbitrariness [at this stage] through a controlled study”).

⁷⁶ *Id.* at 18 n.17 (“The most viable way to conduct such a study would be to modify the datasets used for famous state-level studies of sentencing.”).

⁷⁷ BALDUS ET AL., *supra* note 4.

⁷⁸ *Id.* at 2–3.

⁷⁹ *Id.* at 429.

had to recreate Baldus's list of condemned defendants by de-anonymizing his data, a process that involved several steps.

To begin, we contacted the National Death Penalty Archive housed at the University at Albany (the custodian of Baldus's records). Unfortunately, some of Baldus's records were apparently lost prior to being shipped or in transit to the archive, and the archive's librarian was only able to provide a partial list of the names associated with the study numbers. From this list we were able to match study numbers to names for 100 of the defendants in question. The following protocol was used to identify the remaining twenty-seven defendants who had been sentenced to death:

1. Relying on the CSS data, we created a spreadsheet that included the following clues regarding the condemned defendant's identity: date of offense, date of arrest, date of sentencing, defendant's age at sentencing, county of conviction, and indictment number.⁸⁰
2. Next, we filed open records requests with local prosecutor's offices in the relevant counties to ascertain the names of defendants based on the indictment number from the CSS data.
3. If the prosecutor's office was unable or unwilling to provide the name of a defendant,⁸¹ then we conducted internet searches using different combinations of terms associated with a particular defendant (e.g., the name of the state, the name of the county, relevant dates, and relevant terminology such as "murder" and "death sentence").
4. The internet searches led us to newspaper articles and court reporter citations that included a potential way of identifying the anonymous person listed in Baldus's dataset. Once a potential name was identified, we searched reported cases on Lexis and Westlaw to corroborate that the information from the case matched the information from the CSS.⁸²
5. Finally, to confirm the identity of the defendant, we cross-referenced *Death Row USA* (a quarterly report by the NAACP's Legal Defense and Education Fund that tracks defendants admitted to death row in each state) to verify that we had properly de-anonymized the Baldus data.⁸³

Having identified the names of the 127 condemned defendants, we sought to determine which of the defendants were actually executed. Determining the outcome was

⁸⁰ The authors are willing to make this spreadsheet available to future researchers upon request.

⁸¹ In most instances, the prosecutor's offices were unhelpful. Open records requests were substantially helpful in only four cases: Dennis Dick, Emma Ruth Cunningham, James Cunningham Jr., and Joseph Wilson Jr.

⁸² The information in Baldus's dataset was compared to the information we found about a particular named defendant. For example, we would cross reference the date of the offense, date of arrest, date of sentence, and county of conviction for the defendant anonymously identified in Baldus's dataset with the individual we predicted was a match based on the internet research.

⁸³ Specifically, we verified that the defendant we identified had been added to the NAACP's death row list in the report issued immediately after the sentencing date.

straightforward in most cases based on the appellate record and an official list of executions provided by the Georgia Department of Corrections.⁸⁴ In a few instances, the ultimate resolution of a case was unclear based on the published judicial records. In these cases, we conducted additional investigation by filing open records requests, submitting inquiries to the Georgia Resource Center, and calling former defense attorneys. Ultimately, we succeeded in gathering the information for all 127 persons sentenced to death.

Our research revealed that of the 127 persons sentenced to death, ninety-five were granted relief and twenty-four were executed (the defendants who were executed are listed in Appendix A).⁸⁵ There were eight cases for which relief was not granted, but for which an execution also did not occur. Specifically, our research revealed that five of the men sentenced to death eventually died of natural causes while on death row.⁸⁶ One defendant, Troy Gregg (the litigant whose death sentence was affirmed in *Gregg v. Georgia*) escaped from death row and was beaten to death.⁸⁷ In addition, one defendant (Buddy Earl Justus) was executed by the state of Virginia before he was scheduled for execution in Georgia;⁸⁸ and one defendant (Virgil Delano Presnell) remains on Georgia's death row at the time of writing.⁸⁹

The eight defendants in question are not included in our execution analysis either because the ultimate resolution of the case was outside of the Georgia justice system or because the ultimate resolution is yet to be determined (the Presnell case). Thus, our analysis of executions among defendants who were sentenced to death includes 119 defendants (127 minus 8). However, it is important to note that our key findings remain the same even if we use an alternative approach that includes the eight defendants in question (by assuming, hypothetically, that the cases would have been resolved in a manner that contradicted our argument).⁹⁰

⁸⁴ We acquired the list of executions through an open records request (the list is available upon request from the authors). The list of Georgia executions can also be found on the Death Penalty Information Center website. *Execution Database*, DEATH PENALTY INFO. CTR., <https://deathpenaltyinfo.org/executions/execution-database>, archived at <https://perma.cc/GX6R-P46A>.

⁸⁵ See *infra* Appendix A.

⁸⁶ Those five are William B. Campbell, Garnet William Cape, Son H. Fleming, Jack Potts, and Bob Redd.

⁸⁷ ROBERT M. BOHM, *DEATHQUEST: AN INTRODUCTION TO THE THEORY AND PRACTICE OF CAPITAL PUNISHMENT IN THE UNITED STATES* 264 (5th ed. 2016).

⁸⁸ Justus was sentenced to death and executed for the 1978 murder of Ida Mae Moses in Virginia, but he had also been sentenced to death in Georgia for the 1978 murder of Rosemary Jackson. *Man Who Killed 3 Women Dies in Virginia Electric Chair*, N.Y. TIMES, Dec. 15, 1990, at 11.

⁸⁹ The Georgia Department of Corrections provides an annual roster of inmates on the state's death row. Presnell is listed on the roster as of April 15, 2020. See GA. DEP'T OF CORR., INMATES UNDER DEATH SENTENCE (2020), http://www.dcor.state.ga.us/sites/all/themes/gdc/pdf/Roster_death_row_CY_2020.pdf, archived at <https://perma.cc/H4UA-KM9U>.

⁹⁰ To determine whether excluding the eight cases had a material effect on our findings, we replicated all of the unadjusted and adjusted models with the cases included. To include cases with

B. *Elaborating Baldus's Charging and Sentencing Study: Random Samples, Populations, and Statistical Significance*

The Baldus data are a hybrid: part random sample, part population.⁹¹ Specifically, the CSS includes a stratified random sample of 1,066 defendants selected from the population of 2,483 defendants⁹² (to generalize from the sample to the population the researchers used inverse probability sampling weights⁹³). However, the CSS also includes the population of defendants who were sentenced to death—the census of 127 condemned defendants.⁹⁴ As previously noted, our study examines the entirety of 119 condemned defendants who were executed or secured relief.⁹⁵

missing data, we coded each case against the empirical pattern we observed in the data. Specifically, each of the eight defendants in question was convicted of killing a white victim and therefore each defendant was coded as securing relief (as opposed to being executed). Such an approach subjects our argument to a strenuous test: Would our key finding be the same even if, hypothetically, the cases had been resolved in a manner that contradicted our key finding? Importantly, the alternative models reveal that our central finding holds true regardless of whether the cases are included or excluded. The alternative models are available upon request.

⁹¹ Baldus and colleagues note that “[t]he CSS sample is a stratified-probability sample that includes all death-sentence cases.” BALDUS ET AL., *supra* note 4, at 429. The CSS “deviated from the strict probability model” to “ensure full coverage of death-sentence cases.” *Id.* In an article that provides technical details, Woodworth reiterates that the CSS included all the cases that ended in a death sentence. George G. Woodworth, *Analysis of a Y-Stratified Sample: The Georgia Charging and Sentencing Study*, in PROCEEDINGS OF THE SECOND WORKSHOP ON LAW AND JUSTICE STATISTICS 1983 18 (Alan E. Gelfand ed., 1983). For a general description of the difference between samples and populations, see DAVID KNOKE & GEORGE W. BOHRNSTEDT, STATISTICS FOR SOCIAL DATA ANALYSIS 15–16 (1994) (defining a population as “the entire set of persons, objects, or events that have at least one common characteristic of interest to a researcher” and a random sample as a subset of cases from the population in which each case from the population “is given an equal chance of being included in the sample”).

⁹² BALDUS ET AL., *supra* note 4, at 2–3, 45–46, 67–68 n.10. Baldus treats all of the defendants in the sample as death-eligible. *Id.* at 71–72 n.38.

⁹³ *Id.* at 67–68 n.10. Woodworth notes that the case weight is “equal to the reciprocal of the sampling fraction.” Woodworth, *supra* note 91, at 18.

⁹⁴ The weighted Baldus data includes 2,484 defendants of whom 128 were sentenced to death. *Id.* at 314–15, tbl.50. However, closer inspection of the data reveals that 127 defendants were actually sentenced to death. *Id.* at 45. The discrepancy occurs because 122 of the condemned defendants were weighted as one case and five of the condemned defendants were weighted as 1.2 cases: (122) (1) + (5) (1.2) = 128. We weighted each condemned defendant as one case (in other words, the condemned defendants are not weighted). Thus, we examined 2,483 defendants of whom 127 were sentenced to death. We did so because the Baldus data includes the population of death sentences, so weights are unnecessary for the condemned defendants. To replicate our models, researchers must change the case weight (“CASEWGT”) from 1.2 to 1.0 for the following cases: Z24, Z26, 515, 516, 593.

⁹⁵ See *supra* notes 78–84 (explaining that the majority of the eight cases that did not result in executions or relief were deaths by natural causes while on death row).

Without delving too deep into the quantitative morass, we will first pause because the hybrid nature of the data justifies a brief discussion of statistical significance. Statistical significance does not signify whether a relationship is “big” or “important.”⁹⁶ Instead, tests of statistical significance indicate the probability (p -value) of observing a relationship in a random sample if no relationship exists in the population.⁹⁷ To illustrate the meaning of statistical significance, consider Baldus’s findings. Baldus found a strong relationship between victim race and sentencing in the random sample: 10.92% of the defendants convicted of killing a white victim were sentenced to death, compared to just 1.33% of the defendants convicted of killing a Black victim. The p -value for the model is less than 0.001. Thus, the chance of finding such a substantial difference in the random sample if no difference exists in the population is less than 0.1%. Given the miniscule p -value, Baldus rejected the null hypothesis—that is, the hypothesis that the imposition of a death sentence is unrelated to the race of the victim in the population. Nonetheless, a Type I error—rejecting a null hypothesis that is true—remains possible. The chance that Baldus drew a misleading random sample is vanishingly small, but it is not zero (a p -value cannot be zero because sampling error is always possible).⁹⁸

Indeed, a researcher can only be *certain* that observed differences are real if one has data on the population.⁹⁹ Here, we have data on the population of defendants who were sentenced to death in the place and period in question. Because our execution models examine the census of condemned defendants, we can be certain that any observed racial disparities in this population are real (as opposed to the product of sampling error).¹⁰⁰

⁹⁶ Ronald L. Wasserstein & Nicole A. Lazar, *The ASA’s Statement on p -Values: Context, Process, and Purpose*, 70 THE AM. STATISTICIAN 129, 132 (2016) (“A p -value, or statistical significance, does not measure the size of an effect or the importance of a result.”).

⁹⁷ In technical language, tests of statistical significance indicate the probability of producing a sample statistic as extreme as (or more extreme than) the observed sample statistic if the null hypothesis (no relationship in the population) is true. DENTON E. MORRISON & RAMON E. HENKEL, THE SIGNIFICANCE TEST CONTROVERSY 184 (1970) (“The significance level that results from the comparison gives the relative frequency (probability) with which a sample statistic of the obtained size or more extreme size would be expected to occur over repeated trials (samples) utilizing the same probability sampling method on the same population if the hypothesized value for the population parameter (null hypothesis) were true.”).

⁹⁸ WILLIAM FOX, SOCIAL STATISTICS: AN INTRODUCTION USING MICROCASE 110 (1995) (“The fact that statistical significance is based on probability means that we can never be absolutely certain we are right when we either reject or fail to reject a null hypothesis. After all, we never know for sure from sample data whether or not two variables are related in the population. Only population data can tell us that with absolute certainty. Errors are always possible with sample data because our sample may be unrepresentative. Even random sampling can result in an unrepresentative sample.”).

⁹⁹ *Id.* (noting that “only population data can tell us with absolute certainty” whether two variables are related).

¹⁰⁰ Andrew A. Anderson, *Assessing Statistical Results: Magnitude, Precision, and Model Uncertainty*, 73 THE AM. STATISTICIAN 118, 119 (2019) (“A statistic is an approximation to an unknown population parameter based on a random subsample from that population. Statistics generally differ from true population values: the average height of five randomly selected female professional basketball players is unlikely to exactly equal the average height of all female

If an analysis examines a random sample of cases, then reporting tests of statistical significance is appropriate. However, if an analysis examines an entire population of cases, then reporting tests of statistical significance is inappropriate.¹⁰¹ Accordingly, we report statistical significance for models based on Baldus's sample data (the stratified random sample of 1,066 cases weighted to 2,483 cases), but we do not report statistical significance for models based on Baldus's population data (the census of 119 condemned defendants who were executed or secured relief). Put differently, statistical significance is a concept without relevance in models that examine population data. So we focus on an issue that is relevant: describing the magnitude of racial disparities in execution among the population of condemned defendants.¹⁰²

IV. RESULTS: IS THERE AN EXECUTION-SELECTION EFFECT?

A. *Unadjusted Race of Victim Disparities*

Baldus's research showed that the race of the victim was highly predictive of which defendants would be sentenced to death. Baldus's original findings are reproduced in Table 1, Panel A. To reiterate the central finding, a death sentence was imposed in 10.92%

professional basketball players. Given data from the entire population, there would be no sampling uncertainty.”); Charles D. Cowger, *Author's Reply*, 59 SOC. SERVICE REV. 520, 520 (1985) (“If you have a total population, you have no sampling error.”).

¹⁰¹ See Charles D. Cowger, *Statistical Significance Tests: Scientific Ritualism or Scientific Method?*, 58 SOC. SERV. REV. 358, 366 (1984) (“Significance tests are not only inappropriate when applied to a total population but are unnecessary since the probable relation of a sample and a population is defined as unity when they are the same.”); Athena Engman, *Is There Life After $P < 0.05$? Statistical Significance and Quantitative Sociology*, 47 QUALITY & QUANTITY 257, 265 (2013) (“Another erroneous use of statistical significance . . . is the application of statistical significance tests to samples that equalled the population.”); FOX, *supra* note 98, at 118 (“But when we have population rather than sample data, tests of significance are of questionable utility. If we have information about all the cases in the population . . . then there is no population to which we need to generalize, and tests of statistical significance have little purpose. We already know about the population, so there is no need to generalize to it.”). Still, some have suggested that reporting tests of statistical significance is appropriate for population data, as the population can be conceptualized as “a random sample from a hypothetically infinite universe of possibilities.” HUBERT M. BLALOCK, *SOCIAL STATISTICS* 270 (1970). Morrison and Henkel disagree with Blalock's logic: “Are some or all of the specific benefits of probability sampling available regardless of whether the sample is a probability sample? We doubt it. Statistical inference depends on a statistical theory, but to be applicable the theory also depends on certain empirical operations in research. To ask whether a given result could be generated by a random process model in the absence of a random process in the generation of the data is simply to raise an irrelevant question; an absolutely crucial feature of the application of the model is missing.” MORRISON & HENKEL, *supra* note 97, at 190. Setting the theoretical debate aside, we are not interested in a hypothetically infinite universe of possibilities. Rather, we are interested in what actually happened to the defendants who were sentenced to death in the place and period in question.

¹⁰² Kenneth A. Bollen, *Apparent and Nonapparent Significance Tests*, 25 SOC. METHODOLOGY 459, 467 (1995) (“Researchers have several options when analyzing apparent populations. One is to treat the data as a census of the population and to report descriptive statistics. . . . The important point is that no inference is being made so that significance tests are not appropriate.”).

(107/980) of cases with a white victim compared to 1.33% (20/1503) of cases with a Black victim ($p \leq 0.001$).

Table 1. Unadjusted Disparities Based on Baldus's Original Data¹						
	Panel A: Death Sentence²		Panel B: Execution Given Death Sentence³		Panel C: Overall Execution Rate⁴	
	<i>Number of Actual Death Sentences</i>	<i>Percent</i>	<i>Number of Actual Executions</i>	<i>Percent</i>	<i>Number of Actual Executions</i>	<i>Percent</i>
	<i>Number of Possible Death Sentences</i>		<i>Number of Possible Executions</i>		<i>Number of Possible Executions</i>	
White Victim	107	10.92%	22	22.22%	22	2.26%
	980		99		972	
Black Victim	20	1.33%	2	10.00%	2	0.13%
	1503		20		1503	
Ratio WV / BV					2.26337449 / 0.1330672 = 17.01	
Notes:						
¹ In this table, Hance is coded as killing a Black victim (Baldus's original coding). <i>See infra</i> text accompanying notes 108–32.						
² $p \leq 0.001$; chi-square = 72.22 with 1 DF (percentages are based on the weighted data, but chi-square is based on the unweighted data because it assumes independent observations).						
³ We do not present a test of statistical significance because the calculation is based on population data (see text for discussion).						
⁴ $p \leq 0.001$; chi-square = 18.33 with 1 DF (percentages are based on the weighted data, but chi-square is based on the unweighted data because it assumes independent observations).						

By updating the CSS data, we were able to examine whether the race of the victim predicts not only who will be sentenced to death, but also who will be executed. The disparities that Baldus found at sentencing would expand if defendants convicted of killing a white victim were disproportionately executed; the sentencing disparities would contract if defendants convicted of killing a Black victim were disproportionately executed; and the sentencing disparities would remain the same if defendants convicted of killing white victims and Black victims were executed in equal proportions. Table 1, Panel B, reveals what actually occurred:

- Among defendants who were sentenced to death for killing a white victim, 22.22% (22/99) were executed.
- Among defendants who were sentenced to death for killing a Black victim, 10% (2/20) were executed.¹⁰³

¹⁰³ We did not find a race-of-defendant effect at the execution stage, *supra* note 39.

These findings reveal a racially disparate execution-selection effect: the problematic sentencing disparity discovered by Baldus is exacerbated at the execution stage.¹⁰⁴ Even among those already sentenced to death, persons who were convicted of killing a white victim were more than twice as likely to be executed.

Moreover, considered in context, the updated CSS data present an even more startling picture of racial disparity. To discern the overall racial disparities from sentencing through execution, we combined the data from the penultimate stage of a death penalty case (sentencing), as compiled by Baldus, and the ultimate stage of a capital case (executions), as compiled by us. Table 1, Panel C, shows these aggregated findings. Specifically, it shows that 2.26% (22/972) of the defendants convicted of killing a white victim were executed, compared to just 0.13% (2/1503) of the defendants convicted of killing a Black victim ($p \leq 0.001$). Put differently, the overall execution rate is about seventeen (2.26/0.13) times greater for defendants convicted of killing a white victim.¹⁰⁵

The disparity we uncovered is substantial. But it is important to be clear about the nature of the disparity. It is simply not the case that defendants convicted of killing a white victim were executed on a regular basis. Rather, defendants convicted of killing a Black victim were almost never executed. The disparity stems from comparing rare executions in cases with white victims to virtually non-existent executions in cases with Black victims.

To make this disparity more tangible, it is useful to imagine the execution outcomes in Georgia if persons convicted of killing Black victims had been executed at the same rate as persons convicted of killing white victims. If persons convicted of killing Black victims had been executed at the same rate as persons convicted of killing white victims (2.26%), then Georgia would have executed an additional thirty-two individuals from our dataset since 1980.¹⁰⁶ Alternatively, if persons convicted of killing white victims had been executed at the same rate as persons convicted of killing Black victims (0.13%), then Georgia would have carried out twenty-one fewer executions of individuals in our dataset over the same period.¹⁰⁷ Whether the overall rate of executions were leveled-up to the white-victim rate, or leveled down to the Black-victim rate, the difference in the number of executions would be considerable.

In sum, the racial disparities that Baldus discovered at the sentencing stage of Georgia's death penalty system are exacerbated at the execution stage. Ours is the first

¹⁰⁴ While staggering, we note that mere “associations between racial characteristics” and execution rates do not “establish that racial factors actually influenced the system.” BALDUS ET AL., *supra* note 4, at 141. Accordingly, we studied the race effects after adjusting for a variety of factors as explained in the next section.

¹⁰⁵ Baldus calculated the death sentence rate in the same manner. *See id.* at 314–15.

¹⁰⁶ This figure is derived as follows: If 2.26% of the 1,503 cases with a Black victim had produced an execution, then thirty-four executions would have been carried out. Given that two executions actually occurred in Black victim cases, thirty-two additional executions are required to reach parity.

¹⁰⁷ This figure is derived as follows: If 0.13% of the 972 cases with a white victim had produced an execution, then one execution would have been carried out. Given that twenty-two executions actually occurred in white victim cases, twenty-one fewer executions are required to reach parity.

study to examine actual cases from sentencing through execution, and we show that, compared to defendants who were convicted of killing a Black victim, defendants convicted of killing a white victim were more likely to be sentenced to death *and* more likely to be executed.

B. Unadjusted Race of Victim Disparities: Worse Than it Appears?

It is possible that the findings reported above actually understate racial disparities. Drawing on Baldus's original data, the execution rate is seventeen times greater in white-victim cases. But the execution rate might be as much as thirty-eight times greater in white-victim cases after minor modifications to the data detailed below.

1. Minor Modifications to the Data: The Hance Case

Out of the 1,503 cases with Black victims, Baldus found that only twenty defendants were sentenced to death.¹⁰⁸ Our updating of the Baldus data reveals that only two of those persons were executed: William Henry Hance and Joseph Holcombe Mulligan. Given that our research was aimed at understanding the operation of arbitrariness in the death penalty system, we wanted to know what made these two cases stand out from the entire dataset of death-eligible persons who had killed a Black victim. Thus, we engaged in additional research regarding the facts surrounding the Hance and Mulligan cases. Our research revealed that both cases are unique.

In the case of Mulligan, he killed two persons, a U.S. Army Captain and the captain's girlfriend.¹⁰⁹ At first blush, the fact that the killing was of a captain in the armed forces seems irrelevant—the point is simply that he killed a person in a manner or for reasons that were sufficiently culpable so as to warrant the death penalty. As one leading retributivist scholar has explained, “I think victims should and must be ignored if you are claiming to be doing retributive theory.”¹¹⁰ Indeed, the “assumption that victim characteristics don't figure in the calculus of blame” is “typical of the field.”¹¹¹ But the reality is that the “doctrine and practice of criminal law reflect a moral outlook in which judgments of wrong and blame are based in part on” concerns such as the status or

¹⁰⁸ The Baldus dataset consisted of 1,066 cases, which included 521 white victims and 545 Black victims. See BALDUS ET AL., *supra* note 4, at 67 n.10. Importantly, Baldus used inverse probability sampling weights. So, for example, if a particular case had a one-in-three chance of being included in the random sample then that case counts as three cases. Once the sample weights are applied, the number of cases increases from 1,066 to 2,483. Focusing on the 2,483 cases, the data include 980 white victims and 1,503 Black victims.

¹⁰⁹ David Mould, *Mulligan Dies Blaming His Lawyers*, UNITED PRESS INT'L (May 16, 1987), <https://www.upi.com/Archives/1987/05/16/Mulligan-dies-blaming-his-lawyers/9929548136000/>, archived at <https://perma.cc/NF9Z-HECE>.

¹¹⁰ Michael Moore, *Victims and Retribution: A Reply to Professor Fletcher*, 3 BUFF. CRIM. L. REV. 65, 67 (1999).

¹¹¹ Joshua Kleinfeld, *A Theory of Criminal Victimization*, 65 STAN. L. REV. 1087, 1090 (2013).

vulnerability of the victim.¹¹² So it warrants emphasis that one of the only two men executed for killing a Black victim was executed for the killing of a person with considerable social status, an officer in the U.S. armed forces.¹¹³ What is more, it was a double homicide.

The only other defendant who was executed for killing a Black victim was William Henry Hance, a soldier at Fort Benning in Columbus. Hance was sentenced to death for the murder of Gail Jackson, a Black female prostitute¹¹⁴ (also known as Gail Faison¹¹⁵).¹¹⁶ However, Hance killed two more women during the same crime spree: Irene Thirkield, who was Black, and Karen Hickman, who was white.¹¹⁷ On April 5, 1978, Columbus authorities issued a warrant for Hance in the Gail Jackson case; her body was found just off the military base and thus fell under state jurisdiction. But Hance was already suspected of killing Irene Thirkield and Karen Hickman whose bodies were found on the military

¹¹² *Id.* at 1151; see DONALD BLACK, *THE MANNERS AND CUSTOMS OF THE POLICE* 14–16 (1980) (noting the likely differential interest in a case with a “high status” victim); see generally Scott Phillips, *Status Disparities in the Capital of Capital Punishment*, 43 L. & SOC’Y REV. 807 (2009); Scott Phillips & Mark Cooney, *The Electronic Pillory: Social Time and Hostility Toward Capital Murderers*, 49 LAW & SOC’Y REV. 725 (2015).

¹¹³ Kleinfeld, *supra* note 111, at 1124 (noting that it is unseemly and largely unheard of for crimes against “drug dealers or prostitutes” to be explicitly downgraded in codified law but explaining that this “sort of downgrading tends to show up in the practice of criminal law rather than the doctrine”). Kleinfeld theorizes that the critical assessment is “victimization” such that certain classes of victims, such as children and those who do not themselves have prior criminal records and who are not drug users are the most likely to gain priority status within the justice system. *Id.* at 1128 (“A wealthy, middle-aged professional might be high social status but low victimization, for example.”); *id.* at 1137 (“Interviews with capital jurors show that the vulnerability and innocence of victims move their decisions for life or death.”). Even under Kleinfeld’s theory that the degree of victimization is the best predictor of a sentencing outcome, it is notable that Mulligan and his girlfriend did not have a particularly high degree of victimization: they were romantically involved even though Captain Doe was actually married to Mulligan’s sister. Indeed, the Captain and his brother-in-law (Mulligan) had argued repeatedly about the Captain’s plans to divorce Mulligan’s sister. Likewise, in the lone other case resulting in an execution when the victim was Black (the Hance case) the victim was a prostitute. *Id.* at 1147.

¹¹⁴ MICHAEL NEWTON, *THE ENCYCLOPEDIA OF SERIAL KILLERS: A STUDY OF THE CHILLING CRIMINAL PHENOMENON, FROM THE “ANGELS OF DEATH” TO THE “ZODIAC” KILLER* 109 (2d ed. 2006).

¹¹⁵ *Soldier Denies Evil Slaying*, ATLANTA CONST., Apr. 15, 1978, at 7a.

¹¹⁶ Hance’s victim also fails under Kleinfeld’s theory of victimization. Hance’s victim was a prostitute. Kleinfeld, *supra* note 111, at 1147 (“Empirically, the basic victimization/gender pattern appears to be this: where victims are female, punishments are much harsher and arrests may be more likely than where victims are male (even in cases of wrongful accidents and even after controlling for factors like victim provocation or aggression), unless the female victim has a prior intimate link to the offender or is a prostitute, in which case arrests are less likely and punishments substantially more lenient.”).

¹¹⁷ B. Drummond Ayres Jr., *Police Certain They Have Solved 4 Georgia Slayings*, N.Y. TIMES, Apr. 7, 1978, at A28.

base, and thus fell under military jurisdiction.¹¹⁸ Indeed, by April 7 the Columbus Ledger reported that Hance had confessed to all three murders: “Hance allegedly has admitted to investigators he brutally beat to death Miss Faison, Irene Thirkield, and Private Karen Hickman.”¹¹⁹ The local newspaper continued: “Hance also allegedly admitted to making the phone calls to military police headquarters telling them where to find . . . Miss Hickman’s clothing.”¹²⁰ By May 2, the Hickman investigation was essentially closed: “While authorities are still officially investigating the Hickman case, it has been linked to the ‘Forces of Evil’ killing of a Columbus woman, Gail Faison. Specialist 4 William Hance was charged with Miss Faison’s death.”¹²¹ Supporting the notion that killing a white victim often triggers a particularly robust response, the Hickman murder led to a nationwide manhunt. The Columbus Ledger noted: “The Hickman investigation, a baffling web that involved questioning hundreds of persons, became a nationwide effort over the past six months. CID agents combed almost every city or military post where the Omaha, Nebraska native lived.”¹²² Given the timing of events, media coverage, and the intense search for Hickman’s killer, the state prosecutor surely knew that Hance had killed a white woman serving in the military when he decided to seek the death penalty against Hance for killing a Black prostitute. Potential jurors in Columbus who had been paying attention also would have known that Hance killed Hickman. In December 1978, Hance was convicted and sentenced to death in state court for the murder of Gail Jackson.¹²³ In June 1979, Hance was convicted of the Irene Thirkield and Karen Hickman murders in military court.¹²⁴ Hance’s state death sentence was subsequently overturned, but he was resentenced to death in 1984¹²⁵ in a proceeding that appeared to be tainted with racial bias.¹²⁶

¹¹⁸ David Einhorn & Joliene Hutto, *Man Held in FOE Killings*, Apr. 5, 1978, COLUMBUS LEDGER, at A1–A2.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Husband Arrested in Slaying*, COLUMBUS LEDGER, May 2, 1978, at B4.

¹²² Einhorn & Hutto, *supra* note 118.

¹²³ Larry Kahaner, *Hance Given Death Penalty*, COLUMBUS LEDGER, Dec. 17, 1978, at A1–A2.

¹²⁴ *Hance Guilty in ‘Forces of Evil’ Slayings*, ATLANTA CONST., June 8, 1979, at 1C.

¹²⁵ There is a pending open record request for the trial transcripts from Hance’s re-sentencing in 1984.

¹²⁶ *Hance v. Zant*, 981 F.2d 1180, 1181 (11th Cir. 1993); *William Henry Hance executed in Georgia*, UNITED PRESS INT’L ARCHIVES (Mar. 31, 1994), <https://www.upi.com/Archives/1994/03/31/William-Henry-Hance-executed-in-Georgia/8047765090000/>, archived at <https://perma.cc/3E6W-KAVH>. The lone Black juror on Hance’s jury, Gayle Lewis Daniels, claimed she had never actually voted for the death penalty and had voted “yes” during the polling of the jury out of fear. Bob Herbert, *In America; Jury Room Injustice*, N.Y. TIMES (Mar. 30, 1994), <https://www.nytimes.com/1994/03/30/opinion/in-america-jury-room-injustice.html>, archived at <https://perma.cc/V8BN-ASSF>. The Supreme Court denied certiorari when Hance sought relief, but three Justices dissented from the denial and wrote that “[t]here [wa]s reason to believe that his trial and sentencing proceedings were infected with racial prejudice.” *Hance v. Zant*, 511 U.S. 1013, 1013 (1994) (Blackman, J., dissenting from denial of certiorari).

It is clear that if the three homicides had been joined in a single trial, then the failure to code this as a white-victim case would have been an error. In a technical sense, Hance was sentenced to death and executed for a “case” involving a Black victim, Gail Jackson. In a practical sense, though, Hance’s “case” included three victims who were killed in the same manner during a crime spree, one of whom was a white woman. Considering the facts outlined above, we believe it is appropriate to treat Hance as a white-victim case. Such a conclusion is consistent with social science research which has shown that executing an offender for a transgression against a “different victim” is not unprecedented.¹²⁷

The obvious question is whether coding the Hance case as a Black victim was an error on the part of the Baldus team. We think the best explanation for the coding of the Hance case is not that there was a coding error but simply a gap in the research protocol as applied to the unique circumstances of Hance’s case. Baldus’s research protocol specified that if a case included “one or more white victims,” then the victim’s race should be coded as white.¹²⁸ The protocol specifies how the race of the victim should be coded “in any case” in which there are multiple victims. For example, a case with two victims—one Black, one white—is coded as a “white victim.” Such a protocol is consistent with other research in the field,¹²⁹ and appropriately tailored to Baldus’s central research question: Does the presence of a single white victim increase the likelihood of a death sentence? But read literally, the protocol—“in any case”—excludes the Hance execution from being considered as one that arises out of a “case” with one or more white victims; in the “case” for which Hance was executed there was only one victim—and she was Black. Stated differently, Baldus’s research protocol only applies when there are multiple victims in a single case, and because Hance killed a white victim in a case separate from the one that resulted in his sentence of death and execution, perhaps the protocol simply did not allow Hance to be coded as a white-victim case. Hance appears to be the only such scenario in the Baldus data.¹³⁰

¹²⁷ In 1989, Michael Radelet examined 15,978 executions in American history from 1608 until the late 1980s. He identified thirty white offenders who were executed for killing a Black victim. What explains such anomalous executions? In ten of the thirty cases, the offender had also harmed a white victim: eight offenders killed a slave and therefore harmed the slave’s white owner; two offenders were accused of killing a white victim but could not be prosecuted for the crime. Michael L. Radelet, *Executions of Whites for Crimes Against Blacks: Exceptions to the Rule?*, 30 SOC. Q. 529–44 (1989).

¹²⁸ BALDUS ET AL., *supra* note 4, at 320, 456; DAVID C. BALDUS, GEORGE WOODWORTH & CHARLES A. PULASKI JR., CHARGING AND SENTENCING OF MURDER AND VOLUNTARY MANSLAUGHTER CASES IN GEORGIA, 1973–1979 85 (2001), <https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/9264>, archived at <https://perma.cc/3DXE-HRJU>.

¹²⁹ Sherod Thaxton, *Disentangling Disparity: Exploring Racially Disparate Effect and Treatment in Capital Charging*, 45 AM. J. CRIM. L. 95, 146 (2018) (“Consistent with prior research, cases with at least one Caucasian victim were coded as having a Caucasian victim for the purposes of this study.”).

¹³⁰ That there is no discussion of this possible discrepancy with the protocol by Baldus or other researchers is not surprising because the Hance case is highly unusual. Indeed, other researchers

Alternatively, it is possible that the prior researchers incorrectly coded the Hance case. Perhaps the law students who collected the demographic data did not know that Karen Hickman was white. In support of this theory, the research material compiled by Baldus includes a profile for Hance that identifies Gail Jackson as Black, but describes the remaining victims without noting their names or races.

In any event, whether Hance reflects a gap in the research protocol or a one-off coding error, it seems appropriate to treat it as a white-victim case for the purposes of our analysis. We make this point not to bolster our findings artificially, but to be as precise as possible and demonstrate that Baldus's original data probably underestimate race-of-victim disparities in death sentencing and execution.

To put the Hance case in context, it is important to reflect on how rare it is for persons to be executed for killing a single Black prostitute and no additional victims. Such executions are exceedingly rare according to the Death Penalty Information Center's list of 1,490 executions in the modern era (1976 through 2018).¹³¹ Using that database, we searched for offenders who were executed for killing one Black female. Having identified sixty-five such offenders, we investigated the facts of each case.¹³² In total, since 1976 only two other men, Johnny Ray Johnson (Texas) and Brandon Hedrick (Virginia), have been executed for killing a Black female prostitute.¹³³ Notably, Johnson's execution is similar to that of Hance because although Johnson was executed for the murder of a single prostitute, he also raped and murdered additional women.¹³⁴ Based on our independent research using the Death Penalty Information Center databases, then, Brandon Hedrick is the only man in modern history who was executed for the murder of a single Black female prostitute without also killing at least one other victim in a separate case. Hedrick brutally raped, robbed, and murdered Lisa Crider, a twenty-three-year-old mother of a five-year-old boy, on Mother's Day.¹³⁵ Obviously, the national pattern we uncovered in this vein does not prove that Hance was executed because he killed multiple victims over time, including one white female. However, the historical statistics tend to confirm that the

have documented that about 1% of Georgia cases involve multiple victims of different races. *Id.* A case with multiple victims of different races handled in state court and military court is likely a class of one.

¹³¹ *Execution Database*, *supra* note 84.

¹³² Our research on this aspect of the project was limited, as we used only Murderpedia (a website that collates information about cases including newspaper articles and appellate opinions) and the Death Penalty Information Center Execution Database. See MURDERPEDIA, <https://murderpedia.org>; *Execution Database*, *supra* note 84.

¹³³ *Johnny Ray Johnson*, MURDERPEDIA, <http://www.murderpedia.org/male.J/j1/johnson-johnny-ray.htm>, archived at <https://perma.cc/GW5E-D88Z>; *Brandon Wayne Hedrick*, MURDERPEDIA, <http://www.murderpedia.org/male.H/h1/hedrick-brandon.htm>, archived at <https://perma.cc/6MA4-2EW5>.

¹³⁴ In media reports and appellate opinions, Smith is not described as a prostitute. But she apparently agreed to have sex for drugs, so we included her in our list. See Allan Turner, *Houston Man Put to Death for Murder*, HOUSTON CHRON., Feb. 13, 2009, at B2.

¹³⁵ *Brandon Hedrick*, OFF. OF THE CLARK COUNTY PROSECUTING ATT'Y, <http://www.clarkprosecutor.org/html/death/US/hedrick1035.htm>, archived at <https://perma.cc/3E2B-JTZW>.

Hance case is anomalous, and more complicated than the categorical coding decision to treat the case as a Black-victim killing.

In summary, there were 1,503 possible cases where a death sentence could have been imposed for the killing of a Black victim, yet the only two persons who were executed for killing a Black victim in Baldus's dataset either (a) also killed a white victim, or (b) killed a Black victim with unusually high social status.

2. *Minor Modifications to the Data: The Brown, Charles, and Solomon-Jones Cases*

In compiling our study, we found minor errors by the Baldus research team. Specifically, the researchers omitted two defendants: James Willie Brown and Earl Charles. The researchers also treated two men, Van Roosevelt Solomon and Astor Jones, as a single case. Each defendant is considered in turn.

- James Willie Brown: Brown was indicted in October 1975 for the rape and murder of Brenda Sue Watson, a white¹³⁶ woman in Atlanta.¹³⁷ Baldus's research protocol specified that the authors would include all defendants who were "arrested and charged with homicide" between 1973 and 1979 and "who were subsequently convicted of murder or voluntary manslaughter."¹³⁸ Brown's case may have evaded the attention of the Baldus team because he was deemed incompetent to stand trial and held in a state hospital until his trial and conviction in 1981, the same year the research team collected the CSS data.¹³⁹ Brown was sentenced to death and executed in 2003.¹⁴⁰
- Earl Charles: In October 1974, Max and Myra Rosenstein, the white owners of a furniture store in Savannah, were murdered during a robbery. Charles was convicted of the murder and sentenced to death in May 1975. However,

¹³⁶ *James Willie Brown*, OFF. OF THE CLARK COUNTY PROSECUTING ATT'Y, <http://www.clarkprosecutor.org/html/death/US/brown879.htm>, archived at <https://perma.cc/EGQ6-5H2Q>.

¹³⁷ *Brown v. State*, 295 S.E.2d 727, 733 (Ga. 1982).

¹³⁸ BALDUS ET AL., *supra* note 4 at 45. The research protocol could have been clearer in this regard. In describing the original Procedural Reform Study, Baldus makes clear that they included all persons charged with murder between 1973 and 1978 for whom there was a trial and conviction "during the time specified above." *Id.* at 43–44. But there is less clarity when it comes to the critical Charging and Sentencing Study; here, Baldus specified that he "covered the period from 1973 through 1979" for all defendants charged with homicide and "subsequently convicted of murder or manslaughter." *Id.* at 45. Baldus does not specify for the Charging and Sentencing Study that persons charged between 1973 and 1979 but not convicted until 1981 (or later) are excluded from the study. For practical purposes, Brown may be the only such defendant.

¹³⁹ *Id.* at 46.

¹⁴⁰ For a list of Georgia executions, see *Execution Database*, *supra* note 81.

Charles was exonerated and freed in 1978 before the research team began collecting data for the CSS in 1981.¹⁴¹

- Solomon-Jones: In 1979, Roger Dennis Tackett, the white manager of a convenience store, was murdered in a robbery. Baldus treated the two defendants, Van Roosevelt Solomon and Brandon Astor Jones, as a single “case.” Solomon and Jones were executed in 1985 and 2016, respectively.¹⁴²

The unadjusted disparities reported in Table 1 change substantially if Hance is coded as killing a white victim; Brown and Charles are included; and Solomon-Jones are treated as separate cases.¹⁴³ Using the updated data, Table 2 reveals:

- Among defendants who were sentenced to death for killing a white victim, 24.27% (25/103) were executed.
- Among defendants who were sentenced to death for killing a Black victim, 5.26% (1/19) were executed.
- Even among defendants already sentenced to death, defendants who were convicted of killing a white victim were about 4.6 times more likely to be executed (24.27/5.26) than defendants convicted of killing a Black victim.
- Having corrected a small number of errors in the data, the overall execution rate is about 38 times greater for defendants convicted of killing a white victim than for defendants convicted of killing a Black victim.

¹⁴¹ See MICHAEL L. RADELET, HUGO ADAM BEDAU & CONSTANCE E. PUTNAM, IN SPITE OF INNOCENCE: ERRONEOUS CONVICTION IN CAPITAL CASES 243–44 (1992); see also THE NATIONAL REGISTRY OF EXONERATIONS, EARL OF PATRICK CHARLES, <https://www.law.umich.edu/special/exoneration/Pages/casedetailpre1989.aspx?caseid=54>, archived at <https://perma.cc/LDJ4-HYJ3>.

¹⁴² David Beasley, *Georgia Executes Its Oldest Death Row Inmate For 1979 Murder*, REUTERS (Feb. 3, 2016), <https://www.reuters.com/article/us-usa-execution-georgia/georgia-executes-oldest-death-row-inmate-for-1979-murder-idUSKCN0VB19D>, archived at <https://perma.cc/W9XX-QN78>.

¹⁴³ Minor errors are inevitable in a large-scale research project (especially in the absence of modern computer databases and websites). The errors suggest that Baldus underestimated racial disparities in death sentencing, as each omitted case—Brown, Charles, and Solomon-Jones— involves a death sentence for the murder of a white victim. The relationship between killing a white victim and being sentenced to death is strengthened further if Hance is coded as a white-victim case.

Table 2. Unadjusted Disparities Based on Baldus’s Modified Data¹						
	Panel A: Death Sentence²		Panel B: Execution Given Death Sentence³		Panel C: Overall Execution Rate⁴	
	<i>Number of Actual Death Sentences</i>	<i>Percent</i>	<i>Number of Actual Executions</i>	<i>Percent</i>	<i>Number of Actual Executions</i>	<i>Percent</i>
	<i>Number of Possible Death Sentences</i>		<i>Number of Possible Executions</i>		<i>Number of Possible Executions</i>	
White Victim	111	11.28%	25	24.27%	25	2.56%
	984		103		976	
Black Victim	19	1.26%	1	5.26%	1	0.07%
	1502		19		1502	
Ratio WV / BV					2.56147541 / .0665779 = <u>38.47</u>	
Notes:						
¹ In this table, Baldus’s original data are modified as follows: Hance is coded as killing a white victim; Brown and Charles are included; and Solomon-Jones are treated as separate cases.						
² $p \leq .001$; chi-square = 77.92 with 1 DF (percentages are based on the weighted data, but chi-square is based on the unweighted data because it assumes independent observations).						
³ We do not present a test of statistical significance because the calculation is based on population data (see text for discussion).						
⁴ $p \leq .001$; chi-square = 24.00 with 1 DF (percentages are based on the weighted data, but chi-square is based on the unweighted data because it assumes independent observations).						

C. Adjusted Race of Victim Disparities

The racial disparities described above are unadjusted—that is, the findings we have described up to this point do not consider any possible alternative explanations for the racial disparities. Yet, it is conceivable that non-racial factors partially or fully explain the disparities noted above. For example, some murders are more aggravated than others.¹⁴⁴

¹⁴⁴ It is commonplace to describe the goal of modern capital sentencing systems as seeking to execute only the defendants who committed the most atrocious crimes, that is, the “worst of the worst.” As the Supreme Court has put it, “[c]apital punishment must be limited to those offenders who commit ‘a narrow category of the most serious crimes’ and whose extreme culpability makes them ‘the most deserving of execution.’” *Roper v. Simmons*, 543 U.S. 551, 568 (2005) (quoting *Atkins v. Virginia*, 536 U.S. 304, 319 (2002)). See, e.g., STEIKER & STEIKER, *supra* note 3, at 157

It is possible that defendants convicted of killing white victims also happen to have committed more aggravated murders than defendants convicted of killing Black victims, and thus the defendants who committed the worst murders were the ones executed. Only through a multivariate logistic regression can we examine adjusted racial disparities and answer the question of whether killing a white victim increases the odds of being executed after controlling for confounding variables.¹⁴⁵

In the adjusted models that follow, we provide two sets of results—one treating the Hance case as a Black-victim case, and one treating the Hance case as a white-victim case. Because reasonable minds could disagree on the coding of the Hance case, transparency requires both sets of findings. However, the adjusted models do not include the Brown and Charles cases, nor do the adjusted models separate the Solomon-Jones case, because we do not have the requisite data for the confounding variables. To complete the multivariate analysis, we constructed a series of logistic regression models.¹⁴⁶

1. *Adjusted Odds Ratio for White Victim in Logistic Regression Models*

Having independently replicated and confirmed Baldus's calculations,¹⁴⁷ we next turned to our own data regarding actual executions. Before controlling for any confounding variables, we calculated the odds of execution in white-victim cases and Black-victim cases (the number of times an execution happened divided by the number of times an execution did not happen). For defendants who were sentenced to death for killing a white victim, the odds of execution were 0.2857 (22 executions/77 non-executions). For defendants who were sentenced to death for killing a Black victim, the odds of execution were 0.1111 (2 executions/18 non-executions). An odds *ratio* compares the odds for the two groups—the odds of execution in white-victim cases *relative to* the odds of execution

(describing the fear that run-of-the-mill cases could result in death sentences as “clearly a subtext in *Furman*”).

¹⁴⁵ For a discussion of unadjusted and adjusted racial disparities, *see generally* David Baldus et al., *Empirical Studies of Race and Geographic Discrimination in the Administration of the Death Penalty: A Primer on the Key Methodological Issues*, in *THE FUTURE OF AMERICA'S DEATH PENALTY: AN AGENDA FOR THE NEXT GENERATION OF CAPITAL PUNISHMENT RESEARCH* 174–80 (Charles S. Lanier, William J. Bowers & James R. Acker, ed., 2009).

¹⁴⁶ We recommend the Appendix to readers interested in the details of the regression models. In the body of the Article we will simply describe key findings from the regression models.

¹⁴⁷ The first thing we did was replicate Baldus's well-known “core” model for death sentences. After controlling for 40 confounding factors, Baldus found that the odds of being sentenced to death were 4.25 times greater for defendants convicted of killing a white victim (statistically significant at $p \leq .01$). We replicated Baldus's models and confirmed his results. Before detailing the results of our own regression analysis, however, it is important to make one clarification to Baldus's original findings. If Baldus had coded Hance as a white-victim case, as we suggest it should be, then the key odds ratio at the heart of *McCleskey v Kemp* increases. That is, if the Hance case is re-coded as a white victim case, then Baldus's famous 4.25 figure actually increases; the odds of being sentenced to death were 4.95 times greater for persons convicted of killing a white victim (statistically significant at $p \leq .001$).

in Black-victim cases. Thus, the unadjusted odds *ratio* is 2.57 (0.2857/0.1111). Stated differently, the unadjusted odds of being executed are 2.57 times greater for defendants sentenced to death for killing a white victim, as compared to defendants sentenced to death for killing a Black victim.

Next, we calculated the adjusted odds of execution by using a logistic regression model. In a logistic regression model, the “event” is the less common of the two outcomes.¹⁴⁸ Here, the model includes twenty-four events, as executions (n = 24) are less common than relief (n = 95). Further, the number of events determines the number of variables that can be accommodated in the model. To produce reliable adjusted odds ratios, it is generally understood that ten events are required for each variable,¹⁴⁹ but more recently some scholars have argued that this rule can be relaxed to five events for each variable.¹⁵⁰ Consequently, our execution model can accommodate at least two variables (24/10=2.4), and perhaps as many as five variables (24/5=4.8).

Given that the governing rules for statistical modelling preclude us from including more than two to five variables in each regression, we decided to estimate eighty distinct models. Each logistic regression model includes the race of the victim and one of the forty confounding variables from Baldus’s core model (forty models treat the Hance case as a Black-victim case, forty models treat the Hance case as a white-victim case). As detailed in Appendix C, our conclusions are confirmed by these models. Notably, seventy-nine of the eighty models suggest that killing a white victim at least *doubles* the odds of execution. Importantly, the race-of-victim disparities did not disappear after controlling for a wide range of confounding variables. Put simply, the racial disparities that Baldus discovered went from bad to worse.

Continuing to focus on defendants who were sentenced to death, we also moved beyond the core model. Specifically, we followed Baldus and colleagues’ recommendation to control for defendant culpability as measured by the number of statutory aggravators in each case.¹⁵¹ Baldus describes the logic of the approach:

One useful *a priori* measure assesses relative culpability based on the number of case characteristics that make the defendant death-eligible under Georgia’s post-*Furman* legislation. The Georgia death-sentencing statute incorporates the legislature’s *a priori* judgment that the presence of

¹⁴⁸ Peter Peduzzi et al., *A Simulation Study of the Number of Events Per Variable in Logistic Regression Analysis*, 49 J. CLINICAL EPIDEMIOLOGY 1373, 1373 (1996).

¹⁴⁹ *Id.*

¹⁵⁰ Eric Vittinghoff & Charles E. McCulloch, *Relaxing the Rule of Ten Events Per Variable in Logistics and Cox Regression*, 165 AM. J. EPIDEMIOLOGY 710, 710 (2006).

¹⁵¹ See BALDUS ET AL. *supra* note 4, at 177 (“The culpability scales used for this purpose may also be used as additional independent variables in the model-based approach discussed above.”). Baldus used the sum of statutory aggravators as a scale of defendant culpability in studies of race and capital punishment in Arkansas and Nebraska. See also David C. Baldus et al., *Evidence of Racial Discrimination in the Use of the Death Penalty: A Story from Southwest Arkansas (1990–2005)*, 76 TENN. L. REV. 555, 555–613 (2009); Catherine M. Grosso, David C. Baldus & George Woodworth, *The Nebraska Death Penalty Study: A Legal and Empirical Analysis of the Nebraska Experience (1973–1999)*, 81 NEB. L. REV. 486, 570 (2002).

any one of ten case characteristics would justify the imposition of a death sentence. This suggests that the blameworthiness of a given offender may be a function of the number of statutorily designated aggravating circumstances present in his case[.]¹⁵²

If the culpability metric were to explain racial disparities in execution, then such a finding would assuage concerns about racial bias—it would also align with the Court’s suggestion in *Gregg* that an aggravating circumstances requirement in applying the death penalty mitigates concerns of unconstitutional arbitrariness.¹⁵³ (Georgia’s statutory aggravators from the time period in question are included as Appendix B.) Thus, we examined the effect of victim race on execution before and after controlling for defendant culpability.¹⁵⁴ Strikingly, victim race continues to matter. Indeed, the unadjusted odds ratio for the white-victim variable barely budges after controlling for defendant culpability. If the Hance case is coded as a Black-victim case, then the unadjusted odds ratio of 2.57 for the white-victim variable only attenuates to an adjusted odds ratio of 2.19 after controlling for defendant culpability. If the Hance case is coded as a white-victim case, then the unadjusted odds ratio of 5.38 for the white-victim variable only attenuates to an adjusted odds ratio of 4.93 after controlling for defendant culpability. The bottom line is clear: Depending on the coding of the Hance case, the odds of execution are about two to five times greater for those convicted of killing a white victim than those convicted of killing a Black victim even after controlling for defendant culpability.¹⁵⁵

The fact that the difference between the unadjusted odds ratio and the adjusted odds ratio is relatively trivial indicates that defendant culpability cannot “explain away” the impact of victim race.¹⁵⁶ If defendants convicted of killing a white victim were much more culpable, and if the most culpable defendants were far more likely to be executed, then the racial disparities in the unadjusted model would have disappeared in the adjusted model. In reality, however, our research shows that the defendant’s level of culpability was similar across white-victim and Black-victim cases. Defendants sentenced to death for killing white victims committed murders with an average of 3.4 statutory aggravators, whereas defendants sentenced to death for killing Black victims committed murders with an average of 3.1 statutory aggravators. In short, defendant culpability, as designated by

¹⁵² BALDUS ET AL., *supra* note 4, at 49.

¹⁵³ *See Gregg v. Georgia*, 428 U.S. 153, 222 (1976).

¹⁵⁴ The CSS dataset includes a scale of defendant culpability, as defined by the number of aggravators in the case. The culpability variable is labeled LDFBSUM.

¹⁵⁵ The substantive findings are the same regardless of whether we use an unweighted or weighted scale of defendant culpability. *See infra* Appendix C, note 305.

¹⁵⁶ We acknowledge that controlling for cruelty based on aggravating factors does not necessarily suggest that racial disparities could be adequately explained based on the existence of multiple aggravating factors. That is to say, measuring the rate or number of statutory aggravating factors may not be an entirely race-neutral project. Though it is possible that the codified aggravating factors are themselves infected with racial bias, any such confounding questions would be beyond the scope of this research, and likely difficult to measure given the breadth of aggravating factors (and accompanying high rates of aggravating factors in many states).

the aggravating factors in the Georgia statute, does not explain racial disparities in execution.

We treat the “defendant culpability” or “sum of aggravators” model as our principal model. Doing so has compelling benefits. From a legal perspective, the citizens of Georgia, through their elected representatives, have designated certain crimes as beyond the pale; thus, we are able to measure defendant culpability objectively using the citizens’ judgment. From a statistical perspective, the scale captures the defendant’s culpability in a single variable (an important consideration given the events per variable limitation). Perhaps most importantly, our principal model provides a conservative estimate of the race of victim disparities (the adjusted odds ratios are among the lowest of the models we estimated). Below, we use the odds ratios from our principal model to calculate probability pairs.

Before closing our discussion of adjusted disparities, we assessed the robustness of our key finding using a forward selection algorithm. The procedure asks: Of all the variables in Baldus’s core model, is killing a white victim among the strongest predictors of execution? Forward selection begins with an empty logistic regression model (no variables), adds the variable from Baldus’s core model that most improves model fit, adds the next variable from Baldus’s core model that most improves model fit, and continues until no further addition improves model fit.¹⁵⁷ Of the 41 candidates in the core model, the forward selection procedure indicated that five variables improved model fit: killing to collect insurance money, killing to avoid arrest, having a prior murder conviction, killing a bedridden or handicapped victim, and killing a white victim (the same variables were selected regardless of whether the Hance case was coded as a Black-victim case or a white-victim case). Critically, the forward selection algorithm is completely neutral—the algorithm selected a subset of pivotal variables from Baldus’s core model according to a predetermined formula. Drawing on a neutral formula, the robustness test supports our central conclusion by showing that among defendants who were sentenced to death, killing a white victim is a key predictor of being executed.¹⁵⁸

2. *Defendant Culpability*

Our principal execution model includes two independent variables: victim race and defendant culpability. Having considered the relationship between victim race and execution, it is important to briefly consider defendant culpability. Because defendant culpability is a scale, the odds ratio represents the effect of a one-unit change in the independent variable (number of statutory aggravators) on the dependent variable

¹⁵⁷ Specifically, we estimated a forward selection model for Firth logistic regression based on the penalized likelihood ratio test (Firth logistic regression is required to address quasi-complete separation). See Appendix C; see also TREVOR HASTIE, ROBERT TIBSHIRANI & JEROME FRIEDMAN, *THE ELEMENTS OF STATISTICAL LEARNING: DATA MINING, INFERENCE, AND PREDICTION* 58–59 (2009).

¹⁵⁸ Although supportive of our central conclusion, we did not treat the forward selection model as our principal model. In the forward selection model, the odds ratio for white victims increased substantially (as compared to our principal model based on the sum of aggravators). The change occurred because defendants convicted of killing a white victim were more likely to be executed despite being less likely to kill for insurance money, kill a bedridden or handicapped victim, or have a prior murder conviction. Thus, we treat the more conservative sum of aggravators model as our principal model. The forward selection model is available upon request.

(execution). This is an independently notable feature of our research insofar as it presents the first effort we are aware of to measure the impact on execution of increasing the number of aggravating factors. For each additional statutory aggravator present, the odds of execution are 1.73 times greater. This is an important finding because it validates to some extent the conventional account by prosecutors that the seriousness of the crime matters. Our research confirms that aggravating factors are a statistically valid predictor of whether a defendant will ultimately be executed. More importantly, however, the same regression model demonstrates that killing a white victim has a greater impact on the chance of being executed than committing a murder with one additional statutory aggravator.

3. Probability Pairs

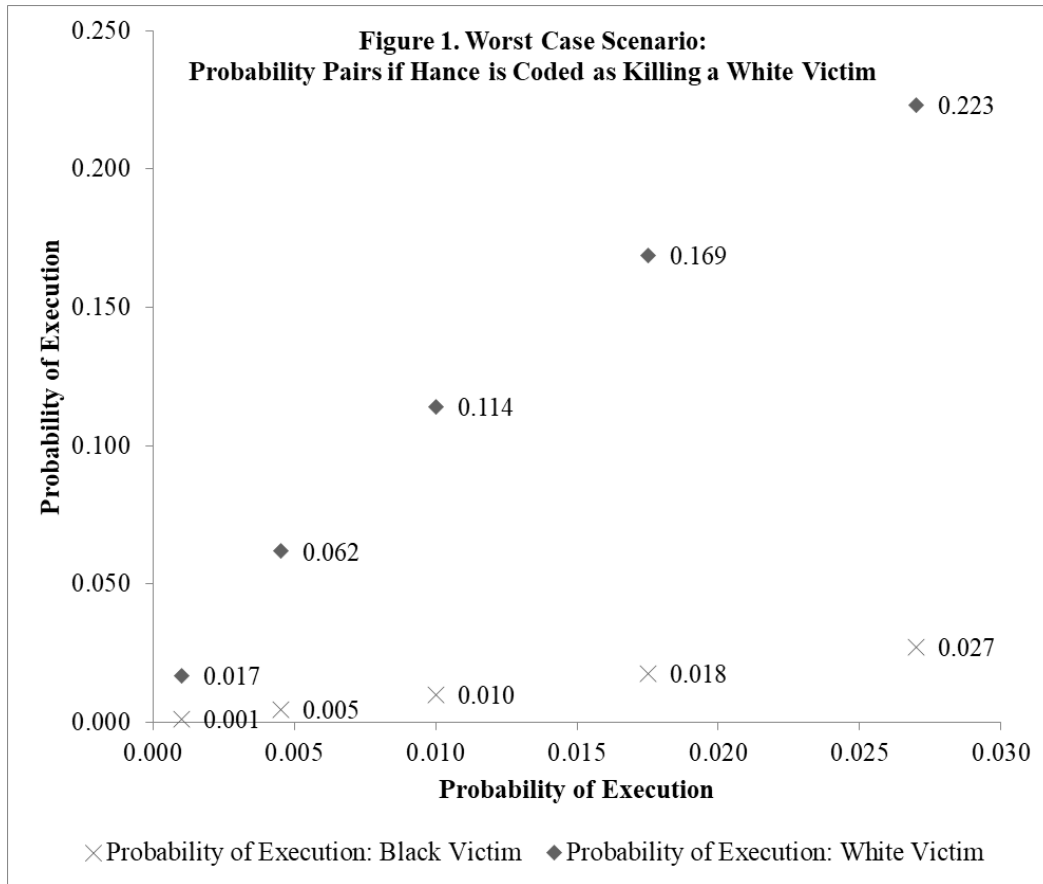
Because many readers will regard odds ratios as difficult to interpret and somewhat abstract, we also converted the odds ratios for the white victim variable to probability pairs.¹⁵⁹ As explained and illustrated in Appendix C, probability pairs assign a hypothetical probability of execution in a Black-victim case. The adjusted odds ratios for the white-victim variable from Baldus's sentencing model and our execution model can then be used to determine the corresponding probability of an execution if the victim had been white. Put simply, the probability pairs allow one to see concretely how the chance of an execution would change if a Black victim had instead been white, but the rest of the facts remained the same.

In Figure 1, we treat the Hance case as a white-victim case to examine the “worst case scenario.” Treating Hance as a white-victim case, the adjusted odds of a death sentence are 4.95 times greater for defendants convicted of killing a white victim (see the Appendix C) and the adjusted odds of an execution are 4.93 times greater for defendants convicted of killing a white victim (as detailed above). The probability pairs provide a readily interpretable metric for describing aggregate racial disparities—the cumulative impact of victim race after combining sentencing disparities and execution disparities. For example, if a defendant convicted of killing a Black victim has a 1% chance of being executed, then a similarly situated defendant convicted of killing a white victim has an 11.4% chance of being executed (0.010 versus 0.114). Likewise, if a defendant convicted of killing a Black victim has a 2.7% chance of being executed, then a similarly situated defendant convicted of killing a white victim has a 22.3% chance of being executed (0.027 versus 0.223).¹⁶⁰ As Figure 1 reveals, the combined racial disparities from sentencing and execution, which have never been documented in death penalty research before, are dramatic.¹⁶¹

¹⁵⁹ For a detailed explanation and example of the calculation of probability pairs, see Akiya M. Liberman, *How Much More Likely: The Implications of Odds Ratios for Probabilities*, 26 AM. J. EVALUATION 253, 257–59 (2005). See also BALDUS ET AL., *supra* note 4 at 384.

¹⁶⁰ The probability of execution in a white-victim case is plotted against the probability of execution in a Black-victim case (the probability in a Black-victim case is plotted against itself as a reference).

¹⁶¹ In Appendix C, we detail the formula used to convert odds ratios to probability pairs and we consider a broader range of hypothetical comparisons.



V. TOWARDS A CONSTITUTIONAL CLAIM BASED ON EXECUTION-STAGE ARBITRARINESS

Our original research adds a new dimension to the vast literature documenting arbitrariness in the administration of the death penalty by showing that decisions about who is ultimately executed are racially influenced and therefore arbitrary. We conclude that execution-stage arbitrariness provides a basis for invalidating a capital sentencing scheme. As noted earlier, arbitrariness in a legal sense does not mean randomness as in ordinary English, but rather describes a decision based on factors irrelevant or improper to the decision being made.¹⁶² Thus a given imposition of a death sentence may be defined as arbitrary even if the court's reason for issuing it is perfectly clear, so long as that reason is legally irrelevant—for example, a court's overt bias or partisanship.¹⁶³

¹⁶² See *supra* note 11 and accompanying text.

¹⁶³ *Id.*

Prior research has focused primarily on assessing the degree of arbitrariness that permeates sentencing proceedings.¹⁶⁴ This research is directly relevant to the question of whether aggravating factors and existing state procedures comport with the requirement of *Furman* to eliminate arbitrariness by qualitatively and quantitatively narrowing the class of offenders who could be sentenced to death. The existing research shows that more than forty years after *Gregg*, sentencing-stage arbitrariness persists, and may, in some states, be even worse than during the pre-*Furman* era.¹⁶⁵

The research presented in this Article takes the next step and confirms that, among the relatively small class of persons sentenced to death, the post-sentencing stages of a case inject an additional layer of arbitrariness into the process of determining who is actually executed. The question taken up in this section is whether this new empirical evidence—showing that it is more likely that a defendant condemned to death for killing a white victim will be executed—is directly relevant to the constitutionality of the death penalty. In this vein, there are at least two related considerations: (1) the relevance and use of social science by the Court in death penalty cases, and more specifically (2) the relevance of data showing systemic, post-sentencing arbitrariness in stating an Eighth Amendment claim.

A. *The History and Future of Empirical Evidence & the Death Penalty*

Scholars have long observed that the Supreme Court’s death penalty jurisprudence is often an exercise in recreating public opinion.¹⁶⁶ When the Court invalidated the death penalty in 1972, public support for capital punishment was at a historic low point, around 50%.¹⁶⁷ By the time the Court decided *Gregg* in 1976 and reinstated the death penalty, public support had surged to about 66%.¹⁶⁸ Notably, the *Gregg* decision’s reinstatement of the death penalty was premised on a prediction that the revised death penalty systems would create a more narrowed, structured, and fair death penalty. The modern era of the death penalty has consisted of procedural tinkering aimed at ensuring fairness and increasing confidence in the use of the ultimate penalty.¹⁶⁹ Yet four decades later, in 2018,

¹⁶⁴ See, e.g., Justin Marceau, Sam Kamin & Wanda Foglia, *Death Eligibility in Colorado: Many Are Called, Few Are Chosen*, 84 COLO. L. REV. 1069, 1103 (2013); Shatz & Rivkind, *supra* note 11 at 1333; Carol S. Steiker & Jordan M. Steiker, *Sober Second Thoughts: Reflections on Two Decades of Constitutional Regulation of Capital Punishment*, 109 HARV. L. REV. 355, 415 (1995).

¹⁶⁵ See, e.g., David C. Baldus et al., *Arbitrariness and Discrimination in the Administration of the Death Penalty: A Legal and Empirical Analysis of the Nebraska Experience (1973–1999)*, 81 NEB. L. REV. 486, 590 (2002); Jeffrey Kirchmeier, *Casting a Wider Net: Another Decade of Legislative Expansion of the Death Penalty in the United States*, 34 PEPP. L. REV. 1, 5–6 (2006); Marceau et al., *supra* note 164, at 1115; Chelsea Creo Sharon, *The “Most Deserving” of Death: The Narrowing Requirement and the Proliferation of Aggravating Factors in Capital Sentencing Statutes*, 46 HARV. C.R.-C.L. L. REV. 223, 247 (2011); Shatz & Rivkind, *supra* note 11, at 1333.

¹⁶⁶ Gross, *supra* note 5, at 767.

¹⁶⁷ *In Depth: Topics A to Z: Death Penalty*, GALLUP, <https://news.gallup.com/poll/1606/death-penalty.aspx>, archived at <https://perma.cc/3N7B-HY78>.

¹⁶⁸ *Id.*

¹⁶⁹ See STEIKER & STEIKER, *supra* note 3, at 155.

only 49% of respondents in a Gallup poll indicated confidence that the death penalty was “applied fairly.”¹⁷⁰

The Court’s death penalty jurisprudence doesn’t merely track empirical evidence of fairness or unfairness—the Justices themselves have explicitly referred to empirical data or hypotheses about data when ruling on the death penalty’s constitutionality. Justice Stewart’s famous proclamation that death sentencing was no more predictable or fair than lightning strikes was borne out of his realization that “less than 20% of those convicted of murder were sentenced to death.”¹⁷¹ Justice White was similarly concerned with the quantitative context for the modern death penalty, explaining that the death penalty was “so infrequently imposed that the threat of execution is too attenuated” to be constitutional.¹⁷² By the same token, when the Justices reinstated the death penalty in *Gregg*, there was an explicit assumption that the revised capital sentencing system would escape the empirical “infirmities which invalidated [the] previous system under *Furman*.”¹⁷³ Summarizing the quantitative assumptions underlying the approval of Georgia’s revised death penalty system, Justice White rejected the assertion that the new system was “bound to fail” because death sentences would remain infrequent and arbitrary.¹⁷⁴ In Justice White’s view, the new death penalty systems, which included statutorily required narrowing factors, would no longer fall victim to the infirmity of infrequency, and instead the death penalty would be imposed in a substantial number of the cases in which it was permitted.¹⁷⁵

Despite the fact that the modern death penalty’s intricate rules and procedures seem to be the product of empirical evidence about how the death penalty operated pre-*Furman*, and empirical assumptions about how the revised systems would operate post-*Gregg*,¹⁷⁶ lower courts and the Supreme Court have more recently received empirical data

¹⁷⁰ Justin McCarthy, *New Low of 49% in U.S. Say Death Penalty Applied Fairly*, GALLUP (Oct. 22, 2018), <https://news.gallup.com/poll/243794/new-low-say-death-penalty-applied-fairly.aspx>, archived at <https://perma.cc/L68X-T7LD>. For scholars like Susan Bandes, the Court’s procedural approach was the “worst of both worlds: the appearance of careful or even overzealous scrutiny, but little actual constitutional protection for the rights of defendants.” Bandes, *supra* note 18, at 906.

¹⁷¹ *Furman v. Georgia*, 408 U.S. 238, 309 (1972) (“[D]eath sentences are cruel and unusual in the same way that being struck by lightning is cruel and unusual.”); see also Shatz & Rivkind, *supra* note 11, at 1285 (“[A]ll five Justices focused on the infrequency with which the death penalty was imposed[.]”).

¹⁷² *Furman*, 408 U.S. at 313 (Stewart, J., concurring) (emphasis added).

¹⁷³ *Gregg v. Georgia*, 428 U.S. 153, 222 (1976) (White, J., concurring).

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

with great skepticism.¹⁷⁷ In *Lockhart v. McCree*,¹⁷⁸ for example, the Court was confronted with research suggesting that removing jurors who opposed the death penalty (“death qualifying a jury”) had the effect of biasing jurors in favor of the prosecution,¹⁷⁹ and Justice Burger is believed to have explained during the Court’s conference on the case that they should not be “‘bossed around’ by social scientists.”¹⁸⁰ There was a sense that even if empirical data showed bias or structural defects, the data should not control the constitutional adjudication. As John Boger put it, the Court arrived at the conclusion that “even if (or more precisely, even though) the empirical evidence showed” structural unfairness, empirical evidence would not justify judicial interventions.¹⁸¹ In *Glossip v. Gross*,¹⁸² Justice Scalia was similarly hostile to the suggestion by his fellow Justices that sociological research was documenting arbitrariness in the imposition of death sentences: “If only Aristotle, Aquinas, and Hume knew that moral philosophy could be so neatly distilled into a pocket-sized, vade mecum ‘system of metrics.’”¹⁸³ Justice Thomas was no less strident, and quipped that courts “owe victims more than this sort of pseudoscientific assessment” that is based on “cold mathematical calculations.”¹⁸⁴ Some of the Justices have been accused of going so far as to gauge the quality of a study “not by the dictates of scientific methodology but rather by how closely their findings conform to one’s previously held beliefs.”¹⁸⁵

¹⁷⁷ See, e.g., Mario L. Barnes & Erwin Chemerinsky, *What Can Brown Do for You?: Addressing McCleskey v. Kemp As A Flawed Standard for Measuring the Constitutionally Significant Risk of Race Bias*, 112 NW. U. L. REV. 1293 (2018); Evelyn R. Carter, *Eyes Wide Open: What Social Science Can Tell Us About the Supreme Court’s Use of Social Science*, 112 NW. U.L. REV. ONLINE 247, 249 (2018). As John Donohue has illustrated based on Justice Scalia’s use of discredited deterrence studies (even studies disavowed by their authors), some judges have an approach to social science data that consists of “credulously accepting the evidence that supports a preconception and of peremptorily rejecting the evidence that contradicts it.” Donohue, *supra* note 42, at 63.

¹⁷⁸ 476 U.S. 162 (1986).

¹⁷⁹ *Id.* at 173.

¹⁸⁰ Boger, *supra* note 17, at 1672. The point, however, is not that social science should also dictate legal results. There are famous cases in which the Court was acting quite rationally to reject or ignore social science data. See, e.g., *Palmore v. Sidoti*, 466 U.S. 429, 433 (1984).

¹⁸¹ See Boger, *supra* note 17, at 1672. This is consistent with some notable recent decisions outside of the death penalty context. For example, Chief Justice Roberts explained that challenges to political gerrymandering were suspiciously based on what he referred to as “sociological gobbledygook,” and Justice Breyer seemed sympathetic to the Chief Justice’s concern. The Chief Justice’s comments during oral argument prompted a response from the President of the American Sociological Association. See Colleen Flaherty, *Sociology’s ‘Mic Drop’ Moment*, INSIDE HIGHER ED (Oct. 12, 2017), <https://www.insidehighered.com/news/2017/10/12/chief-justice-john-roberts-calls-data-gerrymandering-sociological-gobbledygook>, archived at <https://perma.cc/C4BW-VPB3> (“What you call ‘gobbledygook’ is rigorous and empirical.”).

¹⁸² 135 S. Ct. 2726 (2015).

¹⁸³ *Id.* at 2748 (Scalia, J., concurring).

¹⁸⁴ *Id.* at 2752 (Thomas, J., concurring).

¹⁸⁵ This sentiment is directly attributed to Justice Scalia by his former law clerk, Bruce Hay. Donohue, *supra* note 42, at 62. See also *Glossip*, 135 S. Ct. at 2747 (Scalia, J., concurring) (describing Justice Breyer’s use of empirical evidence as “gobbledygook” and chiding his dissenting

In the face of such comments, it is not difficult to understand why some commentators have concluded that the “Supreme Court is allergic to math.”¹⁸⁶ Reva Siegel provided one of the most thoughtful extended reflections on the Court’s use of social-science data, and posited that the Court’s hostility to statistical evidence is partially a product of the belief that data-based decision-making is indelibly political in nature—warranting legislative rather than judicial involvement.¹⁸⁷ There is a deep skepticism of social science as politically biased discourse cloaked in numbers and equations; there is a view that data has been weaponized in support of left-leaning policy preferences.¹⁸⁸ In Siegel’s view, the disparagement of the field and the refusal of judges to implement the insights of social science “may counsel putting [empirical data] into practice outside courtroom settings.”¹⁸⁹ Or as John Boger argues, the Court’s cases dealing with social science are an instruction to lawyers to “[p]ut down your data sets.”¹⁹⁰

But the reality is more complicated, and John Donohue has posited that “empirical evaluation will be at the heart of the case” against the death penalty.¹⁹¹ Carol and Jordan Steiker have similarly concluded that the ultimate demise of the death penalty will come at the hands of data.¹⁹² Take, for example, Justice Breyer’s dissenting opinion in *Glossip v. Gross*: at least by the standards of judicial opinions, it is a tour de force of the empirical

colleagues for “waving over their heads a ream of the most recent abolitionist studies (a superabundant genre) as though they have discovered the lost folios of Shakespeare, insist that now, at long last, the death penalty must be abolished for good . . .”). Notably, even Justice Scalia engages with the social science that he thinks supports his position on the death penalty. *Id.* at 2749 (citing to studies suggesting that the death penalty could serve as a deterrent).

¹⁸⁶ Oliver Roeder, *The Supreme Court Is Allergic to Math*, FIVETHIRTYEIGHT (Oct. 17, 2017) <https://fivethirtyeight.com/features/the-supreme-court-is-allergic-to-math/>, archived at <https://perma.cc/G2HX-EHRN>.

¹⁸⁷ Reva B. Siegel, *Blind Justice: Why the Court Refused to Accept Statistical Evidence of Discriminatory Purpose in McCleskey v. Kemp—and Some Pathways for Change*, 112 Nw. U. L. REV. 1269, 1285–86 (2018) (“At a time when the political branches were engaged in a ‘War on Crime,’ incarceration rates were skyrocketing, and racial discrepancies in incarceration rates were in the headlines, the Court rejected McCleskey’s claim on the grounds that it was better suited for political than legal resolution.”).

¹⁸⁸ To be clear, the authors do not take a general position on whether social science has a political bias (a question that would need to be resolved study-by-study). Instead, we merely note that politicians and commentators have often dismissed sociological findings based on an alleged liberal or left-wing bias. Justice Scalia, for example, has described the vast body of research empirically studying the death penalty as “empirical studies performed by death penalty abolitionists.” *Glossip*, 135 S. Ct. at 2751 (Scalia, J., concurring); see also Jackson Toby, Opinion, *Left-Wing Politics and the Decline of Sociology*, WALL ST. J. (Jan. 25, 2019) <https://www.wsj.com/articles/left-wing-politics-and-the-decline-of-sociology-11548456420>, archived at <https://perma.cc/YS7C-AY6U>.

¹⁸⁹ Siegel, *supra* note 187, at 1289–90.

¹⁹⁰ Boger, *supra* note 17, at 1678.

¹⁹¹ Donohue, *supra* note 42, at 104.

¹⁹² STEIKER & STEIKER, *supra* note 3, at 250 (analogizing to the gay marriage debate and noting that progress was achieved when courts insisted on data in support of gay marriage bans as opposed to moral intuition and an amorphous sense of justice).

case against the modern death penalty.¹⁹³ Justice Breyer documented the many “[t]horough studies of death penalty sentences” that support the conclusion that the death penalty operates in a manner that fails to cure the problems of arbitrariness and unfairness as identified in *Furman*.¹⁹⁴ Drawing on a wealth of social science data, Justice Breyer observed:

Studies indicate that the factors that most clearly ought to affect application of the death penalty—namely, comparative egregiousness of the crime—often do not. Other studies show that circumstances that ought not to affect application of the death penalty, such as race, gender, or geography, often do.¹⁹⁵

Similarly, in a 2018 certiorari petition, *Hidalgo v. Arizona*,¹⁹⁶ Neal Katyal championed the case of a man convicted of multiple murders in Arizona who was arguing for constitutional relief under *Furman* based on an unabashedly quantitative claim: the fact that “virtually every defendant convicted of first-degree murder is eligible for death [in Arizona].”¹⁹⁷ The claim hinged on the recognition that modern death penalty rests on a set of empirical assumptions. Although the Court ultimately denied certiorari in the case, it did so in a most peculiar manner. Four Justices concurred in the denial of certiorari¹⁹⁸ and explained in their opinion that a data-based claim of this sort could eventually suffice to overturn the death penalty.¹⁹⁹ The four Justices writing in *Hidalgo* essentially concluded that the empirical data provided by Hidalgo did not itself provide an adequate data-based vehicle for striking down the nation’s death penalty, but they invited a more careful and robust study.²⁰⁰ As Justice Breyer wrote for the four members of the Court, “I agree with the Court’s decision today to deny certiorari,” because the empirical evidence did not receive the sort of “careful attention and evaluation” that warrants a constitutional decision.²⁰¹ Instead, the Justices reasoned that the data was “limited and largely

¹⁹³ *Glossip*, 135 S. Ct. at 2755 (Breyer, J., dissenting) (citing “the evidence of the death penalty’s application” as a basis for holding the death penalty unconstitutional).

¹⁹⁴ *Id.* at 2760–62 (Breyer, J., dissenting) (“The research strongly suggests that the death penalty is imposed arbitrarily.”).

¹⁹⁵ *Id.* at 2760 (Breyer, J., dissenting).

¹⁹⁶ 138 S. Ct. 1054 (2018).

¹⁹⁷ *Hidalgo v. Arizona*, 138 S. Ct. 1054, 1054 (2018) (describing how the fact of a high death-eligibility rate was proof that the system was failing to adequately narrow the class of offenders eligible for the ultimate penalty as required by *Furman*).

¹⁹⁸ Under the time honored “rule of four,” only four Justices are required to support hearing a case in order for certiorari to be granted. *See* *Ferguson v. Moore-McCormack Lines, Inc.*, 352 U.S. 521, 527 (1957) (describing the rule of four—namely that certiorari should be granted upon a vote of four of the nine justices); *see also* Joan Maisel Leiman, *The Rule of Four*, 57 COLUM. L. REV. 975 (1957). For a detailed exposition of the history and application of the rule in capital cases, *see* Eric M. Freedman, *No Execution If Four Justices Object*, 43 HOFSTRA L. REV. 639, 650 (2015).

¹⁹⁹ *Hidalgo*, 138 S. Ct. at 1057.

²⁰⁰ *Id.*

²⁰¹ *Id.*

unexamined,” and urged other capital defendants to take the “opportunity to fully develop a record with the kind of empirical evidence that the petitioner points to here.”²⁰² The four-Justice opinion in *Hidalgo*, then, reads like a plea for a more thorough, deliberate and well-documented study of arbitrariness in the death penalty.²⁰³

More important than these recent opinions in *Glossip* and *Hidalgo* is the willingness of state courts in recent years to consider empirical evidence about the operation of the death penalty. For example, the Connecticut Supreme Court refused to permit executions to be carried out based in significant part on the data of one leading social scientist, John Donohue.²⁰⁴ Donohue studied every homicide in Connecticut from 1973–2007 and published a comprehensive study in 2011.²⁰⁵ Summarizing portions of his research, two concurring justices observed that “[p]erhaps the most striking finding was that minority defendants who committed capital eligible felonies against white victims in Connecticut were charged with capital crimes in 85 percent of cases, whereas prosecutors only sought a capital conviction approximately 60 percent of the time for crimes with minority victims.”²⁰⁶ Based in large measure on these findings, the Connecticut legislature abolished the death penalty in the state;²⁰⁷ however, the question remained whether the persons sentenced to death prior to the legislative abolition could still be constitutionally executed. The Connecticut Supreme Court resolved the debate in favor of ending the death penalty retroactively for all persons in the state, and Donohue’s compelling research

²⁰² *Id.*

²⁰³ There is a single line in the concurrence that raises the question of whether empirical evidence will suffice, but the bulk of the analysis is pointed towards urging the creation of a more complete record. *Id.* (“Nor has it been fully explained whether and to what extent an empirical study would be relevant to resolving the constitutional question presented.”).

²⁰⁴ *State v. Santiago*, 122 A.3d 1, 49, 94 (Conn. 2015) (relying on Donohue’s research to substantiate key claims regarding defects in the operation of the state’s death penalty). The State’s high court defended its use of sociological studies against the allegations that such research was improper, extra-record evidence. *Id.* at 79 (“Ultimately, and most importantly, Chief Justice Rogers, having criticized our consideration of extra-record materials, fails to identify so much as a single statistic or historical fact cited in this opinion that she believes is subject to reasonable dispute.”).

²⁰⁵ John J. Donohue III et al., *Capital Punishment in Connecticut, 1973–2000: A Comprehensive Evaluation from 4686 Murders to One Execution*, NAT’L BUREAU OF ECON. RES. (Oct. 15, 2011) [hereinafter *Capital Punishment in Connecticut*], <https://deathpenaltyinfo.org/documents/DonohueCTStudy.pdf>, archived at <https://perma.cc/R3JR-CA3C>; see generally John J. Donohue, *An Empirical Evaluation of the Connecticut Death Penalty System Since 1973: Are There Unlawful Racial, Gender, and Geographic Disparities?*, 11 J. EMPIRICAL LEGAL STUD. 637 (2014).

²⁰⁶ *Santiago*, 122 A.3d at 95 (Norcott, J., concurring) (“Donohue also concluded that there is compelling, statistically significant evidence that minority defendants who kill whites are substantially more likely to receive a sentence of death than white defendants who commit equally egregious crimes.”).

²⁰⁷ Randee Fenner, *The Death Penalty in the Hot Seat*, STAN. LAW. (June 11, 2012), <https://law.stanford.edu/stanford-lawyer/articles/professor-john-donohues-empirical-scholarship-informs-death-penalty-overturn-in-connecticut/>, archived at <https://perma.cc/7G7L-JTXH>.

undergirds much of the court's reasoning.²⁰⁸ Other social science research appears to have led to the abolishment of the Delaware death penalty and the state Supreme Court's decision applying the abolition retroactively.²⁰⁹

The most striking example of the impacts of empirical research in death penalty litigation is the Washington Supreme Court's decision in *State v. Gregory*²¹⁰ in October of 2018 striking down that state's death penalty.²¹¹ As a headline in the *Atlantic* aptly summarized the litigation, "Statistics doomed Washington State's Death Penalty."²¹² The court's opinion in that case is an homage to social science generally and the specific research of Katherine Beckett and Heather Evans²¹³ in particular, which the court credited with proving that the state's death penalty was "imposed in an arbitrary and racially biased manner."²¹⁴

Previously, in 2012, the Washington Supreme Court had considered the effectiveness of its statutorily mandated proportionality review and in so doing explicitly noted that there is "no evidence that racial discrimination pervades the imposition of capital punishment in the state."²¹⁵ One justice wrote a separate opinion specifically calling for an end to this research void, asking "competent experts to present evidence on 'the racial patterns that emerge from the aggravated-murder trial reports.'"²¹⁶ Answering this request, a study was commissioned to examine the effect of race on the imposition of the death penalty in the state, and Beckett and Evans produced a study in 2014 and subsequently published their updated findings in 2016.²¹⁷

Whereas social science had previously played a key role behind the scenes²¹⁸ and in concurring and dissenting opinions, the central holding of the Washington Supreme

²⁰⁸ There are actually two Connecticut Supreme Court decisions addressing this issue. The first case concluding that the legislative ban on the death penalty had to apply retroactively was *State v. Santiago*, 122 A.3d 1, 10 (Conn. 2015). Somewhat shockingly, after the retirement from the court of one of the justices in the majority, prosecutors in the state refused to accept the decision as valid and forced a second opinion. See *State v. Peeler*, 140 A.3d 811, 822 (Conn. 2016).

²⁰⁹ The recent decision of the Delaware Supreme Court invalidating that state's death penalty scheme is more traditionally doctrinal in its approach, but there are still aspects of the decision that appear to rest on sociological data. See *Rauf v. State*, 145 A.3d 430, 480 (Del. 2016) (Strine, C.J., concurring) (invoking empirical jury studies).

²¹⁰ *State v. Gregory*, 427 P.3d 621 (Wash. 2018).

²¹¹ *Id.* at 627.

²¹² Garrett Epps, *How Statistics Doomed Washington State's Penalty*, ATLANTIC (Oct. 14, 2018), <https://www.theatlantic.com/ideas/archive/2018/10/how-statistics-doomed-washington-states-death-penalty/572968/>, archived at <https://perma.cc/H3Z5-GNQQ>.

²¹³ Katherine Beckett & Heather Evans, *Race, Death, and Justice: Capital Sentencing in Washington State, 1981–2014*, 6 COLUM. J. RACE & L. 77, 97 (2016).

²¹⁴ *Gregory*, 427 P.3d at 627.

²¹⁵ *State v. Davis*, 290 P.3d 43, 83 (Wash. 2012).

²¹⁶ *Gregory*, 427 P.3d at 630 (quoting *Davis*, 290 P.3d at 98) (Wiggins, J., dissenting)).

²¹⁷ Beckett & Evans, *supra* note 213, at 97.

²¹⁸ One can reasonably speculate about whether both *Coker v. Georgia* and *Kennedy v. Louisiana* were influenced by the Court's awareness of empirical data, not found in the opinions, that the death penalty's application in the rape context operated with extreme racial disparities. Jack Greenberg, *Capital Punishment as a System*, 91 YALE L.J. 908, 912 (1982) ("Almost 90% of those

Court is that in the face of clear data showing that the death penalty operates in an arbitrary or racially biased manner, the penalty is unconstitutional.²¹⁹ The court explained that when “new, objective information is presented for our consideration,” the relevant “constitutional claim must be examined” in light of such sociological data.²²⁰ Relying almost exclusively on the study to substantiate its reasoning, the high court ruled that “[i]t is now apparent that Washington’s death penalty is administered in an arbitrary and racially biased manner,” and in light of the research the Court struck down “Washington’s death penalty as unconstitutional.”²²¹

Empirical data has always been relevant to the constitutionality of the death penalty. There are judges who have reacted with hostility to data that is unfavorable to the death penalty, but there is no question that the arc of the death penalty’s future will turn on the quality and availability of the empirical data.²²² Nowhere is this truer than on questions of race. With Washington’s recent invalidation of the death penalty based on Beckett and Evans’ study, it is not a stretch to imagine that other states will also revisit the

executed were black men convicted for the rape of white women.”). A more concrete example of the influence of empirical evidence even when the research is not directly cited is *Gregg v. Georgia*, where “the Court, while claiming not to have relied on the empirical evidence,” is suspected to have done so by leading scholars. Donohue, *supra* note 42, at 57 (noting that “Isaac Ehrlich’s econometric analysis of national time-series data was used to claim that each execution saved eight lives” by Solicitor General Robert Bork). Ehrlich’s work was later deemed unpersuasive by the National Academy of Sciences. *Id.* Donohue has posited that it is “unrealistic” to expect judges to have “enough quantitative heft to be able to evaluate the quality of statistical studies.” *Id.* at 104.

²¹⁹ The Washington Supreme Court’s decision reads like an academic discourse on sociology data. One cannot read the decision and conclude that without the underlying research, the court would have reached the same conclusion. Indeed, the court goes out of its way to minimize the “methodological issues raised by the State,” with reassuring statements about technical matters almost certainly beyond their competence, including the p-value and the size of the dataset. *Gregory*, 427 P.3d at 634. In one of the most striking lines in the decision, the court declined to require that the research be perfect because the question was a legal one rather than a scientific one, and hedged that “we decline to require indisputably true social science to prove that our death penalty is impermissibly imposed based on race.” *Id.* (rationalizing that Justice Stewart in *Furman* did not actually compare the probability of being struck by lightning to the risk of being sentenced to death).

²²⁰ *Gregory*, 427 P.3d at 633 (2018) (affording “great weight” to the study).

²²¹ *Id.* at 633 (quoting *Furman*, 408 U.S. at 313 (1972) (White, J., concurring)). For a detailed discussion of legislative failures to draft a statute that meaningfully narrows the class of defendants eligible for the death penalty, see Sam Kamin & Justin Marceau, *Waking the Furman Giant*, 48 U. CAL. DAVIS L. REV. 981 (2015); Shatz & Rivkind, *supra* note 11. Even bracketing concerns with race, one could read the court’s decision as treating the empirical evidence regarding the arbitrary administration of the penalty as mandating a holding that the death penalty is unconstitutional: “Beckett’s analysis and conclusions demonstrate that there is no meaningful basis for distinguishing the few cases in which the death penalty is imposed from the many cases in which it is not.” *Gregory*, 427 P.3d at 630 (internal quotation marks omitted).

²²² *Cf.* Kovarsky, *supra* note 48 (dwindling number of counties using the death penalty).

constitutionality of their capital sentencing schemes based on emerging empirical data.²²³ As one scholar posited almost forty years ago, the Court will eventually be faced with enough data about the repeatedly revised capital systems that it “will have to come to the conclusion that there is no way to make a capital punishment system work.”²²⁴

The empirical evidence presented in this Article is robust and reveals yet another form of arbitrariness in the administration of the death penalty. Our research supports Justice Blackmun’s lament that the “tinker[ing] with the machinery of death” must cease and we should no longer “continue to coddle the Court’s delusion that the desired level of fairness has been achieved.”²²⁵ The overwhelming body of research confirms that “the death penalty experiment has failed.”²²⁶

B. The Role of the Constitution in Regulating Execution Arbitrariness

The regression analysis demonstrating that the race of the victim is a powerful predictor of who is actually executed should cause fair-minded policy makers to question their commitments to the death penalty. But does the data also suggest constitutional infirmity under the Eighth Amendment? That is, does the Eighth Amendment govern post-sentencing execution decisions?

1. General Considerations about the Role of the Constitution in Regulating Post-sentencing Arbitrariness

If a state had hundreds of people of various races on death row but only ever executed non-white defendants, we suspect that most observers would assume that the death penalty in that state was operating in an unconstitutional manner. But setting aside the possibility of overt discrimination in the selection of persons for execution, which would violate equal protection, more scholarly thought should be devoted to the contours of an Eighth Amendment challenge to post-sentencing outcomes in capital cases. Unlike stating a claim under equal protection, a claim of Eighth Amendment arbitrariness “need not be intentional or purposeful.”²²⁷ But does an arbitrary death selection process offend the Constitution? Would it be unconstitutional for the state of California, which has more

²²³ Within weeks of the Washington Supreme Court’s decision in *State v. Gregory*, the U.S. Supreme Court conferenced a certiorari petition asking whether, if racial bias in the operation of the Oklahoma death penalty can be proved through a “complex statistical study,” then is the state’s death penalty unconstitutional. *Jones v. Oklahoma*, SCOTUSBLOG, <https://www.scotusblog.com/case-files/cases/jones-v-oklahoma/>, archived at <https://perma.cc/7CE6-QGUP>. See Glenn Pierce, Michael Radelet & Susan Sharp, *Race and Death Sentencing for Oklahoma Homicides 1990–2012*, 107 J. CRIM. L. & CRIMINOLOGY 733, 749 (2017) (finding that after controlling for other factors, the odds of being sentenced to death were 9.6 times greater for defendants who killed a white female victim as compared to a minority male victim).

²²⁴ Greenberg, *supra* note 218, at 928.

²²⁵ *Callins v. Collins*, 510 U.S. 1141, 1145 (1994) (Blackmun, J., dissenting).

²²⁶ *Id.* at 1145 (Blackmun, J., dissenting).

²²⁷ Samuel R. Gross, *Patterns of Death: An Analysis of Racial Disparities in Capital Sentencing and Homicide Victimization*, 37 STAN. L. REV. 27, 120 (1984).

than 700 persons on death row,²²⁸ to conduct an annual lottery-type execution-selection whereby the head of the Department of Corrections randomly draws five ping-pong balls per year from a hopper filled with balls printed with the names of all prisoners for whom appeals have been exhausted and completed? All of these men have been sentenced to death, and an execution warrant lawfully could be issued at any time, so is it abhorrent to the Constitution to have the process of selecting who will be executed and in what order determined by a lottery?²²⁹

Courts would likely conclude that a state lottery to determine who would be executed is so unseemly as to violate the Constitution, and this would be doubly true if it was a rigged lottery that somehow disadvantaged certain defendants. There are states with hundreds of persons on death row, and although the governor may not hold an actual lottery, the decision of whom to execute may depend on variables such as electoral politics, and the victim's status or the level of victim vocalization and media contacts. In practical effect, then, the decision of whom to execute could be just as unmoored from the heinousness of the crime as a lottery.

But the notion of an execution lottery assumes that the post-sentencing process for challenging one's sentence is complete. Whatever else one might say about arbitrary selection procedures in producing the execution queue, surely the procedures cannot serve as an excuse for prematurely curtailing appeals, retrials or post-conviction litigation. What, then, of post-sentencing processes that are just as arbitrary in deciding whose conviction is final and whose death sentence deserves an actual execution warrant?

As with the hypothetical rigged lottery for execution queues, we anticipate that the instinctive reaction of many would be that if the post-sentencing review systems allow the ultimate penalty to be applied in a manner that is demonstrated to be arbitrary, then the punishment is necessarily cruel and unusual—that is, an arbitrarily imposed (or retained) penalty always violates the Eighth Amendment. Under this logic, our research reveals a defect of constitutional magnitude because we have shown that the execution rate among persons sentenced to die for killing a white victim is substantially greater than the execution rate for similarly situated defendants who were sentenced to die for killing a Black victim.²³⁰

²²⁸ *State and Federal Info on California*, DEATH PENALTY INFO. CTR <https://deathpenaltyinfo.org/state-and-federal-info/state-by-state/california>, archived at <https://perma.cc/2EDA-KCGW> (noting that as of the time of writing 740 persons were on California's death row).

²²⁹ Lee Kovarsky has documented that there is a striking lack of clarity and regularity in the process of deciding who among the condemned inmates will actually be executed. *See generally* Kovarsky, *supra* note 48.

²³⁰ To be absolutely clear, the problem is distinct from the question of who among all death sentenced persons whose appeals and retrials are complete should be executed first, or at all. Our focus is on those inmates for whom there are not “available judicial proceedings [that] are sufficiently likely to produce an authoritative legal declaration that a conviction or sentence was in error.” *Cf. id.* at 1168, 1211. Our dataset is unique insofar as we know what has happened in every case (less one) through the appellate and clemency processes. In other words, our quarrel is not simply with when someone gets executed or the sequencing of executions, but whether one is ultimately given relief or executed. Additional research could study the empirical reality that in

But this intuitive reaction is not obviously borne out in the case law. Not only does *McCleskey*²³¹ seem to bar relief based on showings of general systemic racial disparities, it is even harder to imagine that an appellate and post-conviction system, including retrials, (as opposed to an executive action) that produces disparate or arbitrary rates of relief would violate the Eighth Amendment. It is not even entirely clear who would be said to violate the Eighth Amendment in such circumstances. Assuming, *arguendo*, that a state's legislation creates a death penalty that operates at the sentencing level in a fair, non-discriminatory manner, then does that sentencing statute run afoul of the Eighth Amendment when post-sentencing review courts grant relief in a racially disparate manner? Stated differently, can arbitrariness in the operation of the judicial process for validating death sentences render unconstitutional an otherwise proper capital sentencing regime?²³² Is the state's capital sentencing statute unconstitutional if the post-sentencing procedures, as opposed to the direct application of the statute, produce arbitrary execution outcomes?²³³

Arbitrary appellate or post-conviction relief rates as a freestanding constitutional claim would be a novel claim. In the notably distinct realm of parole review, in *Ohio Adult Parole Authority v. Woodard*,²³⁴ a plurality opinion authored by Chief Justice Rehnquist, the Court explained that because "pardon and commutation decisions have not traditionally been the business of courts . . . they are rarely, if ever, appropriate subjects for judicial review."²³⁵ Relying on authority from a non-capital case,²³⁶ the plurality concluded that a prisoner's effort to obtain clemency "is simply a unilateral hope" and beyond judicial review because the prisoner's interest in relief "is indistinguishable from the initial resistance" to being sentenced to death, and that interest "has already been extinguished by the conviction and sentence."²³⁷

some states the death row has become so large and the number of executions so small that the sequencing of executions is tantamount to a decision about who ultimately lives and dies. *See id.* at 1165 (focusing on the distinction between sentencing proceedings in the trial court and the process for actually selecting for execution certain inmates, and not focusing directly, as we do, the intermediate step of appellate or post-conviction relief); *id.* at 1184 (noting that among those in the queue, "some recently exhausted appeals and others have had no active litigation for decades").

²³¹ *McCleskey v. Kemp*, 481 U.S. 279 (1987).

²³² To be sure, claims of arbitrary post-sentencing relief rates present practical challenge for litigators. Are such claims facial challenges—that is, does the state's entire death penalty system fail because it can be shown that relief rates on appeal are arbitrary? Or rather, might courts limit such claims so that they would only be available to persons who show that racial arbitrariness infected their individual appeal?

²³³ Of course, we acknowledged that subsequent research may reveal that the disparate rates of relief we have found may be, in part, a direct product of the capital sentencing system. It is possible, for example, that the disparate execution/relief rates are a product of retrials or re-sentencing under the capital sentencing statute.

²³⁴ *Ohio Adult Parole Auth. v. Woodard*, 523 U.S. 272 (1998).

²³⁵ *Id.* at 280 (quoting *Connecticut Bd. of Pardons v. Dumschat*, 452 U.S. 458, 464 (1981)).

²³⁶ *Dumschat*, 452 U.S. 458.

²³⁷ *Woodard*, 523 U.S. at 280.

But concurring in the decision in *Ohio Adult Parole Authority*, Justice O'Connor, writing for four Justices, rejected the plurality's conclusion that "because clemency is committed to the discretion of the executive, the Due Process Clause provides no constitutional safeguards."²³⁸ The concurring Justices reasoned that some "minimal procedural safeguards" applied even to clemency proceedings and that, judicial relief would be "warranted in the face of a scheme whereby a state official flipped a coin to determine whether to grant clemency."²³⁹ Clemency is not a particularly apt analog for post-sentencing judicial review, but we draw this comparison because of the question that Justice O'Connor's concurrence ultimately invites: What is it about flipping a coin that is so unfair as to implicate due process? Why is it that we can take for granted that a coin-toss procedure for deciding who to execute would run afoul of the constitution? A coin-toss may simply not comport with the sort of appearances of fairness that society demands when it comes to death sentences. Notably, the research presented in this Article shows that a set of judicial processes (again, that look nothing like clemency) produce racial disparities. Our data could fairly be said to produce results that are more unfair or arbitrary than a coin toss. As long as the coin is flipped similarly in all cases, the race of the defendant or the victim is entirely irrelevant. Complete randomness (arbitrariness in the non-technical sense) is preferable to a system that is patterned on improper considerations such as race or geography. Put differently, if a lottery or coin toss is unconstitutional, then it cannot be seriously doubted that a rigged or patterned lottery is also unconstitutional.

Thus, while the arbitrary rates of relief through judicial processes have little in common with clemency procedures, one could fairly argue that [if] the post-sentencing appellate and retrial procedures for determining who will actually be executed operate with the same degree of arbitrariness as a rigged lottery, they should be treated as unconstitutional. Five Justices in *Ohio Adult Parole Authority* concluded that a certain level of unfairness in the process for determining execution-selection will give rise to a constitutional violation, and our research seems to reveal similar levels of unfairness.²⁴⁰ Would it be more constitutionally tolerable for an appellate or post-conviction system to deploy a lottery or dice toss than a clemency board? Surely not. And yet hard questions remain. Does *sub rosa* or implicit arbitrariness that arises over time, through years of accretion in various courts and through a nearly infinite variety of procedural mechanisms, amount to an Eighth Amendment violation? Does the failure or inability of courts and governors to remedy the sort of discrimination documented by Baldus decades ago at the sentencing stage—and in fact the exacerbation of such discrimination by reviewing courts and governors—create a concern of constitutional magnitude?

There are at least two salient barriers to judicial relief based on patterned arbitrariness in the rates of execution relief: the absence of Eighth Amendment protections for appellate procedures under existing law and *McCleskey v. Kemp*.

²³⁸ *Id.* at 288 (O'Connor, J., concurring).

²³⁹ *Id.* at 289 (O'Connor, J., concurring).

²⁴⁰ Justice Stevens provided the fifth vote in his dissent. *Id.* at 290–91 (joining the concurrence in rejecting the reasoning that "even procedures infected by bribery, personal or political animosity, or the deliberate fabrication of false evidence would be constitutionally acceptable[]").

Starting with the first concern, the Court’s death penalty jurisprudence provides no clear support for the proposition that arbitrary rates of relief in the post-sentencing phases of a capital case could violate the Eighth Amendment. In stark contrast to the large and complicated body of procedural rules that apply to the sentencing phase of a case based on the Court’s construction of the Eighth Amendment,²⁴¹ the Court has all but eschewed the notion that the Eighth Amendment has any relevance in the context of appellate procedures. When concluding in *Gregg* that Georgia’s newly revised capital systems survived Eighth Amendment scrutiny, the Court highlighted that each death-sentenced individual was entitled to mandatory appellate proportionality review.²⁴² Each death sentence had to be reviewed by the Georgia Supreme Court to assess whether the penalty was disproportionate as compared to others who committed similar crimes.²⁴³ Significantly, however, in a subsequent decision, *Pulley v. Harris*,²⁴⁴ the Court held that while proportionality review of death sentences is laudable as a means of ensuring fairness, it is not required by the Eighth Amendment.²⁴⁵ Likewise, the Court has never squarely held that a system of mandatory appellate review is required by the Eighth Amendment—that is, it is not even clear that, if a state eliminated its system for appellate review entirely in death penalty cases, the resulting system would automatically violate the Eighth Amendment.²⁴⁶

On the other hand, it is hard to find fault in the conclusion that if *Ohio Adult Parole Authority* prohibits a coin toss during clemency proceedings, a coin-toss procedure engaged in by appellate or post-conviction courts would be similarly unconstitutional. If a state’s backlogged courts implemented a lottery system for capital relief, thus reducing its caseload, and retained ordinary appellate review for defendants who did not prevail in the lottery, we would assume a constitutional violation existed. And certainly if the entire appellate process was converted to an unfair lottery, there is reason to believe that the claims of constitutional injury would be even more compelling insofar as the Supreme Court has recognized appellate proceedings as “an integral part of the . . . system for finally adjudicating the guilt or innocence of a defendant.”²⁴⁷ Because of the relationship between fair adjudications of guilt and reliable “procedures used in deciding appeals,”²⁴⁸ unfair

²⁴¹ See Steiker & Steiker, *supra* note 164, at 415 (cataloguing the reforms that govern modern sentencing law).

²⁴² *Gregg v. Georgia*, 428 U.S. 153, 187–207 (1976).

²⁴³ *Id.*; see also *Zant v. Stephens*, 462 U.S. 862, 879–80 (1983) (describing the Georgia system and noting that “[t]he Georgia Supreme Court conducts an independent review of the propriety of the sentence even when the defendant has not specifically raised objections at trial[.]”). The provision mandating independent appellate review, Ga. Code Ann. § 17–10–35 (2019), remains in effect to this day.

²⁴⁴ 465 U.S. 37 (1984).

²⁴⁵ *Id.* at 51 (leaving open the possibility that the absence of proportionality review could violate the Eighth Amendment in certain circumstances not before the Court).

²⁴⁶ *Halbert v. Michigan*, 545 U.S. 605, 606–07 (2005).

²⁴⁷ *Evitts v. Lucey*, 469 U.S. 387, 393 (1985) (quoting *Griffin v. Illinois*, 351 U.S. 12, 18 (1956)).

²⁴⁸ *Id.*

appellate processes violate due process, and probably the Eighth Amendment as well in capital cases.²⁴⁹

But even if the Eighth Amendment, while not requiring capital appeals, could be interpreted as imposing a requirement of procedural fairness on all appeals if those appeals are mandated by statute, as they are in every state,²⁵⁰ *McCleskey v. Kemp* presents a formidable barrier to relief. *McCleskey* forecloses relief based on data showing systemic racial arbitrariness, as opposed to animus or discrimination in individual cases.²⁵¹ Thus, courts might conclude that our data showing that the race of the victim is a strong predictor of who will actually be executed is constitutionally irrelevant. Put differently, courts might hold that, until *McCleskey* is overruled and sentence-selection arbitrariness is recognized as constituting a claim for relief, evidence of disparate rates of relief in the execution-selection phase of the case is constitutionally irrelevant.

On the other hand, maybe overturning *McCleskey* is not a necessary antecedent step. Instead, perhaps recognizing a constitutional claim relating to execution-selection could be the first step towards overturning *McCleskey*. The Court's hesitation to grant *McCleskey* relief appears to have been motivated, at least in part, by a fear that doing so would invalidate the death penalty in the U.S. for the second time in just a decade. Perhaps it was too much to abolish the power of prosecutors to seek the penalty in any case because of arbitrariness at a systemic level. But the stakes are lower if the Court is not required to hold that death sentences are unconstitutional per se, and instead is permitted to merely require some additional safeguards or procedures in the post-sentencing stage before one is ultimately executed.²⁵² Such a holding would seem to run counter to the modern tendency to reify finality interests and treat the trial proceedings leading to one's sentence as the "main event."²⁵³ Still, it may prove easier for courts to take the incremental step of tinkering with the appellate machinery for a much smaller number of cases (only those with an actual death sentence) than to entirely abolish or revamp the sentencing procedures that apply to hundreds of cases per year.²⁵⁴

²⁴⁹ See, e.g., *Williams v. Pennsylvania*, 136 S.Ct. 1899, 1910 (2016) ("Where a judge has had an earlier significant, personal involvement as a prosecutor in a critical decision in the defendant's case, the risk of actual bias in the judicial proceeding rises to an unconstitutional level.").

²⁵⁰ Cf. *Evitts*, 469 U.S. at 388 (discussing Kentucky's constitutionally mandated right to appeal).

²⁵¹ *McCleskey v. Kemp*, 481 U.S. 279 (1987).

²⁵² The precise nature of the reforms that might address the arbitrariness we identify is beyond the scope of this Article. Suffice to say mandatory proportionality review, like that mandated in Georgia throughout the cases we studied, did not have an ameliorative effect on the sentencing phase arbitrariness detected by Baldus.

²⁵³ *Wainwright v. Sykes*, 433 U.S. 72, 91 (1977); see generally Paul M. Bator, *Finality in Criminal Law and Federal Habeas Corpus for State Prisoners*, 76 HARV. L. REV. 441 (1963).

²⁵⁴ Subsequent research should consider the viability and contours of federal legislation, pursuant to Section 5 of the Fourteenth Amendment, that would make a Racial Justice Act a mandatory feature of state death penalty systems. Such legislation failed in the past, but with support for the death penalty dwindling and in light of the concerns about racism within the system, legislation could be enacted that required states to rebut evidence of racially disparate outcomes before carrying out executions.

2. *Specific Doctrinal Interventions to Address Post-Sentencing Arbitrariness*

This Article does not fully demarcate the contours of the Eighth Amendment in the post-sentencing context, and additional scholarship should focus on the interaction between the Eighth Amendment and unintentional arbitrariness in the operation of the post-sentencing judicial or clemency processes. For present purposes, we offer only a couple of tentative doctrinal interventions that would help address the demonstrated arbitrariness in the selection of who is executed. First, we suggest an analogy to *Batson v. Kentucky*²⁵⁵ and the notion that upon certain prima facie showings, the burden should shift to the State to prove that the system is operating in a racially neutral, non-arbitrary manner. At the end of day, many of these data-based claims will turn on who bears the burden of proof, so such an intervention could significantly impact the litigation of these claims. Second, we propose that the same sort of procedural regulation of the death penalty that applies to sentencing under *Furman* ought to apply to the execution phase of a case—that is, just as a system that fails to narrow the class of offenders to the worst of the worst at sentencing is unconstitutional, so too is a system that operates arbitrarily at the execution phase.

At the outset, and perhaps most significantly, it is important to note that states may simply reject *McCleskey* as a matter of state law, thus freeing them to consider directly the unconstitutionality of patterns of arbitrariness in the execution-selection process. The Washington Supreme Court recently did just that when it observed that Washington’s “current [death penalty] statute is nearly identical to the Georgia Statute” at issue in *McCleskey*²⁵⁶ and, nonetheless, rejected the reasoning of *McCleskey* and held that data regarding racial disparities in the sentencing phase of the death penalty rendered the system unconstitutional.²⁵⁷

When it comes to arbitrary or seemingly discriminatory applications of the post-sentencing power to grant relief, we think that an analogy to the *Batson* framework might be useful.²⁵⁸ *Batson* prohibits a prosecutor from removing jurors in a racially discriminatory manner,²⁵⁹ and notably it does not require any smoking-gun evidence of racial bias.²⁶⁰ Instead, it sets out a three-step inquiry for establishing an unconstitutionally race-based exercise of state authority.²⁶¹ The first-stage of the *Batson* inquiry requires a defendant to make a “prima facie case” of discrimination, for which any statistical showing of disparate racial impact will suffice.²⁶² Once a prima-facie case has been made, the burden shifts to the state to offer a race-neutral explanation for the statistical evidence of disparate racial impact, and the Court has made clear that this burden may not be satisfied by “mere general assertions that its officials did not discriminate or that they

²⁵⁵ 476 U.S. 79 (1986).

²⁵⁶ *State v. Gregory*, 427 P.3d 621, 628–29 (Wash. 2018).

²⁵⁷ *Id.* at 635–36.

²⁵⁸ See *Batson v. Kentucky*, 476 U.S. 79, 94–98 (1986); see also *Foster v. Chatman*, 136 S. Ct. 1737, 1740 (2016) (applying the *Batson* framework).

²⁵⁹ *Batson*, 476 U.S. at 89.

²⁶⁰ *Id.* at 92–94.

²⁶¹ *Id.* at 94–98.

²⁶² *Id.*

properly performed their official duties.”²⁶³ Likewise, testimony or affidavits stating that everyone involved acted “in good faith” and without discriminatory motive will not suffice.²⁶⁴ Finally, where the state succeeds in offering a race-neutral explanation, the defendant is entitled to an opportunity to rebut the proffered race-neutral explanation and prove by a preponderance of the evidence that the proffered explanation is pretext.²⁶⁵

As applied to executions, the original research presented in this paper would suffice to make a prima facie case of disparate treatment among those sentenced to death, and so the burden would shift to the state to prove that the system was executing persons in a race-neutral manner.²⁶⁶ No doubt, state lawyers would respond that the appellate and clemency procedures ensure that only the most egregious cases result in actual executions, and that race has no impact on these processes. It is the culpability of the defendant and not the race of the victim that is actually predictive of who will be executed, the states would respond.²⁶⁷ In the face of this race-neutral explanation, the death-sentenced prisoners would have the burden of rebuttal. But such prisoners would have a strong claim that the race-neutral explanations for who is actually executed are unavailing given that the regressions presented in this paper show that, controlling for the culpability of the defendant, the race of the victim is still a strong predictor of who will actually be executed.²⁶⁸ In cases involving the removal of jurors, the Supreme Court has repeatedly held that “if a prosecutor’s proffered reason for striking a black panelist applies just as well to an otherwise-similar nonblack [panelist] who is permitted to serve, that is evidence tending to prove purposeful discrimination.”²⁶⁹ In the context of executions, protestations by a state that it is acting in good faith and simply complying with procedures that ensure

²⁶³ *Id.* at 94.

²⁶⁴ *Batson*, 476 U.S. at 94.

²⁶⁵ *Id.* at 97–98.

²⁶⁶ Such a claim would likely be raised as part of a direct appeal, or even as a preemptive challenge to a capital sentencing hearing in cases where the data tends to support a finding of racial discrimination in the application of the death penalty. But perhaps such a claim would not be ripe until a person sentenced to death could demonstrate that their execution was relatively imminent. *Cf. Panetti v. Quarterman*, 551 U.S. 930, 946 (2007) (discussing the appropriate time for filing a challenge to the imposition of a death sentence based on one’s incompetence to be executed and describing any rule that required such a claim to be raised in an initial habeas petition as unjustified insofar as the claim would not yet be ripe). Moreover, it must be noted that our research is not directly analogous to the sort of racial discrimination targeted in *Batson*. We show disparity among those who are actually executed based on the race of the victim, not the race of the offender himself.

²⁶⁷ The alternative race-neutral explanation is that the cases with the best claims for legal relief result in the highest rate of post-sentencing relief. In a subsequent article, we will examine the circumstances in which relief was granted in the cases within our dataset.

²⁶⁸ Of course, the same is true of Baldus’s data, which was unsuccessful in convincing the Court to invalidate the death penalty. The point here, however, is simply that these cases turn on the question of who bears the burden of proof in an individual case. Systemic data, we argue, ought to suffice to justify shifting the burden of disproving discrimination in a particular case to the state, and *Batson* stands as a potential example of this sort of burden shifting in the criminal justice system.

²⁶⁹ *Foster v. Chatman*, 136 S. Ct. 1737, 1754 (2016) (quoting *Miller–El v. Dretke*, 545 U.S. 231, 241 (2005)).

that only the most deserving crimes will result in executions may fail insofar as the explanation “applies just as well” to persons who kill non-white victims. As we have shown, the race of the victim is a better predictor than the existence of one additional aggravating factor that one will ultimately be executed.

Accordingly, particularly in a context where the pattern of execution decisions made by a single decision-maker can be reviewed, such as executive clemency proceedings, the *Batson* framework may provide a useful doctrinal framework for challenging racial disparities in the execution context.²⁷⁰ The utility of a *Batson*-style claim against an entire appellate system should also be explored, though there are practical differences in the ways and reasons relief is granted in such systems that make the analogy to *Batson* less forceful. Moreover, there may be limits to the force of a *Batson* analogy in this context. For example, *Batson* is a tool for revealing *sub rosa* discriminatory intent, but the crux of the claim is a showing of *actual* discriminatory intent demonstrated through circumstantial evidence. When it comes to challenges to a state’s death penalty system (as opposed to, for example, a governor’s clemency grants), it is more likely that a court would find that the legislation permitting the death penalty was enacted for crime control reasons—that is, the state system was enacted in spite of foreseeable racial effects, and not because of it. The benefit of *Batson* in this context would be the opportunity to shift the burden to the state, but unlike under a more comprehensive Racial Justice Act, it seems that under such a framework, systemic challenges to the State’s death penalty system would rarely succeed.

Our second proposed doctrinal intervention is to apply to the execution-selection process the same framework that *Furman* applied to sentence imposition. Under this framework, a state seeking to execute a defendant is obligated to operate a system that executes only the worst of the worst offenders. The research presented in this Article proves that arbitrariness pervades the execution process. Such a claim is not dependent on findings of racial discrimination per se, but rather hinges on the arbitrary operation of the system in failing to execute the most culpable defendants. As District Court Judge Cormac Carney reasoned: “Arbitrariness in execution is still arbitrary, regardless of when in the process the arbitrariness arises.”²⁷¹

²⁷⁰ We acknowledge that applying *Batson* review to the decisions of multiple different actors over long periods of time is less consistent with currently existing doctrine. But scholarly treatises have considered such expansions of the doctrine in other contexts. See, e.g., *Probable Cause and Racial Profiling—Establishing a Claim of Race-Based Law Enforcement—Batson-Inspired Approach—Proposed Approach*, 2A GILLESPIE MICH. CRIM. L. & PROC. § 28:33 (2d ed.) (“[T]he proposed approach sets out a three-part test for establishing unconstitutional, race-based police exercise of discretion in the course of police-citizen contacts.”); Jennifer A. Larrabee, *DWB (Driving While Black) and Equal Protection: The Realities of an Unconstitutional Police Practice*, 6 J. L. & POLICY 291, 295–96 (1997).

²⁷¹ *Jones v. Chappell*, 31 F. Supp. 3d 1050, 1063 (C.D. Cal. 2014), *rev’d sub nom. Jones v. Davis*, 806 F.3d 538, 552–53 (9th Cir. 2015) (reversing under *Teague v. Lane*, 489 U.S. 288 (1989), for announcing a new rule of constitutional law).

More specifically, the *Furman* majority held that death penalty sentencing functioned like a fatal and unpredictable lottery.²⁷² Out of all the persons eligible for the ultimate sentence, a very small and seemingly “random handful” were actually sentenced to death.²⁷³ The utter infrequency of the penalty relative to the number of people eligible represented a form of unconstitutional arbitrariness violating the Eighth Amendment. As Justice White put it, “I cannot avoid the conclusion that as the statutes before us are now administered, the penalty is so infrequently imposed that the threat of execution is too attenuated to be of substantial service to criminal justice.”²⁷⁴ The “very rarity of death sentences—like the low odds of being struck by lightning” was one of the factors that doomed the death penalty to unconstitutionality in *Furman*.²⁷⁵ Our data shows that the rate of execution among those sentenced to death is also about 20%, thus raising the same sort of concerns about discretionary death penalty procedures becoming “pregnant with discrimination.”²⁷⁶

By its plain terms, *Furman* applies to arbitrariness in the selection of who is sentenced to death, but the reasoning applies with equal force to arbitrariness in the selection of who is actually executed. It would be odd to imagine that the Eighth Amendment prohibits “a state from randomly selecting which few members of its criminal population it will sentence to death, but [allows] that same state to randomly select which trivial few of those condemned it will actually execute.”²⁷⁷

To be sure, any challenge to the discretion inherent in governors and judges who enjoy the authority to grant persons sentenced to death relief will be met with historical and practical skepticism. Nonetheless, the discretion enjoyed by judges and governors is

²⁷² *Furman v. Georgia*, 408 U.S. 238, 309–10 (1972) (Stewart, J., concurring) (“[D]eath sentences are cruel and unusual in the same way that being struck by lightning is cruel and unusual.”); *see also* *Walton v. Arizona*, 497 U.S. 639, 658 (2002) (Scalia, J., concurring) (“The critical opinions, however, in light of the subsequent development of our jurisprudence, were those of Justices Stewart and White. They focused on the infrequency and seeming randomness with which, under the discretionary state systems, the death penalty was imposed.”).

²⁷³ *Furman*, 408 U.S. at 310 (Stewart, J., concurring).

²⁷⁴ *Id.* at 313 (White, J., concurring).

²⁷⁵ *Kamin & Marceau*, *supra* note 221, at 983. The fear that only a miniscule number of persons are ultimately subjected to the penalty is also magnified by our data. Of the 2,475 death-eligible defendants for whom the final outcome of the case is known, just twenty-four were executed. Most death-eligible persons were not sentenced to death, as Baldus showed, and our research now shows that even among those sentenced to death, around 80% avoided an actual execution.

²⁷⁶ *Furman*, 408 U.S. at 257 (Douglas, J., concurring); *id.* at 310 (Stewart, J. concurring) (“[I]f any basis can be discerned for the selection of these few to be sentenced to die, it is the constitutionally impermissible basis of race.”). The execution rate is either 19% (24/127) or 20% (24/119), depending on whether the eight defendants discussed above are included or excluded.

²⁷⁷ *Jones v. Chappell*, 31 F. Supp. 3d 1050, 1063 (C.D. Cal. 2014); *see also id.* at 1062 (“Of course, for an arbitrarily selected few of the 748 inmates currently on Death Row, that remote possibility may well be realized. Yet their selection for execution will not depend on whether their crime was one of passion or of premeditation, on whether they killed one person or ten, or on any other proxy for the relative penological value that will be achieved by executing that inmate over any other. Nor will it even depend on the perhaps neutral criterion of executing inmates in the order in which they arrived on Death Row.”).

not the only or even the most celebrated discretion in our justice system: Jurors and prosecutors enjoy almost unchecked discretion with an unrivalled historical pedigree.²⁷⁸ Yet in *Furman v. Georgia* and *Zant v. Stephens*,²⁷⁹ the Court held that the discretion typically enjoyed by juries and prosecutors must be subject to some additional constraints in the context of capital prosecutions.²⁸⁰

It is not sufficient for Eighth Amendment purposes, the Court has explained, that low death-sentencing rates are the product of discretionary decisions made by juries and prosecutors about who deserves death.²⁸¹ Discretion that begets disparate or seemingly arbitrary outcomes is subject to judicial oversight.²⁸² The relevant Eighth Amendment law stands for the proposition that arbitrary mercy or the unpredictable imposition of death sentences violates the Eighth Amendment.²⁸³ Arbitrariness in the administration of capital punishment—whether at the sentencing, appeals and retrial stage, or at the execution queue stage—is contrary to the lodestar of the modern death penalty, *Furman v. Georgia*.

Put simply, if arbitrary grants of mercy at the front-end of the system—juries and prosecutors—can violate the Eighth Amendment, then so too can back-end arbitrariness on the part of post-sentencing judicial procedures and executive review.²⁸⁴ At bottom, modern *Furman*-type claims are assertions that empirical data undermines the theory of *Gregg* and its progeny that guided discretion statutes together with various procedural innovations would result in a system that reliably executed the worst of the worst.²⁸⁵ Our study is one more contribution to that set of empirical data—and a particularly potent one because it shows that the post-sentence protections *Gregg* relied upon have at minimum not worked, and indeed may have worsened matters.

²⁷⁸ See, e.g., *Inmates of Attica Corr. Facility v. Rockefeller*, 477 F.2d 375, 383 (2d Cir. 1973) (noting that prosecutorial discretion is generally beyond the scope of judicial review and is virtually absolute in the absence of tangible evidence of discrimination or similar impropriety); *Duncan v. Louisiana*, 391 U.S. 145, 151–56 (1968) (noting that the reason the jury right was incorporated is so that defendants may enjoy the untutored discretion of their peers as opposed to the legal expertise of a judge).

²⁷⁹ *Zant v. Stephens*, 462 U.S. 862 (1983).

²⁸⁰ See *Furman*, 408 U.S. at 256 (1972); *Zant*, 462 U.S. at 877.

²⁸¹ See *Furman*, 408 U.S. at 256 (1972).

²⁸² See Chelsea Creo Sharon, *The “Most Deserving” of Death: The Narrowing Requirement and the Proliferation of Aggravating Factors in Capital Sentencing Statutes*, 46 HARV. C.R.-C.L. L. REV. 223, 228 (2011) (compiling research showing the connection between discretion and arbitrariness).

²⁸³ See, e.g., Kamin & Marceau, *supra* note 214, at 989 (summarizing the decisional law and academic commentary on this point).

²⁸⁴ Baldus noted that the prosecutors and juries who appeared to have their assessment of culpability colored by race were “probably quite unaware of the connection between their culpability perceptions and the race of the victim.” BALDUS, ET AL., *supra* note 4, at 79 n.59. We suspect that judges are similarly unaware of the role that implicit bias plays in who gets relief from a death sentence.

²⁸⁵ This is exactly the conclusion reached by Justices Blackmun and Stevens after years of experience.

In short, research showing disparate rates of post-sentencing relief in capital cases presents courts with a conundrum. On the one hand, it is arguably an overreaction to strike down a death penalty system as a whole just because of arbitrariness in the processes for reviewing convictions. And yet, when the process for determining who will not be executed amplifies sentencing-stage arbitrariness, the constitution is arguably implicated. Baldus showed that race was relevant to who was sentenced to death, and our research shows that the racial disparities he documented are exacerbated considerably through post-sentencing proceedings that determine who will actually be executed. At the very least, a death penalty system must be viewed as no better than the sum of its parts. Now, with the benefit of the original research in this Article, for the first time courts can make a clear-eyed assessment of whether the full range of racial disparities arising over the course of a case are constitutionally relevant. It no longer suffices for courts to simply reiterate the holding of *McCleskey* because our data demonstrates that the problem is much greater than could have been known at the time when that case was decided.

CONCLUSION

Whereas previous research had thoroughly documented the unseemly role of race in predicting who would be sentenced to death, this Article demonstrates that, even in the stages of a case *after* a death sentence has been imposed, the race of one's victim is an important factor in determining who will be executed. In 1990, David Baldus published his seminal book, *Equal Justice and the Death Penalty*, which details his findings from and methodology for studying Georgia's death penalty. On the back cover of the book, William Bowers writes that Baldus provided a "landmark study" that shows "the extent of arbitrariness and discrimination under Georgia's post-*Furman* capital statute."²⁸⁶ However, this Article demonstrates that Baldus's work did not show—and could not yet have shown—the full "extent" of arbitrariness and discrimination underlying the death penalty. Baldus's work studied cases "from the point of indictment to the penalty-trial sentencing decision," and found that "prosecutorial discretion is the principal source of the race-of-victim disparities" in the system.²⁸⁷ We have now shown that Baldus actually underestimated the scope of racial disparity in our justice system. Post-sentencing judicial interventions and governors inject an additional, previously undocumented level of racial disparity into the system.

Put differently, our research shows that the infamous arbitrariness uncovered by Baldus was only the tip of the iceberg. Racial disparities persist, and are even exacerbated by the processes of determining who among the persons sentenced to death is actually executed. Most persons sentenced to death are not executed, but the rate of relief is higher for persons who kill Black victims.²⁸⁸ Controlling for other factors, among the persons sentenced to death in Baldus's dataset, the odds of execution are at least twice as great, and

²⁸⁶ See BALDUS ET AL., *supra* note 4.

²⁸⁷ *Id.* at 403.

²⁸⁸ We are in the process of developing a qualitative and quantitative explanation for how the race of the victim could be impacting appellate court outcomes and will report these findings in a subsequent Article.

perhaps almost five times as great, if the victim is white. Baldus wrote in 1990 that the “most striking feature of capital sentencing in the United States, both before and after *Furman*, is the infrequency with which death sentences are imposed.”²⁸⁹ His research showed that it was prosecutorial discretion that continued to “dominate the system” and decide who was sentenced to death, not legislative standards.²⁹⁰ By expanding the Baldus data, we now show that this patterned lottery continues, and even gets worse in the post-sentencing phases of a capital case. The arbitrariness at the sentencing phase (the sentencing selection) is exacerbated through the procedures that determine who will actually be executed (the execution selection).

It is well-known that just a few years after the 5-4 decision was handed down in *McCleskey*, the author of the majority opinion, Justice Lewis Powell, told an interviewer that the one vote he regretted during his time on the Court was his decisive vote in *McCleskey*.²⁹¹ More than three decades after it was handed down, the Supreme Court’s refusal to grant Warren McCleskey relief based on Baldus’s data remains “one of the most notorious decisions the Supreme Court has reached in the past seventy years.”²⁹² The decision enshrined the racially disparate application of our death penalty system as an unavoidable and apparently tolerable cost of retaining the death penalty. In recent years, state courts, a block of Supreme Court Justices, and numerous scholars have shown a resurgent interest in revisiting the underpinnings of the *McCleskey* decision. At the same time, scholars have begun to acknowledge the dearth of quantitative research about actual executions as opposed to mere sentences of death.²⁹³ This Article provides a fresh perspective for courts and policy-makers considering the propriety of the death penalty by showing that the impact of race on death penalty outcomes is even greater than previously known.

²⁸⁹ BALDUS ET AL., *supra* note 4, at 398 (noting that the sentence was imposed in only a fraction of the cases in which the penalty was authorized by law).

²⁹⁰ *Id.* at 248; *see also id.* at 328 (“The overall conclusion suggested by the data, therefore, was that the race-of-victim effects in death sentencing observed among defendants indicted for murder were attributable principally to prosecutorial decisions made both before and after trial.”).

²⁹¹ *See* David Von Drehle, *Retired Justice Changes Stand on Death Penalty*, WASH. POST (June 10, 1994), <https://www.washingtonpost.com/archive/politics/1994/06/10/retired-justice-changes-stand-on-death-penalty/9ccde42b-9de5-46bc-a32a-613ae29d55f3/>, *archived at* <https://perma.cc/WJ5L-237A>. Powell also “acknowledged that he had been hampered by his limited understanding of statistics as he evaluated the claims of racial disparity.” Donohue, *supra* note 42, at 94 n.190.

²⁹² *See* Gross, *supra* note 41, at 771.

²⁹³ *See* Kovarsky, *supra* note 48, at 44.

Appendix A

Table 3. Condemned Defendants in the CSS Who Have Been Executed¹						
<i>Defendant (s)</i>	<i>County of Conviction</i>	<i>Date of Crime</i>	<i>Date of Sentence</i>	<i>Date of Execution</i>	<i>Race of Defendant</i>	<i>Kill White Victim</i>
Alderman, Jack Edward	Chatham	9/21/1974	6/18/1975	9/16/2008	White	Yes
Blankenship, Roy Willard	Chatham	3/2/1978	4/28/1980	6/23/2011	White	Yes
Bowden, James	Muscogee	10/10/1976	12/9/1976	6/24/1986	Black	Yes
Burger, Christopher A	Wayne	9/5/1977	1/25/1978	12/7/1993	White	Yes
Gilreath, Fred Marion	Cobb	5/11/1979	3/3/1980	11/15/2001	White	Yes
Green, Roosevelt	Monroe	12/12/1976	1/28/1978	1/8/1985	Black	Yes
Hance, William Henry	Muscogee	2/28/1978	12/16/1978	3/31/1994	Black	No (original), Yes (modified)
High, Jose Martinez	Taliaferro	7/26/1976	12/1/1978	11/6/2001	Black	Yes
Isaacs, Carl Junior	Seminole	5/14/1973	1/3/1974	5/6/2003	White	Yes
McCleskey, Warren	Fulton	5/13/1978	10/12/1978	9/25/1991	Black	Yes
McCorquodale, Timothy	Fulton	1/16/1974	4/12/1974	9/21/1987	White	Yes
Messer, James	Polk	2/13/1979	2/7/1980	7/28/1988	White	Yes
Mitchell, William	Worth	8/11/1974	11/5/1974	9/1/1987	Black	Yes
Mulligan, Joseph Holcombe	Muscogee	4/13/1974	11/4/1976	5/15/1987	Black	No
Smith, John Eldon	Bibb	8/31/1974	1/30/1975	12/15/1983	White	Yes
Solomon, Van Roosevelt and Jones, Brandon Astor	Cobb	6/17/1979 6/17/1979	9/27/1979 10/11/1979	2/20/1985 2/3/2016	Black	Yes
Spivey, Ronald Keith	Muscogee	12/28/1976	6/30/1977	1/24/2002	White	Yes
Stanley, Ivon Ray	Decatur	3/12/1976	1/15/1977	7/12/1984	Black	Yes
Stephens, Alpha Otis O'Daniel	Bleckley	8/21/1974	1/21/1975	12/12/1984	Black	Yes
Stevens, Thomas Dean	Wayne	9/5/1977	1/26/1978	6/28/1993	White	Yes
Tucker, Richard	Bibb	9/15/1978	1/11/1979	5/22/1987	Black	Yes
Tucker, William Boyd	Muscogee	8/20/1977	3/9/1978	5/29/1987	White	Yes
Willis, Henry	Cook	2/11/1976	4/16/1976	5/18/1989	Black	Yes
Young, John	Bibb	12/7/1974	1/9/1976	3/20/1985	Black	Yes
Notes: ¹ Dates were derived from two sources: the Charging and Sentencing Study and the Georgia Department of Corrections (DOC). In a small number of cases, the dates did not match. In the event of a discrepancy, we used the date provided by the DOC (unless the DOC date is clearly wrong, such as a sentencing date before the crime).						

Appendix B

Table 4. Georgia's Statutory Aggravators¹
Statutory Aggravator 1: The offense of murder, rape, armed robbery, or kidnapping was committed by a person with a prior record of conviction for a capital felony. (variable name: LDFB1)
Statutory Aggravator 2: The offense of murder, rape, armed robbery, or kidnapping was committed while the offender was engaged in the commission of another capital felony or aggravated battery, or the offense of murder was committed while the offender was engaged in the commission of burglary or arson in the first degree. (variable name: LDFB2)
Statutory Aggravator 3: The offender by his act of murder, armed robbery, or kidnapping, knowingly created a great risk of death to more than one person in a public place by means of a weapon or device which would normally be hazardous to the lives of more than one person. (variable name: LDFB3)
Statutory Aggravator 4: The offender committed the offense of murder for himself or another, for the purpose of receiving money or any other thing of monetary value. (variable name: LDFB4)
Statutory Aggravator 5: The murder of a judicial officer, former judicial officer, district attorney or solicitor, or former district attorney or solicitor was committed during or because of the exercise of his official duty. (variable name: LDFB5)
Statutory Aggravator 6: The offender caused or directed another to commit murder or committed murder as an agent or employee of another person. (variable name: LDFB6)
Statutory Aggravator 7: The offense of murder, rape, armed robbery, or kidnapping was outrageously or wantonly vile, horrible, or inhuman in that it involved torture, depravity of mind, or an aggravated battery to the victim. (variable name: LDFB7)
Statutory Aggravator 8: The offense of murder was committed against any peace officer, corrections employee, or fireman while engaged in the performance of his official duties. (variable name: LDFB8)
Statutory Aggravator 9: The offense of murder was committed by a person in, or who has escaped from, the lawful custody of a peace officer or place of lawful confinement. (variable name: LDFB9)
Statutory Aggravator 10: The murder was committed for the purpose of avoiding, interfering with, or preventing a lawful arrest or custody in a place of lawful confinement, of himself or another. (variable name: LDFB10)
Notes: ¹ Baldus lists Georgia's statutory aggravators. See BALDUS ET AL., <i>supra</i> note 5, at 35. No defendant was sentenced to death for statutory aggravator 5.

Appendix C. Logistic Regression Models and Probability Pairs

In the main text, we reported our key findings regarding racial disparities in execution, but we did not explore nuanced elements of the statistical analysis. Here, we provide technical details for the interested reader. Specifically, we examine the logistic regression models by contrasting unadjusted odds ratios (the magnitude of racial disparities before controlling for confounding variables) and adjusted odds ratios (the magnitude of racial disparities after controlling for confounding variables).²⁹⁴ We also report probability pairs, an interpretable metric for describing racial disparities.

Before turning to our analysis of executions, we briefly review Baldus and colleagues' analysis of death sentences in the Charging and Sentencing Study ("CSS"). Baldus constructed a core death sentence model with forty-one variables: the race of the victim and forty control variables.²⁹⁵ The control variables were chosen based on the existing research literature, the authors' knowledge of capital punishment, and the impact of each on death sentencing.²⁹⁶ Table 1, Model 1, replicates Baldus's core logistic regression model. The finding is familiar—the adjusted odds of a death sentence are 4.25 times greater for defendants convicted of killing a white victim than defendants convicted of killing a Black victim ($p \leq .01$). Indeed, the core model became the heart of *McCleskey*'s constitutional challenge.²⁹⁷ Interestingly, though, racial disparities in death sentencing might have been worse than Baldus realized: If Hance is coded as a white victim case, then the adjusted odds ratio climbs to 4.95 (Table 1, Model 2; $p \leq .001$).²⁹⁸

²⁹⁴ Logistic regression models are appropriate for binary outcomes (e.g. whether the defendant was sentenced to death or not, and whether the defendant was executed or secured relief). The models estimate odds ratios. The odds ratios indicate the odds of the outcome (e.g. death sentence) for the focal group (defendants convicted of killing a white victim) relative to the odds of the outcome for the reference group (defendants convicted of killing a Black victim). An odds ratio greater than one denotes a direct (positive) relationship, an odds ratio less than one denotes an inverse (negative) relationship, and an odds ratio of 1 denotes no relationship.

²⁹⁵ Technically, Baldus's core model includes the race of the victim, the race of the defendant, and thirty-nine control variables. See BALDUS ET AL., *supra* note 4.

²⁹⁶ See *id.* (describing the core model as one that "captured the essence of the charging-and-sentencing system. It is the result of our extensive efforts to reflect accurately the most relevant and important influences in the system").

²⁹⁷ See *McCleskey v. Kemp*, 481 U.S. 279 (1987).

²⁹⁸ See *infra* Table 5 (referencing the statistically significant relationship in Model 2, $p \leq .001$). Based on guidance regarding the number of events per variable (EPV) in a logistic regression model, Baldus's core death sentence model includes too many variables (see the main text for a discussion of EPV). It is important to note that such guidance was not available at the time Baldus conducted the research. Because 127 defendants were sentenced to death (defined as the event), the core death sentence model can accommodate thirteen variables if EPV is ten, or twenty-five variables if EPV is relaxed to five. But the core model includes forty-one variables. To construct a more parsimonious death sentence model, we used forward selection and backward elimination based on the Akaike Information Criterion ("AIC"). AIC balances model accuracy with model parsimony (the inclusion of more variables improves accuracy, but diminishes parsimony; the inclusion of fewer variables diminishes accuracy, but improves parsimony). Application of the AIC to collections of models drawn from Baldus's core model identifies the optimal model as that with the minimum AIC value.

Among the defendants who were sentenced to death in the CSS, did being convicted of killing a white victim also increase the odds of execution? As reported in the main text, the unadjusted odds of execution are 2.57 times greater in white victim cases than Black victim cases.²⁹⁹ But that assumes we use Baldus's original data. If Hance is coded as a white victim case, then the unadjusted odds ratio climbs to 5.38.

The pivotal question is whether racial disparities in execution disappear after controlling for confounding variables. Ideally, we would replicate Baldus's core death sentence model for executions. Unfortunately, an exact replication is not possible. The execution model only includes 119 cases³⁰⁰ and twenty-four events, with an event defined as an execution. Consequently, each logistic regression model can only accommodate two to five variables—not even close to the forty-one variables in the core model.³⁰¹

Thus, we began by estimating a series of eighty distinct execution models. Each logistic regression includes the race of the victim plus one control variable from Baldus's core model. Such a strategy allows us to control for all the confounding variables in Baldus's core model, though not simultaneously. In Table 2, Model 1a through Model 40a rely on Baldus's original data (treating Hance as a Black victim case). Here, the adjusted odds ratios for white victim range from 1.92 to 3.44 (the odds ratios are arranged in descending order). In Table 2, Model 1b through Model 40b rely on Baldus's modified data (treating Hance as a white victim case). Here, the adjusted odds ratios for white victim range from 3.34 to 8.39. The findings underscore the strength of the relationship between

See KENNETH P. BURNHAM & DAVID R. ANDERSON, MODEL SELECTION AND MULTIMODEL INFERENCE: A PRACTICAL INFORMATION-THEORETIC APPROACH 60–64 (2002). Forward selection begins with an empty model (no variables), adds the variable whose inclusion produces the model with the minimum AIC value, adds the next variable whose inclusion produces the model with the minimum AIC value, and continues until no further addition decreases the AIC value. Backward elimination begins with a full model (all variables), drops the variable whose exclusion produces the model with the minimum AIC value, drops the next variable whose exclusion produces the model with the minimum AIC value, and continues until no further deletion decreases the AIC value. Using Baldus's original coding of Hance as a Black victim case, the forward selection model includes twenty-six variables with an odds ratio of 4.78 for white victim and the backward elimination model includes twenty-four variables with an odds ratio of 4.86 for white victim. Both model selection procedures indicate that the race of the victim is essential to understanding death sentencing. In fact, the odds ratios for white victim in the trimmed models are greater than the odds ratio for white victim in Baldus's core model, suggesting that Baldus might have underestimated the impact of victim race on death sentencing by overfitting the model. Models are on file with the authors and available upon request.

²⁹⁹ *See supra* p. 33.

³⁰⁰ As noted in note 90, the substantive findings are the same for all our models if we include 127 cases (by coding cases with missing data against the research prediction). *See supra* p. 17–18, n. 90.

³⁰¹ *See supra* notes 148–50 and accompanying text (discussing the events per variable limitation).

victim race and execution: Defendants convicted of killing a white victim were more likely to be executed regardless of model specification.³⁰²

We also followed Baldus and colleagues' recommendation to control for the defendant's culpability as measured by the number of statutory aggravators in the case. Table 3 demonstrates that defendant culpability is a strong and (roughly) linear predictor of execution: As the number of aggravators in a case increases, so too does the chance of execution. Among defendants who were condemned to death for a murder that included one or two aggravators, just 4% (1/26) were executed. But among defendants who were condemned to death for a murder that included three, four, five or six aggravators, the chance of execution rose to 18%, 26%, 33%, and 50%, respectively.

It is conceivable that the defendants who were sentenced to death for killing a white victim committed the most aggravated murders. If so, racial disparities in execution might be illusory. Do racial disparities in execution disappear after controlling for defendant culpability? Table 4 provides the answer. Using Baldus's original data, the unadjusted odds ratio of 2.57 for the white victim variable attenuates to 2.19 after controlling for defendant culpability. Using Baldus's modified data, the unadjusted odds ratio of 5.38 for the white victim variable attenuates to 4.93 after controlling for defendant culpability. The change from the unadjusted models to the adjusted models is minimal, meaning that racial disparities in execution cannot be explained by defendant culpability.³⁰³ Put succinctly, among the subset of defendants who were sentenced to death in the CSS,

³⁰² In Table 6, all models were estimated using conventional logistic regression with the exception of models: 34a, 37a, 38a, 40a, 37b, 38b, 39b, and 40b. The models in question cannot be estimated using conventional logistic regression because of quasi-complete separation. Quasi-complete separation occurs if one value of an independent variable is a perfect predictor of the dependent variable. Defendant sex provides an example: Four women were sentenced to death in the CSS, but none was executed. Thus, a value of one for female defendant ("FEMDEF") always corresponds to a value of zero for execution. In fact, four of the control variables in Baldus's core model have a value of 1 that always corresponds to a value of zero for execution ("AVENGE," "FEMDEF," "HATE," "JEALOUS"). In the presence of quasi-complete separation, the maximum likelihood estimate of the logistic regression coefficient may not exist and the conventional logistic regression model does not converge. Fortunately, Firth logistic regression, or penalized likelihood logistic regression, solves the problem of quasi-complete separation. Thus, the eight models listed above are estimated using Firth logistic regression. See PAUL D. ALLISON, *LOGISTIC REGRESSION USING SAS: THEORY AND APPLICATION* 46–59 (2d ed. 2012); see generally George Heinze & Michael Schemper, *A Solution to the Problem of Separation in Logistic Regression*, 21 *STAT. IN MED.* 2409 (2002).

³⁰³ Some have argued that it is inappropriate to compare odds ratios across unadjusted and adjusted logistic regression models. See Carina Mood, *Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It*, 26 *EUR. SOC. R.* 67–82 (2009); Kristian Brent Karlson, Anders Holm & Richard Breen, *Comparing Regression Coefficients Between Same-Sample Nested Models Using Logit and Probit: A New Method*, 42 *SOC. METHODOLOGY* 286–313 (2012). However, Kuha and Mills demonstrate that such comparisons are only problematic if the binary outcome is a crude approximation of a continuous variable. See Johni Kuha & Colin Mills, *On Group Comparisons with Logistic Regression Models*, *SOC. METHODS & RES.*, Jan. 2018, at 9 (noting that if the outcome is truly binary then "the problem simply does not exist and can be safely ignored"). We examine a truly binary outcome—the defendants were executed or secured relief.

being convicted of killing a white victim substantially increased the odds of execution even after controlling for defendant culpability. We treat the “defendant culpability” or “sum of aggravators” model as our principal model because it provides a conservative estimate of racial disparities.³⁰⁴

To assess the robustness of our central finding, we also estimated a forward selection model for Firth logistic regression based on the penalized likelihood ratio test.³⁰⁵ The forward selection procedure identified five variables from Baldus’s core model that improved model fit: killing to collect insurance money, killing to avoid arrest, having a prior murder conviction, killing a bedridden or handicapped victim, and killing a white victim. The same variables were selected regardless of whether we used Baldus’s original data or modified data. The forward selection model reinforces our main finding: Killing a white victim is a pivotal predictor of execution.

Baldus and colleagues discovered that the race of the victim influenced death sentences. Among the condemned, we discovered that the race of the victim influenced executions. What is the magnitude of the combined effect? To answer the question, we used the adjusted odds ratio for the white victim variable from Baldus’s core model, and the adjusted odds ratio for the white victim variable from our principal model, to calculate probability pairs. Initially, we coded Hance as a Black victim case³⁰⁶ and then as a white victim case.³⁰⁷ Probability pairs shed additional light in two ways: By providing a more readily interpretable metric than odds ratios, and by describing the combined effect of victim race across sentencing and execution.

To illustrate the calculation of probability pairs, consider the following hypothetical example (treating Hance as a Black victim case). The example can be found in Table 5, Panel A, Row 3, Columns A through F.

Assume that 1000 defendants were convicted of killing a Black victim. Of the 1000 defendants, fifty were sentenced to death. Of the fifty condemned defendants, ten were executed. Thus, the probability of a death sentence is .05 (50/1000); the probability of an execution given a death sentence is .20 (10/50); and the overall probability of an execution is .01 (10/1000). The overall probability of an execution can also be calculated as follows: $.05 \times .20 = .01$.

If the overall probability of an execution is .01 for a defendant convicted of killing a Black victim, then what is the overall probability of an execution if the defendant had

³⁰⁴ The scale of defendant culpability treats the aggravators as equal to one another. It is true that the aggravators are equal from a legal perspective—each renders a defendant death eligible. But the aggravators are not equal from a statistical perspective—different aggravators have different effects on the chance of execution. Thus, we followed Baldus’s lead by also creating a weighted scale of defendant culpability. *See* BALDUS ET AL., *supra* note 4, at 56. Specifically, we estimated a multivariate logistic regression model with the aggravators predicting execution and used the coefficients as weights. We then summed across the weights for each case to create the weighted defendant culpability scale. Because our substantive findings were the same regardless of whether we used the unweighted or weighted defendant culpability scale, we opted for the simpler and more interpretable unweighted scale depicted in Table 7 (we also created a weighted defendant culpability scale using a series of bivariate logistic regressions with each aggravator predicting execution; again, our substantive findings were the same).

³⁰⁵ *See supra* note 302 (indicating that Firth is required to address quasi-complete separation).

³⁰⁶ *See infra* Table 9 (referring to panel A).

³⁰⁷ *See infra* Table 9 (referring to panel B).

been convicted of killing a white victim instead? The following three-step process provides the answer:

Step 1 (Row 3, Column D): If the probability of a death sentence is .05 for a defendant convicted of killing a Black victim (P_b), then what is the corresponding probability of a death sentence for a defendant convicted of killing a white victim (P_w)? Because Baldus found that the adjusted odds of a death sentence are 4.25 times greater for a defendant convicted of killing a white victim (Table 1, Model 1), the answer is given by:

$$p_w = \frac{(p_b \times Odds\ Ratio)}{(1 - p_b + p_b \times Odds\ Ratio)}$$

$$p_w = \frac{(.05 \times 4.25)}{(1 - .05 + .05 \times 4.25)}$$

$$p_w = .183$$

Step 2 (Row 3, Column E): If the probability of an execution given a death sentence is .20 for a defendant convicted of killing a Black victim (P_b), then what is the corresponding probability of an execution given a death sentence for a defendant convicted of killing a white victim (P_w)? Because we found that the adjusted odds of an execution are 2.19 times greater for a defendant convicted of killing a white victim (Table 4, Model 2a), the answer is given by:

$$p_w = \frac{(p_b \times Odds\ Ratio)}{(1 - p_b + p_b \times Odds\ Ratio)}$$

$$p_w = \frac{(.2 \times 2.19)}{(1 - .2 + .2 \times 2.19)}$$

$$p_w = .354$$

Step 3 (Row 3, Column F): The probabilities from the sentencing stage and the execution stage can be multiplied to find the overall probability of an execution. In the current example, the probability of an execution is .01 for a defendant convicted of killing a Black victim ($.05 \times .20 = .01$) compared to .065 for a defendant convicted of killing a white victim ($.183 \times .354 = .065$).

The probabilities can be translated to percentages. If a defendant convicted of killing a Black victim has a 1% chance of ultimately being executed, then a similarly situated defendant convicted of killing a white victim has a 6.5% chance of ultimately being executed.

Extending the approach illustrated above, in Table 9, Panel A, we set the base probability of a death sentence to a range of hypothetical values under the assumption that the defendant was convicted of killing a Black victim. Because the probability of a death sentence is .05 for all defendants (127/2483), we used a range of values centered around .05, including: .01, .03, .05, .07, .09 (Rows 1–5, Column A). Then we calculated the

corresponding probability of a death sentence under the assumption that the victim had instead been white. The corresponding probabilities are, respectively: .041, .116, .183 (the above example), .242, and .296 (Rows 1–5, Column D).

In Table 9, Panel A, we also set the base probability of an execution given a death sentence to a range of hypothetical values under the assumption that the defendant was convicted of killing a Black victim. Because the probability of an execution given a death sentence is .20 for all defendants (24/119), we used a range of values centered around .20, including: .10, .15, .20, .25, .30. Then we calculated the corresponding probability of an execution given a death sentence under the assumption that the victim had instead been white. The corresponding probabilities are, respectively: .196, .279, .354 (the above example), .422, and .484 (Rows 1–5, Column E).

We can now calculate the overall probability of an execution. Consider, for example, the low end of the range (Row 1, Columns C and F) and the high end of the range (Row 5, Columns C and F). At the low end, defendants convicted of killing a Black victim face a 0.1% chance of execution ($.01 \times .10 = .001$), but change the victim to white and the chance of execution rises to 0.8% ($.041 \times .196 = .008$). At the high end, defendants convicted of killing a Black victim face a 2.7% chance of execution ($.09 \times .30 = .027$), but change the victim to white and the chance of execution rises to 14.3% ($.296 \times .484 = .143$).³⁰⁸

Following our established convention, Table 9 Panel B examines racial disparities under the assumption that Hance is a white victim case. Thus, the adjusted odds ratios for the white victim variable used to calculate the probability pairs change from 4.25 to 4.95 in the death sentence model and from 2.19 to 4.93 in the execution model. The probability pairs in Panel B are displayed in Figure 1 in the main text.³⁰⁹ Already stark, the probability pairs are truly striking if Hance is treated as a white victim case. For example, if a defendant convicted of killing a Black victim has a 1% chance of ultimately being executed, then a similarly situated defendant convicted of killing a white victim has an 11.4% chance of ultimately being executed (Row 8, Columns I and L). And if a defendant convicted of killing a Black victim has a 2.7% chance of ultimately being executed, then a similarly situated defendant convicted of killing a white victim has a 22.3% chance of ultimately being executed (Row 10, Columns I and L).

Probability pairs demonstrate the magnitude of the adjusted racial disparities. Being convicted of killing a white victim increases the chance of being sentenced to death; among those sentenced to death, being convicted of killing a white victim increases the chance of being executed. Combining racial disparities from the penultimate stage of a case and the ultimate stage of a case reveals that defendants convicted of killing a white victim are much more likely to ultimately be executed.

³⁰⁸ To be clear, this process cannot be used to predict outcomes in real world cases.

³⁰⁹ The data files needed to replicate our findings are on file with the authors and available upon request.

Table 5. Replicating Baldus's Core Model: Odds Ratios from the Logistic Regression of Death Sentence on Race of Victim Using Original Data and Modified Data			
		<i>Original Data: Hance Black Victim¹</i>	<i>Modified Data: Hance White Victim²</i>
		<i>Model 1</i>	<i>Model 2</i>
		<i>Adjusted Odds Ratio</i>	<i>Adjusted Odds Ratio</i>
HVICRC	One or more white victims	4.25**	4.95***
ARMROB	Armed robbery involved	4.20*	4.21*
AVENGE	Motive was to avenge role by judicial officer, D.A., lawyer	28.93	32.15
BLACKD	Def was Black	.94	.98
BLVICMOD	Family, lover, liquor, or barroom quarrel	.54	.55
COPERP	One or more co-perpetrators involved	1.27	1.30
CPLESEN	Co-perpetrator received a lesser sentence	2.19	2.25
DEFADMIT	Def admitted guilt and no defense asserted	.28	.27
DLEADER	Def primary mover in planning homicide or contemporaneous offense	1.73	1.70
DRGHIS	Def had a history of drug or alcohol abuse	.36**	.37**
DROWN	Victim was drowned	2.62	2.74
FEMDEF	Def was a female	1.32	1.43
HATE	Hate motive	.71	.71
INSMOT	Def motive was to collect insurance	20.30*	19.97*
JEALOUS	Jealousy motive	.47	.48
KIDNAP	Kidnapping involved	2.89	2.95
LDFB1	Def prior record murder, armed rob, rape, kidnapping with bodily injury	4.05**	4.33**
LDFB3	Def caused death risk in public place to two or more people	1.15	1.18
LDFB4	Pecuniary gain motive for self/other	.80	.79
LDFB6	Murder for hire	5.89	6.17
LDFB7D	Rape/armed rob/kidnap plus silence witness, execution, or victim pleaded for life	1.82	1.87
LDFB8	Victim was a police or corrections officer on duty	1.68	1.67
LDFB9	Def was a prisoner or escapee	7.69**	7.99**
LDFB10	Killing to avoid, stop arrest of self, other	1.51	1.46
MENTORT	Mental torture involved	9.71**	10.12**
MITDFFN	Def was retired, student, juvenile, housewife	.54	.52
MULSH	Multiple shots	2.20*	2.17*
MULTSTAB	Multiple stabbing	4.67**	4.76**
MURPRIOR	Prior murder conviction	5.27	5.86
NOKILL	Def was not the triggerman	.06***	.06***
NONPROPC	Non-property related contemporaneous crime	1.42	1.42
PRISONX	Number of prior def felony prison terms	1.08	1.09
RAPE	Rape involved	12.78***	13.27**
SMYOUTH	Def was under 17 years of age	.42	.42
STRANGER	Victim was a stranger	2.81*	2.76*
TORTURE	Victim was tortured physically	27.46**	28.50**
TWOVIC	Def killed two or more people	7.92**	10.00**
VBED	Victim bedridden/handicapped	2.82	2.78
VICCHILD	Victim was 12 or younger	4.74*	4.77*
VPCARBR	One or more convictions for a violent personal crime, burglary, or arson	1.35	1.31
VWEAK	Victim weak or frail	3.08	3.07

Note: p values: *p ≤ .05; ** p ≤ .01; *** p ≤ .001.
¹ Model 1, an exact replication of Baldus's core model, includes 2,484 weighted defendants of whom 128 were sentenced to death. For more details, see note 93 in the main text.
² In Model 2, Hance is coded 1 for TWOVIC.

Table 6. Odds Ratios from the Logistic Regression of Execution on Race of Victim Controlling for Each Variable from Baldus's Core Model Entered Separately (n = 119)¹

<i>Original Data: Hance Black Victim</i>			<i>Modified Data: Hance White Victim</i>		
<i>Model #</i>	<i>Control Variable</i>	<i>Adjusted Odds Ratio for White Victim</i>	<i>Model #</i>	<i>Control Variable</i>	<i>Adjusted Odds Ratio for White Victim</i>
1a	INSMOT	3.44	1b	INSMOT	8.39
2a	VBED	3.11	2b	VBED	7.65
3a	BLVICMOD	3.09	3b	BLVICMOD	7.06
4a	MURPRIOR	2.97	4b	MURPRIOR	6.92
5a	CPLESSEN	2.70	5b	ARMROB	5.76
6a	PRISONX	2.69	6b	DLEADER	5.76
7a	ARMROB	2.68	7b ²	TWOVIC	5.75
8a	LDFB8	2.68	8b	DROWN	5.69
9a	TWOVIC	2.66	9b	LDFB8	5.68
10a	BLACKD	2.65	10b	BLACKD	5.67
11a	DLEADER	2.65	11b	CPLESSEN	5.63
12a	DROWN	2.64	12b	PRISONX	5.60
13a	MULSH	2.63	13b	MULSH	5.57
14a	LDFB9	2.61	14b	LDFB9	5.49
15a	LDFB1	2.58	15b	VICCHILD	5.48
16a	LDFB6	2.58	16b	LDFB1	5.45
17a	SMYOUTH	2.58	17b	LDFB6	5.43
18a	DEFADMIT	2.57	18b	SMYOUTH	5.43
19a	TORTURE	2.57	19b	MENTORT	5.42
20a	VWEAK	2.56	20b	DEFADMIT	5.38
21a	MENTORT	2.55	21b	TORTURE	5.38
22a	VICCHILD	2.55	22b	VWEAK	5.37
23a	VPCARBR	2.55	23b	LDFB10	5.34
24a	RAPE	2.53	24b	RAPE	5.31
25a	MULTSTAB	2.51	25b	VPCARBR	5.31
26a	NOKILL	2.50	26b	NOKILL	5.25
27a	LDFB3	2.49	27b	LDFB3	5.22
28a	MITDFFN	2.49	28b	MULTSTAB	5.22
29a	DRGHIS	2.44	29b	MITDFFN	5.21
30a	LDFB10	2.42	30b	NONPROPC	5.11
31a	NONPROPC	2.40	31b	DRGHIS	5.09
32a	COPERP	2.37	32b	COPERP	5.08
33a	LDFB7D	2.21	33b	LDFB7D	4.77
34a	JEALOUS	2.18	34b	LDFB4	4.71
35a	LDFB4	2.18	35b	KIDNAP	4.59
36a	KIDNAP	2.14	36b	STRANGER	4.27
37a	FEMDEF	2.10	37b	JEALOUS	3.79
38a	HATE	2.07	38b	FEMDEF	3.65
39a	STRANGER	2.02	39b	HATE	3.58
40a	AVENGE	1.92	40b	AVENGE	3.34

Notes:

¹ We do not present tests of statistical significance because the models are based on population data.

² In Model 7b, Hance is coded 1 for TWOVIC.

Table 7. The Relationship Between the Sum of Statutory Aggravators and Execution (n=119)¹		
	<i>Number of Actual Executions</i>	<i>Percent</i>
	<i>Number of Possible Executions</i>	
One Statutory Aggravator	1 8	13%
Two Statutory Aggravators	0 18	0%
Three Statutory Aggravators	7 38	18%
Four Statutory Aggravators	9 35	26%
Five Statutory Aggravators	6 18	33%
Six Statutory Aggravators	1 2	50%
Note: ¹ We do not present tests of statistical significance because the models are based on population data.		

Table 8. Principal Model: Odds Ratios from the Logistic Regression of Execution on Race of Victim Controlling for the Sum of Statutory Aggravators (n = 119)¹				
	<i>Original Data: Hance Coded as Black Victim</i>		<i>Modified Data: Hance Coded as White Victim</i>	
	<i>Model 1a</i>	<i>Model 2a</i>	<i>Model 1b</i>	<i>Model 2b</i>
	<i>Unadjusted Odds Ratios</i>	<i>Adjusted Odds Ratios</i>	<i>Unadjusted Odds Ratios</i>	<i>Adjusted Odds Ratios</i>
White Victim	2.57	2.19	5.38	4.93
Sum of Statutory Aggravators		1.73		1.73
Note: ¹ We do not present tests of statistical significance because the models are based on population data.				

Table 9. The Magnitude of Combined Disparities: Converting Adjusted Odds Ratios to Probability (P) Pairs for Death Sentence (DS), Execution Given a Death Sentence (EGDS), and Execution (E)

Panel A. Probability Pairs Assuming Hance is Coded as Killing a Black Victim (adjusted odds ratio for death sentence 4.25; adjusted odds ratio for execution 2.19)

	<i>Assigned Probability for Case with a Black Victim</i>				<i>Corresponding Probability for Case with a White Victim</i>		
	P of DS	P of EGDS	P of E (DS) × (EGDS)		P of DS	P of EGDS	P of E (DS) × (EGDS)
	<i>Column A</i>	<i>Column B</i>	<i>Column C</i>		<i>Column D</i>	<i>Column E</i>	<i>Column F</i>
<i>Row 1</i>	.01	.10	.001		.041	.196	.008
<i>Row 2</i>	.03	.15	.005		.116	.279	.032
<i>Row 3</i>	.05	.20	.010		.183	.354	.065
<i>Row 4</i>	.07	.25	.018		.242	.422	.102
<i>Row 5</i>	.09	.30	.027		.296	.484	.143

Panel B. Probability Pairs Assuming Hance is Coded as Killing a White Victim (adjusted odds ratio for death sentence 4.95; adjusted odds ratio for execution 4.93)

	<i>Assigned Probability for Case with a Black Victim</i>				<i>Corresponding Probability for Case with a White Victim</i>		
	P of DS	P of EGDS	P of E (DS) × (EGDS)		P of DS	P of EGDS	P of E (DS) × (EGDS)
	<i>Column G</i>	<i>Column H</i>	<i>Column I</i>		<i>Column J</i>	<i>Column K</i>	<i>Column L</i>
<i>Row 6</i>	.01	.10	.001		.048	.354	.017
<i>Row 7</i>	.03	.15	.005		.133	.465	.062
<i>Row 8</i>	.05	.20	.010		.207	.552	.114
<i>Row 9</i>	.07	.25	.018		.271	.622	.169
<i>Row 10</i>	.09	.30	.027		.329	.679	.223