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Jeffery T. Ulmer, John H. Kramer and Gary Zajac

Department of Sociology and Criminology, The Pennsylvania State University, University Park, PA, USA

ABSTRACT
This study uses propensity score weighting to examine three key death penalty decisions in Pennsylvania from 2000–2010, focusing on the role of defendant and victim race: prosecutors’ decisions to seek the death penalty, prosecutors’ decisions to retract death filings, and decisions to sentence defendants to the death penalty. We collected data on 880 first degree murder convictions in 18 Pennsylvania counties, encompassing 87% of the state’s first-degree murder convictions. We do not find that black defendants, or black defendants who kill white victims specifically, are more likely to have the death penalty sought or imposed. Instead, we find that those who kill white victims, regardless of defendant race, are more likely to receive the death penalty. We further found that black defendants, and blacks who killed black victims, were more likely to have a death filing retracted by prosecutors. Finally, patterns of death penalty race disparity varied greatly depending on the county in which a case was prosecuted and sentenced.

Capital sentencing is the most consequential of punishment decisions. As such, it is an issue that invokes foundational legal, moral, and empirical questions surrounding fairness, proportionality, and wrongful convictions. Although there has been a nationwide decline in death sentences, executions, and public support for the death penalty (Death Penalty Information Center, 2017), it remains an important societal issue. The death penalty, no matter how rare or common, still involves the state’s ultimate punitive power; the power to take lives. If race is connected to the exposure of defendants to that power, this has substantial negative implications for the legitimacy of the U.S criminal justice system (Garland, 2010). According to Spohn (2015), “Reducing the racial disproportionality in prison and eliminating racial bias in noncapital and capital sentencing should be high-priority goals of policy makers and politicians. Evidence that race infects the sentencing process undermines respect for the law and casts doubt on the ability of the criminal justice system to ensure due process and equal protection for all.”
Racial disparity, as well as institutional and individual-level racism, was embedded in capital punishment throughout much of U.S. history (Banner, 2002; Garland, 2010). On death rows throughout the U.S. today, 41% of inmates are black and 13% are Hispanic. In addition, the race of victims is also the site of racial disproportionality in the death penalty. In the post-Gregg (1976) era, 288 black defendant/white victim capital murder cases have resulted in execution, while 20 white defendant/black victim cases have so resulted (Death Penalty Information Center, 2018).

This study examines death penalty case processing in Pennsylvania from 2000–2010, focusing on the role of defendant and victim race in three key death penalty decisions: prosecutors’ decisions to seek the death penalty, prosecutors’ decisions to retract filings to seek the death penalty, and jury or judge decisions to sentence defendants to the death penalty. We collected detailed data on 880 first degree murder convictions in 18 Pennsylvania counties, encompassing 87% of the state’s 2000–2010 first degree murder convictions. Using propensity score weighting methods, we examine: 1) the effects of defendant race on death penalty decisions, 2) the effects of victim race; 3) effects of both in combination; and 4) how defendant and victim race effects differ between courts.

The contributions of this research are first and foremost empirical. This study adds to our base of knowledge about race and capital punishment decision making with findings from a novel and high-quality dataset, from a large, populous, and diverse state. In addition, our study has several other features that are important empirical contributions. This study presents a unique opportunity to examine prosecutorial discretion in a highly consequential setting: the decisions that expose defendants to the death penalty. First, a prosecutorial filing to seek the death penalty initiates exposure of a defendant to capital punishment. Second, these filings, in turn, can leverage defendants to plead guilty to avoid the risk of the death penalty. Prosecutors’ retracting of death filings are thus intimately tied to plea bargaining. Almost no research has investigated racial disparity in prosecutors’ decisions to retract a filing to seek the death penalty (for an exception, see Baldus, Woodworth, Zuckerman, & Weiner, 1998). Our examination of this question is therefore another unique contribution of our study. There is also a paucity of research on the question of whether the effects of defendant or victim race on death penalty decisions vary between courts. Here, we examine whether the effects of defendant or victim race on death penalty filings, retractions, and sentences vary between county jurisdictions. This focus on between-court variation provides a window onto localized differences in the connection of race to prosecutorial and judge/jury discretion.

Our theoretical and conceptual framing draws on the focal concerns perspective from prior punishment decision making literature, and notions of court organizational norms, to develop our empirical expectations. We also draw guidance from the findings of prior studies of racial disparity in death penalty decision making. The focal concerns perspective points to the potential for the race of the defendant and/or victim to mobilize different perceptions of blameworthiness or dangerousness by prosecutors, judges, and/or juries. Organizational conceptions of courts lead us to further expect that the role of victim or defendant race may also vary between court jurisdictions.
An Overview of Death Penalty Discretion Points

While this is a study of just one state, Pennsylvania has several features that are similar to many other states that retain capital punishment. Like many states, Pennsylvania has substantial racial disproportionality among its prisoners sentenced to death.\(^1\) Additionally, in terms of legal structures, all capital punishment states are constrained by the Gregg v. GA (1975) decision and a large body of other case law in how capital decision making can operate. Thus, Pennsylvania’s death penalty discretionary decisions operate in a similar manner to other death penalty states. For example, a set number of aggravating circumstances must be codified by statute, and prosecutors must file notice that they are going to pursue the death penalty due to the presence of one or more of these statutory aggravators. Pennsylvania’s statutory aggravators are similar to those in many other states (Donohue, 2014; Marceau, Kamin, & Foglia, 2013; Paternoster, Brame, Bacon, & Ditchfield, 2004). If prosecutors file to seek the death penalty, there is then a bifurcated trial, with a guilt phase and a penalty phase, and the penalty can be decided by judge or jury.

To comply with the logic of Gregg v. Georgia (1975), all states that impose capital punishment must define aggravating circumstances that can lead to the death penalty in statute, and these aggravating circumstances must be proved to a reasonable doubt standard. As noted, the prosecution must file a motion that aggravation is present and that they are seeking the death penalty. Once filed, a motion seeking the death penalty can later be retracted by the prosecution. Retraction removes a defendant’s exposure to the death penalty, and is thus a potentially powerful lever to extract guilty pleas even to first degree murder. If conviction for first degree murder occurs and the prosecution has filed a motion for the death penalty (and not retracted it), a jury or judge (typically jury) must decide whether to sentence the defendant to death by either finding (a) existence of aggravating circumstances and no mitigating circumstances or (b) that aggravating circumstances outweigh mitigating circumstances.\(^2\) Figure 1 shows the case flow of a sample of 880 first degree murder convictions from Pennsylvania we analyze for this study.

Pennsylvania’s statutory list of eighteen aggravating circumstances is similar to other common aggravating and mitigating circumstances listed in other death penalty states’ statutes.\(^3\) As with other capital punishment states (Marceau et al., 2013), Pennsylvania’s aggravating circumstances vary in their specificity and breadth. Some of the aggravating circumstances, such as victimizing a firefighter or police officer or victimizing someone under 12 years old, refer to specific, clear-cut circumstances. Others apply to a much broader segment of cases, and/or leave room for

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\(^1\)According to the Pennsylvania Department of Corrections Execution List (Pennsylvania Department of Corrections, Persons Sentenced to Execution in Pennsylvania, December 1, 2016), there were two Asians (1.1%); seventeen Hispanics (9.7%); sixty-four Whites (36.6%) and ninety-two African-Americans (52.6%) under sentence of death in Pennsylvania. By contrast, in 2015, non-Hispanic Whites accounted for 77.4% of the state population, while the percentage African-Americans was 11.7%. U.S. Census Bureau, http://quickfacts.census.gov/qfd/states/42000.html as of July 1, 2015.

\(^2\)There are seven statutorily listed mitigating factors in Pennsylvania, and any other evidence of mitigation can also be introduced. Mitigating factors must be sustained by a preponderance of the evidence standard.

\(^3\)For example, see Donohue’s (2014) description of Connecticut’s statutory aggravating circumstances, and Paternoster et al.’s (2004) description of Maryland’s.
interpretation, such as the offender having a significant history of violent felonies, the murder being committed in perpetration of a felony, the victim and offender being connected in drug trafficking, or the defendant “knowingly creating grave risk of death” to others besides the victim. The breadth and interpretive nature of these latter aggravating circumstances allow prosecutors significant discretion in the scope of first-degree murder cases for which the death penalty could be sought. In addition, judges and/or juries have substantial discretion at sentencing in finding if aggravating circumstances are proven, and deciding whether these are outweighed by any mitigating circumstances.

**Defendants, Victims, and Focal Concerns of Punishment**

The focal concerns perspective is a prominent framework for analyzing sentencing decisions in general (Ulmer, 2012), but one that has rarely been applied to the study of race on death penalty decision-making (for an exception, see Jennings, Richards, Smith, Bjerregaard, & Fogel, 2014). However, the focal concerns perspective on sentencing suggests expectations for how the race of defendants and/or victims might affect death penalty decision making. This perspective argues that punishment decisions center around three focal concerns: blameworthiness, protection of the
community/offender dangerousness, and practical consequences and constraints surrounding decisions. The focal concerns perspective argues that both legal and extra-legal considerations can affect the assessment of defendants and cases in terms of the three focal concerns; in this case, the assessment of who among eligible defendants are appropriate for the death penalty. But status-linked attributions and stereotypes can shape court decision makers’ assessments of defendant blameworthiness, dangerousness/rehabilitative potential, and/or practical contingencies and constraints, though they likely are subordinate to legally relevant factors (Kramer & Ulmer, 2009). For murder, the characteristics of victims may also condition different definitions of blameworthiness or community protection (Curry, 2010; Curry, Lee, & Rodriguez, 2004). This study is not a direct test of the focal concerns perspective, rather, we are drawing from it to shape our empirical expectations and to gain insight into possible mechanisms behind those expectations. Our logical strategy for our analysis is to control for legally relevant factors such as aggravators and mitigators that should be expected to shape blameworthiness and perceived dangerousness, and case processing factors such as evidence and motions that would shape practical constraints. Then, we examine whether defendant or victim race, singly or in combination, affects death penalty outcomes, net of these legally relevant and case processing factors. If so, this finding would be consistent with the notion that defendant and/or victim race influence the assessment of focal concerns such as blameworthiness or dangerousness.

Prior sentencing literature from the focal concerns perspective argues that harsher sentences are more likely to be imposed on black defendants than white defendants because of court actors’ (and public) stereotypes that blacks are more dangerous, and more morally culpable and blameworthy (Spohn, 2015). Research reveals that court officials (and society-at-large) often view Black and Hispanic offenders as violence-prone, threatening, disrespectful of authority, and more criminal in their lifestyles (Bridges and Steen, 1998; Rios, 2011; Steen et al., 2005). Consistent with this view, research has also found that defendant race itself affects capital sentencing outcomes. For example, a major review of research on disparity in administration of the death penalty in the post-Furman era was conducted by the U.S. General Accountability Office (GAO) (1990). More than half of the studies found that race of defendant influenced the likelihood of being charged with a capital crime or receiving the death penalty (General Accountability Office, 1990). More recently, Beckett and Evans’ (2014) study of death penalty decisions in Washington found no evidence that defendant or victim race affected prosecutorial decisions to seek the death penalty, but they found juries were over four times more likely to impose the death penalty on black defendants. Therefore, we hypothesize:

1) Prosecutors will be more likely to seek the death penalty against black defendants, and will be less likely to retract such filings. Black defendants will also be more likely to receive the death penalty at the hands of judges or juries.

The GAO review (1990) noted earlier also found that in 82% of studies prior to 1990, defendants (regardless of their own race) who murdered whites were more likely to be sentenced to death than those who murdered blacks. This finding was consistent across data sets, states, data collection methods, and analytic techniques. Regarding the prosecutorial decision to seek the death penalty, many studies have
found that prosecutors were more likely to seek the death penalty for capital murder cases involving a white victim (Bowers & Pierce, 1980; Brock, Sorensen, & Marquart, 1999; Hindson, Potter, & Radelet, 2006; Keil & Vito, 1995; Paternoster, 1984; Paternoster, Soltzman, Waldo, & Chiricos, 1983; Paternoster et al., 2004; Radelet & Pierce, 1985; Songer & Unah, 2006; Williams, Demuth, & Holcomb, 2008). Baldus et al. (1998) study of death penalty decisions in Philadelphia from 1983–1993 did not find a race of victim effect in prosecutors’ decisions to seek the death penalty, but did find that prosecutors were significantly less likely to retract a filing to seek the death penalty when the murder victim was black. In Maryland, Paternoster and Brame (2008; see also Paternoster et al., 2004) found that defendants with white victims were six times more likely to receive the death penalty than cases with non-white victims.

As part of a larger project investigating murder case processing and sentencing, we have conducted interviews with prosecutors, defense attorneys, and judges, and these hint at how perceptions of victims might shape death penalty decisions. Some District Attorneys said that the decision to pursue the death penalty was influenced by whether the case involved victim who was someone a jury could be sympathetic toward, versus a disreputable, criminally involved victim, such as a drug dealer. Prosecutors commonly referred to such latter cases as “bad on bad.” Another prosecutor volunteered that he decided within a few minutes of examining a crime scene whether to file for the death penalty, pointing to his impressions of how impactful the crime scene or murder incident appeared. In general, these factors all likely inform interpretations of the focal concern of blameworthiness, and perhaps community protection from especially dangerous or predatory offenders. Prosecutors, judges, and juries may see some victims as more sympathetic and worthy of “justice,” which may affect their decisions (Lynch, 2013; Mangino & Champion, 2013). We therefore hypothesize the following:

2) Cases with white victims will be more likely to see a death penalty filing, and will be less likely retracted. These cases will also be more likely to receive the death penalty.

Theoretically, cases where the defendant is black and the victim is white are especially likely to invoke racialized fears of dangerousness and perceptions of blameworthiness/culpability (Paternoster & Brame, 2008; Donohue, 2014), and more studies than not have found race of victim/race of defendant disparities in death penalty decisions. Regarding prosecutorial discretion, many studies have found prosecutors are specifically more likely to seek the death penalty when the defendant is black and the victim is white (e.g., Brock et al., 1999; Donohue, 2014; Keil & Vito, 1995; Lenza, Keys, & Guess, 2005; Sorenson and Wallace, 1999). For example, Lenza et al. (2005), in Missouri (1978–1996), found that blacks who killed whites were five times more likely to be charged with capital murder than blacks who kill blacks. Yet findings on the role

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4This larger ongoing project focuses more broadly on between-county variation in homicide case processing and sentencing, and encompasses both quantitative and qualitative data collection. In connection with the qualitative dimension of this project, we have conducted interviews with prosecutors, judges, and defense attorneys that have substantial experience with first degree murder cases. Specifically, we have interviewed 11 District Attorneys and Assistant District Attorneys, eight judges, and six defense attorneys in four counties. These four counties are among those in the first degree murder data we analyze here. The interviews encompass questions about the charging decisions, the decision to seek the death penalty, the decision to retract the death penalty if sought, plea bargaining, and the sentencing process, among other topics.
of defendant race/victim race in prosecutorial death penalty decisions are also mixed and complex. Vito, Higgins, and Vito (2014) study of Kentucky from 2000–2010 found no significant disparity connected to black defendant/white victim cases in prosecutors’ seeking the death penalty, and Baldus, Woodworth, Grosso, and Christ (2003) did not find such disparities in Nebraska. Unah (2011) found that North Carolina prosecutors were less likely to seek the death penalty in cases with non-white defendants and white victims than when the defendant and victim were both white. But Jennings et al. (2014) studied North Carolina capital murder trials using propensity score matching, and found results that conflicted with the findings of Unah (2011) in that they did not find race of defendant or victim disparity (see also Blankenship and Blevins (2001). Finally, a recent report by Beckett and Evans (2014) in Washington state found that neither the race of defendant nor victim affected prosecutors’ decisions to seek the death penalty, but race of victim did affect death sentencing decisions.

Regarding death sentencing by judges or juries, a large number of studies have found that black defendants convicted of killing white victims are the most likely to receive the death penalty (e.g., Baldus, Woodworth, & Pulaski, 1990; Bowers & Pierce, 1980; Donohue, 2014; Gross & Mauro, 1984; Holcomb, Williams, & Demuth, 2004; Johnson, Blume, Eisenberg, Hans, & Wells, 2012; Keil & Vito, 1995; Lenza et al., 2005; Ohio Joint Task Force to Review the Death Penalty, 2014; Paternoster & Brame, 2008; Unah, 2011; Williams et al., 2008). This includes the famous study of the death penalty in Georgia by Baldus et al. (1990), which figured centrally in the McKlesky v. Kemp (1987) U.S. Supreme Court case. Baldus et al. (1990) examined over 2,000 cases charged with murder in Georgia, and found that a defendant who killed a white victim was four times more likely to receive a death sentence than one with a non-white victim. A re-analysis by Williams et al. (2008) of the 1970s Georgia data compiled by Baldus et al. (1990) also found that cases involving black male offenders with white victims were treated most severely, while black offenders with black victims were treated most leniently among the interactions of race-of-defendant and race-of-victim. Similarly, the Baldus et al. (1998, p. 1714) study of Philadelphia also found that the race of the defendant is “…a substantial influence in the Philadelphia capital charging and sentencing system, particularly in jury penalty trials.” Specifically, black defendants overall, and those who killed white victims specifically, were more likely to receive the death penalty, and such racial disparity was more prominent in jury sentences than sentences handed down by judges. More recently, Unah’s (2011) study in North Carolina also found that cases with non-white defendants and white victims were 8% more likely to receive the death penalty.

Donohue’s (2014) study has special relevance for the notion that defendant race influences the assessment of focal concerns such as blameworthiness, and that victim race shapes blameworthiness via judgement about the social value of victims. This study had 18 coders independently evaluate cases in Connecticut with race and outcome information removed, using three different murder “egregiousness” scales based on Connecticut’s statutory aggravating circumstances. On average, white defendant/white victim crimes were rated by the coders as objectively most egregious, while minority defendant/white victim crimes were rated least egregious. Yet, in the real-life case outcomes, the latter were most likely to result in a death sentence. Donohue
(2014) found that race of defendant and victim were stronger predictors of death sentences than the coders’ objective egregiousness ratings or statutory aggravating factors. This is consistent with the argument that defendant and victim race can shape perceptions of the blameworthiness of defendants, or the worthiness or social value of victims. Therefore, we hypothesize:

3) Black defendant/white victim cases will be especially likely to see a death penalty filing; and these cases will be less likely retracted. Such cases will be most likely to receive the death penalty.

Variation Between Courts

According to Paternoster (2011, p. 11): “… there is at least as much if not more variation in the inclination to impose the death penalty within death penalty states as there is between death penalty states (emphasis in original).” Local courts develop distinctive formal and informal case processing and sentencing norms (see Eisenstein, Flemming, & Nardulli, 1988; Ulmer, 1997; Ulmer, 2005). The interpretation of defendants and cases relative to the focal concerns is shaped by local court contexts (e.g., Anderson & Spohn, 2010; Kramer & Ulmer, 2009; Spohn & Fornango, 2009; Ulmer & Johnson, 2017). Given these possibilities, we expect that the effects of the race of defendants and victims on death penalty decisions will differ significantly between courts. In fact, a great deal of research on sentencing in general shows that the effects of race and the degree of racial disparity vary across court contexts (Ulmer, 2012). However, there is a paucity of research on the question of whether the effects of defendant or victim race on death penalty decisions vary between courts.

Our interviews with prosecutors illustrate the importance of differing norms surrounding capital cases. In one county, the norm was that the death penalty was not sought unless the case involved the murder of a police officer, or multiple victims. By contrast, the death penalty in a different county was routinely sought in any cases where any aggravating factor might be argued, but then the prosecutors’ office would retract a substantial number of those filings. In still another county, the prosecutor’s office was said to seek the death penalty in any case they thought an aggravating factor might be present, and would then let the jury decide. This county differed from another county, where the District Attorney considered some statutory aggravators “stupid” and only sought the death penalty when he considered a case to involve “the worst of the worst,” with an “innocent” victim (meaning someone not involved in crime themselves) and/or torture or excessive cruelty. As prosecutors, judges, and/or juries decide the application of the death penalty, defendant or victim race might differentially shape how they weigh cases as deserving the ultimate punishment.

Prosecutors, judges, and juries might also differently weigh the demands or wishes of victims’ families. In one county, prosecutors said that they strongly considered the wishes of the victim’s family in deciding to seek the death penalty, while in another county prosecutors listened to victims’ families wishes, but did not consider this a definitive factor seeking the death penalty. Pressure from victims’ families on prosecutors to seek the death penalty, or directed at juries to impose the death penalty, might shape perceptions of blameworthiness. In sum,
court organizational cultures and contexts may differ in the extent to which the race of the defendant, or the victim, might be linked to perceptions of blameworthiness, dangerousness, or practical constraints. All these considerations lead to our fourth hypothesis:

4) There will be substantial and significant variation in the effects of defendant and victim race between courts.

To encapsulate our overall argument, the focal concerns perspective implies that the race of the defendant and/or victim may mobilize different perceptions of blameworthiness, dangerousness, or practical considerations. We therefore expect: 1) black defendants will fare worse than white defendants, 2) cases with white victims will be exposed to and sentenced to death more likely than cases with black victims, and 3) black defendant-white victim cases will be especially singled out for exposure and sentencing to death. We further expect that the role of victim or defendant race will vary between courts as well.

Our strategy is to control for legally relevant factors such as aggravating and mitigating factors, and other murder case characteristics, that should be expected to shape blameworthiness and perceived dangerousness, and case processing factors such as evidence strength and defense motions that would shape practical constraints. Notably, we measure aggravators both as independently coded and as filed by prosecutors in our models. Then, we examine the effects of defendant and victim race on capital murder decisions, net of these legally relevant and case processing factors. We further test whether the effects of defendant and victim race vary between courts, again, net of case-level legally relevant and case processing variables that would be expected to influence judgements of blameworthiness and dangerousness, and the role of practical case factors.

Data and Methods

We examine first degree murder convictions in cases charged in Pennsylvania from 2000–2010, focusing on three key death penalty decisions: 1) prosecutors’ decisions to seek the death penalty, 2) prosecutors’ decisions to retract filings to seek the death penalty, and 3) courts’ decisions to sentence defendants to the death penalty. A challenging issue in identifying eligible cases was Pennsylvania prosecutors’ common practice of initiating homicide prosecutions by charging defendants with general criminal homicide, which could include any of the various degrees of murder or manslaughter. That is, the degree of murder (i.e., first, second, third, manslaughter) is not typically specified at initial charging, but is instead determined through the conviction process. The implication of this practice was that we had to identify all cases charged under the general criminal homicide statute (18 Pa.C.S. §2502), and then follow the processing of those cases to determine whether or not they were first-degree murder convictions and thus exposed to a decision to seek the death penalty. Rule 802 of the Pennsylvania Rules of Criminal Procedure requires that the prosecutor file a notice of aggravating circumstances either at the time of arraignment, or subsequently if the prosecutor becomes aware of an aggravating circumstance after arraignment.
Data Sources and Collection

The only available statewide data set on all offenders prosecuted in Pennsylvania’s criminal justice system resides with the Administrative Office of Pennsylvania Courts (AOPC). The AOPC docket transcript data include the sex, race, and age of the defendant, the arrest charges, indictment or information charges, conviction charges, and other information such as prosecution and defense motions, attorneys of record, and important case identifiers (by which cases can be linked to other data). From the AOPC docket transcript data, we identified and coded a total of 4,274 cases charged under the general criminal homicide statute from 2000–2010 (3,902 cases involve a black or white defendant). Of these cases charged with criminal homicide, 1,260 (30% of cases charged with criminal homicide) were not convicted of any homicide charge. There were 1,115 docket cases (26% of cases charged) with a first-degree murder conviction (1,065 black or white defendants). Of those, 155 were convicted of two counts of first-degree murder, and 38 were convicted of three counts of first-degree murder. There were 241 cases (5.6%) with at least one conviction of second-degree murder, and 1,235 (29%) with at least one third degree murder conviction. A total of 423 cases (10%) had at least one conviction for lesser criminal homicides, such as manslaughter. We did not code any post-sentencing outcomes, such as appeals or retrials. In line with prior research on death penalty decision making in trial courts, we focus on initial prosecution and trial court outcomes.

Table 1 shows the racial breakdown of black and white defendants charged with any criminal homicide, from the statewide AOPC docket transcript data for 2000–2010. Black defendants comprised 53% of the cases with any criminal homicide charges, and white defendants comprised 38% (Hispanic and other ethnicity defendants comprised the other 9%, not shown in the table). By contrast, in 2000, 10.8% of Pennsylvania’s population was black and 5.7% was Hispanic. This means that the murder charge data from which we started was highly racially disproportionate relative to the state population.

As we move from those charged with criminal homicide to those convicted of first-degree murder statewide (as opposed to our 18 field data collection counties), the pool becomes even more racially disproportionate. Table 1 also shows that about 62% of those convicted of first-degree murder were black and 34% were white (not shown, 6% were Hispanic, not mutually exclusive with black or white). In
the statewide data, there are also 25 defendants of Asian or other ethnicity, and 25 with missing or indeterminate ethnicity in the AOPC docket data. Table 1 then shows the field-collected data from the 18 counties, in which there are 880 defendants, 805 of whom are black or white (7% are Hispanic). The field data contain somewhat greater percentages of minority defendants, compared to the statewide population of first-degree murder-convicted defendants. This difference is likely due to the demography of the 18 field data counties, which are the larger and more diverse counties in the state. The counties not contained in the field data are smaller, more rural, and have very predominantly white populations (in terms of residents and murder defendants).

We used the AOPC docket transcript data as the starting point of our data collection to identify all cases charged under the general criminal homicide statute from 2000–2010. We then obtained sentencing data from the Pennsylvania Commission on Sentencing (PCS) for murder sentences imposed from 2000 through 2014 to supplement the AOPC data. Furthermore, we obtained case management file data from the Pennsylvania Department of Corrections (DOC), which included defendant IQ, psychological assessments, education, employment and military history, and other information on offender characteristics.

In order to gain more in-depth information to examine death penalty cases and decision making, we used the three datasets above to identify first degree murder convictions. We determined that 18 counties had ten or more criminal homicide charges during the 2000–2010 period, and we focused out data collection efforts on these counties. We provided their District Attorneys’ offices and court clerks’ offices with our lists first-degree murder convictions in their counties. This enabled us to clarify, validate, and in some cases correct errors in our lists of first degree murder convictions. We then traveled to the 18 counties and coded in-depth data from (largely paper) case files in the District Attorney’s Offices and/or court clerks’ files. These case files included police reports, indictments/information and arraignment charges, evidence collected and presented, motions filed (including those presenting statutory aggravating circumstances and seeking the death penalty, and those retracting such filings), and information about crime circumstances, and victim characteristics, relation to defendant, and victim resistance to the offender if any. Since the 18 statutory aggravating factors on which prosecutors can file to seek the death penalty are crucial legally-relevant determinants of exposure to the death penalty, we coded them in two ways: 1) as filed by the prosecutor in court records, and 2) as independently

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5While first and second degree murder are not covered by Pennsylvania’s sentencing guidelines, the PCS collects information on the sentencing of convictions for these offenses.
6Due to the large number of Philadelphia cases, the Philadelphia District Attorney’s Office requested that we limited our data collection to cases charged from 2005–2010, as a condition of cooperation. This yielded 331 first degree murder convictions, and resulted in the omission of 250 cases prior to 2005.
7The coauthors performed the coding of the cases in the 18 counties, along with a trained and supervised a team of student assistants. We pretested our field data collection codebook and strategy in two counties, and used this pretesting to create uniform coding rules. We attempted to minimize discretionary coder judgement as much as possible by coding the presence of case attributes (including aggravating and mitigating factors), victim characteristics, defense motions, evidence variables, etc. as present only if there was unambiguous positive mention or record of the factor in the police reports, docket transcripts, arraignments, court proceedings, death certificates, newspaper reports, etc. The field data collection codebook is available on request.
determined to be present by our coding team. Our later propensity score analyses control for the aggravating circumstances as independently coded in the analyses of filing and retracting the death penalty, and as filed by the prosecutor in the analysis of the imposition of the death penalty.

To supplement local case files, we also reviewed local newspaper reports and appellate documents to verify and to fill in any information missing from the record (this was often helpful in collecting more detailed victim information). Furthermore, we gained access to the Pennsylvania Department of Health’s death certificate information for victims, with victim race, ethnicity, gender, and date of birth. Finally, we engaged in extensive data cleaning, consisting of removing any duplicate cases (such as when a defendant committed multiple murders and was prosecuted under different docket numbers but part of the same criminal proceeding), identifying missing or invalid data. We then tracked down missing information for all the first-degree murder convictions in the 18 counties’ data, through additional DOC data requests, internet searches of newspaper articles, and further AOPC or appellate docket searches. Thus, the 880 first degree murder conviction cases from the 18 counties used in our analyses have no missing data, and they represent 87% of all first-degree convictions statewide in this time period. These form the basis of our main analyses.

The field-collected data include 34 female defendants convicted of first-degree murder, comprising about 4% of our data set. Of these 34 female defendants, prosecutors sought the death penalty against eight (about 24% of the female defendants). Of those eight females, the death penalty filing was retracted for five. Thus, three females (8.8% of the 34 female defendants) were exposed to a death penalty trial. One of these three females received the death penalty. While a broader examination of the role of gender in the processing and sentencing of murder cases would be valuable, we do not have adequate numbers of first-degree murder cases involving female defendants, and do not have adequate variation in death penalty outcomes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Propensity score weighted models(^a) ATE</th>
<th>Propensity score weighted models with county as predictor ATE</th>
<th>Allegheny(^b) Odds</th>
<th>Philadelphia(^b) Odds</th>
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<td>.25(*)</td>
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</tbody>
</table>

\(^a\)Not controlling for county.
\(^b\)Versus 16 reference counties.
\(^c\)Weighted treatment N = 388; weighted control N = 417.
\(^d\)Weighted treatment N = 371; weighted control N = 434.
\(^e\)Weighted treatment N = 387; weighted control N = 418.
\(^f\)Weighted treatment N = 385; weighted control N = 420.
\(^g\)Weighted treatment N = 420; weighted control N = 385.
\(^\dagger\)p < .10, \(*\)p < .05, \(**\)p < .01, \(**\*)p < .001.
among those females, to pursue the role of defendant gender further in our analyses.\textsuperscript{8}

\section*{Analytical Strategy}

The well-known studies of race and the death penalty by Baldus et al. (1998) and many others (e.g., Beckett & Evans, 2014; Donohue, 2014; Holcomb et al., 2004; Keil & Vito, 1995; Lenza et al., 2005; Ohio Joint Task Force to Review the Death Penalty, 2014; Unah, 2011; Williams et al., 2008) relied on logistic regression. However, logistic regression results can be biased under certain conditions (Apel & Sweeten, 2010; Austin, 2011). These conditions include: 1) situations where the comparison groups are dissimilar on key confounding covariates, and 2) situations where selection bias might exist (that is, the treatment and control groups might have unequal likelihoods of being selected into the data, and/or exposed to the outcome of interest).

Regarding the first condition, black and white defendants collectively differ on many of our control variables, such as aggravating circumstances, concurrent convictions, case characteristics, etc. In other words, these groups are imbalanced on these control variables. Regarding the second condition, given the descriptive statistics above on the racial composition of homicide charged and convicted cases in the AOPC data, it is possible that there is race-related selection bias affecting the likelihood of being arrested, charged, and/or convicted of first-degree murder. Because the AOPC data do not contain the fine-grained detail that our field collected data do, we cannot directly model the extent of such selection bias by controlling for detailed characteristics of homicides, defendants, and victims. However, we can try to make cases as similar, or balanced, as possible on known covariates. That is a major advantage of propensity score methods (Apel & Sweeten, 2010).

Our analyses below were conducted with inverse propensity score weighting\textsuperscript{9} (see Jennings et al., 2014; Paternoster & Brame, 2008). We compare cases that are balanced on many observed covariates, and are thus comparable but for the race of defendant and/or victim. We make no strong causal claims here. We are simply using propensity methods as a tool to balance and compare cases across defendant and victim race, in a way that addresses some of the shortcomings of logistic regression noted above.

Rosenbaum and Rubin (1985) recommend the standardized difference statistic to assess balance (see also Paternoster & Brame, 2008). Standardized difference values between \(-.20\) and \(.20\) for covariates are said to indicate acceptable balance (Paternoster & Brame, 2008; Rosenbaum and Rubin, 1985). In all our propensity score weighted models presented in Tables 2–4, standardized difference statistics for our covariates were between \(-.20\) and \(.20\), and covariate balance was greatly improved.

\textsuperscript{8}In our multivariate analyses, we include the small numbers of female defendants, but do not include gender as a control variable. In supplemental analyses, we omitted female defendants from the data, and results are nearly identical to those presented.

\textsuperscript{9}We conducted all propensity score weighting analyses using the “TEFFECTS” and “IPW” procedures in STATA statistical software, version 14. For documentation and a fuller explanations of propensity score analysis, see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144483/ For details on propensity score methods procedures in STATA, see http://blog.stata.com/2015/07/07/introduction-to-treatment-effects-in-stata-part-1/ and http://www.stata.com/manuals13/te.pdf.
over the raw, unweighted cases. Full balance statistics for all the covariates in our propensity models for each comparison and for each dependent variable are available online (authorship-identifying web link here). Summary statistics on covariate balance on the models reported in Tables 2–4 are presented in the Appendix.

Our 880 first degree murder convictions are nested within 18 counties. The literature does not provide definitive guidance on how to address multilevel data with propensity score methods, but various options exist (see Li, Zaslavsky, & Landrum, 2013). According to Li et al. (2013), one can control for the nesting of cases within larger groupings (like counties) in the propensity model. Alternately, Li et al. (2013) describe inverse propensity score weighted regression (IPWR) as an option for examining differences between higher-level groupings of cases. We address differences among counties in the effects of defendant and victim race/ethnicity on death

Table 3. Death penalty retracted (N = 805).

| Variable                  | Propensity score weighted models
t | IPWR models with county as predictor | Allegheny
t | Philadelphia
t |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ATE</td>
<td>ATE</td>
<td>Odds</td>
</tr>
<tr>
<td>Black Defendant(c)</td>
<td>(0.06^*)</td>
<td>.07**</td>
<td>.42*</td>
</tr>
<tr>
<td>White Victim(d)</td>
<td>(-0.05^*)</td>
<td>(-0.06**)</td>
<td>.33</td>
</tr>
<tr>
<td>White Def/White Victim(e)</td>
<td>(-0.02)</td>
<td>(-)</td>
<td>(-)</td>
</tr>
<tr>
<td>Black Def/White Victim(f)</td>
<td>(-0.06**)</td>
<td>(-0.03)</td>
<td>.08**</td>
</tr>
<tr>
<td>Black Def/Black Victim(g)</td>
<td>(0.06^*)</td>
<td>(0.07^*)</td>
<td>(0.42)</td>
</tr>
</tbody>
</table>

\(a\) Not controlling for county.
\(b\) Versus 16 reference counties.
\(c\) Weighted treatment N = 388; weighted control N = 417.
\(d\) Weighted treatment N = 371; weighted control N = 434.
\(e\) Weighted treatment N = 387; weighted control N = 418.
\(f\) Weighted treatment N = 384; weighted control N = 420.
\(g\) Weighted treatment N = 420; weighted control N = 385.
\(p < .10, ^*p < .05, ^{**}p < .01, ^{***}p < .001.\)

Table 4. Sentenced to the death penalty (N = 805).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Propensity weighted model(a)</th>
<th>IPWR models with county as predictor</th>
<th>Allegheny(b)</th>
<th>Philadelphia(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ATE</td>
<td>ATE</td>
<td>Odds</td>
<td>Odds</td>
</tr>
<tr>
<td>Black Defendant(c)</td>
<td>(-0.01)</td>
<td>(-0.01)</td>
<td>.83</td>
<td>.19(^{***})</td>
</tr>
<tr>
<td>White Victim(d)</td>
<td>(0.08^{**})</td>
<td>(0.07**)</td>
<td>.25(^{**})</td>
<td>.18()</td>
</tr>
<tr>
<td>White Def/White Victim(e)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>()</td>
<td>.08(^*)</td>
</tr>
<tr>
<td>Black Def/White Victim(f)</td>
<td>(0.01)</td>
<td>(-0.001)</td>
<td>(-)</td>
<td>.12()</td>
</tr>
<tr>
<td>Black Def/Black Victim(g)</td>
<td>(-0.08)</td>
<td>(-0.07^7)</td>
<td>(-)</td>
<td>.72()</td>
</tr>
</tbody>
</table>

\(a\) Not controlling for county.
\(b\) Versus 16 reference counties.
\(c\) Weighted treatment N = 418; weighted control N = 387.
\(d\) Weighted treatment N = 370; weighted control N = 434.
\(e\) Weighted treatment N = 363; weighted control N = 420 (20 cases were omitted due to lack of propensity score overlap.).
\(f\) Weighted treatment N = 391; weighted control N = 414.
\(g\) Weighted treatment N = 452; weighted control N = 353.
\(p < .10, ^*p < .05, ^{**}p < .01, ^{***}p < .001.\)
penalty outcomes by estimating IPWR models that: 1) weight cases according to their propensity scores; 2) include county dummy variables (Philadelphia, Allegheny, vs. the other 16 counties grouped together) as predictors of the odds of the various death penalty outcomes in a logistic regression after propensity score weighting; and 3) show differences between the county groupings in the effects of the treatment variables.

Findings

We first present descriptive statistics on our key variables, and then the results from our propensity score weighting models. Our comparisons then focus on the race of defendant, and then race of victim, followed by comparisons of cases grouped by race of defendant by race of victim. In each case, we also present IPWR results showing how differences in these effects by county.

Descriptive statistics for our dependent variables, race of defendants and victims, and the predictors in our propensity models are shown in Table 5. Variables included in our propensity models are shown in italics.

Several features are interesting in the descriptive statistics. First, these murder cases are largely intra-racial, with 53% of cases having black defendants and black victims, and 19% of cases having white defendants and white victims. Roughly 11% are in the black defendant-white victim category that has been found to be the site of disparity in many past studies. Second, most (about 89%) of death penalty sentencing decisions are made by juries, rather than judges. Third, defense counsel are split about evenly between court appointed attorneys, private attorneys, and public defenders. Fourth, most defendants also have concurrent convictions for another felony, though this does not mean that the murder was necessarily committed in the course of those concurrent felonies (which is a statutory aggravating factor).

Interestingly, our field coding found substantially more aggravating factors than were filed by prosecutors. Our coders recorded an aggravating factor when the case files contained affirmative, explicit mention or objective evidence of the factor (for example, when the record clearly indicated that the murder was committed during a robbery or drug transaction, or when a defendant clearly had a history of prior violent felony convictions, or when a defendant clearly had a prior murder conviction, etc.). Our independent coding found at least one aggravator present in 497 (62%) cases. Prosecutors, on the other hand, were more selective in their decisions to file aggravating factors, and seem to forgo filing them in some cases where they objectively could have, filing for the death penalty (and thus filing at least one aggravator) in 313 (36%) cases.10 Also, although there are 18 statutory aggravating factors in Pennsylvania, only

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10 We compared the proportions of black and white defendants for whom prosecutors filed aggravating factors, and the proportions of black and white defendants for which coders found evidence of aggravating factors. Prosecutors appeared to file certain aggravating factors (i.e., history of violent felony convictions, and defendant created grave risk of death for another besides victim) for black defendants proportionally more frequently than white defendants. However, based on our independent coding of aggravating factors, we found that cases involving black defendants were proportionally more likely to exhibit the presence of aggravating factors, particularly the ones that prosecutors were more likely to file for blacks. Thus, where racial disproportionality existed in the filing of aggravating factors, this appeared to coincide with disproportionality in the presence of those aggravating factors in our independent coding.
10 of them were found by our coding or filed by prosecutors in sufficient number to be included in our analyses. For example, there were no cases where a murder was committed during a hijacking, three cases each where murder was committed for hire or the victim was held for ransom, four cases where the victim was a non-government informant, eight cases where the victim was in the third trimester of pregnancy, and 12 or fewer cases for three other aggravators.

Table 2 below presents the results from a variety of propensity score weighting models of the decision to file a motion to seek the death penalty that make comparisons between the race of defendants, the race of victims, and different combinations of race of defendant and victim. Because of the comparatively small number of Hispanic defendant and victim cases (as well as the cases involving 13 defendants of other ethnicities), the analyses in Tables 2–4 compare only black defendants and victims to white defendants and victims. Each row represents a comparison from a separate propensity model.

The first column in Table 2 shows the average treatment effect (ATE) for the group comparisons for all counties pooled together—not controlling for county differences. With each comparison, the propensity weighted treatment and control Ns on which the comparisons are based are also listed. There were insufficient numbers of cases involving white defendants with black victims to include in the analysis. The second column shows the ATE for the comparison groups from IPWR models that include dummy variables for Philadelphia and Allegheny County (versus the other 16 counties as reference). The third and fourth columns show the differences in the effects of the race of defendant and victim variables between Allegheny, Philadelphia, and the other 16 counties in the data. In other words, the third and fourth columns show how the death penalty outcomes for a given comparison group (say, black defendants) differ for Allegheny and Philadelphia versus the other counties. The county effects are expressed as odds, rather than ATEs, because the county effects are entered as predictors in the logistic regression models that are estimated after adjusting for the propensity score weighting.

In general, the different comparison groups show relatively small differences in the likelihood of prosecutors seeking the death penalty. For example, black defendants were about 4% more likely (ATE = .036) to have a motion for the death penalty filed against them, a difference that is not statistically significant. When controlling for between-county differences, black defendants had a 6% greater probability of having a motion for the death penalty filed against them (not significant). Another notable effect was found in cases with black defendants and white victims, which saw an 8% smaller probability of death penalty filing than other types of cases, an effect that borders on statistical significance. Thus, there may be a modest tendency for prosecutors to seek the death penalty less often when the defendant is black and the victim is white. However, this effect weakens slightly in the IPWR model controlling for county.

11In the case of multiple murder victims, the victim race/ethnicity variable indicates whether any of the victims were white, black, or Hispanic.
12In supplemental models, we controlled for the county variables by including them in the propensity score model instead of in IPWR models. Results were substantively the same as those in the IPWR models that control for county in the tables we present.
implying that the tendency toward lower probability of death penalty filings for black defendant/white victim cases was somewhat mediated by county differences.

Regarding differences between counties, black defendants were significantly less likely to have a motion for the death penalty filed against them in Allegheny County, compared to black defendants in the other 16 counties (aside from Philadelphia). In fact, each type of defendant, victim, and defendant/victim combination is significantly less likely to have a motion for the death penalty filed against them in Allegheny County. In fact, in supplemental propensity score weighted comparisons of differences between counties (not shown), prosecutors in Allegheny were 20% less likely than those in the reference counties to seek the death penalty in all cases.

The effects of defendant and victim race for Philadelphia generally were smaller than in the other 16 counties (excluding Allegheny). For example, black defendants in Philadelphia were less likely to see a death penalty filing than black defendants in the other 16 counties besides Allegheny, while white defendant/white victim cases had greater odds compared to the same cases in the other counties. None of these odds would be statistically significant, however.

Table 3 focuses on prosecutors’ decisions to retract filings to seek the death penalty.

Table 3 compares the differences between cases in the likelihood that prosecutors will withdraw a filing to seek the death penalty sometime prior to sentencing. While it may seem logical to include only cases where a death filing was made in these analyses, we include all cases so as to better compare the retraction cases with cases that are otherwise similar but for the race of defendant and race of victim. Inclusion of all cases also dramatically improves covariate balance.

Cases with black defendants were 6% more likely to have a death filing retracted, and the same is true of cases with black defendants and black victims. In the IPWR models controlling for county differences, black defendants were 7% more likely to have a death filing retracted (second column). Also, cases with white victims (and any defendant) are 5% less likely to have a death filing retracted (6% controlling for county differences). By contrast, black defendant/white victim cases are 6% less likely to have a death filing retracted when we do not control for county differences, but this effect declines by half to non-significance when controlling for county. This suggests that the black defendant/white victim comparison in the first column masks important between-county differences. Indeed, a pattern distinctive to Philadelphia emerged. In Philadelphia, cases with black defendants were much more likely to have a death filing retracted than their counterparts in the 16 reference counties. The same is true to a lesser extent of cases with black defendants and white or black victims (though the effects are not statistically significant). In contrast, Philadelphia cases with white victims are not more likely to have a death filing retracted than those in the reference counties, and in fact are slightly less so. These patterns indicate very substantial differences between Philadelphia and the other counties in retracting death penalty filings.

Finally, Table 4 shows the results of propensity score weighting models examining the likelihood of receiving the death penalty.
In our death penalty models, we include all of the 805 cases (excluding Hispanic and other ethnicity defendants), and not just the 167 cases where the death penalty was filed and not retracted. This strategy follows the logic of the Paternoster and Brame (2008) study, which examined all potentially death-eligible cases that could have gotten the death penalty and not just the ones where the death penalty was sought. Similarly, we reason that, given the breadth and vagueness of some of the statutory aggravating factors, prosecutors might possibly have sought the death penalty in all first degree murder cases. The propensity score weighting procedure renders cases comparable and covariates balanced, whether or not prosecutors actually sought the death penalty.

In the first column propensity weighted comparisons, black defendants were essentially no different than white defendants in the probability of receiving the death penalty. Also, there was essentially no greater probability for black defendant/white victim cases to receive the death penalty than other types of cases. Cases with black defendants and black victims were 7% less likely to receive the death penalty, and this approached statistical significance in the county-controlled models. However, cases with white victims, regardless of defendant, were 8% more likely to receive a death sentence than cases with black victims, and 7% more likely to receive it when controlling for county differences.

Turning to the comparisons between counties, black defendants and nearly all defendant/victim combinations have substantially lower odds of receiving the death penalty in Philadelphia than their counterparts in the 16 reference counties. Additionally, cases with white victims in Allegheny County had 75% lower odds of receiving the death penalty than white victim cases in the 16 reference counties. There were insufficient numbers of death sentence cases in Allegheny County involving the other victim or defendant by victim groupings for comparisons. In fact, supplemental propensity score weighted comparisons of differences between counties showed that Allegheny and Philadelphia were 5% less likely to impose the death penalty in all cases than the 16 reference counties.

The overall pattern for death sentences, then, points to the effects of victim race, and differences between counties in the likelihood of cases of all types to receive the death penalty. A statewide pattern appears by which cases with white victims were significantly more likely to result in death sentences than cases involving black victims. In addition, cases involving both black and white defendants and victims were substantially less likely to see a death sentence in Philadelphia than their counterparts in the reference counties.

Supplemental Analyses

We performed a number of supplemental analyses to check the robustness of our findings. We replicated all comparisons in Tables 2–4 with propensity score matching (kernel matching) rather than weighting. We obtained very similar results to those we presented. All effects shown in Tables 2–4 were in the same direction, of similar size, and similar level of significance. Third, we examined different specifications for the propensity score weighted models. For each of our comparisons, we estimated

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defendant Age (years)</td>
<td>28 (mean)</td>
<td>9.4 (st. dev.)</td>
</tr>
<tr>
<td>Race/ethnicity of Victim(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>282</td>
<td>32</td>
</tr>
<tr>
<td>Black</td>
<td>516</td>
<td>58.6</td>
</tr>
<tr>
<td>Race/ethnicity of Defendant-Victim</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White defendant-white victim</td>
<td>169</td>
<td>19.2</td>
</tr>
<tr>
<td>White defendant-black victim</td>
<td>33</td>
<td>3.8</td>
</tr>
<tr>
<td>Black defendant-white victim</td>
<td>94</td>
<td>10.7</td>
</tr>
<tr>
<td>Black defendant-black victim</td>
<td>467</td>
<td>53.1</td>
</tr>
<tr>
<td>Defendant IQ Between 71–90</td>
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<td></td>
</tr>
<tr>
<td>Type of Legal Representation</td>
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<td></td>
</tr>
<tr>
<td>Private attorney</td>
<td>322</td>
<td>36.6</td>
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<tr>
<td>Public defender</td>
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<td>32.4</td>
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<tr>
<td>Court appointed attorney</td>
<td>269</td>
<td>30.6</td>
</tr>
<tr>
<td>Trial County</td>
<td></td>
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<tr>
<td>Allegheny</td>
<td>149</td>
<td>16.9</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>331</td>
<td>37.6</td>
</tr>
<tr>
<td>Other county</td>
<td>400</td>
<td>45.5</td>
</tr>
<tr>
<td>Sentenced by Judge (only for sentence models)</td>
<td>19</td>
<td>11.5</td>
</tr>
<tr>
<td>Sentenced by Jury (only for sentence models)</td>
<td>148</td>
<td>88.5</td>
</tr>
<tr>
<td>Concurrent Convictions</td>
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<tr>
<td>Sex offense</td>
<td>24</td>
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<tr>
<td>Robbery</td>
<td>128</td>
<td>14.5</td>
</tr>
<tr>
<td>Burglary</td>
<td>54</td>
<td>6.1</td>
</tr>
<tr>
<td>Other felony</td>
<td>529</td>
<td>59</td>
</tr>
<tr>
<td>Offense Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple victims</td>
<td>131</td>
<td>14.9</td>
</tr>
<tr>
<td>Victim killed with knife</td>
<td>105</td>
<td>12.0</td>
</tr>
<tr>
<td>Victim killed with bare hands</td>
<td>70</td>
<td>8.0</td>
</tr>
<tr>
<td>Victim killed with gun</td>
<td>619</td>
<td>70.0</td>
</tr>
<tr>
<td>Victim didn’t resist</td>
<td>212</td>
<td>24.0</td>
</tr>
<tr>
<td>Victim was killed in an especially brutal manner</td>
<td>122</td>
<td>14.0</td>
</tr>
<tr>
<td>Defendant tried to hide victim’s body</td>
<td>123</td>
<td>14.0</td>
</tr>
<tr>
<td>Victim killed execution style</td>
<td>249</td>
<td>28.3</td>
</tr>
<tr>
<td>Defendant ambushed victim</td>
<td>165</td>
<td>19.0</td>
</tr>
<tr>
<td>Victim was a family member</td>
<td>72</td>
<td>8.2</td>
</tr>
<tr>
<td>Victim had children</td>
<td>240</td>
<td>27.3</td>
</tr>
<tr>
<td>Statutory Aggravating Factors (1 = yes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victim was a prosecution witness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>29</td>
<td>3.3</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>45</td>
<td>5.1</td>
</tr>
<tr>
<td>Murder committed in perpetration of a felony</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>134</td>
<td>15.2</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>244</td>
<td>27.7</td>
</tr>
<tr>
<td>Defendant created risk of death to other than victim</td>
<td>136</td>
<td>15.5</td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>268</td>
<td>30.5</td>
</tr>
<tr>
<td>Victim was tortured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>48</td>
<td>5.5</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>75</td>
<td>8.5</td>
</tr>
<tr>
<td>Defendant convicted of other death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>39</td>
<td>4.4</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>69</td>
<td>7.8</td>
</tr>
<tr>
<td>Defendant convicted of another murder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>85</td>
<td>9.7</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>109</td>
<td>12.4</td>
</tr>
<tr>
<td>Significant history of violent felony convictions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As filed by D.A.</td>
<td>82</td>
<td>9.3</td>
</tr>
<tr>
<td>As identified by coders</td>
<td>97</td>
<td>11</td>
</tr>
</tbody>
</table>

(continued)
propensity score weighted models that included the control variables in Table 5, plus defendant criminal history score (the PCS Prior Record Score), defendant education (in years), whether the defendant had legal employment at the time of the murder, whether the defendant was married, whether the defendant had children, and whether the defendant had served in the military. We also explored whether defendant education, employment, marital and parenthood status, and military experience predicted the death penalty outcomes, but none of these exhibited statistically or substantively significant relationships to death penalty filing, retraction, or sentencing.

We also ran our propensity score weighted comparisons with only the statutory aggravating factors and defense mitigating factors, and all other controls in Table 5 omitted. In general, these models were also quite consistence with our findings in Tables 2–4. Where there were differences, the effects in these differently specified models were generally in the same direction but stronger than in our main findings. Specifically, in both of the different propensity score model specifications, the positive white victim effect on receiving the death penalty is much stronger (ATE = .21 to .29, \( p = .001 \)), as is the negative black defendant/black victim effect (ATE = −.21, \( p < .001 \)).

Finally, we replicated our comparisons in Tables 2–4 with logistic regression models that included the defendant, victim, and defendant/victim race variables (separately and together) along with the controls in Table 5. In general, the logistic regressions
presented the same substantive findings as the propensity score weighting results. Specifically, the odds ratios for the white victim effects from these logistic regressions were as follows: 1) white victim cases had .92 odds (not significant) of death penalty filing compared to black victim cases; 2) white victim cases had .57 odds ($p \leq .05$) of death penalty retraction compared to black victim cases; and 3) white victim cases had 5.36 times the odds of black victim cases for receiving the death penalty ($p \leq .001$).

Conclusions

This study examined death penalty case processing in Pennsylvania from 2000–2010, focusing on the role of defendant and victim race in three key death penalty decisions: prosecutors’ decisions to seek the death penalty, prosecutors’ decisions to retract filings to seek the death penalty, and courts’ decisions to sentence defendants to the death penalty. As mentioned, Pennsylvania is the site of one of the most well-known studies of the death penalty in the literature, Baldus et al. (1998), who collected data on death penalty decisions in Philadelphia from 1983–1993. Our study extends their efforts empirically by examining a much wider selection of counties and non-capital murder cases, and a later time period.

In contrast to some studies reviewed above, and our first hypothesis, we do not find an overall pattern of disparity to the disadvantage of black defendants in the decision to seek the death penalty, the decision to retract the death penalty once filed, or the decision to impose the death penalty. Furthermore, unlike Baldus et al. (1998) and other studies (e.g., Baldus et al., 1990; Paternoster & Brame, 2008; Paternoster et al., 2004; Songer & Unah, 2006; Unah, 2011; Williams et al., 2008), we do not find disparity in the decision to seek or impose the death penalty to the disadvantage of defendants in cases specifically with black defendants and white victims. This is counter to our third hypothesis.

By contrast, we find substantial support for our second hypothesis. We find an overall white victim effect on receiving the death penalty, an effect that was not contingent on the race of the defendant. This effect was remarkably robust to different model specifications and techniques. Cases with white victims had an 8% greater probability of receiving the death penalty compared with cases with black victims, regardless of defendant race, net of the many legally relevant and case processing control variables in our propensity models. These control variables included aggravating factors both independently coded and as filed by prosecutors, and several variables measuring evidence strength and prosecution and defense motions. The pattern of white victim cases being more likely to receive the death penalty also holds up when controlling for county differences, even though Philadelphia and (to a lesser extent) Allegheny are less likely to sentence all defendants to death. This finding points especially to jury sentencing discretion (recall that 70% of death penalty sentencing trials are before juries), and to a lesser extent judge sentencing as a potential locus of focal concerns assessments linked to the race of the victim, rather than prosecutorial decisions to seek the death penalty. This finding coincides with the
consensus of the 1990 GAO report, which noted that race of victim influenced death sentencing decisions much more commonly than did race of defendant.

We also found strong support for our fourth hypothesis; the effects of race of defendant and victim on prosecutorial and court discretionary decisions to seek, retract, and impose the death penalty varied between counties. The findings with regard to retracting death penalty filings best exemplifies the importance of this between-county variation. Philadelphia prosecutors stood out as unique in their patterns of filing and then retracting motions to seek the death penalty. Philadelphia is conspicuously more likely than other counties to retract filings after making them, and they appear to do so more for cases involving black defendants (regardless of victim) than white defendants, and less likely to do so for cases with white victims. In Philadelphia, black defendants were much more likely to have a death filing retracted than their counterparts in all other counties, and cases with white victims saw lower (but not significantly) odds of retraction in Philadelphia than the rest of the state. Philadelphia’s distinctiveness is consequential, since it accounts for about 40% of the first degree murder cases in our data. In fact, our between-county findings are consistent with a major theme in the literature on sentencing in general, which documents important differences among local courts in case processing practices and sentencing severity and in the effects of different variables like race (see Ulmer, 2012).

As with all studies, this one has distinct limitations. First, we can only examine selection in pre-conviction outcomes and racial proportionality descriptively (see Table 1). Because the AOPC data do not contain the fine-grained detail that our field collected data do, we cannot directly model the extent of racial differences in selection by controlling for detailed characteristics of homicides, defendants, and victims. This means that omitted variable bias in the processes that select cases into arrest, charging, first degree murder conviction, death penalty filing and retraction, and death sentences is a concern. We did, however, balance cases on a wide variety of measures of offense characteristics, aggravating and mitigating factors, offender characteristics, victim characteristics, evidence strength measures, and ancillary case processing factors (motions, etc.), both those in Table 5 and others in supplemental analyses. In addition, the fact that our findings are robust across three different analytical methods (propensity score weighting, propensity score matching, and logistic regression) and different propensity model specifications give us reasonable confidence in the results.

Fourth, though we have suggestive data from descriptive statistics and supplemental models discussed above, we cannot determine exactly how death penalty filings and their retraction figure into charge bargaining processes (i.e., prosecutors retracting a death filing in exchange for a guilty plea to a murder charge less than first degree), nor how counties qualitatively differ in their norms surrounding plea bargaining and the death penalty.

Finally, like most sentencing studies using the focal concerns framework, we lack direct measures of individual decision makers’ interpretations of blameworthiness, dangerousness, and practical constraints. The only way to show that would be qualitative data or survey data that were connected to individual case decisions, both of which are problematic from a practical standpoint in a larger-scale multi-county study with hundreds of cases. Instead, we balance cases on a wide range of covariates and make comparisons between cases that are highly similar but for race of offender and race of
victim. This allows us to at least demonstrate that the findings are consistent with what we would expect if, in this case, the race of victims could affect the assessment of blameworthiness or dangerousness net of a large number of detailed legally relevant and case processing factors. We do this as effectively as possible short of a randomized controlled experiment with first degree murder cases, which would be nearly impossible and likely unethical, or precision matching, for which we lack sufficient data.

In spite of these limitations, we make several contributions not only to the empirical understanding of capital prosecution and sentencing, but our study also has conceptual features relevant to the focal concerns and court communities perspectives that are uncommon in the general sentencing literature. First, capital sentencing is a crucible within which we can observe the court system as it engages in the most consequential decisions that it makes, which is itself a contribution to our conceptual understanding of criminal punishment. Second, we clearly identify the discretionary decisions of specific decision makers: prosecutors and juries/judges. We can thus identify whether prosecutorial or jury/judge discretion is the site of disparity based on race of defendant or race of victim, or both. This is not routinely the case in most studies of sentencing.

Third, this study is a unique opportunity to examine the role of race of defendant and victim in prosecutorial discretion. Prosecutorial discretion is the decisive site of exposure to the death penalty, and is a vital focus of recent criminal justice decision-making research (Baumer, 2013). Data on prosecutorial decisions that precede sentencing are typically not available in general sentencing studies. It is also usually not possible to parse the discretionary input or influence of prosecutors or judges in non-capital sentencing outcomes. By examining the decision to seek the death penalty and then also decisions to retract motions seeking the death penalty, our analysis therefore sheds light on understudied sites of prosecutorial discretion.

We also look at a unique and seldom examined decision: the decision to retract a death filing, which is intimately tied to plea agreements and pleading guilty. Prosecutors’ control over the twin decisions to file and then retract a death filing constitutes a powerful lever to extract guilty pleas. In fact, our data show that retracting death filings is tightly connected to pleading guilty to first degree murder. In supplemental logistic regression models predicting pleading guilty as a dependent variable, a prosecutorial filing to seek the death penalty strongly increases the likelihood of a defendant pleading guilty. In time order, death filings typically occur at arraignment, prior to conviction by guilty plea or trial. Specifically, a death penalty filing raises the odds of a guilty plea to first degree murder by 2.9. Pleading guilty, in turn, is associated with 8.1 times greater odds of the death penalty filing being retracted. Thus, examining retractions of death filings provides a window into an important dimension of plea bargaining in capital cases.

To our knowledge, only Baldus et al. (1998) has examined this site of prosecutorial discretion, finding that Philadelphia prosecutors were less likely to retract a filing when the victim was black. Our findings contrast sharply with Baldus et al. (1998) regarding race and the retraction of death filings. We found that black defendants were significantly more likely to have a death filing retracted, and the same was true
of cases with black defendants and black victims. Also, cases with white victims (and any defendant) were less likely to have a death filing retracted. Thus, while race of defendant or victim seems not to condition the prosecutors’ decisions to seek the death penalty, there may be a tendency for prosecutors to view defendants (regardless of race) who kill white victims as more blameworthy or threatening to the community, and be less likely to retract death filings accordingly in white victim cases.

Fourth, sentencing studies of non-capital violent offenses seldom have data on victim characteristics. Here, we control for victim age and gender, relationship to the defendant, and other factors, thus providing a window into how race affects punishment outcomes net of these victim statuses. More importantly, we examine how victim race (along with defendant race) affects prosecutorial and jury/judge decisions in first degree murder cases. Our finding that race of victim is associated with death penalty decisions is not only a valuable empirical finding for the death penalty literature, but also is at least consistent with the notion that race of victim shapes the interpretation of focal concerns. For focal concerns, our results suggest that in these data victim race, rather than defendant race, may be connected to the perceived blameworthiness of a defendant in death sentencing decisions. There may be practical considerations connected to victim race as well. Victim families, outside constituencies, or segments of the public might exert greater pressure for death sentences in cases with white victims. This not only illuminates an important dimension of disparity in death penalty sentencing, but points to the needs for further research on the potentially important role of victim race in violent offenses more broadly. Further research, especially involving qualitative data on cases and interviews with judges and juries, is needed to illuminate these possibilities behind the kinds of victim race effects we find here.

In closing, our study raises at least three sets of questions about contemporary death penalty decision making that future research should address. The first concerns whether murder victims’ lives are differentially viewed in ways connected to their race. We earlier discussed the focal concerns perspective on criminal justice decision-making as a source of insight into how race of defendant and victim might be associated with differential death penalty outcomes. Our findings, along with prior studies are consistent with the notion that the race of murder victims might shape definitions of blameworthiness or community protection in some death penalty decisions. If victim race shapes perceptions of focal concerns of punishment, the findings here point to prosecutors’ decisions to retract death filings rather than filing them in the first place, as prosecutors much more commonly stick with death filings in white victim cases.

The findings also point to death sentencing decisions, which are primarily made by juries, as a site where victim race, rather than defendant race, may shape considerations of blameworthiness, dangerousness, and practical factors. The perceived practicality of obtaining convictions and death sentences from juries also may be a consideration in retracting death filings that is linked to the race of the victim. Pressure from victims’ families may also present a practical consideration in terms of public perceptions and balancing the wishes of victims’ families and advocates for the defendants. Prosecutors might be more likely to stick with a death filing and not
retract it (perhaps as a part of a plea agreement) if white victims’ families are more likely to press for the death penalty. In addition, white victim families might also be more likely to testify and ask juries to impose death. These are suggestive observations, but assessing them empirically will have to await further inquiry.

The second set of questions involves the role of race in the guilty plea process in capital cases. Prosecutors likely are influenced by their perceptions of evidence strength, projections of likely trial outcomes, and other pragmatic features of cases, and want to rationally maximize their chances to achieve their desired outcomes. In many cases, this may mean filing to seek the death penalty as a way to pressure a defendant, and then retracting that filing if the defendant pleads guilty. Our finding that both the race of defendants and victims affected the decision to retract a death filing, along with such rejections’ connection with pleading guilty, suggests that prosecutors’ weighing of practical considerations connected to cases might somehow be intertwined with race. It may be that prosecutors’ plea bargaining practices in cases where they seek death exert different pressures on black defendants to plead guilty in exchange for dropping the death filing. As mentioned, it may also be that white victims’ families are more likely to push for DAs to stick with death filings, and thus they may be less willing to offer to drop a death filing in white victim cases. Further research should focus on the role of victim and defendant race in murder charging decisions, the guilty plea process, and the role of death penalty retractions as plea leverage for prosecutors.

Finally, our research points to the need for more attention to how and why local prosecutorial and court discretion surround the death penalty varies, especially why the effects of victim or offender race vary between courts. Critics would see such place-based variation in murder case processing and sentencing as an unwarranted disparity that comes close to the kind of arbitrariness that Furman v. Georgia (1972) decried. If race is not only connected to death penalty decisions, but is also connected to them in different ways in different locales, this highlights a perennial dilemma in which key principles of local communities’ criminal justice independence (Garland, 2010) clash with the principles of due process and equality.

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**References**


Appendix: Mean standardized difference statistics for comparisons in Tables 2–4, before and after propensity score weighting

Mean Standardized Difference Statistics for Death Penalty Filed Comparisons

Mean Standardized Difference Statistics for Death Penalty Retracted Comparisons

Mean Standardized Difference Statistics for Death Penalty Sentence Comparisons