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Jonathan R. Sorensen

Rocky L. Pilgrim

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CRIMINOLOGY

AN ACTUARIAL RISK ASSESSMENT OF VIOLENCE POSED BY CAPITAL MURDER DEFENDANTS

JONATHAN R. SORENSEN, PH.D.* & ROCKY L. PILGRIM**

The Supreme Court held in *Furman v. Georgia*¹ that capital punishment was unconstitutional due to the arbitrary nature of then-current sentencing statutes. Citing jury discretion as the cause of inconsistent sentencing practices, the *Furman* decision invalidated the capital punishment statutes of all retentionist jurisdictions in the United States. In order to address the Court's central concern—whether death sentences were imposed in a uniform and fair manner—state legislatures revamped their capital punishment statutes to limit jury discretion. In the decisions that followed, the Court clarified which procedures would be acceptable, upholding statutes that guided juror discretion,² but striking down those that mandated a death sentence for particular types of murder.³ Since that time, death penalty jurisprudence has focused on how to insure consistency in decision-making while providing fairness to individual defendants.⁴

* Professor of Criminal Justice at the University of Texas – Pan American (currently Senior Research Associate at Vera Institute of Research).

** Student of law at Boston College Law School.

¹ 408 U.S. 238 (1972).

² See *Gregg v. Georgia*, 428 U.S. 153 (1976); *Jurek v. Texas*, 428 U.S. 262 (1976); *Proffitt v. Florida* 428 U.S. 242 (1976).

³ See *Roberts v. Louisiana*, 428 U.S. 325 (1976); *Woodson v. North Carolina*, 428 U.S. 280 (1976).

⁴ See Carol S. Steiker & Jordan M. Steiker, *Judicial Developments in Capital Law*, in *AMERICA'S EXPERIMENT WITH CAPITAL PUNISHMENT* 47, 55 (James R. Acker et al. eds., 1998).

Concern for fairness led the Court to rule that states must allow evidence of nondangerousness as a mitigating factor in the punishment phase of capital trials.⁵ The goal of incapacitating dangerous offenders prompted twenty-one states to include a defendant's potential for future violence among the aggravating circumstances jurors may be directed to consider before reaching a punishment decision.⁶ Texas and Oregon, however, are the only two states that require capital juries to *predict* future conduct before sentencing. Specifically, a jury in these two states must unanimously agree there is "a probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society" before imposing a death sentence.⁷ This requirement has thrust death penalty decisions into the realm of the subjective once again.

Studies have found the fate of capital defendants in Texas and Oregon is determined almost entirely by juries' deliberations on, and emotional responses to, the punishment inquiry concerning defendants' future dangerousness. In Texas during 1974 through 1988, jurors returned life sentences in 126 cases. In 85% (107) of these cases, the life sentences resulted from jurors' failure to find evidence that the defendant would pose a continuing threat to society.⁸ A study of twenty-seven Oregon jurors from nine capital murder trials found that each of the life

⁵ See *Skipper v. South Carolina*, 476 U.S. 1, 4-5 (1986).

⁶ See Sandra B. McPherson, *Psychological Aspects of Mitigation in Capital Cases* (1996) (unpublished manuscript), cited in Mark D. Cunningham & Tom J. Reidy, *Integrating Base Rate Data in Violence Risk Assessments at Capital Sentencing*, 16 *BEHAV. SCI. & L.* 71 (1998).

⁷ OR. REV. STAT. § 163.150 (1997); TEX. CODE CRIM. PROC. ANN. art. 37.071 (West 1985). In Virginia, capital defendants may be sentenced to death based upon a finding of future dangerousness or the heinousness of the murder. As stated in the Virginia code:

In assessing the penalty of any person convicted of an offense for which the death penalty may be imposed, a sentence of death shall not be imposed unless the court or jury shall (1) after consideration of the past criminal record of convictions of the defendant, find that there is a probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society *or* that his conduct in committing the offense for which he stands charged was outrageously or wantonly vile, horrible, or inhuman in that it involved torture, depravity of mind or an aggravated battery to the victim; and (2) recommend that the penalty of death be imposed.

VA. CODE ANN. §19.2-264.2 (Michie 1999) (emphasis added).

⁸ See James W. Marquart et al., *Gazing into the Crystal Ball: Can Jurors Accurately Predict Dangerousness in Capital Cases?*, 23 *LAW & SOC'Y REV.* 449, 463 (1989).

sentences issued was due to the inability of jurors to agree on the issue of future dangerousness.⁹ The authors of the Oregon study concluded that under the Oregon statute, "the issue of future dangerousness plays a prominent, if not central role. Virtually all disagreements and prolonged discussion concerned only the second question of future dangerousness. Jurors clearly perceived the penalty decision as hinging on this issue."¹⁰

Narrowing the scope of deliberations to future dangerousness encourages jurors to contemplate their worst fear, that the defendant may kill again, while simultaneously quashing discussions over issues related to deservedness.¹¹ States in which jurors are directed to weigh specified aggravating and mitigating factors have average jury death sentencing rates ranging from approximately one-fourth to one-half that of life sentences.¹² In Texas, over three-fourths of all capital trials brought before juries during penalty trials between 1974 and 1988 resulted in death sentences.¹³ Texas has clearly been the most active capital punishment jurisdiction in the United States, accounting for over one-third of all executions in the past two decades.¹⁴

⁹ See Sally Constanzo & Mark Constanzo, *Life or Death Decisions: An Analysis of Capital Jury Decision Making Under the Special Issues Sentencing Framework*, 18 LAW & HUM. BEHAV. 151 (1994).

¹⁰ *Id.* at 168.

¹¹ See Craig Haney et al., *Deciding to Take a Life: Capital Juries, Sentencing Instructions, and the Jurisprudence of Death*, 50 J. SOC. ISSUES 149, 160, 162-68 (1994).

¹² David C. Baldus et al., *Reflections on the "Inevitability" of Racial Discrimination in Capital Sentencing and the "Impossibility" of Its Prevention, Detection, and Correction*, 51 WASH. & LEE L. REV. 359, 411 (1994) (32% in New Jersey, 1983-91); David C. Baldus et al., *Racial Discrimination and the Death Penalty in the Post-Furman Era: An Empirical and Legal Overview, with Recent Findings from Philadelphia*, 83 CORNELL L. REV. 1638, 1645 (1998) (35% in Philadelphia, Pennsylvania, 1983-93); Beth Bjerregaard et al., *An Analysis of Mitigating Factors Presented in Capital Murder Sentencing Trials*, (1999) (unpublished findings presented at the Annual Meeting of the American Society of Criminology in Toronto, Canada) (50.4% in North Carolina); Thomas J. Keil & Genaro F. Vito, *Race and the Death Penalty in Kentucky Murder Trials: 1976-1991*, 20 AM. J. CRIM. JUST. 17, 23 (1995) (27% in Kentucky, 1976-91); Jonathan R. Sorensen & Donald H. Wallace, *Capital Punishment in Missouri: Examining the Issue of Racial Disparity*, 13 BEHAV. SCI. & L. 61, 68 (1995) (54% in Missouri, 1977-91).

¹³ See JAMES W. MARQUART ET AL., *THE ROPE, THE CHAIR, AND THE NEEDLE* 135 (1994).

¹⁴ TONYA MCCLARY, NAACP LEGAL DEFENSE AND EDUCATIONAL FUND INC., *DEATH ROW U.S.A.* 16 (Spring 1999).

Certain theoretical and pragmatic issues are raised by any sentencing system that uses the rationale of offender incapacitation to justify a penalty of death. First, the abstract philosophical question is raised as to whether it is ever acceptable to punish someone for crimes he has yet to commit.¹⁵ Sentencing a defendant to death because of some act he may commit in the future is troubling for those opposed to such teleological forecasting¹⁶ and seems to contradict the "innocent until proven guilty" premise of the American judicial system. Despite these concerns, however, the U.S. Supreme Court has upheld the future dangerousness provision of the Texas statute on numerous occasions.¹⁷

A more concrete issue concerns how future dangerousness can be most accurately predicted, if at all. Several factors in the decision-making process encourage jurors to overestimate the threat of violence posed by capital murderers. Foremost among these is the lack of objective information regarding the likelihood of repeat violence. Recent research on jury deliberations has shown that jurors' assessments of future dangerousness is highly subjective.¹⁸ Influenced by stereotypical images of the violent recidivist—the psychopathic serial killer disproportionately portrayed in the media and the new "true crime" genre of television shows¹⁹—jurors seldom realize research has consistently found the true incidence of recidivism among murderers released from prison to be much lower than for other types of parolees.²⁰ In researchers' terminology, jurors fail to consider the base rate of recidivism. Studies show the likelihood of repeat murders ranges from .1% to 7% per year, with the average

¹⁵ See ANDREW VON HIRSCH, *PAST OR FUTURE CRIMES* 3 (1985).

¹⁶ See Charles L. Black Jr., *Due Process for Death: Jurek v. Texas and Companion Cases*, 26 CATH. U. L. REV. 1 (1976).

¹⁷ See *Penry v. Lynaugh*, 492 U.S. 302 (1989); *Barefoot v. Estelle*, 463 U.S. 880 (1983); *Jurek v. Texas*, 428 U.S. 262 (1976).

¹⁸ See William J. Bowers & Benjamin D. Steiner, *Death by Default: An Empirical Demonstration of False and Forced Choices in Capital Sentencing*, 77 TEX. L. REV. 605, 645-65 (1999).

¹⁹ See Gregg Barak, *Media, Crime, and Justice: A Case for Constitutive Criminology*, in *CULTURAL CRIMINOLOGY* 142, 148-51 (Jeff Ferrell & Clinton R. Sanders eds., 1995).

²⁰ See ALAN J. BECK & BERNARD E. SHIPLEY, U.S. DEP'T OF JUSTICE, *RECIDIVISM OF PRISONERS RELEASED IN 1983* 2-6 (1989); CRAIG PERKINS, U.S. DEP'T OF JUSTICE, *NATIONAL CORRECTIONS REPORTING PROGRAM*, 1992 18 (1994).

being less than 1%.²¹ One study of capital murderers commuted as a result of the *Furman* decision found that 188 murderers were paroled by the end of 1987, serving an average of 5.3 years in the outside community.²² Only one killed again, for a rate of .1% committing repeat homicides per year. Six of the 188 committed violent offenses, resulting in a violent recidivism rate of .6% per year.²³

Jurors also overestimate the opportunity inmates will have to commit acts of violence in the outside community. Texas jurors who have served on capital murder trials consistently underestimate the number of years that must be served by a capital murderer receiving a life sentence, with the average juror believing a person sentenced to life in prison will be paroled after 15 years.²⁴ Under current Texas law, capital murderers must serve at least 40 years of flat time before becoming eligible for parole.²⁵ In a recent denial of certiorari, four Supreme Court justices chastised the State of Texas for refusing to inform jurors of the mandatory minimum number of years to be served by capital defendants who are given a life sentence.²⁶ As Justice Stevens noted in *Brown v. Texas*,²⁷ failure to provide this information unfairly "tips the scales" in favor of a death sentence.²⁸ The significance of this realization is twofold. A mandatory 40-year prison term makes the potential risk period in the outside community much shorter and the defendant much older upon release.²⁹ Parolees with these characteristics have demonstrated the lowest rates of recidivism.³⁰

²¹ See Hugo A. Bedau, *Prison Homicides, Recidivist Murder, and Life Imprisonment*, in *THE DEATH PENALTY IN AMERICA* 176, 178-79 (Hugo A. Bedau ed., 1997); Cunningham & Reidy, *supra* note 6, at 80-82.

²² See James W. Marquart & Jonathan R. Sorensen, *A National Study of the Furman-Commuted Inmates: Assessing the Threat to Society from Capital Offenders*, 23 *LOY. L.A. L. REV.* 5, 24 (1989).

²³ See *id.*

²⁴ Bowers, *supra* note 18, at 647.

²⁵ TEX. CODE CRIM. PROC. ANN. art. 42.18 § 8 (1996).

²⁶ See *Brown v. Texas*, 118 S.Ct. 355 (1997).

²⁷ *Id.*

²⁸ *Id.* at 356; See also *Simmons v. South Carolina*, 512 U.S. 154 (1994).

²⁹ A recent change in legislation has rendered this issue moot. As of September 1, 1999, at the request of defense attorneys, jurors may be informed that a defendant sentenced to life must serve a minimum 40-year term before becoming eligible for parole. S.B. 39, 76th Leg., Reg. Sess. (Tex. 1999).

³⁰ BECK & SHIPLEY, *supra* note 20; Stephen D. Gottfredson & Don M. Gottfredson, *Behavioral Prediction and the Problem of Incapacitation*, 32 *CRIMINOLOGY* 441 (1994).

Prison violence is also greatly overestimated by jurors. The constraints of the prison environment reduce violence potential among its charges, with rates of homicide in prison being far lower than rates of homicide in the free community.³¹ The yearly rate of repeat murder in prison has been found to be .002 or less for murderers in general.³² This rate is consistent in situations where capital murderers serving life without parole and capital murderers serving death sentences were placed in the same general prisoner population.³³ Murderers commuted from death sentences also have a repeat murder rate of about .002.³⁴

Most jurors are unaware that both correctional administrators and inmates agree that murderers are generally among the most docile and trustworthy inmates in the institution.³⁵ Empirical studies support these views, finding an inverse relationship between sentence length or time served and disciplinary infractions.³⁶ This relationship is also found in the case of assaultive behaviors.³⁷ Studies of capital murderers determined the base rates of violent rule infractions to be .06 per year or less.³⁸

Though consistency in base rates exists, the pattern of violation over the course of an inmate's confinement must also be taken into consideration when assessing risk. Studies have shown that long-term inmates have stable rates of rule violation

³¹ Wendy P. Wolfson, *The Deterrent Effect of the Death Penalty Upon Prison Murder*, in *THE DEATH PENALTY IN AMERICA* 159, 160 (Hugo A. Bedau ed., 3d ed. 1982).

³² *Id.* at 168.

³³ Jon R. Sorensen & Robert D. Wrinkle, *No Hope for Parole: Disciplinary Infractions Among Death-Sentenced and Life-Without-Parole Inmates*, 23 *CRIM. JUST. & BEHAV.* 542, 548 (1996).

³⁴ Marquart & Sorensen, *supra* note 22, at 19-21.

³⁵ See generally VICTOR HASSAN, *LIFE WITHOUT PAROLE: LIVING IN PRISON TODAY* (1996); GORDON WARDLAW & DAVID BILES, *THE MANAGEMENT OF LONG-TERM PRISONERS IN AUSTRALIA* (1980).

³⁶ John D. Woolledge, *Correlates of Deviant Behavior Among Inmates of U.S. Correctional Facilities*, 14 *J. CRIME & JUST.* 1 (1991); Kevin N. Wright, *A Study of Individual, Environmental, and Interactive Effects in Explaining Adjustment to Prison*, 8 *JUST. Q.* 217 (1991).

³⁷ Terrill R. Holland & Norman Holt, *Correctional Classification and the Prediction of Institutional Adjustment*, 7 *CRIM. JUST. & BEHAV.* 51, 54 (1980); Frank J. Porporino, *Managing Violent Individuals in Correctional Settings*, 1 *J. INTERPERSONAL VIOLENCE* 213, 220-21 (1986).

³⁸ Marquart, *supra* note 22, at 21; Sorensen, *supra* note 33, at 548.

throughout the first few years of their sentences.³⁹ The pattern of rule violation among murderers specifically has been found to be stable during the first few years of incarceration, declining slightly thereafter, especially among initially high-rate offenders.⁴⁰ This convergence toward the mean rate of violations suggests that institutional disciplinary mechanisms, the maturation of inmates, or a combination of the two are successful in restraining further violations. As in free society, age has been found to be the major determinant of rule-violating behavior in prison.⁴¹

To create a more reliable means of predicting prison violence, it is necessary to use variables other than time served and age. These same variables can also be used to categorize capital defendants according to levels of risk. While misconduct rates are generally low among incarcerated murderers, existing variance suggests the importance of searching for particular correlations within offense types.⁴²

Mental health researchers recently began to focus on how violence is most accurately predicted by utilizing objective actuarial methods.⁴³ These studies typically include a broad array of predictor variables and carefully specify the probability with which particular types of violence are likely to recur.⁴⁴ Paul

³⁹ Timothy J. Flanagan, *Time Served and Institutional Misconduct: Patterns of Involvement in Disciplinary Infractions Among Long-Term and Short-Term Inmates*, 8 J. CRIM. JUST. 357 (1980); Edward Zamble, *Behavior and Adaptation in Long-Term Prison Inmates: Descriptive Longitudinal Results*, 19 CRIM. JUST. & BEHAV. 409 (1992).

⁴⁰ Jonathan R. Sorensen et al., *Patterns of Rule-Violating Behaviors and Adjustment to Incarceration among Murderers*, 78 PRISON J. 222 (1998).

⁴¹ See Amy Craddock, *A Comparative Study of Male and Female Prison Misconduct Careers*, 76 PRISON J. 60, 66 (1996); Brad. R. C. Kelln et al., *An MCMI-III Discriminant Function Analysis of Incarcerated Felons: Prediction of Subsequent Institutional Misconduct*, 25 CRIM. JUST. & BEHAV. 177, 187 (1998); John M. Memory et al., *Comparing Disciplinary Infraction Rates of North Carolina Fair Sentencing and Structured Sentencing Inmates: A Natural Experiment*, 79 PRISON J. 45, 59 (1999); Glenn D. Walter, *Time Series and Correlational Analyses of Inmate-Initiated Assaultive Incidents in a Large Correctional System*, 42 INT'L J. OFFENDER THERAPY & COMP. CRIMINOLOGY 124, 128 (1998).

⁴² Tim Brennan, *Classification for Control in Jails and Prisons*, in 9 PREDICTION AND CLASSIFICATION: CRIMINAL JUSTICE DECISION-MAKING 323, 342 (Don M. Gottfredson & Michael Tonry eds., 1987).

⁴³ David J. Cooke, *The Development of the Prison Behavior Rating Scale*, 25 CRIM. JUST. & BEHAV. 482 (1998); Kevin S. Douglas & Christopher D. Webster, *The HCR-20 Violence Risk Assessment Scheme: Concurrent Validity in a Sample of Incarcerated Offenders*, 26 CRIM. JUST. & BEHAV. 3 (1999).

⁴⁴ John Monahan, *Violence Prediction: The Past Twenty and the Next Twenty Years*, 23 CRIM. JUST. & BEHAV. 107 (1996).

Meehl first distinguished actuarial from clinical predictions in 1954, defining the latter as a "psychological hypothesis regarding the structure and the dynamics of [a] particular individual" and characterizing the former as a "mechanical combining of information for classification purposes, and the resultant probability figure which is an empirically determined relative frequency."⁴⁵ The individuals making housing and security decisions in prisons have now turned to objective classification models constructed from actuarial data.⁴⁶ This method of decision-making has permeated the corrections system during the past two decades as a result of legal challenges against existing classification procedures.⁴⁷ Studies developing and testing these models have found a number of consistent correlates of prison misbehavior and adjustment problems.⁴⁸

In a recent attempt to assess their own ability to identify career criminals, Gottfredson and Gottfredson cite Packer, who asserts, "It is an empirical question in every case [where a criminal is sentenced for the purpose of incapacitation] whether the prediction is a valid one."⁴⁹ This maxim is particularly appropriate for capital defendants who have been sentenced to the irrevocable punishment of death based on a prediction of the likelihood of their re-offending. Developments in recent research have provided a sound methodology for assessing capital defendants' overall level of risk. This approach identifies the actuarial predictors of future dangerousness and determines the accuracy rates that may be expected when making these predictions. This article uses actuarial methods to examine the accuracy and utility of predicting future dangerousness in capital cases under the current Texas death penalty statute.

⁴⁵ PAUL MEEHL, *CLINICAL VS. STATISTICAL PREDICTIONS*, 3-4 (1954).

⁴⁶ Robert P. Cooper & Paul D. Werner, *Predicting Violence in Newly Admitted Inmates: A Lens Model Analysis of Staff Decision Making*, 17 *CRIM. JUST. & BEHAV.* 431 (1990); Jon L. Proctor, *Evaluating a Modified Version of the Federal Prison System's Inmate Classification Model: An Assessment of Objectivity and Predictive Validity*, 21 *CRIM. JUST. & BEHAV.* 256 (1994).

⁴⁷ See *Pugh v. Locke*, 406 F. Supp. 318 (D. Ala. 1976); *Ramos v. Lamm*, 485 F. Supp. 122 (D. Colo. 1979).

⁴⁸ Paul Gendreau et al., *Predicting Prison Misconducts*, 24 *CRIM. JUST. & BEHAV.* 414 (1997); Woolfedge, *supra* note 36, at 1-25.

⁴⁹ HERBERT L. PACKER, *THE LIMITS OF THE CRIMINAL SANCTION* 48-49 (1968), reprinted in Gottfredson, *supra* note 30, at 442.

I. METHODOLOGY

The rarity of repeat violence among incarcerated murderers necessitated drawing a large enough sample to ensure that the base rates of violence and that the effects of its correlates could be accurately estimated. For this reason, the entire population of cases for which information was available has been included. Because the goal is to assess the potential threat posed by capital murder defendants in Texas, the population of cases was drawn from the records of 10,121 murderers currently incarcerated in the Texas Department of Criminal Justice—Institutional Division (TDCJ-ID).

To ensure the reliability of these estimates, however, data were restricted to cases as similar as possible to the cases that would be predicted.⁵⁰ Since Texas does not prosecute individuals under the age of seventeen as capital defendants, only in-

⁵⁰ Under Texas law, capital punishment is limited to those who kill under the following circumstances:

(1) the person murders a peace officer or fireman who is acting in the lawful discharge of an official duty and who the person knows is a peace officer or fireman;

(2) the person intentionally commits the murder in the course of committing or attempting to commit kidnaping, burglary, robbery, aggravated sexual assault, arson, or obstruction or retaliation;

(3) the person commits the murder for remuneration or the promise of remuneration or employs another to commit the murder for remuneration or the promise of remuneration;

(4) the person commits the murder while escaping or attempting to escape from the penal institution;

(5) the person, while incarcerated in a penal institution, murders another:

(A) who is employed in the operation of the penal institution; or

(B) with the intent to establish, maintain, or participate in a combination or in the profits of a combination;

(6) the person:

(A) while incarcerated for an offense under this section or Section 19.02, murders another; or

(B) while serving a sentence of life imprisonment or a term of 99 years for an offense under Section 20.04, 22.021, or 29.03, murders another;

(7) the person murders more than one person:

(A) during the same criminal transaction; or

(B) during different criminal transactions but the murders are committed pursuant to the same scheme or course of conduct; or

(8) the person murders an individual under six years of age.

TEX. PENAL CODE §19.03 (2000).

mates who were at least seventeen when entering prison were included in the sample. Those convicted of manslaughter were excluded from the sample as well, but they were used to test the validity of the prediction instrument. Also, only those murderers who entered prison from January 1990 through December 1998 were included. Inmates incarcerated prior to 1990 were excluded for two reasons. First, the best-behaved prisoners in the earlier cohort could have been released from confinement, resulting in sample selection bias. Second, the reliability of computerized information on disciplinary infractions occurring prior to the TDCJ-ID coming online in 1989 is questionable. Inmates entering prison in 1999 were not included, so that a minimum follow-up period of 3 months would be possible. Inmates sentenced to death were excluded from the sample because they were housed under more stringent conditions than most of the other murderers serving time in the TDCJ. The final study population consisted of 6,390 inmates who had served an average of 4.55 years during January 1990 through March 1999.

Violent acts are defined herein as assaultive or dangerous acts that either cause, or have the imminent potential to cause, serious bodily injury. This definition includes homicides and aggravated assaults committed against guards and inmates. Indicators of institutional violence and variables useful in predicting violence in the prison system were gleaned entirely from official records maintained by the TDCJ-ID. Homicide log books were consulted to determine which inmates had been involved in homicides during the studied period. Level 1 inmate rule violations ("Level 1 Violations") extracted from computerized records were relied upon as the primary measure of violent acts directed toward other inmates. The violent acts included sexual assaults, assaults with a weapon, and fighting with a weapon.⁵¹

Some Level 1 Violations were specified generically as any act defined by Texas law as a felony. In these instances, the individual inmate folders were consulted to determine the exact nature of the offense. Conviction data were also examined, because the standard practice of the TDCJ-ID is to prosecute

⁵¹ If a weapon was involved, the offense was considered violent because of the imminent possibility that injury could occur, even when no serious bodily injuries were sustained.

and convict inmates for further assaultive offenses committed while confined.⁵² Unspecified Level 1 Violations and convictions were generally assaults on guards. Together these official records were used to determine the extent of violent acts perpetrated against the TDCJ-ID staff.

Additional potential predictors identified in previous studies were also retrieved.⁵³ These variables include pre-prison information specifically related to the inmates' personal characteristics and their criminal histories, as well as the offenses that resulted in their incarceration.⁵⁴

II. ANALYSIS AND FINDINGS

The first step in performing this actuarial analysis was to construct the base rate of violence that can be expected from capital defendants. The table below shows the rate at which violent acts were committed by the 6,390 incarcerated murderers, and the percentage of the group that was involved.

As the table shows, the rate of homicide was .2 per 1,000 inmates per year; only seven homicides were committed by inmates during their cumulative 29,074.5 years served. After an average of four-and-one-half years in prison, one in one thousand inmates had committed a homicide. Not one guard was murdered during the sample period. Thirty-three aggravated assaults were committed against guards, a rate of 1.1 assaults per 1,000 inmates per year. One-half of one percent of the incar-

⁵² See David R. Eichenthal & James B. Jacobs, *Enforcing the Law in State Prisons*, 8 JUST. Q. 283 (1991).

⁵³ Gendreau, *supra* note 48, at 414; Proctor, *supra* note 46, at 261; Woolredge, *supra* note 36, at 1-25.

⁵⁴ Personal characteristics included military service, branch of military served in, type of discharge from the military, gang membership, IQ score, Educational Attainment score, educational level, sex, race, ethnicity, citizenship, marital status, religion, and age. Criminal history included number of arrests, convictions, juvenile confinements, probated sentences, TDC confinements, other prison confinements, and total prior prison terms. Offense-related information included the number of victims, presence of contemporaneous attempted murders, assaults, burglaries, robberies, sexual assaults, arsons, drug crimes, involvement of alcohol or drugs, the county of conviction and degree of the murder conviction. Offense information on the following variables was available for a sub-sample of the inmates, including the cause of death (gunshot, stabbing, bludgeoning, strangulation or other), the number of perpetrators, the age and sex of victims, as well as the relationship between the victim and offender.

cerated murderers were responsible for these assaults. The total rate of violence was about twenty-four per one thousand inmates per year, involving 8.4 % of the inmates.⁵⁵

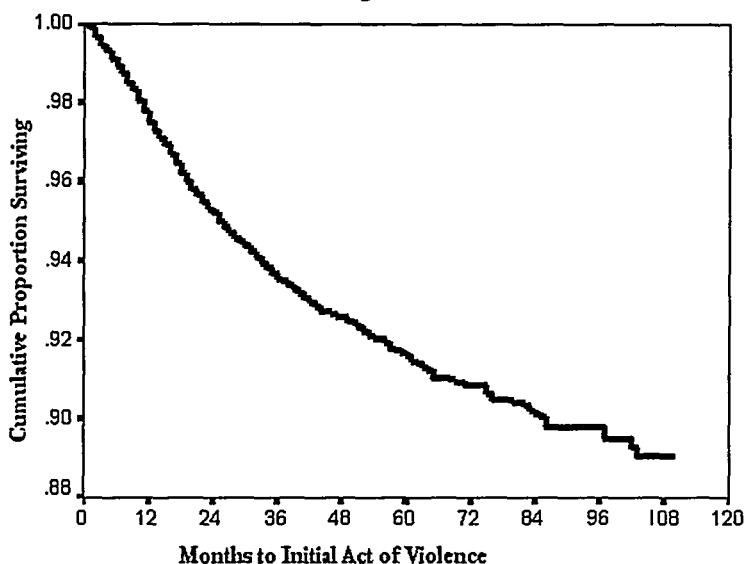
TABLE 1
VIOLENT ACTS COMMITTED BY 6,390 INCARCERATED MURDERERS
DURING JANUARY 1990 THROUGH MARCH 1999.

VIOLENT ACTS	YEARLY RATE PER 1,000 INMATES	PERCENTAGE OF INMATES INVOLVED
Against guards		
Aggravated Assault	1.1	0.5 %
Against inmates		
Homicide	0.2	0.1 %
Assault with a weapon	12.1	4.4 %
Fight with a weapon	10.6	4.2 %
Other violence	0.4	0.2 %
Total Rate/Percentage	24.4	8.4 %
Total Frequency	711	536

The findings presented in Table 1 describe the actual level of violence among inmates incarcerated over an average term of 4.55 years. To make these analyses applicable to life-sentenced capital murderers, the likelihood of violence must be estimated for their minimum forty-year term. Estimating this likelihood of violence is more complicated than simply multiplying the observed levels of yearly violence by the number of years to be served, however, because most inmates who commit violent acts do so in their initial stages of incarceration. Institutional control mechanisms, aging, and adjustments to the prison envi-

⁵⁵ Table 1 includes violent acts committed by murderers as well as capital murderers. In analyzing the incidence of violence separately for capital versus noncapital murderers, though not statistically significant, capital murderers were found to be less likely than murderers to be involved in violence (7.2% versus 8.6%, Chi square=1.90, p=.168). This counterintuitive finding is consistent for the frequency of violence as well, with the mean for capital murderers being .09 and .12 for murderers (t-test=1.83, p=.068). As noted in Table 2, the differences in prison violence between capital and noncapital murderers are due to factors unrelated to their crime of conviction, although some elements of capital murder, such as a contemporaneous robbery/burglary or the killing of multiple victims, are influential determinants.

Figure 1



ronment make it extremely rare for an inmate to become involved in an initial act of violence after being incarcerated for ten or more years.⁵⁶ Figure 1 shows the projected proportion of incarcerated murderers surviving, or not committing any violent acts, over 111 months.⁵⁷

As shown in Figure 1, the estimated rate of failure, or committing a violent act, over the first 111 months of incarceration is approximately 11%, with about 89% of the inmates surviving over the 9+ years without committing an act of violence. Figure 1 also captures the trend in offending. Half of the group that committed a violent act did so within the first two years of their incarceration. Survival becomes much more common during the middle and latter months in the series, with initial acts of violence rare by the ninth year of incarceration.

⁵⁶ See generally Cunningham & Reidy, *supra* note 6, at 71; Sorensen, *supra* note 40.

⁵⁷ Figure 1 was plotted using a Cox regression model, which held constant all other factors found to be significantly related to violence (*see infra* Table 2 and *infra* note 57). Cox regression is a procedure within the broader category of survival analysis which generates estimates of the probability of surviving based on the characteristics and patterns of those failing and the length of time to failure.

Holding all institutional factors constant, the estimated likelihood of violence being committed by a newly received capital murderer over the next forty years in the Texas Department of Criminal Justice—Institutional Division is .164.⁵⁸ The approximate risk of a given capital murderer committing any of the offenses cataloged in Table 1 over the entire period of his incarceration is essentially double (1.95 times) the observed estimates. For example, the probability a capital defendant will kill again while incarcerated over the next forty years is 0.2%, or about two in one thousand.

After calculating the expected baseline rate of violent threats posed by capital murderers, the next step in the analysis sought to find factors that would aid in the prediction of violence. From the entire inventory of potential predictor variables available, only six were found to be significantly related to violence among the incarcerated murderers, with years at-risk and the number of years incarcerated serving as the control variable. Involvement in a contemporaneous robbery/burglary, presence of multiple victims, and additional murder attempts/assaults relate to the circumstances of the offense. Gang membership, having served a prior prison term, and age

⁵⁸ This probability was estimated using information on murderers received at the TDCJ-ID during 1985-1989. Their likelihood of committing a violent act during their first five years of incarceration was estimated to be .079, based on the behavior of those serving their first five years during the 1990s. The observed probability of violence among those inmates serving their sixth-through-fifteenth years of incarceration during the 1990s was .127. These figures are not additive, however, as a number of inmates committing acts during the 1990s were repeat-offending. Estimating recidivism at 33.1% from the 1990s data, the rate of new violence among those serving their sixth-through-fifteenth years during the 1990s can be estimated to be .085 (.127x.669). By adding the new violence probability of .085 occurring during the sixth-through-fifteenth years to the estimated probability of violence occurring during the first five years of .079, the estimated likelihood of violence occurring during the first 15 years of incarceration becomes .164. This is an extremely liberal estimate of violence occurring over a 15-year term because the best-behaved murderers incarcerated in the late 1980s have been released from prison. It is nearly impossible to use the data on those incarcerated longer than 15 years because of selection bias inherent in the sample. However, given the effects of aging, institutional controls for violence, and the general trends observed elsewhere, the odds of an inmate becoming involved in their initial act of institutional violence after being incarcerated for 15 years is extremely low. Given that the previous 15-year estimate was constructed liberally, and the rarity of inmates being newly initiated into violence after the 15-year period, the estimate of .164 will be used for the entire 40-year term.

relate to characteristics of the offender. Table 2 presents these factors and their levels of significance.⁵⁹

TABLE 2
LOGISTIC REGRESSION MODEL USED TO PREDICT VIOLENCE AMONG
INCARCERATED MURDERERS

PREDICTOR VARIABLE	LOGIT COEFFICIENT	STANDARD ERROR	PREDICTED PROPORTIONAL CHANGE
Robbery/burglary	.464***	.130	.074
Multiple victims	.365*	.192	.056
Attempted murder/ assault	.265*	.130	.040
Gang membership	.622***	.126	.104
Prior prison term	.346***	.101	.053
Age less than 21	.359**	.112	.055
Age 26 through 30	-.454**	.160	-.072
Age over 35	-.819***	.173	-.144
Years at risk	.208***	.020	
Constant	-3.642***	.144	
-2LL Change	280.940***		

*p<.05;**p<.01;***p<.001

The last column in Table 2 gives the predicted proportional change in the probability of violence per unit change in each predictor variable, with all other factors held constant.⁶⁰ Involvement in a robbery or burglary during the commission of the original offense increases the likelihood of violence by 7.4

⁵⁹ The results from the Cox regression model used to estimate Figure 1 were essentially similar to those presented in Table 2 in terms of magnitude and significance. The unstandardized regression coefficients were as follows: robbery/burglary, .396; multiple victims, .375; attempted murder/assault, .215; gang membership, .623; prior prison term, .334; age less than 21, .312; age 26 through 30, -.400; age 31 through 35, -.635; and age over 35, -.770. The estimates from logistic regression are preferred in calculating the actuarial mode, as we are more concerned with the concepts of failure, or the commission of a violent act, a dichotomous variable, than the time to failure, a continuous variable which is modeled by Cox regression.

⁶⁰ The predicted proportional change is derived from Petersen's formula: $\frac{\exp(L_1)}{1+\exp(L_1)} - \frac{\exp(L_0)}{1+\exp(L_0)}$, where L_0 is the logit before the unit change in x_j , and $L_1=L_0+B_j$ is the logit after the unit change in x_j . Trond Petersen, *A Comment on Presenting Results From Logit and Probit Models*, 50 AM. SOC. REV. 130, 131 (1985). The expected proportion of inmates' involvement in violence was chosen as the comparison point before and after adding the effects of the parameters; hence, L_0 is calculated using the formula $\ln[P/(1-P)]$, where $P=.164$. *Id.*

percentage points above the mean of 16.4%, making the commission of violence among those who were involved in a robbery/burglary murder 1.45 times (.238/.164) more likely than those whose original offenses did not include a contemporaneous robbery/burglary. The presence of multiple victims in the original violent offense increased the likelihood of the commission of violence by 5.6 percentage points, while an additional previously attempted murder or assault increased the likelihood by 4.0 percentage points.⁶¹ Among the offender's personal characteristics, gang membership⁶² increased the likelihood of the commission of violence by 10.4 percentage points and having served a prior prison term increased the likelihood by 5.3 percentage points.

Clearly the most influential indicator of prison violence is the age of the defendant upon entry into prison. The age categories included in the model should be interpreted in comparison to the average age category, 21 through 25, which serves as the reference category.⁶³ As shown in Table 2, the relative risk that an offender would commit violence was 5.5 percentage points higher among those less than age 21. Risk of violence among offenders decreased as the age of inmates increased, with those aged 26 through 30 years being 7.2 percentage points less likely to be violent than those 21 through 25 years of age. The risk of violence among inmates aged 31 through 35 years old decreased by 12.3 percentage points while the risk decreased by 14.4 percentage points for those over the age of 35.

From the logistic regression model in Table 2, a scale was constructed using these predictors of violence. Each case was

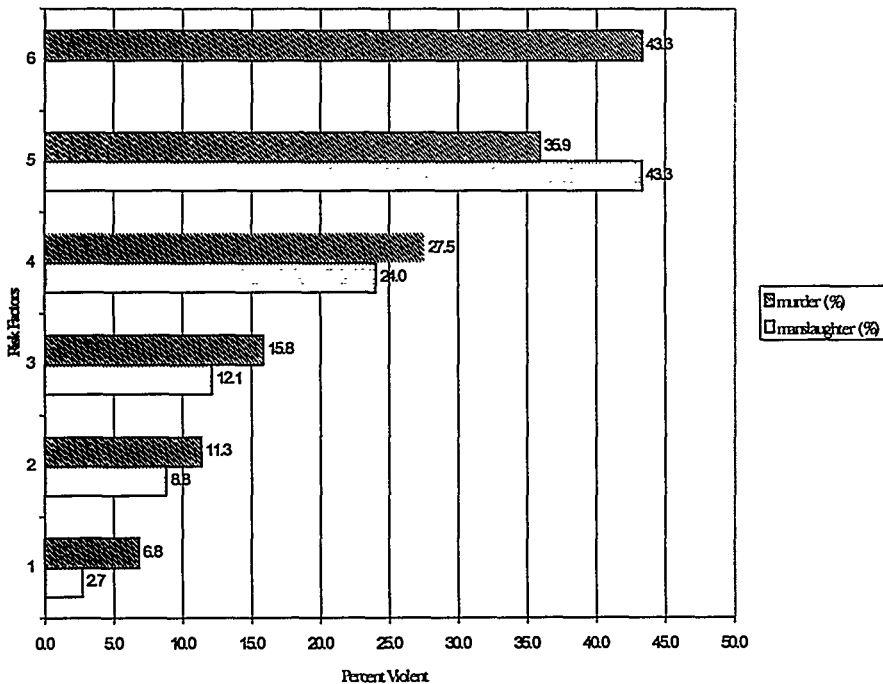
⁶¹ The measure of these characteristics was based on convictions for these contemporaneous offenses.

⁶² Gang membership refers to membership in a prison gang. The utility of this measure as a pre-prison predictor is limited to those cases with strong indicators suggesting that the inmates will enter a prison gang (e.g. former membership in a prison gang during a previous prison incarceration or membership in a street gang from which recruits are typically sought by a major prison gang).

⁶³ Age was not included as a covariate because the relationship between age and risk of violence was not linear. After examining the data, certain obvious cutting points presented themselves in terms of the likelihood of violence. While those in the 21-25 year old range were average in terms of their likelihood of violence, those in the younger age category were substantially higher. The five year intervals tended to cluster the cases in terms of violence risk until about the age of 35. Among inmates over 35, the risk of violence was not significantly lower for those in any particular five-year age interval, so that those over 35 were categorized as 36-or-over.

scored on the presence or absence of each predictor. From the baseline rate of .164, or a 16.4% likelihood of violence, positive coefficients were added and negative coefficients were subtracted to produce an overall risk score. Hypothetically, the likelihood of violent risk posed by an incarcerated murderer over a forty-year term ranges from 2% for those over the age of 35 with no other aggravating case features to 54.6% for youths under 21 whose personal and offense characteristics include all other predictor variables. Cases are then grouped in rounded intervals of 8% into risk categories based on their predicted likelihood of committing violent acts. The first interval includes cases 7.4% and under, those in the second include those 7.5%-15.4% and so on. The highest category includes cases with a

Figure 2
 Projected probabilities of engaging in violent acts among incarcerated murderers (N=6,390) and the validation sample (N=867)



predicted likelihood of violence of 39.5% and higher.

Figure 2 above illustrates the projected probabilities of violence over a forty-year term by risk level for both the sample of incarcerated murderers and the validation sample of man-

slaughter inmates incarcerated during the same period. Projected probabilities were calculated from observed probabilities, using the multiplier 1.95.⁶⁴ As shown in Figure 2, the projected probabilities are within the expected range for each of the 8% risk intervals for the murderers. For example, the projected likelihood of violence among those in the lowest risk category was 6.8%, below the 8% predicted. Projected violence for those in the second risk level, 11.3%, was within the 8-15% likelihood, and so on. The average level of risk is found in the third risk level, with a projected rate of violence of 15.8%, which is very close to the mean expected likelihood of 16.4% for the entire sample. The projections for those in the highest risk category were 43.3%, again within the expected level of over 40% likelihood.

A test of validity was performed by applying the scale to a group of inmates incarcerated for manslaughter during the same period. Although the validation group is less violent overall than the murderers, with 5.1% involved in violence as compared to 8.4% respectively, the results presented in Figure 2 show the scale performed well on the validation sample. Overall, the group had fewer risk factors, and therefore fewer inmates were in the higher risk categories. Only 9.8% of the inmates in the validation sample, as compared to 21.6% of the murderers, were in categories four through six.⁶⁵ Beyond this, the figures show a lower-than-expected level of violence among the lower risk categories, but slightly higher than expected levels among the high-risk categories. Sample selection bias is the most probable reason for this finding, as many of the best-behaved manslaughter offenders were released from incarceration within the sampled period, leaving behind those from which a higher rate of violence could be expected. Nonetheless, the results validate the utility of the scale for categorizing incarcerated homicide offenders according to their potential for future violence.

III. DISCUSSION AND CONCLUSION

The lives of capital murder defendants in Texas rest upon jurors' abilities to predict future behavior. Juries, however, of-

⁶⁴ See *supra* note 58 and accompanying text.

⁶⁵ Only one inmate in the validation sample fell into the highest risk category. Because of this, category 6 is excluded from the presentation in Figure 2.

ten make these predictions without information that would allow them to make an educated decision. Influenced by popular culture and stereotypes, jurors tend to overestimate the likelihood of violent recidivism. Uninformed, even misguided, about the actual likelihood that a murderer will engage in repeat acts of violence, jurors have unwittingly contributed to Texas' standing as the most active death penalty jurisdiction in the United States.⁶⁶

Interviews with former capital jurors show the extent to which such jurors actually believed capital defendants would pose a danger in the future.⁶⁷ Jurors were asked to estimate the probability that defendants would recidivate in the future if sentenced to life imprisonment. Median estimates of the future likelihood of recidivism were reported separately for jurors sentencing defendants to life and jurors sentencing defendants to death. Among those issuing death sentences, the median estimate was an 85% likelihood that the defendant would commit a violent crime and a 50% likelihood that the defendant would commit a new homicide had they been given a sentence of life imprisonment. The estimates by jurors issuing life sentences were a 50% likelihood for a new violent offense and a 25% likelihood of a new homicide. Their responses reveal that jurors do in fact severely overestimate the likelihood of violence being committed by a life-sentenced capital murderer, as the current study has found the likelihood of repeat murder expected from a life-sentenced capital murder defendant to be approximately 0.2% over a forty-year term, while the risk of assaultive behavior in general is about 16%.

Under Texas Rules of Criminal Evidence, "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise."⁶⁸ The data contained herein not only provides jurors with accurate base recidivism rates for violence,

⁶⁶ See Bowers, *supra* note 18; *Brown v. Texas*, 118 S.Ct. 355 (1997).

⁶⁷ Rocky L. Pilgrim & Jon Sorensen, *Jury Deliberations on Future Dangerousness* (1999) (unpublished findings presented at the Annual Meeting of the American Society of Criminology in Toronto, Canada, can be ordered from the authors). These findings are also part of the Capital Jury Project headed by William Bowers of Northeastern University.

⁶⁸ TEX. R. EV. Rule 702 (1999).

but also provides information to assess the level of risk posed by a specific capital defendant. For example, if a defendant were under the age of 21 and had killed multiple victims during a robbery, his projected likelihood of committing violent acts over a forty-year period of incarceration would be essentially double that of the average inmate.⁶⁹ Alternately, if a defendant were 32 years of age, and had committed a murder while assaulting an additional victim, his likelihood of committing a violent act during a forty-year period of incarceration would be less than half that of the average capital murder defendant.⁷⁰

Given that the Texas Court of Criminal Appeals has consistently held that "society" encompasses the prison population in addition to free society,⁷¹ information provided herein seems especially pertinent for jurors who are now instructed that defendants must serve a minimum of 40 years prior to parole consideration. Risk assessments concerning future violence potential in prison have been upheld by the Texas Court of Criminal Appeals.⁷² Similar assessments based on the current study have already been presented in several capital trials and may be used by any expert witnesses charged with making a determination as to the "probability that the defendant would commit criminal acts of violence that would constitute a continuing threat to society."⁷³ Access to information such as this provides jurors with a greater opportunity to make an informed decision when deciding the ultimate fate of another human being.

⁶⁹ The risk level posed by a particular capital defendant can be calculated, beginning with the base-rate likelihood of .164, and then adding or subtracting the predicted proportional changes (last column of table 2) for each of the circumstances present in the case under consideration. In this case, .055 is added to the base rate for the defendant's age, .056 for multiple victims, and .074 for the robbery. The defendant's likelihood of violence over the 40-year term is estimated to be 34.5% (.164+.055+.056+.074=.345).

⁷⁰ In this case, .123 is subtracted from the base rate for the defendant's age, while .040 is added for his assault on an additional victim. The defendant's likelihood of violence over the 40-year term is estimated to be 8.1% (.164-.123+.040=.081).

⁷¹ See *Morris v. State*, 940 S.W.2d 610, 613 (Tex. Crim. App. 1996).

⁷² See *Griffith v. State*, 983 S.W.2d. 282, 288 (Tex. Crim. App. 1998).

⁷³ TEX. CODE CRIM. P. ANN. art. 37.071 (West 1985).