DETERRENCE AND THE DEATH PENALTY

Committee on Law and Justice
National Research Council of the National Academies
STUDY SPONSORS

- National Institute of Justice, Department of Justice
- Proteus Action League
- Tides Foundation
COMMITTEE ON DETERRENCE AND DEATH PENALTY

Committee

DANIEL S. NAGIN (Chair), H. John Heinz III College, Carnegie Mellon University
KERWIN K. CHARLES, Harris School of Public Policy Studies, University of Chicago
PHILIP J. COOK, Sanford School of Public Policy, Duke University
STEVEN N. DURLAUF, Department of Economics, University of Wisconsin–Madison
AMELIA M. HAVILAND, H. John Heinz III College, Carnegie Mellon University
GERARD E. LYNCH, U.S. Court of Appeals for the Second Circuit
CHARLES F. MANSKI, Department of Economics, Northwestern University
JAMES Q. WILSON, School of Public Policy, Pepperdine University, and Clough Center for the Study of Constitutional Democracy, Boston College

Members include economists, a judge, a statistician, a political scientist, and a criminologist.

Staff:
JANE L. ROSS, Study Director
JOHN V. PEPPER, Consultant
KEIKO ONO, Senior Program Associate
CAROL HAYES, Christine Mirzayan Fellow
BARBARA BOYD, Administrative Associate
In Memorium
James Q. Wilson
1931-2012

“I’ve tried to follow the facts wherever they land”
Process

• Four in-person meetings
• Workshop for discussion of commissioned papers that appeared in a special issue of the Journal of Quantitative Criminology
• Papers available online at the Journal of Quantitative Criminology website
JQC Commissioned Papers

• “Pitfalls in the Use of Time Series Methods to Study Deterrence and Capital Punishment” K. Charles and S. Durlauf.
• “Sanctions, Perceptions, and Crime: Implications for Criminal Deterrence” R. Apel
• “Capital Punishment and Deterrence: Understanding Disparate Results” by S. Durlauf, C. Fu, and S. Navaro
• “Deterrence and the Death Penalty: Partial Identification Analysis Using Repeated Cross Sections” by C. Manski and J. Pepper
PURPOSE OF STUDY

Address whether the available evidence, since publication of National Research Council report of 1978, provides a reasonable basis for drawing conclusions about the magnitude of the effect of capital punishment on homicide rates.
Conclusion of 1978 NRC Report with regard to Capital Punishment

- “...the sensitivity of the more recent analysis to minor variations in model specification and the serious temporal instability of the results lead the panel to conclude that available studies provide no useful evidence on the deterrent effect of capital punishment.”

- “…the Panel considers that research on this topic is not likely to produce findings that will or should have much influence on policy makers.”

- Report appeared shortly after the 1976 Gregg decision that ended the legal moratorium on the death penalty

- New generation of studies based on post-Gregg data have reached widely varying conclusions
Examples of Competing Claims

• “Our results suggest that...each execution results, on average, in eighteen fewer murders with a margin of error of plus or minus ten.” Dezhbakhsh, Rubin, and Shepherd (2003, p.344)

• “[O]ur results provide no empirical support for the argument that the existence or application of the death penalty deters prospective offenders from committing homicide.” Kovandzic, Vieraitis, and Boots (2009, p.803)

• “We find that the existing evidence for deterrence is surprisingly fragile.” Donohue and Wolfers (2005, p.794)
COMMITTEE CHARGE AND SCOPE OF WORK

1. Does the available evidence provide a reasonable basis for drawing conclusions about the magnitude of capital punishment's effect on homicide rates?

2. Do potential remedies to shortcomings in the evidence on the deterrent effect of capital punishment have broader applicability for research on the deterrent effect of noncapital sanctions?

What is not included in the committee charge?

- Making a determination of whether the death penalty is good public policy. Deterrence is but one of many considerations relevant to this issue.
CONCLUSION AND RECOMMENDATION: The committee concludes that research to date on the effect of capital punishment on homicide is not informative about whether capital punishment decreases, increases, or has no effect on homicide rates. Therefore, the committee recommends that these studies not be used to inform deliberations requiring judgments about the effect of the death penalty on homicide.
Commentary on Committee Mandate and Conclusion

• Mandate was not to assess the plausibility of competing hypotheses about deterrence
• Focus was on whether the empirical evidence was informative
• “... concerted effort not to approach [the evaluation] with a prior assumption about deterrence.” (p.3)
• “A lack of evidence is not evidence for or against the hypothesis.” (p. 3)
Figure 2.1: Number of Executions in the USA from 1930 to 2010
Figure 2.2: Annual Death Sentences and Executions in the USA from 1976-2009
Capital Punishment in the Post-\textit{Gregg Era} \\

- 1234 executions from 1976 to 2010 \\
- 1999 peak year with 98 executions \\
- Since 2005 executions have declined to about 50/yr. \\
- Only about 15\% of death sentences have resulted in executions \\
- Five states with largest numbers of executions, 1973-2009 \\
  - Texas, Virginia, Oklahoma, Florida, Missouri \\
- Presently about 15,000/yr. murders and non-negligent homicides down from a peak of about 25,000/yr. in the early 1990s
Types of Studies

• Panel Regression Studies
  – 50 states + District of Columbia
  – Circa 1975-2000 (annual data)
  – Study legal status of the death penalty and/or intensity of its use
  – Some IV-based
    \[ y_{it} = \alpha_i + \beta_t + \gamma f(Z_{it}) + \delta X_{it} + \epsilon_{it} \]

• Time Series Studies
  – Study execution events
  – Unit of observation usually city or state
  – High frequency data (e.g., days, weeks or months)
  – Use time series methods circa 1970
SHORTCOMINGS IN EXISTING RESEARCH

• Incomplete Specification of the Sanction Regime for Homicide

• No Credible Basis for Assumptions about Potential Murderers’ Perceptions of and Responses to Capital Punishment

• Statistical Models Based on Assumptions that are Not Credible
Incomplete Specification of the Sanction Regime for Homicide

• “Properly understood, the relevant question regarding the deterrent effect of capital punishment is the differential or marginal deterrent effect of execution over the deterrent effect of other available or commonly used penalties.” (p.29)

• No studies account for the non-capital component of the sanction regimes (e.g., availability and frequency of use of LWOP)

• Capital and non-capital components of the sanction regime necessarily correlated but how is unclear
Sanction Risk Perceptions: Some Examples of How Execution Risk is Measured

- the number of executions in the prior year (prior to the current year’s homicide rate);
- the number of executions in the prior year divided by the number of death sentences in the same prior year (or a variant, using a 12 month moving average of these counts for both the numerator and denominator);
- the number of executions in the current or prior year divided by the number of death sentences in an earlier prior year (3, 4, 5, 6, and 7 years prior have all been implemented and similar specifications using executions from the first three quarters of the current year and last quarter of prior year divided by death sentences 6 years prior);
- the number of executions in the prior year divided by the number of death row inmates in the prior year;
Why is calculating true risk so complicated?

• Only 15% death sentences have been carried out
  – Lengthy appeals process
  – Reversals and commutations
  – Death by other causes....

• Amount of data depends on the size of the state (e.g., Texas v. Delaware) and time since Gregg

• Court decisions and executive decrees make prior data less informative/obsolete

• Relationship between true risk and subjective expectations is unknown
Sanction Risk Perceptions
Assumptions

• Results of panel studies very sensitive to measurement of execution risk
• Calculation of the true risk is complex and arguably impossible
• None of the risk measures used has a credible relationship to the “true” risk
• No evidence on how potential murderers perceive this risk
• Bottom line: No basis for arbitrating among the competing claims about the “right” measure
Statistical Models Based on Assumptions that are Not Credible: Some Examples

• Effect is homogenous across state and time (panel studies)
  – Instantaneous and time invariant effect of legal status of death penalty
  – Effect of the death penalty is the same in South Carolina as Massachusetts

• Potential murderers are cognizant of time trends in number of executions and respond to deviations from those trends (time series studies)
You Need a Model of Perceptions to Interpret this Figure

Figure 2: Murder Rates in California, New York, and Texas--1974 to 2009
RECOMMENDATIONS FOR FUTURE RESEARCH

1. Collection of the data required for a more complete specification of both the capital and noncapital components of the sanction regime for murder and other crimes;

2. Research on how potential murderers (criminals) perceive the sanction regime for murder (and other crimes); and

3. Assessing model uncertainty with weaker assumptions.
Measurement of Non-capital Component of the Sanction Regime

• Data by state and year on non-capital sanction regime is unavailable
  – Legally available sentencing options
  – Intensity of actual application

• Collection of data for other crimes should also be a priority
Research on Sanction Risk Perceptions

• Examples of interesting questions
  – Correspondence between perceptions and reality
  – Adjustment process to changes in policy
  – Perceptions across crime types

• Need for longitudinal data

• Importance of sampling high risk populations
  – Pathways to Desistance Study
  – Prisoners
  – Work on defining high risk populations
  – Work on how to frame questions
Some Observations About Model Uncertainty

- First order problem is identification, not power and related issues of statistical inference
- Knowledge of how potential murderer’s perceive and respond to sanction threats is highly incomplete—the consequence is model uncertainty
- Fragility of evidence is reflection of this uncertainty
Assessing Model Uncertainty with Weaker Assumptions: Two Possible Approaches Outlined in the Report

• Model Averaging
• Partial Identification
Figure 2: Net Lives Saved At Mean Characteristics of 1996 Death Penalty State

Linear, State Coefficients

-63.6  -51.7  -45.0  -41.3  -39.0  -23.5  -16.5  -15.2  -14.5  -11.6  -5.3  -2.7  -2.7  -1.7

Logistic Models

15.0  16.5  16.6  18.5  20.2  20.9

Linear, Fixed Coefficients
Model Uncertainty: An Illustration of the Problem from Manski and Pepper (2012)

Table 1: Homicide Rates per 100,000 Residents by Year and Treatment Status in 1977

<table>
<thead>
<tr>
<th>Year</th>
<th>Untreated</th>
<th>Treated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>8</td>
<td>10.3</td>
<td>9.6</td>
</tr>
<tr>
<td>1977</td>
<td>6.9</td>
<td>9.7</td>
<td>8.8</td>
</tr>
<tr>
<td>Total</td>
<td>7.5</td>
<td>10</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Assuming random assignment in 1977 gives 2.8 (9.7 – 6.9).

A before-and-after comparison of the treated gives −0.6 (9.7 – 10.3).

The difference-in-difference (DID) estimate is 0.5 [(9.7 – 10.3) – (6.9 – 8.0)].
Postscript on Response to the Report
Two New York Times Editorials: “The Myth of Deterrence” and “America Retreats from the Death Penalty”
One of the most frequently made claims about the death penalty is that it deters potential murders...But a distinguished committee...has now reached the striking and convincing conclusion that all of the research...should be ignored.

Commentary: Death penalty deters murders? Evidence doesn’t bear that out
[The NRC report concluded;”The research to date is flawed and ‘not informative’ about whether the death penalty has an effect on murder rates and concludes...these studies ‘should not influence policy judgments’..
Sacramento Bee Sept. 14, 2012
Lessons

• Press understood arguments and accurately reported them.
• Implications of report were parsed differently across outlets.
• Role of researchers of is to communicate the evidentiary value of research findings including their uncertainty not to make their own judgments about the appropriate standard of proof.