CAPITAL PUNISHMENT IN TEXAS AND CALIFORNIA: A COMPARISON

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This study compares two versions of the use of capital punishment. Texas rigorously implements the death penalty. California reluctantly executes capital punishment. The study examines similarities and differences in the two approaches. Execution rates, death penalties imposed by juries, implementation of death, the cost of capital punishment, murder rates, and the reciprocal effects of execution rates and murder rates were viewed in light of posed research questions. The study revealed that Texas was significantly higher in the rate of executions, jury imposed death sentences, and the implementation of capital punishment than California. The cost of capital punishment was also substantially higher in Texas than in California. Despite the differences in the practice of capital punishment, the murder rates of Texas and California were remarkably similar. There was a strong correspondence in year-to-year changes and no significant difference in the rates of the two states. An examination of execution rates and murder rates over time via a cross-lagged panel analysis, unfortunately, produced no clear findings. However, this study did illustrate the value of the Heilbrun (2006) challenge to examine states that rigorously versus reluctantly implement their death-penalty sentences.

INTRODUCTION

Capital punishment continues to attract strong opinions from most observers, and rightly so. State-sponsored homicide should be monitored in a democracy. Retentionists or supporters of capital punishment cite the positive effects of the death penalty and argue that it makes us safer. Abolitionists decry the use of capital punishment as ineffective and state that its use has little or no effect on our

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safety and it harms our morality. One can easily become confused in the capital punishment debate. How does "the machinery of death" affect our society (Mandery, 2005)?

The death penalty clearly provides retribution. The offender, who steals the life of the victim, will in turn forfeit his life to the vengeance of the state. At the same time, capital punishment provides specific deterrence. An executed capital offender will not commit another crime or make us unsafe again. Other issues related to capital punishment are not so easily discerned. Does an execution reduce murder rates, making us safer? Does the use of the capital punishment screen us from future dangerous acts of other murderers? Is capital punishment cost effective and is it the best use of limited criminal justice funds? All of these questions remain open to discussion, usually shaped by the strong emotions that characterize the debate (Clarke & Witt, 2007).

This research continues the examination of capital punishment. The focus of this study is the states of Texas and California. Heilbrun (2006) contemplated the value of an examination of states that rigorously versus reluctantly implement their death-penalty sentences; but would Texas and California fulfill this examination? Both jurisdictions utilize capital punishment in their criminal justice systems, but perhaps, in a different way. The investigation looks at a number of variables surrounding the death penalty in these two states. Comparing and contrasting findings in these states will help us incrementally, instead of definitively, answer a number of questions related to the use of capital punishment.

Paternoster, Brame, & Bacon (2008) have recently reviewed the long history of capital punishment in the United States (traced back to 1608) as they examined a multitude of issues surrounding the death penalty. Despite the fact that court rulings create moratoriums from time to time, they also maintained that the death penalty shows no signs of disappearing for any enduring amount of time for the majority of states, in spite of the fact it continues to create controversy and ambivalence. Paternoster, Brame, & Bacon (2008), as well as Mandery (2005) and Bohm (2007), vividly illustrate the

constant interplay between public opinion, court cases, and state statutes on the death penalty.

Conventional wisdom has produced a number of axioms about the role of capital punishment for a society. Examples would include such proposed relationships as: capital punishment deters others from committing homicides; it reduces subsequent threats to society; and it is cost effective. Investigators who have attempted to examine these proposed relationships empirically have faced a number of obstacles. Unfortunately, capital punishment does not lend itself to scientific experimentation and generalized causal inferences. A social scientist could not ethically make the death penalty the punishment for capital murders that occur on Monday, Wednesday, and Friday while having capital murders that occur on the other days of the week receive a life sentence in order to establish what consequences result (Clark & Whitt, 2007). The research challenges have produced death penalty studies that rely on complex multivariate statistical methods that are non-experimental in nature. Because these methods have limits in establishing causal inferences and because the audiences for such studies often have strongly-held beliefs, either for or against the use of capital punishment, the studies frequently produce more debate than resolution. The present study does not attempt to resolve the role of capital punishment, but attempts to continue to examine the issues surrounding capital punishment in hopes that, with enough carefully-conducted studies across time, a pattern will emerge that is more discernable for all.

Studies of Historical Context

In one of the first studies of capital punishment, Sutherland (1925) concluded that there is no evidence of a significant relation between the murder rate and the practice of using the death penalty. He went on to say that there may be a significant relationship, but it cannot be demonstrated. He concluded that the scientific examination of capital punishment was not worth the effort due to the small number of persons executed each year.

One of the most influential early death penalty scholars was Thorsten Sellin. After numerous comparisons, Sellin (1959; 1967) concluded that there was no relation between capital punishment and murder rates. Bedau (1967), another death penalty scholar of the era, also came to the same conclusion.

The lack of positive findings, however, did not end the death penalty debate (Clark & Whitt, 2007). And so, the National Academy of Science commissioned an investigation, headed by Blumstein, Cohen, and Nagin, to examine the death penalty. The Academy's findings (1978) reported that the death penalty had no effect on deterrence or incapacitation.

Another national study was performed on former death-sentence capital offenders by Marquart and Sorenson (1989) and found that death-sentenced capital murderers were no more dangerous than any other group of offenders. In addition, a comprehensive review of deterrence studies was completed by Bailey and Peterson in 1997. These scholars concluded that there was no compelling evidence to support the notion that the death penalty affected murder rates.

Not all research has found an absence of connection between the death penalty and violent crime. Utilizing new methodology of econometric models, Erhlich (1975) found that executions produced a deterrent effect that saved lives. Numerous scholars challenged this finding, and his research still engenders lively debate. Shepherd (2005) later used a similar approach to examine capital punishment across the United States. Her findings provided support for deterrence in some jurisdictions while finding evidence of brutalization (violence begets violence) in others. She concluded that a state had to execute nine prisoners a year to produce a reduction in murders; otherwise an increase in murders occurred.

Current Status

The scientific examination of capital punishment has produced more questions than answers. As a result of this dilemma, continued research on capital punishment is clearly warranted.

In this regard, Heilbrun (2006) raised a salient issue. Any serious investigation of the death penalty "should involve not only comparison between retentionist and abolitionist states but should

also take a multi-tier approach to evaluating capital punishment in this country among states having the death-penalty. States with death-penalty statutes that are rigorously implemented should be compared to states with death-penalty statutes that are reluctantly invoked " (p. 9).

The similarities and differences between states that have rigorously versus reluctantly implemented their death-penalty statutes may be valuable to studying the issues — such as, deterrence and cost — surrounding capital punishment. Two states that both have death-penalty statutes but seem to vary substantially in their implementation of those statutes are Texas and California.

Why Compare Texas with California?

Both California (1st) and Texas (3rd) possess very large death rows in the United States. Each jurisdiction sentences numerous offenders to death each year. However, the states vary dramatically in their execution of the death penalty (Death Penalty Information Center, 2008). According to their state statutes, the two states were seriously committed to capital punishment and the assessment of the death penalty. An examination of recent records, however, suggested a very different commitment to the execution of the death penalty (Vandiver, 2005).

The states have comparable demographics. In 2000, Texas had a population of 20,851,820 while California had a population of 33,871,648. Males comprised 49.6% of the population in Texas and 49.8% of the population in California. The minority populations of the states are similar. Texas's population is 11.5% African American and 32.0% Hispanic. California's population is 6.7% African American and 32.4% Hispanic. The average household size is 2.74 in Texas and 2.87 in California. Educational achievements are also similar. The Texas population includes 75.7% with a high school diploma and 23.2% with a bachelor's degree. California's population includes 76.8% with a high school diploma and 26.6% with a bachelor's degree. The individual poverty level in Texas includes 15.4% of individuals and 14.2% of individuals in California (U.S. Census Bureau, 2000).

Both states also have large criminal justice systems to deal with the problems of crime, including capital murder (Pollock, 2006). At the end of 2000, Texas housed 157,997 inmates while California housed 163,001. Ninety-four percent of inmates in Texas were male, while 93% were male in California. In Texas 50% of inmates were incarcerated for violent crimes while the percentage was 44% in California (Vandiver, 2005). Both states utilize "three-strikes-you're-out" and mandatory sentencing schemes that have created a huge criminal justice system (Pollock, 2006).

The states of Texas and California are significant representatives of the death penalty states. Texas and California possess some of the largest death rows in the United States (Vandiver, 2005). In both states, the cost of maintaining the machinery of death is extremely expensive (Dieter, 2005). However, the use of executions in both states appears to be dramatically different. California juries assess numerous death sentences. However, the state rarely executes these sentences. Texas juries also issue numerous death sentences. The state then executes more offenders than any other jurisdiction (Vandiver, 2005).

What Research Has Been Conducted that Examines Capital Punishment Focusing on Texas or California?

Texas Studies

Sorenson, Wrinkle, Brewer, and Marquart (1999) examined the issue of capital punishment in Texas. The study used the number of executions as the independent variable; whereas murder rates and felony murder rates served as the dependent variable. The study found that the murder rate was not related to the number of executions. The study also found that the felony murder rate was not related to the number of executions.

Cloninger & Marchesini (2001) used a portfolio analysis in a quasi-controlled group experiment. They developed an econometric/mathematical model of homicides when executions were typical for the state. They then examined homicide rates by taking advantage of a moratorium period for Texas executions and comparing with a period of double the number of normal executions. According to

their model, there were greater than predicted number of homicides in the moratorium period and fewer than predicted in the high period. Their interpretation was that the findings were consistent with the deterrence effect of capital punishment.

Since, as Bryce (1998) reports, Harris County (Houston) accounts for one-third of the offenders on Texas death row, Stolzenberg and D'Allesio (2004) examined the impact of executions on murder rates in Houston, Texas. Despite the fact that local news cover arrests, trials, convictions, and executions pertaining to local homicide cases, the study produced no credible evidence to support that executions decreased the murder rate in Houston, Texas.

California Studies

Bailey (1979) studied the death penalty for murder in California for the period of 1910–1962. The study used multiple measures of the certainty of the impending death penalty to take place. It also included two different measures of rates for homicide with several socio-demographic variables taken into account. The study looked for both linear and non-linear relationships between executions and homicides but found no evidence that the certainty of execution provided an effective deterrent to committing murders.

After a twenty-five year moratorium, California received a great deal of state and national news when the state reintroduced the death penalty in 1992. Cochran & Chamlin (2000) took advantage of a naturally-occurring event to assess the impact of the much-publicized execution on the incidence of homicides using weekly time-series data. Based upon their approach, they found a significant decline in the level of nonstrangers' felony-murders; but a significant increase in the degree of argument-based murders of strangers in the period following the execution.

Examination That Focused on both Texas and California

Sorenson and Pilgrim (2006) discuss capital punishment in Texas in their recent book. The seasoned researchers report that urban homicide rates have decreased faster than rural homicide rates. The authors also looked at Texas (high execution rates), New York (no executions since 1963), and California (low execution rates). Their

examination found that New York had the highest drop in homicide rates. Their review also concluded that the decrease in homicide rates was not related to the number of executions. They speculated that a number of factors may be causing the drop in homicide rates, including an increase in the number of people imprisoned.

Purpose of This Investigation

Any new generation of criminal justice investigators quickly realizes that the issues surrounding capital punishment are complicated and difficult to effectively study. With different methodologies utilized across decades of study, they also quickly realize that getting a decisive answer to the part played by the death penalty is also difficult. This could discourage their participation in engaging in further investigations. The authors of this study think just the opposite needs to occur. How can we actually encourage researchers to continuing work in order to make progress in establishing a better understanding of the function of capital punishment in the United States? As stated earlier, because the research methodologies have limits in establishing causal inferences and because the audience for such studies often have strongly-held beliefs (either for or against) the use of capital punishment, the previous studies frequently produce more debate than resolution. The present study does not attempt to decisively establish the role of capital punishment in the American criminal justice system, but attempts to continue to examine the issues surrounding capital punishment in hopes that, with enough carefully-conducted studies across time, a pattern will emerge that is more discernable for all.

Also in this regard, the present investigators think that, by making the scope of relevant research more defined, the results will be less controversial and ambivalent. In turn, such studies will also foster more investigators to participate in a continuing examination of capital punishment. Many smaller-scaled projects may yield more valuable contributions to the larger, and in many ways more controversial, picture emerging in time.

Therefore, with this reasoning in mind, this study attempts to examine a variety of similarities and differences that may exist in two states that have rigorously (Texas) versus reluctantly (California) implemented their death-penalty statutes. By looking for both similarities and differences, data may begin portraying a pattern that could answer some important inductive questions surrounding capital punishment. What coincides with the differences in implementation in regard to estimated execution costs and statewide murder rates? Are there similarities in the murder rates changing across years in the two states? Are the differences in execution rates and murder rates statistically reliable? Is there any indication that data from the two states are consistent with a possible reciprocal relationship between execution rate and murder rate?

METHOD

Data Acquisition and Measures

We collected the primary data for this study from four sources. From the U.S. Department of Justice (*Sourcebook of Criminal Justice Statistics Online*, 2006), the collected measures for 1992 – 2005 were the number of executions, prisoners under sentence of death, number of murders 1992 – 2003, and the murder rate (per 100,000) for states of Texas and California 1992 – 2003. From the Federal Bureau of Investigation's *Crime in the United States*, we obtained the number of murders and the murder rate (per 100,000) for the states of Texas and California for 2004 – 2005. We obtained the number of new death sentences from the Death Penalty Information Center (2008). For costs per execution, we used Liebman's (2000) estimates for the two states.

For the appropriate measures, we converted the primary data into rates. Converting the state crime statistics into a rate per 100,000 (Gertsman, 2003) allowed for a more consistent examination of data across the two states. Because the data consisted of only fourteen years, and California had years in which there were zeros, the rates for executions and implementation of death sentences were transformed using a version of a reciprocal transformation (Howell, 2007) in order for the data to meet the assumptions of the analyses. In order for the results to be more straightforward to interpret, the means and standard deviations will be reported in terms of the original data for these two measures.

Similarities and Differences

The intent of this study was to examine both the similarities as well as the differences among a cluster of variables that surround capital punishment in two states that may employ the death sentence in different ways. Using quantitative data, the analyses were to highlight the similarities and the differences, not to test specific hypotheses. Therefore, to highlight similarities, correlation coefficients were used descriptively. We wanted to address the question — despite the fact that the two states may be different in implementing the death penalty, did the states have corresponding rates across a contemporary period of the fourteen years? As a result and when appropriate, we used correlation coefficients to index the annual fluctuations in these measures.

We examined differences in the two states by comparing rates and other measures with one-way ANOVAs. One-way ANOVAs were employed instead of standard t-tests in order to be able to report the magnitude of effect (eta-squared values) in each analysis conveniently.

Crossed-lagged Panel Model

To examine for a possible temporal precedence, or even a reciprocal relationship, between execution rate and murder rates in these two states, we utilized a crossed-lagged panel model (Shadish, Cook, & Campbell, 2002; Finkel, 1995) that logically is based on the assumption that cause produces change in effect, and not the other way around. Despite the fact that correlative data cannot establish cause and effect, the cross-lagged panel model allows suggestive examination of temporal precedence as a requirement for cause and effect. Larger cross-lagged correlations are consistent with a demonstration of temporal precedence.

RESULTS

The number and rate of executions are shown in Table 1 [page 216]. Texas (M=.110, SD=.050) had a significantly higher, F(1, 26) = 308.99, p< .001, partial eta² = .92, execution rate than California (M=.003, SD=.002) across the years 1992–2005. Unfortunately, the

scatterplot (using the rates for the two states) revealed a decidedly non-linear pattern, and thereby, the correlation coefficient (-.167) does not, in this instance, represent a faithful correspondence of the annual changes across the period for this measure.

Table 1 Prisoner Executions by State per 100,000

| Year | T | exas | California | | |
|---------------|-----|-------|------------|-------|--|
| | N | rate | N | rate | |
| 1992 | 12 | 0.068 | 1 | 0.003 | |
| 1993 | 17 | 0.094 | 1 | 0.003 | |
| 1994 | 14 | 0.076 | 0 | 0.000 | |
| 1995 | 19 | 0.101 | 0 | 0.000 | |
| 1996 | 3 | 0.016 | 2 | 0.006 | |
| 1997 | 37 | 0.190 | 0 | 0.000 | |
| 1998 | 20 | 0.101 | 1 | 0.003 | |
| 1999 | 35 | 0.175 | 2 | 0.006 | |
| 2000 | 40 | 0.192 | 1 | 0.003 | |
| 2001 | 17 | 0.080 | 1 | 0.003 | |
| 2002 | 33 | 0.152 | 1 | 0.003 | |
| 2003 | 24 | 0.109 | 0 | 0.000 | |
| 2004 | 23 | 0.102 | 0 | 0.000 | |
| 2005 | 19 | 0.083 | 2 | 0.006 | |
| Total/average | 313 | 0.110 | 12 | 0.003 | |

Note. Rate = N (number of executions)/state population—365 x 100,000. (Gertsman, 2003). Rate per 100,000 populations rounded to the nearest one thousandth. Prisoners executed under civil authority. Table 6.85 (2006). Sourcebook of Criminal Justice Statistics Online. Washington, D.C.: U. S. Department of Justice, 2006.

The number and rate of death penalties imposed by juries annually are shown in Table 2 [opposite]. The corresponding changes in the rate is reflected by a moderately strong positive correlation coefficient of r=.56. In spite of the moderately parallel pattern across the fourteen years, Texas (M=.163, SD=.050) juries imposed, at

a significantly higher rate (F(1, 26) = 23.63, p < .001, partial eta² = .48), more death sentences than their California counterparts (M = .086, SD = .033).

Table 2
Death Penalties Imposed by Juries

| Year | T | Texas | | California | | |
|------|----|-------|----|------------|--|--|
| | N | Rate | N | Rate | | |
| 1992 | 31 | .18 | 37 | .12 | | |
| 1993 | 27 | .15 | 33 | .11 | | |
| 1994 | 43 | .23 | 22 | .07 | | |
| 1995 | 40 | .21 | 36 | .11 | | |
| 1996 | 33 | .17 | 39 | .12 | | |
| 1997 | 32 | .16 | 36 | .11 | | |
| 1998 | 39 | .20 | 31 | .09 | | |
| 1999 | 48 | .24 | 43 | .13 | | |
| 2000 | 34 | .16 | 31 | .09 | | |
| 2001 | 26 | .12 | 24 | .07 | | |
| 2002 | 37 | .17 | 14 | .04 | | |
| 2003 | 29 | .13 | 19 | .05 | | |
| 2004 | 23 | .10 | 11 | .03 | | |
| 2005 | 14 | .06 | 23 | .06 | | |

Note. Rate = N (number of death penalties)/state population – $365 \times 100,000$. (Gertsman, 2003). Rate per 100,000 populations rounded to the nearest one-hundredth. Death Penalty Information Center. (2008) Death Sentences in the United States from 1977 to 2006. Accessed 02/07/2008.

To evaluate if Texas was implementing the death penalty differently than California, the number of executions and the rate of executions are shown in Table 3 [page 218]. Once again, we found that Texas (M = .052, SD = .022) had a significantly (F(1, 26) = 199.27, p< .001, partial eta² = .89) higher rate than California (M = .002, SD = .002). The correspondence of rates could not be summarized linearly, thus the correlation coefficient (–.31) was not valuable in this particular instance.

Table 3
Implementation of Executions

| Year | | Texas | | | California | | |
|------|----|-------|-------|---|------------|-------|--|
| | N | DR | rate | N | DR | rate | |
| 1992 | 12 | 344 | .0349 | 1 | 332 | .0030 | |
| 1993 | 17 | 357 | .0476 | 1 | 363 | .0028 | |
| 1994 | 14 | 394 | .0355 | 0 | 381 | .0000 | |
| 1995 | 19 | 404 | .0470 | 0 | 420 | .0000 | |
| 1996 | 3 | 438 | .0068 | 2 | 454 | .0044 | |
| 1997 | 37 | 438 | .0845 | 0 | 486 | .0000 | |
| 1998 | 20 | 451 | .0443 | 1 | 512 | .0020 | |
| 1999 | 35 | 460 | .0761 | 2 | 553 | .0036 | |
| 2000 | 40 | 450 | .0889 | 1 | 586 | .0017 | |
| 2001 | 17 | 453 | .0375 | 1 | 603 | .0017 | |
| 2002 | 33 | 450 | .0733 | 1 | 614 | .0016 | |
| 2003 | 24 | 453 | .0530 | 0 | 629 | .0000 | |
| 2004 | 23 | 446 | .0516 | 0 | 637 | .0000 | |
| 2005 | 19 | 411 | .0462 | 2 | 646 | .0031 | |

Note. Rate = N (number of executions)/DR (death row population at year end). Prisoners under sentence of death, by race, ethnicity, and jurisdiction (1993-2006). *Sourcebook of Criminal Justice Statistics Online*. Washington, DC: Washington, DC: U.S. Department of Justice. Retrieved February 14, 2008, from http://www.albany.edu/sourcebook/tost_6.html#6_s.

Using data from 1973 to 1988, Liebman (2000) reported in 1985 dollars the estimated costs per execution for a number of states, including Texas and California. These estimates represent a conservative estimate for the years 1992 - 2005 and are displayed in an accumulating graphic in Figure 1 [opposite]. The average estimated cost for executions annually in Texas was 51.0 million compared to California's 4.3 million dollars.

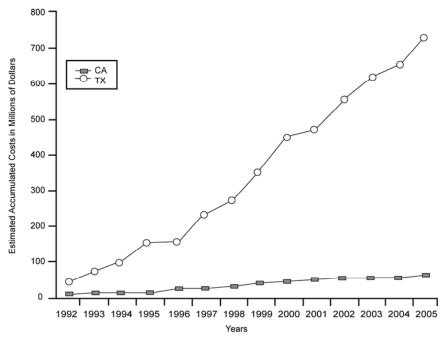


Figure 1. Execution Costs

Note. Estimated cost per execution in Texas is \$2,300,000 and \$5,000,000 in California. Liebman, J.S. (2000). The overproduction of death. *Columbia Law Review, 100*(8), 2030-2156.

A scatterplot of annual murder rates for the two states revealed a strong linear pattern with a correlation coefficient of +.97. Thus, as murder rates fluctuated in Texas, they correspondingly fluctuated in California as well. Another way to capture this relationship and insert the time dimension is shown in Figure 2 [page 220]. Overall, the murder rates fell in a similar way in both states.

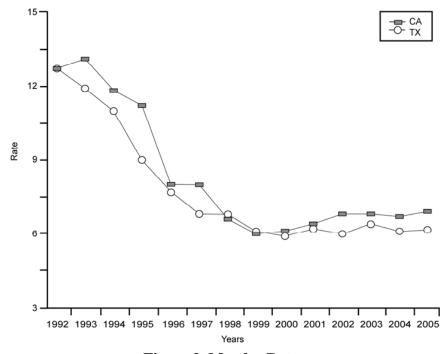


Figure 2. Murder Rates

Note. Rate = N (number of murders)/population – 365 x 100,000. Estimated number and rate (per 100,000 inhabitants) of offenses known to police. Table 3.107. (2006). Sourcebook of Criminal Justice Statistics Online. Washington, D.C.: U. S. Department of Justice. (1992–2003). Crime in the United States by region, geographic division, and state. Table 4. (2005). Crime in the United States. Washington, D.C.: Federal Bureau of Investigation. (2004–2005).

There was no significant difference (F(1, 26) = .39, p = .537,partial $eta^2 = .015$) between the murder rates of Texas and California. Both states began with a murder rate of 12.7 per 100,000 populations in 1992. Despite some fluctuation in rates over the years, no differences were significant, and both states enjoyed a steady decline in murder rates.

Results from Crossed-lagged Model

A conceptual framework to understand the results of the cross-lagged panel model can occur by first considering Figure 3 as an illustration. The circles on the left represent the execution rate and murder rate taken for the same year. The right circles represent these same rates taken the next year. A correlation coefficient using the rates on the left describe the concurrent correlations between murder and execution rates. Correlation coefficients across the top and the bottom circles are autocorrelations separated by a lag of one year. The relationships between execution rate at time 1 and murder rate a year later and, likewise, between murder rate at time 1 and execution rate a year later are the most important coefficients to consider. If executions are an influential temporal precedence to changing murder rates for the following year in a state, then, according to this model's analysis, the correlation coefficient crossing down should exceed the correlation coefficient crossing up. In contrast, if murder rates are an influential temporal precedence of execution rates for the following year, then correlation coefficients crossing up should exceed those crossing down. No difference between these coefficients is problematic to interpret. Also, low coefficients are difficult to interpret and, at the most, would suggest that other variables are more dominant and that neither variable fulfills a crucial temporal precedence role. It is important to note that even the most ideal results could not establish a cause-effect relationship. However, the most ideal results could be suggestive and, therefore, consistent with meeting one criterion of cause-effect—the one of identifying temporal precedence. Recognizing the limitations of the model (Shadish, Cook, and Campbell, 2002), we wanted to utilize the cross-lagged model to gather what valuable information that we could from the data for California and Texas.

Figure 3 [page 222] gives the six correlation coefficients between the variables of the execution rates (transformed data to meet the assumptions of parametric statistics, including Pearson's r) and murder rates for Texas across the fourteen years of this study. The only demonstrated strong relationship (p< .05) was the autocorrelation between murder rates. The cross-lagged coefficients were not strong, nor were they that differential (.17 vs. .26, p> .05).

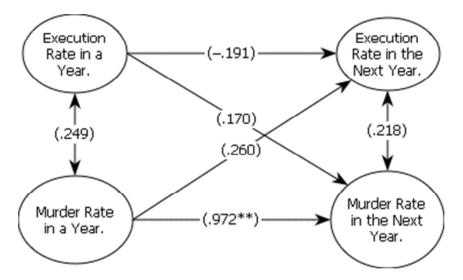


Figure 3. Texas Cross Lagged Panel

Figure 4 [below] repeats the same examination for the data of California. Once again, the only strong relationship (p< .05) was the autocorrelation on murder rates. The cross-lagged coefficients were relatively weak (.05 & .21) and non-differential (p> .05).

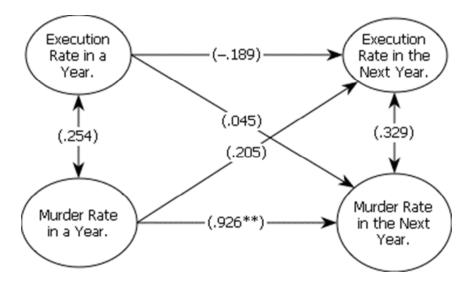


Figure 4. California Cross Lagged Panel

DISCUSSION

This study found that both states have provisions for capital punishment; however, Texas implements the death sentence more often. We have also found that the juries in both states are giving death sentences to convicted murderers, but the Texas juries are utilizing the death sentence at a higher rate. We found that there were substantial differences in estimated costs involved with maintaining the capital punishment systems; yet, there was not a significant difference in the murder rates of the two states.

This study's findings are consistent with early research between capital punishment and murder rates (Sellin, 1959; 1967; Bedau, 1967; and National Academy of Science, 1978). Moreover, the findings seem to be inconsistent with the contentions coming out of the econometric models of Erhlich (1975) and Shepard (2005). According to Shepherd's nationwide study, a state had to execute nine prisoners a year to produce a reduction in murders; otherwise an increase in murders occurred. In this examination, Texas had more than nine executions per year in all but one year. California had fewer than nine in all fourteen years. Nevertheless, the two states did not have statistically reliable differences in murder rates.

As shown by data across the fourteen years, the murder rates appear to be decreasing in a parallel fashion, and this pattern fits with national trends in the same direction (Mandery, 2005). Sorenson and Pilgrim (2006) also allude to this broad trend, and they conclude that the reduction in murder rates is perhaps related to increased numbers of people incarcerated, not the number of executions taking place.

Shortcomings

The primary shortcoming of this study was the failure to demonstrate a useful finding related to the cross-lagged panel model. The execution rates of Texas and California did not have a stronger associative relationship with the following year's murder rate than the reversed cross-lagged relationship. If the cross-lagged coefficients were differentially stronger in one direction than another, then it would have suggested that additional data and analyses might be valuable in clarifying the demonstrated relationship. Although by no

means a powerful technique of establishing if the rate of executions brings about a lowered murder rate, or the other way around, the results of the cross-lagged panel analysis was disappointing because they could have indicated a direction for further study. If we interpret these results in light of conclusions by Sorenson and Pilgrim (2006), the murder rates of states are influenced by many factors, none of which have a large effect.

This study has attempted to heed the call from Heilbrun (2006) to examine the similarities and differences between states that have rigorously versus reluctantly implemented their death-penalty statutes. The present study also attempted to promote through example that smaller, more focused studies on aspects of capital punishment may, in time, produce a clearer, more discernable pattern. Because the effect of capital punishment has to be studied non-experimentally, and because the audience of such studies often possesses strongly-held beliefs, a definitive study to answer once and for all the role of capital punishment is probably not possible. The present study attempted to encourage more researchers to conduct smaller, more focused studies designed to create a convergence of findings.

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