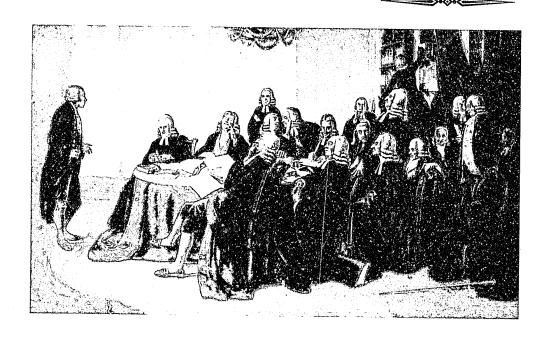


# Academically Speaking...

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Criminal Justice-Related Research by Florida's Doctoral Candidates



Academically speaking ... Criminal justice-related research by Florida's doctoral candidates, 1993

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Diane L. Zahm, Ph.D., Editor Florida Criminal Justice Executive Institute by Lisa Stolzenberg and Stewart J. D'Alessio

# Sentencing and unwarranted disparity: An empirical assessment of the long-term impact of sentencing guidelines in Minnesota<sup>1</sup>

valuations of Minnesota's effort at sentencing reform have proliferated in recent years. The general conclusion drawn from this empirical literature is that Minnesota's determinate sentencing system has achieved its goal of increased neutrality in the application of criminal sanctions (Miethe and Moore, 1985, 1989; Minnesota Sentencing Guidelines Commission [MSGC], 1984; Moore and Miethe, 1986). Despite the consistency of these studies, two limiting factors prevent them from being conclusive. First, most longitudinal studies of Minnesota's sentencing guidelines conducted to date have relied exclusively on the one-group pretestposttest research design. Because such designs have a limited number of observation points, they are inherently weak for drawing definitive conclusions about the long-term effectiveness of the guidelines in diminishing sentencing inequality (Tonry, 1987). In this paper we use an interrupted timeseries design to more accurately evaluate the long-term effectiveness of Minnesota's determinate sentencing system. Longitudinal designs with multiple observation points not only enhance the drawing of causal inferences; they also allow us to determine more clearly whether any initial impact of the guidelines on attenuating unwarranted sentencing disparity was sustained over time. As Miethe and Moore (1985:361) maintain, "the use of multiple observational periods in

future research would be a preferred method for discerning the longevity of this [Minnesota] sentencing reform and whether decreases in disparity are attributable to the new law, historical effects, or some other factor."

A second problem is that sentencing disparity has been operationalized poorly in prior studies. Variation in sentencing decisions can result from differences in legally mandated offender and offense characteristics (e.g., seriousness of offense and prior criminal history) or from extralegal sentencing factors such as an offender's race, gender, or social class. One common approach, represented by Miethe and Moore (1985) has been to examine the effects of extralegal variables on preguideline and postguideline sentencing outcomes after controlling for legally mandated sentencing factors. Such analyses are explanatory because they attempt to discern whether the implementation of guidelines altered the major determinants of various sentencing outcomes. Another, more general approach, which is used in this analysis, measures sentencing disparity as total sentencing variation unexplained by legally mandated sentencing factors (Barry and Greer, 1981; Carrow et al., 1985). This operationalization of disparity diminishes the prospects that measurement error will arise from inadequate measures of extralegal variables and omitted variables.

## Methods and findings

Data. Data for this study were obtained from the Minnesota Sentencing Guidelines Commission (MSGC). The preguideline (or baseline) data reflect fiscal year 1978 (July 1, 1977 through June 30, 1978) and account for approximately 50% of the convicted felony offenders sentenced in the state for that year.2 Postguideline data were available for all persons convicted of a felony offense committed from May 1, 1980 through December 31, 1989. We calibrated both preguideline and postguideline data into monthly intervals. This procedure resulted in 12 preguideline and 115 postguideline time periods.<sup>3</sup> We eliminated the first three months of postguideline data from the study because the number of felony offenders sentenced under the new law was insufficient to permit any meaningful statistical analysis. Relatively few offenders were sentenced under the guidelines during May, June, and July 1980 because the new law required that the arrest occur after the guidelines were implemented. Our decision to exclude these months reduced the number of postguideline periods to 112.

Variables. Drawing from Barry and Greer (1981) and Carrow et al. (1985), we define unwarranted disparity as sentencing variation not attributable to legally mandated sentencing factors (the standard error of the estimate). We employed logistic regression to calculate the disparity measure for preguideline and postguideline periods for the no prison/prison sentencing outcome; we used ordinary least squares (OLS) regression to calculate the disparity measure for the judicial decision as to length of prison sentence.4 We controlled for the effects of legally mandated

sentencing factors, offense seriousness and criminal history during calculation of the disparity measure for both sentencing outcomes.<sup>5</sup> We also included an interaction term for offense seriousness and criminal history in the logistic and OLS regression equations because the sentencing guidelines place more importance on criminal history in determining the no prison/prison decision for less serious offenses and decisions as to prison duration (MSGC, 1984).

Although such effects are not delineated specifically in the guidelines grid, our analysis includes the effects of whether the most serious conviction offense was a personal crime and whether a weapon was involved (or possessed) in the commission of the crime. We incorporated these variables because they are consistent with the intent to amplify the severity of sanction for serious personal offenders and with legislative policies prescribing mandatory minimum sentences for offenses committed with dangerous weapons (Miethe and Moore, 1985). In addition, the prison length regression equations include a hazard-rate variable computed from the no prison/prison equations as a partial correction for sample selection bias. The inclusion of this variable controls partially for criminal defendants who received a nonprison sanction.6

Figure 1 depicts monthly values of sentencing disparity for the no prison/prison sentencing decision. The vertical line represents the establishment of the determinate sentencing law in Minnesota. As can be seen in Figure 1, the guidelines had a substantial initial impact on reducing unwarranted disparity for the no prison/prison outcome. Figure

2 shows the influence of the determinate sentencing law on reducing unwarranted disparity for the prison length series. Again, the figure provides strong visual evidence of a large reduction in sentencing incongruity.

Intervention analysis. We developed the univariate ARIMA models for the no prison/prison Ln(2,0,0) and prison length Ln(2,0,0) series through an iterative model-building strategy (see McCleary and Hay, 1980). Because previous research suggested that reductions in sentencing disparity following Minnesota's reform effort may have been short-lived (MSGC, 1984), we used a pulse function (coded 0 before the intervention, 1 at the moment of the intervention, and 0 after the intervention) to model the intervention for both series. The pulse function models the guidelines as having an abrupt, temporary impact on reducing unwarranted sentencing disparity.

Results showed that the guidelines initially reduced disparity for the no prison/prison sentencing decision, but that inequality levels began to revert to preguideline levels as time passed (Pulse=-.199, p<.05). In contrast, we observed a nonsignificant pulse function for the

prison length series, an indication that the initial observed decline in sentencing disparity, as depicted in Figure 2, was maintained over time (Pulse=-.501, p>.05). This explanation was supported empirically by a statistically significant step function  $(Y_t = \omega_0 I_t + N_t)$  for the sentence length series. (See Table 1).

To enhance interpretation, we transformed the intervention coefficients which are stated in the natural logarithm, into ratios by using the following formula:

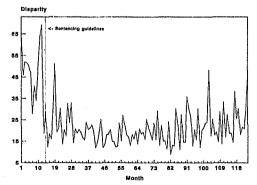
$$\frac{e^{(\omega 0)} e^{(ARIMA)}}{e^{(ARIMA)}} = e^{(\omega 0)}$$

where  $e^{(\omega 0)}$  is defined as "the ratio of the postintervention series level the preintervention series level" (McCleary and Hay, 1980:174). Each ratio then was calculated as the percent change in the expected value of the process associated with the intervention (percent change  $(e^{(\omega 0)} - 1)100$ ). Accordingly we can conclude that unwarranted disparity for the no prison/prison sentencing decision showed an overall decline 18%, while sentencing inequality decreased by approximately 60% for the judicial decision as to length of prison sentence.



Figure 1. Unwarranted Disparity for the No Prison/Prison Outcome

Figure 2. Unwarranted Disparity for the Prison Length Outcome



# Table 1 Maximum-Likelihood Coefficients for the No Prison/Prison and the Prison Length Equations

	No Prison/Prison			Prison Length	
	В	Sig T		В	Sig T
AR(1)	.412	.000	AR(1)		
AR(2)	.298	.001	AR(2)	.214	.023
PULSE	199	.007	STEP	909	.000
CONSTANT	-1.307	.000	CONSTANT	3.892	.000

NOTE: The first autoregressive parameter for the prison length model was not statistically significant (AR(1) = .006, p > .05) and thus was dropped from the analysis.

### Discussion and conclusion

Conventional wisdom currently holds that Minnesota's guidelines have been extremely successful in achieving neutrality in criminal sentencing. The findings of prior studies are limited, however, because of their prolific use of pretest-posttest research designs and their inadequate operationalization of sentencing disparity. Because of these shortcomings, previous studies fail to adequately address the long-term effect of this reform of reducing sentencing incongruity.

Our analyses reveal that Minnesota's sentencing guidelines worked dramatically to effectuate sentencing equivalence for the prison length decision. The guidelines also curtailed disparity for the no prison/prison judicial decision, but to a lesser degree. Of more substantive importance is the finding that sentencing equality diminished over time for the no prison/prison sentencing outcome. We offer two possible explanations this reversion. One possibility, as proffered by the

MSGC (1991), is that many offenses, especially assault in the second degree, did not warrant prison sentences. The sentencing guideline grid was constructed so that first-time violent offenders would be sentenced more severely than nonviolent repeat offenders. Yet many first-time violent offenders did not deserve such severe penalties: therefore, differential sanctioning for the no prison/prison decision may have resulted from judges' adjusting their sentencing behavior so that many defendants who would receive a prison sentence under the guidelines would receive a nonprison sanction instead. This possibility is supported by the finding that departures from the guidelines for total and personal offenses were generally mitigating, not aggravating (Miethe and Moore, 1985; MSGC, 1991).

A second possible explanation is that increases in sentencing inequality resulted from attempts to constrain the growth of Minnesota's prison population. During the development of the guidelines, it was determined that prison populations would not exceed existing capacity constraints (MSGC, 1984). Even so, prison populations continued to increase in Minnesota. When forecasts indicated that the prison population would exceed the existing prison capacity, the MSGC (1984) initiated several measures to avert the projected overcrowding. Although these adjustments prevented any further enlargement in prison populations, jail incarceration continued to increase at an alarming rate. The use of jail as a condition of a stayed sentence increased sharply from the preguideline to the postguideline period; the rate rose from 44.7% in 1978 to 66.1% in 1984 (Miethe and Moore, 1989). It seems plausible that judges opted to sentence increasing numbers of offenders to jail instead of prison so as to maintain prison populations within capacity constraints. This supposition is consistent with other research suggesting that prison overcrowding is an important consideration in criminal sentencing (Peterson and Hagan, 1984). Further study of this issue is needed for a fuller understanding of sentencing practices in Minnesota.

A few limitations to this analysis require explication, although they do not invalidate our findings. First, because Minnesota's guidelines were designed to focus on aggregations of cases within cells reflecting the juncture between offense severity and criminal history, the research methods employed herein fall short in determining whether the guidelines were effective in reducing sentencing disparity among individual offenders (Feeley and Simon, 1992). Moreover, the aggregating of criminal offenses may mask sentencing incongruity within specific offense categories (D'Alessio and Stolzenberg, 1993). For example, the MSGC (1991) reported that compliance with the guidelines was significantly lower for assault in

the second degree than for all other offenses primarily because the circumstances surrounding this offense varied substantially.

In addition, although unwarranted sentencing inequality decreased for both decision points, it is quite possible that "disparity" was displaced to earlier decision points in the judicial process (Alschuler, 1978). Such displacement is known as the "hydraulic" or "zero-sum" effect (Clear et al., 1978). Yet some observers remain unconvinced that judicial decisions not regulated explicitly by the guidelines inevitably result in greater sentencing disparity. For example, Miethe (1987) found that prosecutors' charging and plea bargaining practices remained fairly stable across preguideline and postguideline periods in Minnesota. This stability was attributed to several "internal" and "external" factors that limited prosecutors' discretion.

We also must remain cautious about generalizing broadly from these findings because the examination of data from other states with determinate sentencing may yield divergent results. For example, Kramer et al. (1989) note that Pennsylvania, Washington, and Minnesota differ as to the ranges in prescriptive/presumptive sentencing guidelines. Pennsylvania's guidelines afford judges much greater leeway in sanctioning criminal defendants than do those of either Minnesota or Washington. The wider the sentencing ranges provided to the judiciary, the less impact the guidelines tend to have on sentencing practices (Martin, 1983). Sentencing inequality thus may be more prevalent in other states, even those with prescriptive/ presumptive determinate sentencing.

In summary, the results of the present study have implications for future research on determinate sentencing. They suggest that researchers may make their studies more relevant by using longitudinal data with multiple observation periods

rather than relying exclusively on pretest-posttest study designs. Furthermore, both the methodology and the measurement of sentencing disparity employed here have broad applicability in evaluating the effectiveness of other determinate sentencing systems. From a policy standpoint, our finding of a reversion to preguideline disparity levels for the

no prison/prison sentencing outcome suggests the need for increased monitoring of judicial compliance with the guidelines. When judges adhere more strictly to the abstract principle of just deserts, as embodied in determinate sentencing, greater equity in criminal sentencing can be actualized.

#### Endnotes

1. This paper is reprinted from Criminology, volume 32, number 2, 1994, pp. 301-310, with permission of the American Society of Criminology. The authors are grateful to the anonymous reviewers for their valuable suggestions. We also wish to thank Susan Carter for providing us access to the data o the Minnesota Sentencing Guidelines Commission. The opinions expressed are those of the authors and do not necessarily reflect the views of the Minnesota Sentencing Guidelines Commission.

- 2. The baseline data were stratified by county and gender; all female offenders were included in the sample, and a 42% sample of male offenders was selected from each of the 87 counties. The sample of 2,332 cases was weighted to represent the sentenced felony offender population for fiscal year 1978 (N = 4,369).
- 3. Because sentencing data were unavailable for a 22-month period immediately preceding the guidelines, we joined the preguideline and the postguideline series to reflect a continuous series. The exclusion of these data from the analysis should not be a serious limitation because it reduces the likelihood of reactivity bias (Campbell and Stanley, 1963).

That is, by excluding data immediately prior to the intervention, we decrease the likelihood that the effect of the guidelines on reducing sentencing disparity would be abated by judges' prematurely adjusting their sentencing behavior.

- 4. We coded the not prison/prison outcome as 1 if the offender received a prison sanction; otherwise, as 0. The length of prison outcome was recorded in months. The sentencing decisions analyzed in this study were based on the most serious offense at conviction.
- 5. We used the offense severity and criminal history scales developed by the MSGC. Offense severity is measured as a 10-point scale ranging from 1 (less serious crimes such as sale of a simulated controlled substance) to 10 (second-degree murder). The criminal history index (seven-point scale) is an additive measure of four elements including prior felony sentences, legal status at the time of the current offense, felonytype juvenile record, and prior nontraffic misdemeanor and gross misdemeanor sentences. See the MSGC (1984) and Miethe and Moore (1985) to learn in greater detail how the offense severity and criminal

history scales were constructed.

6. Although sample selection bias is reported to be problematic in sentencing research (Zatz and Hagan, 1985), the inclusion of the hazard-rate variable in the equations for prison length did not produce any substantive changes in the ARIMA results.

7. We modeled two additional interventions to determine whether they were salient in explaining the increase in disparity levels for the no prison/prison series. First, we examined the Commission's legislative policies to avert projected prison overcrowding by selectively reducing some presumptive sentence lengths, shortening mandatory prison sentences by the amount of good time

inmates earned, and amending the Commission's jail credit policies to award credit for time served in jail on a split sentence (that is, a short jail term followed by probation) if the probation was later revoked and the offender imprisoned. These policies, which were enacted on November 1, 1983, reduced the average prison term from 27 months in 1982 to 22 months by early 1984. Second, we assessed a change in the Commission's membership as a potential source of disparity in the no prison/prison decision. The Minnesota Corrections Board position on the Commission was abolished as of July 1, 1982. Results showed that neither intervention component was important in explaining the reversion to preguideline disparity levels.

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