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# INCAPACITATION AND CRIME CONTROL: DOES A "LOCK 'EM UP" STRATEGY REDUCE CRIME?\*

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Research on the use of incapacitation strategies to reduce crime has increased rapidly in the last decade. Estimates of the crime reduction potential are numerous and variable, reflecting different assumptions by researchers. This paper reviews and synthesizes studies of collective and selective incapacitation. Sentencing practices in the 1970s and early 1980s prevented an estimated 10 to 30 percent of potential crimes through collective incapacitation strategies. Greater use of incarceration, such as through mandatory minimum sentences, would prevent additional crimes, but prison populations would increase substantially. Selective incapacitation strategies target a small group of convicted offenders, those who are predicted to commit serious crimes at high rates, for incarceration. These high-rate serious offenders, however, are difficult to identify accurately with information currently available in official criminal history records. Preliminary research, assuming moderate accuracy, suggests that selective incapacitation may prevent some crimes, such as 5 to 10 percent of robberies by adults, but increases in prison populations would result. The future of selective incapacitation is discussed in light of current research and knowledge about serious criminal activity.

Confronted with the perceived failures of deterrence and rehabilitation as effective approaches to crime control, criminal justice policy makers increasingly have embraced the strategy of incapacitation. Moreover, research on incapacitation strategies has accumulated rapidly over the last decade. In the mid-1970s, the general philosophy of punishment drifted away from rehabilitation, in part because of discouraging results from evaluations of rehabilitation programs (Lipton, Martinson, and Wilks 1975; Martinson 1974; see also Sechrest, White, and Brown 1979), but also because of rising crime rates and increasing public fear of

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crime. Interest in deterrence waned because of serious methodological problems in estimating the size of the deterrent effect (see Blumstein, Cohen, and Nagin 1978). In contrast to these crime control strategies, the simple, direct, and seemingly effective approach of incapacitation was very appealing to both scholars and policy makers (Blumstein et al. 1978; Shinnar and Shinnar 1975; Wilson 1975).

A decade later, philosophies about crime control strategies appear to be shifting again, especially in the scholarly community. Rehabilitation is being revived, reaffirmed, and resold (Cullen and Gilbert 1982; Gendreau and Ross 1983; Greenwood and Zimring 1985). Deterrence research has undergone significant changes in emphasis. Some recent studies analyze individual responses to their understandings of formal and informal sanctions, referred to as "perceptual deterrence" (Paternoster 1987; Paternoster, Saltzman, Chiricos, and Waldo 1983). Others analyze the impact of specific local policy innovations (e.g., increased sentences for gun crimes) on local crime patterns (see Cook 1980) rather than analyzing chance variation in aggregate crime rates and imprisonment policies. In addition, the effectiveness of incapacitation strategies, especially those involving selective imprisonment policies, has been questioned seriously in recent years (Blumstein, Cohen, Roth, and Visher 1986; Cohen 1983; Visher 1986; von Hirsch and Gottfredson 1984). This review essay examines critically the incapacitation research accumulated over the last decade<sup>1</sup> and assesses whether the current controversy and the rising skepticism about incapacitation are justified.

### DEFINITIONS AND ASSUMPTIONS

Incapacitation as a strategy for crime control involves the physical isolation of an offender from the community, usually through imprisonment, to prevent the offender from committing further crimes. Incapacitation research is concerned with estimating the "incapacitative effect"—that is, the reduction in crime that can be attributed to imprisonment. Two types of incapacitation strategies need to be distinguished: collective and selective incapacitation (Greenberg 1975).

*Collective* incapacitation refers to crime reduction accomplished through traditional offense-based sentencing and imprisonment policies or changes in those policies, such as imposing

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<sup>1</sup> This review of research on collective and selective incapacitation relies on original sources as well as on previous reviews of this research. Since the mid-1970s, Jacqueline Cohen has written extensively on incapacitation strategies; her work provided much of the background material for this essay.

mandatory minimum sentences. Under these policies, offenders' sentences typically are based on the seriousness of the conviction offense and perhaps on the offender's prior record. This "just deserts" philosophy serves as an ideal for many judges, although actual sentencing practices in the United States are quite diverse. Any incarceration strategy, including judges' individual decisions, will have an incapacitative effect as long as the imprisoned offenders would have been committing crimes if they were free.

*Selective* incapacitation is an attempt to improve the efficiency of imprisonment as a crime control strategy by tailoring sentencing decisions to individual offenders. A collective incapacitation strategy would require similar sentences for offenders convicted of the same offense or longer sentences for everyone with a prior record; when a selective strategy is at work, however, offenders who are thought to pose the greatest risk of future crimes become the prime candidates for incarceration and for longer prison sentences. Such a strategy also implies that criminal penalties for low-risk offenders are reduced to short prison sentences, jail terms, or other alternatives. The key to reducing crime through selective incapacitation policies is the ability to identify offenders who will commit serious crimes at high rates in the future.

Estimates of crime reduction by collective and selective incapacitation strategies rest on three critical assumptions (see Cohen 1983). First, it is assumed that all offenders are at risk of being arrested, convicted, and incarcerated. There is no group of offenders who always succeed in evading the criminal justice system. Although it is difficult to study this issue directly, the existence of such offenders is thought to be improbable because the offenders who eventually are arrested seem to account for most of the crimes committed (Shinnar and Shinnar 1975).

Second, the crimes committed by offenders sent to prison presumably are not replaced completely with crimes by other offenders. This assumption is more likely to be violated if the incarcerated offender is part of an organized criminal activity such as drug trafficking and distribution, in which the incarcerated offender's crimes are continued by other drug dealers. Some burglary and auto theft networks might also operate in this fashion. In addition, crimes committed in groups, generally by juveniles, might not be prevented by incarcerating a single group member (see Reiss 1980).

Finally, in estimating incapacitative effects, incarceration is assumed to have no effect on the subsequent criminal behavior of released offenders. This assumption seems not to cause large errors because the rehabilitative and the criminogenic effects of prison

are thought to be roughly equal among incarcerated offenders. Although particular individuals may experience either a criminogenic or a rehabilitative effect, these individual effects probably offset one another so that for *all* incarcerated offenders there is no effect.<sup>2</sup>

Studies of the effects of collective and selective incapacitation strategies which will be reviewed in this paper are often based on a mathematical model which characterizes individual criminal activity within a "criminal career" (Avi-Itzhak and Shinnar 1973, Shinnar and Shinnar 1975; see also Blumstein et al. 1986; Cohen 1983). Incapacitation strategies reduce crime by interrupting an offender's criminal career. To determine the amount of crime prevented by a specific incapacitation policy, the key parameter is the estimated number of crimes that an offender commits during a year while free on the street. This estimate is commonly designated in the incapacitation literature as the Greek letter *lambda* ( $\lambda$ ). The incapacitative effect is also a function of the number of years remaining in an offender's criminal career and the length of the incapacitation period. The size of the estimated incapacitative effects in existing research depends on estimates of  $\lambda$ , assumptions about the length of criminal careers, and the type of sanctioning policy used in the analyses.<sup>3</sup>

### COLLECTIVE INCAPACITATION STRATEGIES

Following Cohen (1983), the major studies of collective incapacitation are divided into two categories. In the first category are those studies that estimate the crime reduction effects of criminal justice practices and sanctioning policies in the last two decades. The second group of studies assesses the likely effects of hypothetical sanctioning innovations (e.g., mandatory five-year terms) on crime rates and on prison populations. These studies reveal that

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<sup>2</sup> Research generally has found no overall rehabilitative (or criminogenic) effect of imprisonment, which is consistent with this assumption (e.g., Lipton et al. 1975; Farrington, Ohlin, and Wilson 1986). In the long run, if incarceration shortens criminal careers, reduces criminal activity, or affects the careers of nonincarcerated offenders (deterrence), incapacitative effects would be overestimated. On the other hand, if incarceration lengthens careers or increases criminal activity, incapacitative effects actually would be underestimated (see Cohen 1983: 9-10).

<sup>3</sup> The incapacitative effect of imprisonment is expressed mathematically as:

$$I = \frac{1}{1 + \lambda qJS},$$

where  $\lambda$  is the individual crime rate,  $q$  is the probability of arrest,  $J$  is the probability of conviction and incarceration, and  $S$  is the average sentence length (derived originally by Avi-Itzak and Shinnar 1973). This fraction gives the proportion by which an offender's time free (and hence his total number of crimes) is reduced by incarceration.

collective incapacitation strategies involving greater use of imprisonment reduce crime only modestly but increase prison populations substantially.

### *Past and Current Incarceration Policies*

The studies summarized in Table 1 attempt to ascertain how much crime was prevented by the sanctioning policies and by the prevailing use of imprisonment in the 1960s, 1970s, and early 1980s. Most of the published estimates of incapacitative effects, however, are not directly comparable because of different assumptions used in the calculations, especially concerning values of  $\lambda$ . Cohen (1978, 1983, 1987) recalculated many of the published findings using more reasonable assumptions, and her adjusted estimates appear in brackets in the third column. Moreover, some of the published estimates express crime reduction effects as a percentage of potential crimes (prevented plus current), while others report the percent reduction from current crimes.<sup>4</sup> Table 1 reports the former estimate because it is somewhat more common in the literature. The incapacitative effect is the percent reduction in crimes that would have been committed by inmates if they had been free in the community.

The studies are arrayed chronologically by the time period of the incapacitation estimates. Some of the differences among estimates in Table 1 are due to changes in expected time served per crime; expected time served has fallen substantially over the past two decades because rising crime rates in the 1970s exceeded the capacity of the criminal justice system to apprehend and incarcerate offenders. The first three estimates of incapacitative effects in Table 1 (Ehrlich 1974; Greenberg 1975; Shinnar and Shinnar 1975) are all based on incarceration experiences and crime rates in the 1960s, but they assume different values of  $\lambda$ . If  $\lambda$  is assumed to be 5 for reported crimes (Ehrlich; Shinnar and Shinnar) and 15 for reported and unreported crimes (Greenberg),<sup>5</sup> the then-prevailing incarceration policies prevented from 26.5 to 39.4 percent of potential index crimes in 1960-1965. For 1970-1972 data (Clarke 1974;

<sup>4</sup> The two estimates can be derived directly from one another: if  $I$  is the incapacitative effect and if it refers to the percent reduction in potential crimes, then  $I^*$  (percent reduction from current crimes) is  $\frac{I}{1 - I}$ . Cohen made this point in comments on a draft of this paper.

<sup>5</sup> In Ehrlich,  $\lambda = 1$ ; in Shinnar and Shinnar,  $\lambda = 10$ ; in Greenberg,  $\lambda = .5$  to 3.3 (see Cohen 1978, 1983). In earlier work, Cohen (1983) reports an adjusted incapacitative effect for Greenberg of 13.5 percent, which is based on  $\lambda = 6.25$ . Greenberg, however, includes reported and unreported crimes in his estimate. To compare his estimate with the others from the 1960s,  $\lambda$  for Greenberg should be 15, which reflects a reporting rate of 33 percent ( $5/.33 = 15$ ); the revised incapacitative effect from potential crime is 26.5 percent (Cohen 1987).

Table 1. Incapacitative Effects of Past and Current Collective Imprisonment Policies

Study	Data Base	Reduction of Potential Crime Resulting from Incapacitation
Ehrlich (1974)	Index offenses nationally in 1960	9.5% of reported index crimes [34.4%] <sup>a</sup>
Shinnar and Shinnar (1975)	Safety crimes in New York State in 1960: homicide, rape, robbery, assault, burglary	56% of reported safety crimes [39.4%]
Greenberg (1975)	Index offenses from national sample in 1965	1.2-8.0% of reported and unreported index crimes [26.5%]
Clarke (1974)	Juvenile index arrests in Philadelphia; reported index offenses in 1972 for adults and juveniles	1.4% of all (adult and juvenile) reported index crimes [6-12%]
Shinnar and Shinnar (1975)	Safety crimes in New York State in 1970	20% of reported safety crimes [10.7%]
Cohen (1985a)	UCR for robbery and burglary in 1973; prison population estimate in 1973	15-33% of robberies; 12-26% of burglaries (adult and juvenile, reported and unreported)
Peterson and Braiker (1980)	California prison inmates in 1976; total offenses in California in 1976	18% of adult reported and unreported robberies, 6% of burglaries, 6% of auto thefts [31%, 10%, 8%]
Cohen (1985b)	UCR for burglary and robbery in 1982; prison population estimate in 1982	20-42% of robberies, 18-35% of burglaries (adult and juvenile, reported and unreported)

<sup>a</sup>Estimates in brackets were calculated by Cohen (1983, 1987), based on alternative assumptions about aspects of the authors' models. See text for further details.

Shinnar and Shinnar 1975), incarceration prevented an estimated 6 to 12 percent of index crimes or safety crimes (homicide, rape, robbery, aggravated assault, and burglary).<sup>6</sup>

The last three estimates of collective incapacitation in Table 1 are based on individual crime rates of *prison inmates*, which are likely to be higher than crime rates of the entire offender population. Because of the higher estimates of  $\lambda$ , these incapacitative effects are greater than those from the other studies in the 1970s. The estimates of individual crime rates for prison inmates in these studies were calculated from data on self-reported crimes collected in two surveys of prison inmates which the Rand Corporation conducted in 1976 and 1978 (see Chaiken and Chaiken 1982; Peterson and Braiker 1980).

Peterson and Braiker (1980) use data from the 1976 Rand survey of California inmates and state statistics on the total number of crimes (reported and unreported) that occurred in California in

<sup>6</sup> These two estimates are not strictly comparable because Clarke's estimate is based on the incarceration of juveniles only, while Shinnar and Shinnar's estimate is based on the incarceration of adults. Cohen's adjusted estimate for Clarke also is based on more reasonable assumptions about  $\lambda$ , dropout from criminal activity before age 18, and the probability of arrest for juveniles and adults. Shinnar and Shinnar overestimated  $\lambda$  at ten reported safety crimes per year; if we assume that  $\lambda$  is five, the adjusted estimate is 10.7 percent (see Cohen 1983).

1976 to calculate the incapacitative effect of incarceration on robbery, burglary, and auto theft. They conclude that incarceration in 1976 prevented 18 percent of potential robberies in California, 6 percent of burglaries, and 6 percent of auto thefts. The larger adjusted estimates (Cohen 1987) reflect higher values of  $\lambda$  for the three crimes. These values are taken from data in Peterson and Braiker (1980: Tables 10a, 13), but they differ from those used by Peterson and Braiker in their calculations.

Cohen's (1985a, b) collective incapacitation estimates in Table 1 were developed to estimate the incapacitative effect of the substantial increase in U.S. prison populations that occurred between 1973 and 1982. The number of inmates in state and federal institutions almost doubled during this period. Incapacitative effects were based on a range of values of  $\lambda$  estimated from the inmate surveys and on national data for 1973 and 1982 for reported crime rates and prison population estimates. The technical details of these calculations are available in Blumstein et al. (1986: 124-27).

The incapacitative effect of incarceration in 1973 prevented 15 to 33 percent of reported and unreported robberies and 12 to 26 percent of reported and unreported burglaries (see also Blumstein et al. 1986: Table 5-1). The range of estimates reflects the use of lower and upper bounds for values of  $\lambda$  for inmates ( $\lambda = 5, 15$ ). In terms of actual numbers of crimes, incarceration in 1973 averted approximately 92,000 potential robberies and 487,000 potential burglaries nationwide (using the midpoint values of 24% for robbery and 19% for burglary). Incarceration in 1982 prevented a slightly greater number of robberies and burglaries: specifically, 20 to 42 percent of robberies and 18 to 35 percent of burglaries ( $\lambda = 15, 37$ ). When the incapacitative effects of incarceration for 1973 and 1982 are compared, the data show that the doubling of prison populations in the 1970s prevented only an additional 6 to 9 percent each of all robberies and burglaries.

To summarize, the sentencing practices and policies of the last 15 years are estimated to have reduced crime by 10 to 30 percent. If some offenders evade arrest indefinitely or if other offenders continue the crimes of some incarcerated offenders, this range overestimates the crime reduction effect. Incapacitation appears to have been only slightly more effective in averting crimes in the early 1980s than in the 1970s, despite a near doubling of the U.S. prison populations in less than ten years. Moreover, Blumstein et al. estimate that "any further reductions in reported index crimes below 1981 levels would require 10 to 20 percent increases in inmate populations for each 1 percent reduction in crime" (1986:



128). Thus attempts to expand the general use of incarceration beyond current practices is likely to cause large increases in prison populations.

### *Alternative Imprisonment Policies*

Incapacitation researchers use a different method to estimate the potential crime reduction through collective incapacitation under hypothetical policies such as imposing a five-year prison term after a previous felony conviction. The studies in Table 2 all rely on arrest and conviction histories of samples of offenders. After searching these histories for previous convictions, one can calculate the percentage of arrests that could have been averted if the

Table 2. Incapacitative Effects of Alternative Collective Imprisonment Policies

Study	Data Base	Alternative Sentencing Policy	Target Offense	Estimated Crime Reduction (%)
Greenberg (1975)	Arrestees in California, 1971	One year added to time served for those sent to prison	Index offenses	3-4
Van Dine et al. (1977, 1979)	Arrestees in Franklin County, Ohio, 1973	Five-year prison terms after any adult felony conviction	Violent index offenses	17.4
		Five-year prison terms after any adult or juvenile felony conviction	Violent index offenses	27.4 <sup>a</sup>
		Five-year prison terms after <i>repeat</i> adult felony conviction	Violent index offenses	6.0
Petersilia and Greenwood (1978)	Convicted offenders in Denver, 1968-1970	Five-year prison terms after any adult felony conviction	Violent offenses	31
		Five-year prison terms after <i>repeat</i> felony conviction	Burglary	42
		Five-year prison terms after <i>repeat</i> felony conviction	Violent offenses	16
Cohen (1982)	Arrestees in Washington, DC, 1973	Five-year prison terms after any adult conviction for target offense	Burglary	15
		Five-year prison terms after any adult conviction for target offense	Index offenses except larceny	13.7
		Five-year prison terms after <i>repeat</i> adult conviction for target offense	Index offenses except larceny	3.8

<sup>a</sup>Estimated by Cohen (1983) from data in original sources.

offender had received the hypothetical prison term after a prior conviction. These percentage estimates of averted *arrests* also apply to *crimes* if the arrested offenders in the sample are no more or no less likely to be arrested than other offenders (Cohen 1983).

Table 2 summarizes estimates of incapacitative effects using data from the early 1970s for four different jurisdictions. Greenberg (1975) analyzed the crime reduction effect of imposing an additional year in prison for those released from prison within one year of being included in his sample. This alternative policy would have prevented 3 to 4 percent of reported index offenses in California in 1971. All other estimates in Table 2 are based on a hypothetical policy of a five-year mandatory prison term imposed after initial or repeat felony convictions.

Van Dine, Conrad, and Dinitz (1979) examined the criminal records of all adults arrested for violent index offenses in Franklin County, Ohio in 1973. If a five-year prison term had been imposed after any adult felony conviction, an estimated 17.4 percent of violent index offenses would have been prevented in Columbus during 1973. Moreover, imposing the hypothetical five-year prison term after any adult or juvenile felony conviction would have increased the incapacitative effect to about 27 percent (Cohen 1983). Restricting the five-year sentences to offenders with more than one felony conviction, however, would have prevented only 6 percent of violent offenses. Cohen (1982) performed a very similar analysis using an arrested 1973 sample from Washington, D.C., but focused on index offenses (except larceny) instead of violent offenses. About 13.7 percent of these offenses could have been averted with a five-year sentence for any felony conviction; 3.8 percent could have been averted if the hypothetical sentence had been applied after a repeat felony conviction.

Finally, Petersilia and Greenwood (1977) analyzed data from a sample of convicted offenders in Denver during 1968-1970. This convicted sample probably includes more serious offenders than the arrested samples used in the other studies, which explains why the crime reduction effects from imposing five-year mandatory sentences after any adult felony conviction are considerably greater. On the basis of prior histories of convictions, 31 percent of convictions for violent offenses and 42 percent of convictions for burglary would have been prevented by the hypothetical imprisonment policy. When the five-year terms are applied to offenders with *repeat* felony convictions, the potential incapacitative effects for violent offenses and burglary are 16 and 15 percent respectively.

In summary, five-year mandatory prison terms for offenders with one or more prior felony convictions would have averted perhaps 10 to 20 percent of all index (or violent) offenses in the studied jurisdictions in the early 1970s. Why wouldn't these reasonably severe sanctions have had a greater effect? Cohen (1983) suggests

that the maximum incapacitative effect of collective strategies is inherently limited because many offenders have no prior convictions for the target offense (although many have arrests). The failure of prior arrests for a specific offense to result in convictions for that offense is due in part to plea bargaining, charge reductions, and case dismissals. Increasing the conviction rate (and the probability of arrest) could increase the crime reduction effect of collective incapacitation policies that are based on prior convictions.

Yet as the experience of the 1970s and the doubling of prison populations during that period have shown, crime reduction through collective incapacitation is not without costs. In 46 states and U.S. territories prisons and jails are under court order or are involved in litigation concerning crowding and other prison conditions (S. Gottfredson 1986). Hypothetical imprisonment policies would also have substantial effects on prison populations because these policies involve sending more offenders to prison or lengthening prison terms. In Washington, D.C., for example, five-year sentences would require a 310 percent increase in the number of offenders incarcerated for index offenses (except larceny), or about a 231 percent increase in the *total* prison population. (Target offenses accounted for 74.5% of the total prison population in Washington, D.C.) In Denver and Columbus, the total prison population would have increased more than threefold (Cohen 1983: Table 4).<sup>7</sup>

The estimates of crime reduction in Tables 1 and 2 show that general increases in the use of incarceration through collective incapacitation strategies are not likely to reduce crime substantially. Even modest reductions in crime will cause large increases in total prison populations. These findings, coupled with constraints on current prison capacity and public pressure for a more aggressive response to crime, led to a search for other methods to reduce crime using incapacitation strategies. Some previous research (Cohen 1978; Marsh and Singer 1972) had suggested that if "selected" offenders—those committing crimes at high rates—were more likely to be incarcerated, higher incapacitative effects might be possible. Research on the crime control effectiveness of selective incapacitation strategies soon followed.

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<sup>7</sup> About 75 percent of inmates are incarcerated for index offenses, according to 1981 prison admissions data (Bureau of Justice Statistics 1984); hence Denver would experience a 338 percent (.75 × 450) increase and Columbus a 392 percent (.75 × 523) increase in total prison populations.

## SELECTIVE INCAPACITATION STRATEGIES

The appeal of selective incapacitation stems largely from the frequently cited finding that a small handful of very active offenders (18%; 6% of the cohort) accounted for a disproportionately large share of arrests (52%) in a Philadelphia birth cohort (Wolfgang, Figlio, and Sellin 1972). The implications were readily apparent: if this small group could be identified and incapacitated for longer periods than other, less active offenders, crime could be reduced appreciably without increasing prison populations.

The Philadelphia research suggested that offenders might vary substantially in their individual crime rates and that some offenders might commit crimes at much higher rates than others. Later research, relying on self-report data from prison and jail inmates about their criminal activity, found that the majority of inmates reported committing specific crimes at low rates, but that a small group reported committing crimes at very high rates (Chaiken and Chaiken 1982; Peterson and Braiker 1980). For example, among all inmates reporting the commission of robbery in a sample drawn from prisons and jails in California, Michigan, and Texas, 50 percent committed fewer than 5 robberies per year, but 10 percent committed more than 80 per year (Chaiken and Chaiken 1982). These results suggest that most criminals, including the majority of those incarcerated, actually commit few crimes.

In light of these findings, the crime control strategy of selective incapacitation—using prison space for offenders who are predicted to commit serious crimes at high rates and reducing use of incarceration for other offenders—gained considerable attention. This type of sentencing policy held the promise of addressing simultaneously the problems of prison crowding and high crime rates. Of course, the prediction of criminal behavior is implicit in all stages of decision making within the criminal justice system; police, prosecutors, and judges characterize offenders on the basis of observable attributes and their own personal experiences. These criminal justice officials currently are targeting many high-rate offenders for longer sentences on the basis of their intuitive predictions.<sup>8</sup>

The explicit use of selective incapacitation strategies is controversial, however, and raises important empirical and ethical concerns. The effectiveness of selective incapacitation rests on the

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<sup>8</sup> Gottfredson and Gottfredson (1986) review the research on factors that influence actual decisions in bail and pretrial release, prosecution, sentencing, and parole. These studies typically are descriptive and develop multivariate models to explain the largely unobservable decisions made by police, prosecutors, judges, and parole officials. For an in-depth review of prediction and classification issues in criminal justice decision making, see Gottfredson and Tonry (1987).

ability to classify individual offenders in terms of their projected criminal activity, although the accuracy of these predictions will always be imperfect. (The problems of identifying serious high-rate offenders will be discussed at length in a later section.)

Ethical concerns largely initiated the debate over the appropriateness of selective incapacitation.<sup>9</sup> In many ways, selective incapacitation is distinct from the traditional objectives of criminal sanctions: retribution, deterrence, rehabilitation, and general (collective) incapacitation. The most important difference is that sentencing within a selective incapacitation strategy punishes an offender on the basis of the possibility of crimes not yet committed rather than solely because of the gravity of the current crime. The traditional just deserts philosophy of imposing sanctions for criminal acts emphasizes uniformity in sanctions among offenders convicted of similar offenses and severity of sanction proportional to the seriousness of the offense. Selective incapacitation encourages different sentences for the same offense to take account of differences in anticipated future crimes among offenders.

Several writers describe this difference in sentencing philosophy as a built-in tension between the values of fairness and equity in sentencing offenders and of public protection against crime (Forst 1983; Gottfredson and Gottfredson 1985). Others suggest that the philosophies are not necessarily incompatible, especially if offense patterns and prior record can be used to predict future criminal activity (Moore, Estrich, McGillis, and Spelman 1984). Alternatively, if just deserts principles can establish a range of acceptable sanctions rather than a single just sentence, the choice of a particular sentence within that range could be based on predictive considerations. Offenders likely to commit future crimes at high rates, for example, could receive a sentence in the upper end of the range; low-risk offenders could receive a sentence in the lower end (Morris and Miller 1985). However, Andrew von Hirsch, the principal proponent of sanctioning according to just deserts, believes that formulation of a possible marriage between selective incapacitation and just deserts blurs important differences between the philosophies and "entails sacrifices of equity for offenders" (1984: 175, 1985).

Other ethical objections to selective incapacitation strategies have been raised concerning the types of information that might be used in explicit predictions about an offender's likelihood of committing future crimes at high rates. In one view, information

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<sup>9</sup> These ethical debates have become quite vigorous, and the issues are discussed here only briefly. For other discussions, see Cohen (1983), von Hirsch (1984, 1985), Moore et al. (1984), Morris and Miller (1985), or Tonry (1987).

about juvenile criminal activity, drug use, unemployment, or even prior incarceration should not influence sentencing decisions despite any predictive power they might have, because these factors are irrelevant to the seriousness of the current offense and the offender's culpability for that offense (von Hirsch 1984).

Other critics raise concerns about the consequences of errors that are likely to be made in predicting offenders' future criminal activity. These predictions may be inaccurate in two ways. First, an erroneous prediction may extend the incarceration of offenders who are actually good risks because of predicted crimes that never would be committed; these are "false positive" errors. Second, some offenders who are likely to be very active criminals in the future may not be identified and may receive light sentences; these are "false negative" errors.

The false positive errors are particularly troubling in the minds of some scholars because their effect is a denial of liberty (an extended prison term) based on a faulty prediction. As might be expected, the acceptable level of error depends on one's views about the philosophy of punishment and the perceived social and political consequences of such errors. Differing positions on these ethical questions are unlikely to be resolved easily, but the use of explicit selective incapacitation strategies for crime control probably will not depend on the outcome of this debate. The acceptance of selective incapacitation by the criminal justice system is more likely to rest on empirical assessments of its effectiveness and on methodological issues in its implementation. The next section addresses these issues in the context of reviewing estimates of incapacitative effects derived from selective incapacitation strategies.

#### *Incapacitative Effects of Selective Incapacitation*

Although the use of risk classifications to determine incarceration time is common in parole decisions, the study by Peter Greenwood of the Rand Corporation, *Selective Incapacitation* (1982), provided the first explicit estimates of crime reduction that could be achieved by incarcerating offenders selectively according to predictions of their future criminal activity. Greenwood uses data gathered from self-reports of inmates incarcerated for robbery or burglary in California and a modified version of the incapacitation model developed by Shinnar and Shinnar (1975).

As discussed earlier, a selective incapacitation sentencing strategy requires some prediction about the convicted offender's future level or intensity of criminal activity. To create a prediction instrument which could classify convicted robbers or burglars into

predicted low-, medium-, and high-rate groups, Greenwood selected seven characteristics<sup>10</sup> whose presence or absence was associated with high annual robbery and burglary rates. When convicted robbers in the sample were classified by this scale, their self-reported average individual frequencies of offending ( $\lambda$ ) varied sharply across the three predicted groups: 30.9 (high-rate), 11.0 (medium-rate), and 2.2 (low-rate). Greenwood then used these values of  $\lambda$  along with other data: the probabilities of arrest, conviction, and incarceration, average sentence length, and the current volume of crime.

Greenwood estimated the effects on crime rates and on prison populations of a selective incapacitation policy that would increase time served in prison to about 8 years for high-rate robbers and 3½ years for predicted high-rate burglars, and would reduce time served to 1 year for all other robbers and burglars. (In the California sample, the average times served by robbers and burglars were 4.4 years and 1.8 years respectively.) This sentencing policy would cause an estimated 15 to 20 percent reduction in adult robberies, an 11 percent reduction in adult burglaries, and no change in the size of the total prison population in California (1982: xix, 79).<sup>11</sup>

Greenwood's methods and estimates of incapacitative effects have been questioned by Cohen (1983), by von Hirsch and Gottfredson (1984), by Visher (1986), and by Spelman (1986). All of these studies conclude that the original estimates overstate the likely effect of the proposed selective incapacitation policy. Table 3 presents some revised estimates based on reanalyses of the same data (for robbers), but using alternative assumptions.

Cohen (1983) and Visher (1986) reanalyzed the data with the same assumptions and values as the intermediate variables used by Greenwood (1982: Table 5.1). They estimate, however, that only a 13 to 14 percent reduction in robbery could be achieved with a selective imprisonment policy in which predicted high-rate robbers serve eight years and all others serve one year. In their analyses the effect of this policy on *total* prison populations is essentially

<sup>10</sup> The seven yes-no variables, which were summed to form a seven-point scale, are (1) prior conviction for current offense (robbery or burglary), (2) incarcerated more than 50 percent of two years preceding current arrest, (3) convicted before age 16, (4) juvenile commitment to state facility, (5) heroin or barbiturate use in two years preceding arrest, (6) heroin or barbiturate use as a juvenile, and (7) employed less than 50 percent of preceding two years. Inmates then were classified as low-rate (scoring 0 or 1), medium-rate (scoring 2 or 3), or high-rate (scoring 4 or more).

<sup>11</sup> Greenwood reports a range of effects on the number of robbery inmates resulting from no change to a five percent reduction. For ease of presentation, these effects on the *robbery* prison population have been converted to effects on *total* prison population. A five percent reduction in robbery inmates means that if 25 percent are robbers (California Department of Corrections 1980), the total prison population might be reduced 1.25 percent.

Table 3. Incapacitative Effects of Selective Imprisonment Policies

Study	Data Base	Imprisonment Policy (Adults)	Target Offense	Estimated Crime Reduction	Change in Prison Population <sup>a</sup>
Greenwood (1982)	California prison and jail inmates, 1978	Time served would be 8 years for predicted high-rate robbers, 3.5 years for predicted high-rate burglars; 1 year for all others	Robbery	15-20%	↓ 0-1%
Visher (1986); Cohen (1983)	California prison and jail inmates, 1978	Time served would be 8 years for predicted high-rate offenders, 1 year for all others	Burglary Robbery	11% 13-14%	no change no change
Cohen (1984)	California prison and jail inmates, 1978	Time served would be 8 years for predicted high-rate offenders, 1 year for all others	Robbery	6-10%	↑ 4-10%
Spelman (1986)	California prison and jail inmates, 1978	Time served would be 4.5 years for predicted high-rate offenders, 1 year for all others	Robbery	0.52% [8%] <sup>b</sup>	↓ 2% ↑ [4%] <sup>b</sup>
Janus (1985)	Federal inmates released in 1978	Time served based on Salient Factor Score risk levels <sup>c</sup>	Very high-severity offenses <sup>d</sup>	7%	no change
Cohen (1983)	Arrestees in Washington, DC, 1973	Additional 2-year terms upon conviction for all offenders	Robbery Burglary	8% 6%	↑ 17% ↑ 25%

<sup>a</sup>In the original publications, most of these studies reported prison population effects for the target offense (e.g., increase in robbery inmates). This table gives estimates of the effects on the *total* prison population, based on burglary accounting for 18 percent of the California prison population and robbery accounting for 25 percent (California Department of Corrections 1980). Estimates less than 1 percent are reported as "no change."

<sup>b</sup>These adjusted estimates are based on high-rate robbers serving eight years. See text for further details.

<sup>c</sup>The Salient Factor Score is a prediction scale used in the federal parole system to assess an inmate's risk of future offenses (see Hoffman 1983).

<sup>d</sup>These offenses are robbery, breaking and entering or burglary of armory, of residence, or involving hostile confrontation with victim; counterfeiting currency; drug sales; extortion; explosives; and property offenses exceeding \$100,000 but not \$500,000.



zero, if we assume that 25 percent of California inmates are incarcerated for robbery (California Department of Corrections 1980).

In a more in-depth study of Greenwood's methods, Cohen (1984) points out that the statistical model adapted by Greenwood from Shinnar and Shinnar fails to take into account the termination of offenders' careers. Without an explicit estimate of career length in the model, it is assumed that remaining careers are very long in comparison to time served. Both the Visher and the initial Cohen reanalyses assumed implicitly that criminal careers are infinite. Yet the expected time remaining in careers is rather short: about 5 to 15 years (Blumstein and Cohen 1982; see also Blumstein et al. 1986: 85-95). Including career length in the analysis is important because any time spent incarcerated *after* the end of a career does not prevent any crimes. If time served under Greenwood's hypothetical imprisonment policy is 8 years for high-rate robbers and if residual careers average 15 years, then 35 percent of inmates would be expected to end their careers before their release (Blumstein et al. 1986: Table 5-3).

The career adjustment in the selective incapacitation model lowers the estimate of crime reduction that can be achieved by the selective imprisonment policy. Cohen (1984; see also Blumstein et al. 1986: Table 5-2) estimates that Greenwood's policy would reduce adult robberies by 6 to 10 percent if residual careers last 5 to 15 years. Moreover, rather than causing no change in total prison population, selective imprisonment for robbers might result in a 4 to 10 percent *increase*. Thus assumptions about career length have a substantial impact on the estimates. Because some criminals are likely to end their careers during incarceration and to be replaced by new offenders who eventually are incarcerated, the estimated reduction in crime is likely to be smaller and the adverse effect on total prison population is likely to be larger than realized previously.

Spelman (1986) also estimates the incapacitative effect of a selective imprisonment policy with an adjustment for a finite career. Most of Spelman's results, however, are not comparable to those by Greenwood, Visher, or Cohen because he calculates the maximum possible reduction in crime based on the assumption of no change in the prison population, rather than the crime reduction effect of a specific sentencing policy. (Spelman also estimates the maximum possible reduction in prison inmates while holding total crimes constant; these two maximums cannot be achieved simultaneously.) Even so, some similar estimates can be derived from data in one of Spelman's appendices (1986: 505). In one analysis, if predicted high-rate robbers serve 4.5 years (rather than about 8

years) and if other robbers serve 1 year (and if careers average 8.5 years), the robbery rate and the total prison population might be reduced by about 1 and 2 percent respectively. The Spelman and Cohen estimates become more comparable after Greenwood's original selective policy is substituted (time served of 8 years for high-rate robbers): an estimated 8 percent decrease in robbery and 4 percent increase in the total prison population (see Table 3).<sup>12</sup>

Using a different analytical method, Janus (1985) examines the effect of selective incapacitation strategies through data on post-release arrests of federal inmates paroled in 1978. In the federal parole system, one of the factors influencing early release decisions is an assessment of the inmate's risk of future crimes. A predictive scale known as the Salient Factor Score is used to assign inmates to a recidivism risk category ("very good" to "poor") based on information about prior criminal history, age, and history of drug use (see Hoffman 1983). Janus limits his analysis to inmates who are classified as "very high severity" offenders<sup>13</sup> and compares differences in time served and arrests prevented for four recidivism risk levels.

Janus uses data on rearrests during the three-year follow-up to compute monthly arrest rates. With these rates, one can calculate the increment in arrests prevented as a result of the differences in the time served by inmates at the different risk levels. In comparison to the effect of setting time served at an average level for all offenders, Janus estimates that 7 percent of all arrests were prevented by setting time served according to recidivism risk levels. When compared to a policy of incarcerating all offenders for the time served by inmates classified as "very good" risks, the current selective policy prevents about 21 percent of all arrests (Blumstein et al. 1986: Table 5-4).

The estimates in the last row of Table 3 are based on an alternative type of selective imprisonment policy. Some studies indicate that high-rate offenders are more likely to commit certain types of offenses (see Chaiken and Chaiken 1982); hence high-rate offenders might be distinguished solely by the crimes they commit rather than by individual characteristics. Cohen (1982, 1983) uses

<sup>12</sup> I am grateful to Jacqueline Cohen for her comments on an earlier draft concerning Spelman's techniques and the comparability of his estimates with those in Table 3. The remaining differences between Cohen (1984) and Spelman (1986)—primarily Spelman's lower estimate of prison population increases—are due to higher values of  $\lambda$  and a smaller estimate of the number of low-rate offenders in Spelman's analysis (Cohen 1987, personal communication).

<sup>13</sup> This offense category includes robbery, breaking and entering or burglary of armory, of residence, or involving hostile confrontation with victim; counterfeiting currency; drug sales; extortion; explosives; and property offenses exceeding \$100,000 but not \$500,000.

arrest histories of persons arrested in 1973 in Washington, D.C., to estimate the incapacitative effect of targeting all offenders convicted of robbery or burglary for longer sentences. Following Greenberg (1975), Cohen examines their criminal records for previous robbery and burglary convictions to determine whether augmenting current sentences by two years would have prevented the 1973 arrest. This sentencing strategy would have reduced robbery by an estimated 8 percent, but the total prison population would have increased by 17 percent. Targeting the policy on convicted burglars would have resulted in similar incapacitative effects (see Table 3).

This charge-based incapacitation policy would be easier to administer than one based on predictions about individual offenders and would raise fewer ethical objections. The anticipated crime reduction, however, is less than ten percent, and substantial increases in the total prison population would result. Why would this type of policy have such a great effect on prison populations? Unlike the imprisonment policy proposed by Greenwood or the federal parole policy, prison terms would not differ for any subset of convicted robbers and burglars. Imposing a higher level of incarceration uniformly on all offenders convicted of the same offense would increase the number of inmates because many convicted robbers and burglars, especially first-time offenders, currently do not receive prison sentences.

In summary, analyses of the Rand sample of prison and jail inmates have significantly advanced our understanding of the likely effect of selective incapacitation on crime rates and prison populations. Using new methods and data about the criminal activity of known offenders, Greenwood (1982) began a vigorous debate about the merits of selective incapacitation when he reported that a 20 percent reduction in robbery was possible with a selective imprisonment policy. Greenwood's estimates of incapacitative effects appear to be inflated, however, largely because of his assumption that criminal careers are long relative to the proposed sentences for high-rate offenders and perhaps also because of some small technical errors. Reanalyses of the Rand data suggest that a selective incapacitation strategy is likely to reduce robbery rates by perhaps 5 to 10 percent and that prison populations would have to expand by as much as 10 percent. Other analyses, however, show that the federal parole system has had some success in using selective policies in parole release decisions. Finally, charge-based strategies are likely to be less controversial, but they would cause larger increases in prison populations.

*Identifying the High-Rate Offender*

Implementation of these selective incapacitation policies rests on the ability to identify future high-rate offenders. Any distribution of individual crime rates will show that some small group of offenders is committing more crimes than others. The critical issue is whether that group can be distinguished from other offenders. They may well have different criminal records or may engage in different activities from other offenders when they are compared *retrospectively*. But for crime control purposes, the high-rate offenders must be identified *prospectively*; that is, we must be able to predict which individuals will commit serious crimes at high rates in the future.

In statistical models of criminal careers, criminal events and the response of the criminal justice system are assumed to be the result of a chance process; they are not fixed or determined ahead of time (Cohen 1983). Thus it is unlikely that offenders will commit the same number of crimes each year. In a hypothetical sample of offenders who commit serious crimes at an average rate of five crimes per year, a sizable fraction of that sample could be expected to commit at least ten crimes in a given year. Because of this statistical process, true low-rate offenders may appear to be committing crimes at higher than average rates; this misperception will compound the problem of identifying the true high-rate offenders.<sup>14</sup>

Blumstein and Moitra (1980) rely on these statistical properties of criminal events in an analysis of "chronic offenders" (those with five or more arrests) and recidivism rates in the 1945 Philadelphia cohort. They examined whether the length of the prior arrest record could be used to identify the high-rate offender. Somewhat surprisingly, chronic offenders could not be distinguished by their prior records because after their third arrests, all the "persisters" have the same probability of being rearrested. Those with longer prior records are just as likely to be rearrested (and by inference, to commit future crimes) as those with shorter records. Moreover, the well-known finding that 6 percent of the cohort (18% of the offenders) were responsible for 52 percent of the arrests could have been produced by a population of offenders all of whom, after their third arrest, had an equal probability (.7) of recidivism (Cohen 1983).

If the length of an offender's criminal record is not a good indicator of the frequency of criminal activity, what other attributes

<sup>14</sup> Chaiken and Rolph (1980) examine the statistical relationship between estimated  $\lambda$  and true  $\lambda$  and discuss different estimation procedures in calculating  $\lambda$ .

predict serious, frequent criminal behavior? In a follow-up to the Blumstein and Moitra analysis, Barnett and Lofaso (1985) demonstrate that although the *number* of prior arrests is not predictive of future arrests, the *rate* at which juveniles are arrested is a good predictor. That is, juveniles in the Philadelphia study whose prior arrest rates were high were likely to continue to accumulate arrests (and by inference, to commit crimes) at high rates. In other studies, high-rate adult offenders have histories of serious criminal activity, particularly violence, as juveniles; they use multiple types of narcotic and addictive drugs (heroin, amphetamines, barbiturates) in large quantities; they have extensive prior records of criminal activity (convictions and incarcerations); and they are unemployed for long periods of time (see Blumstein et al. 1986: Ch. 3; also e.g., Chaiken and Chaiken 1982; Peterson and Braiker 1980; Wish and Johnson 1986).

How accurate are prediction scales that use these types of information for classifying offenders by risk of recidivism? Early prediction scales, which were used primarily to predict violent behavior, suffered serious problems of accuracy. In a review of several clinical studies, false-positive rates were especially high: about 60 percent of individuals predicted to be violent were not observed to be violent in the follow-up period (Monahan 1981). Studies of prediction scales in parole-release decisions also report false positive rates of 50 to 60 percent among offenders predicted to be at high risk of recidivism (see Cohen 1983: 40; Gottfredson and Gottfredson 1986).

In a National Research Council/National Academy of Sciences report, the Panel on Research on Criminal Careers recently reviewed the accuracy of four explicit prediction scales: the Salient Factor Score, used in federal parole-release decisions; Greenwood's seven-item scale; the Iowa Risk Assessment Instrument, used in parole-release decisions in Iowa; and a proposed scale for assigning federal offenders to career criminal units (Blumstein et al. 1986: Ch. 6). Although these four scales differ somewhat, they include similar types of predictor variables which reflect current knowledge about high-rate offenders. History of drug use, prior arrests or convictions, and incarceration experiences appear in all four scales. Two controversial variables—juvenile criminal history and recent unemployment—appear in the scale developed by Greenwood.

In comparison to the earlier attempts at prediction, the four scales show some improvement in accuracy. False-positive rates for three of the four scales are about 40 to 50 percent (Blumstein et al. 1986: Table 6-8). These gains in accuracy reflect improved

techniques in developing prediction scales, the use of longer follow-up periods to detect future criminal activity, and different measures of criminal behavior (rearrest and rates of offending rather than reincarceration). Blumstein et al. conclude that some further improvement in predicting high-rate offenders is possible by "highlighting additional salient predictor variables and by pointing to variables that are often used but are indeed weak" (1986: 197).

#### *Accuracy of the Seven-item Scale*

Greenwood's seven-item scale was not developed with longitudinal data, and it had not been tested (validated) on an independent sample when the panel reviewed the scales. Shortly thereafter, the Rand Corporation completed two studies which were designed to examine the extent to which that scale (and others) succeeded in predicting recidivism (Greenwood and Turner 1987; Klein and Caggiano 1986). The primary data for both of these studies consisted of follow-up criminal history information on the California inmates who were included in the original Rand survey and who had been out of prison for two years.<sup>15</sup>

Using different methods and measures of accuracy, both studies concluded that the seven-item scale was unable to predict very accurately which inmates would recidivate or which ones were more likely to be high-rate offenders after release. In Table 4, three post-release outcomes—no arrest, arrest, and incarceration—

Table 4. Percentage of Cases Observed and (Expected by Chance) Based on Recidivism Outcomes in a 24-Month Follow-up of California Inmates

Scale Score	No Arrests	Arrested	Incarcerated	Total
0-3	16.7 (12.2)	15.4 (14.2)	15.4 (21.0)	47.5
4-7	9.0 (13.5)	14.6 (15.7)	28.8 (23.2)	52.4
Total	25.7	30.0	44.3	100.0

Source: Based on data reported in Klein and Caggiano (1986: Table 3.7, 3.8).

are compared for predicted low/moderate-rate offenders (those scoring 0 to 3) and predicted high-rate offenders (those scoring 4 to 7). If the prediction is that low/moderate-rate offenders will not

<sup>15</sup> Greenwood and Turner report a sample size of 188 (12 of whom were not included in analyses because of missing data); Klein and Caggiano report a sample size of 233. The source of this difference could not be determined from information in either study. Greenwood and Turner also used a sample of offenders released from the California Youth Authority. That analysis will not be discussed here because criminal history information was incomplete; a modified version of the scale was used because most of the sample were juveniles when they were incarcerated.

be arrested and that high-rate offenders will be either arrested or incarcerated, the seven-item scale predicted the actual outcomes only 9 percent better than chance  $[(16.7 + 14.6 + 28.8) - (12.2 + 15.7 + 23.2) = 9.0]$ .

Yet this overall measure of accuracy obscures other results that appear when recidivism outcomes are examined separately. The data reported by Klein and Caggiano indicate that the prediction scale is less accurate for predicting arrest and more accurate for predicting no arrest or reincarceration. Predicted low/moderate-rate offenders were slightly more likely to have no arrests in the follow-up period (16.7/47.5=35%) than to be arrested or incarcerated. The most likely outcome for predicted high-rate offenders was to be reincarcerated (55%). On the other hand, arrest was about equally likely for the two groups (32% vs. 28%). Table 5 presents additional results concerning the performance of the seven-item scale for predicting several recidivism measures. Unfortunately, except for percent arrested within 24 months, different measures are used in the two follow-up studies of the released California inmates. As was evident in Table 4, the scale is not very effective in predicting post-release criminal activity when the recidivism measure is arrest; the majority of released inmates, regardless of predicted level of criminal activity, were rearrested within two years.

Little improvement occurs when the outcome measure is narrowed to "safety" arrests (an arrest for murder, aggravated assault, rape, robbery, or burglary): similar percentages of predicted low/moderate-rate and high-rate offenders were arrested for a safety offense (46.9% vs. 54.7%). The scale was also a poor predictor of the percentage who "failed" during the follow-up period (incurring an arrest or a jail or prison term).

The data in Table 5 also show that the seven-item scale predicts reincarceration more accurately than arrest. Nevertheless, 32.3 percent of inmates predicted to be low/moderate-rate offenders were incarcerated within 24 months. Part of the difference in predictive accuracy between arrest and incarceration in the Klein and Caggiano results is likely to be a function of judges' intuitive "predictions" about offenders' criminal activity, which may be based on some of the characteristics included in the scale. These predictions presumably enter into judges' sentencing decisions, including the decision to sentence convicted offenders to prison or jail.

A relatively new measure of criminal activity and recidivism is the offender's annual arrest rate. Greenwood and Turner (1987: Tables 3.11, 3.12) compute post-release annual arrest rates (the

Table 5. Recidivism Measures by Predicted Level of Criminal Activity Based on Seven-Factor Scale

Recidivism Measure	Predicted Level of Criminal Activity			
	Greenwood and Turner		Klein and Caggiano	
	Low/Moderate	High	Low/Moderate	High
Percent arrested within 24 months	70.4	80.0	64.9	82.8
Percent with "safety" arrest within 24 months <sup>a</sup>	46.9	54.7	—	—
Percent reincarcerated within 24 months	—	—	32.3	55.0
Percent "failed" during entire follow-up <sup>b</sup>	75.3	86.3	—	—
Percent with "high" annual arrest rate <sup>c</sup>	39.1	57.4	—	—

<sup>a</sup>Murder, aggravated assault, rape, robbery, and burglary are referred to as "safety" crimes.

<sup>b</sup>A failure is either an arrest, a jail term, or a prison term. Offenders could be returned to prison without a corresponding arrest.

<sup>c</sup>An annual arrest rate in the follow-up period of 0.78 times per year or greater was defined as high by Greenwood and Turner.

number of arrests per year of street time) for the follow-up sample and define high-rate offenders as those with actual arrest rates greater than 0.78. The seven-item scale is less accurate, however, in predicting annual arrest rates than in predicting reincarceration (see Table 5). Among those predicted to be low/moderate-rate offenders, 39.1 percent had a high annual arrest rate; 43 percent of offenders predicted to be high-rate did not have high annual arrest rates in the follow-up period. Although no tabular data are presented, Klein and Caggiano also find that the scale is a poor predictor of arrest rates after release in California: the correlation between the seven-item scale and post-incarceration arrest rates is only 0.18.

#### *Using Official Records in Prediction*

Annual arrest rates are one measure of individual criminal activity, and those offenders who are arrested most often are assumed to commit crimes at high rates (Blumstein and Cohen 1979; Wolfgang et al. 1972). In Greenwood and Turner's study, annual post-incarceration arrest rates are correlated weakly with *self-reported* pre-incarceration crime rates. Lower probabilities of arrest among high-rate offenders may explain in part the weak predictive power of self-reported crimes and hence of the seven-item scale (1987: 30-33).<sup>16</sup>

<sup>16</sup> Greenwood and Turner did not examine explicitly the relationship between prior arrest rates and future arrest rates. Some of their data, however, suggest that



Other studies have examined whether the information in official criminal history records is adequate to identify high-rate offenders (Chaiken and Chaiken 1982, 1984, 1985; Rolph and Chaiken 1987). In initial analyses of the Rand inmate survey data, Chaiken and Chaiken (1982; see also Chaiken and Chaiken 1984) attempted to distinguish between high-rate serious offenders and other offenders, using information from official records. In their classification of offenders according to the combinations of crimes they commit, the most serious category of offenders, the "violent predators," reported committing robbery, assault, and drug deals at high rates.

The violent predators who had been convicted of robbery could not be identified accurately through official record information on current and prior convictions for assault or drug-related crimes and drug use. Information on juvenile criminal activity and recent arrests did not improve the accuracy of the identification. About 35 to 40 percent of the convicted robbers were identified falsely as violent predators on the basis of official record information (Chaiken and Chaiken 1982: Table 3.3). Moreover, in a separate analysis to predict which convicted robbers were high-rate offenders, official record items accounted for only 20 percent of the variance in individual robbery rates among California inmates (1982: 117).

In a second study, Chaiken and Chaiken (1985) examine the characteristics of three types of offenders: "low-rate losers," offenders with low reported crime frequencies and high arrest rates; "high-rate losers," offenders with high reported crime frequencies and high arrest rates; and "high-rate winners," offenders with high reported crime frequencies and low arrest rates. On the basis of data gathered from the Rand inmate survey and from another survey of inmates conducted by the Bureau of Justice Statistics in 1979, the high-rate offenders who avoid detection appear to be younger, have never been married, hold jobs longer, have a history of committing crime since adolescence, are more careful about planning their crimes, and often work with partners. They also are less likely to be heroin users, although a majority of these offenders used illicit drugs such as barbiturates.

In identifying high-rate offenders, Chaiken and Chaiken caution against relying solely on the number of times an offender has been arrested, convicted, or incarcerated as an adult because inept,

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an analysis similar to that of Barnett and Lofaso would contradict the Barnett-Lofaso finding that prior arrest rates predicted future arrest rates in the Philadelphia cohort.

low-rate criminals also may have extensive criminal records. Instead, criminal justice officials need to gather information on arrests and convictions for specific types of offenses, particularly robbery, assault, and drug charges. Moreover, arrest and presentence investigation reports often contain predictive information about number of offenders involved, release status (probation or parole), employment history, and juvenile sentences to probation or incarceration.

In a third analysis using the Rand inmate survey, Rolph and Chaiken (1987) construct six definitions of the high-rate serious offender, select predictor variables from official records and self-reported information, and examine the accuracy of several prediction models. In most of their analysis an offender is considered high-rate serious if "any of his crime rates are high and he deals drugs and commits either robbery or assault" (Table 3). The strongest official-record predictor variables are total prior convictions, total robbery and assault arrests in the two-year period before incarceration, age, years since first arrest, and a variable that captures recent incarceration experiences.

The accuracy of this prediction equation, however, is no greater than that of previous efforts. Among California inmates, 54 percent of predicted high-rate serious offenders (on the basis of the regression equation) were not defined as high-rate serious using their reported criminal activity (Rolph and Chaiken 1987: Table 9). The prediction equation is even less accurate for the Michigan and Texas samples. Nevertheless, as Rolph and Chaiken note, their model makes for fewer errors for the low-rate offenders: only 30 percent of the predicted low-rate offenders are misclassified.

Finally, in their latest work, which was designed to help prosecutors identify "career criminals" for priority prosecution, Chaiken and Chaiken (1987) conclude that official record information may be more useful for identifying dangerous high-rate defendants than for distinguishing high-rate from low-rate defendants. The strongest indicators of high-rate dangerous behavior include aspects of the current offense (use of a knife, but not a gun; injury to the victim; number of robbery counts); current charge of robbery with a previous adult conviction for burglary, murder, or robbery; and juvenile convictions for robbery.

In summary, these studies of high-rate offending point to several factors that limit the usefulness of existing official records for identifying high-rate serious offenders. First, these offenders are usually young and their adult criminal records do not reveal the

extent of their criminal activity, particularly if convictions are preferred over arrests for ethical reasons. Second, juvenile records are often inadequate indicators of serious criminal activity because police contacts often are not recorded, and court records may not reflect accurately the extent of culpability or the nature of the crimes committed. The inmates in the Rand survey actually reported more juvenile arrests and incarcerations than did their official records (Chaiken and Chaiken 1982: Table B.1). Third, recent evidence suggests that some high-rate offenders successfully evade arrest and conviction for the crimes they commit more often than other offenders (Chaiken and Chaiken 1985; Greenwood and Turner 1987). Finally, official records rarely contain detailed information about an offender's unemployment history or specific drug use (types of drugs including heavy alcohol use, drug combinations, and frequency of use).

The problem of identifying high-rate offenders appears to limit the utility of selective incapacitation strategies. Yet the gains from selective incapacitation are also likely to be modest because criminal justice system officials already consider many of the offender attributes that are included in prediction scales. Future research should be directed at refining existing profiles of high-rate offenders and pointing out information that is not related to serious high-rate criminal activity. In addition, more attention must be focused on developing theories or explanatory models of high-rate offending.

### *The Future of Selective Incapacitation*

Debates over the future of selective incapacitation as a crime control strategy raise questions about its basic assumptions, implementation, and long-term effects. Several writers challenge a fundamental premise of selective incapacitation: that a small group of high-rate offenders commits a disproportionate share of serious crime. Research on criminal participation shows that arrest is far more prevalent in the general male population, even for serious offenses, than is typically assumed. According to one study, about 25 percent of all males are likely to be arrested for an index offense in their lifetime (Blumstein and Graddy 1982).

Currie (1985) and others (Gottfredson and Hirschi 1986; Tillman 1987) argue that because a broad segment of the population is actually involved in serious crime, crime control through incapacitation is impractical. A closer look at these data, however, reveals that many of these offenders are arrested only for one index offense and that the "persisters" who are arrested for at least three

index offenses constitute a small group of serious, high-rate offenders. These data illustrate the importance of the distinction between the fraction of persons who ever commit crimes (prevalence) and the frequency with which offenders commit crimes (incidence) in studying individual criminal behavior and developing policies for reducing crime.

A crime control strategy of selectively incapacitating convicted offenders is directed at one subgroup of criminals: serious, persistent, high-rate offenders. One-time offenders are not the focus of incapacitation strategies. Furthermore, different crime control strategies will be needed to prevent the initiation of criminal behavior and to interrupt the persistence of that behavior. The use of multiple strategies directed at different types of offenders and prevention strategies aimed at potential offenders will be more effective than relying primarily on one strategy to reduce crime.

The implementation of selective sentencing strategies might take many different forms. Several researchers have found that the risk predictions are more accurate for identifying future low-rate offenders than high-rate offenders. Hence an alternative strategy might be to use explicit prediction scales as a guide for identifying which offenders should not be incarcerated or should receive only minimum sentences because of their low risk of becoming a high-rate, serious offender (Chaiken and Chaiken 1984). Alternatives to incarceration, for example, might be directed toward offenders who have no history of frequent illicit drug use, who have no history of violent offending as a juvenile, and who have no prior convictions for robbery or drug offenses (Chaiken and Chaiken 1984: 221). These offenders may be good candidates for alternative community programs or intensive supervised probation.

In a similar vein, several parole boards use risk predictions in making decisions about parole. Gottfredson and Gottfredson (1985) suggest that the release of low-risk offenders, or "selective deinstitutionalization," could be used explicitly to alleviate prison crowding. Moreover, this type of strategy could be used to reduce the overall prison population because of fiscal considerations or other reasons.

Yet van den Haag (1983) argues that selective incapacitation strategies are likely to produce an unanticipated effect. To be most effective, these strategies would reduce the punishment for perhaps two-thirds of all offenders. These low- and moderate-rate offenders then may view criminal activity as less risky and actually may increase their criminal activity (Cook [1986] makes a similar argument in the context of a different crime control strategy),

thus undermining the crime reduction achieved by sentencing high-rate offenders for longer terms. Because some offenders might not be deterred by the milder punishments, more nonoffenders would become offenders and more low-rate offenders would become high-rate offenders. Testing of selective sentencing policies on a limited scale could shed some light on the importance of this effect.

In conclusion, aggressive implementation of either collective or selective incapacitation strategies is likely to have only modest effects on the volume of serious crime in the United States. Compared to the 10 to 20 percent increase in total prison populations needed to reduce crime by 1 percent through collective increases in incarceration, selective incapacitation could achieve perhaps a 5 percent reduction (in robbery) with a 5 to 10 percent increase in prison populations. These findings indicate that "lock 'em up" strategies—either collective strategies for all offenders or sophisticated strategies for selected offenders—are only slightly more effective against crime than current practice. They highlight the need for multiple crime control strategies, including prevention, deterrence, and rehabilitation.

Selective incapacitation research has produced valuable insights: the identification of a small group of serious frequent offenders, the role of drug use in high-rate offending, and the predictive power of some types of juvenile criminal activity well into the adult years. Research should continue to identify specific combinations of factors that predict patterns of high-rate serious offending so that police, prosecutors, and judges can make informed decisions that will enhance the crime control effectiveness of the criminal justice system.

## REFERENCES

- Avi-Itzhak, B. and R. Shinnar (1973) "Quantitative Models in Crime Control." *Journal of Criminal Justice* 1:185-217.
- Barnett, A. and A.J. Lofaso (1985) "Selective Incapacitation and the Philadelphia Cohort Data." *Journal of Quantitative Criminology* 1:3-36.
- Blumstein, A. and J. Cohen (1979) "Estimation of Individual Crime Rates from Arrest Records." *Journal of Criminal Law and Criminology* 70:561-85.
- (1982) "The Duration of Adult Criminal Careers." Final report to the National Institute of Justice. School of Urban and Public Affairs, Carnegie-Mellon University, Pittsburgh.
- Blumstein, A. and E. Graddy (1982) "Prevalence and Recidivism in Index Arrests: A Feedback Model." *Law and Society Review* 16:265-90.
- Blumstein, A. and S. Moitra (1980) "The Identification of 'Career Criminals' from 'Chronic Offenders' in a Cohort." *Law and Policy Quarterly* 2:321-34.

- Blumstein, A., J. Cohen, and D. Nagin, (eds.) (1978) *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*. Panel on Research on Deterrent and Incapacitative Effects, National Research Council. Washington, DC: National Academy of Sciences.
- Blumstein, A., J. Cohen, J. Roth, and C. Visser, (eds.) (1986) *Criminal Careers and "Career Criminals."* Panel on Research on Criminal Careers, National Research Council. Washington, DC: National Academy Press.
- Bureau of Justice Statistics (1984) *Prison Admissions and Releases, 1981*. Washington, DC: U.S. Department of Justice.
- California Department of Corrections (1980) *California Prisoners—1980: Summary Statistics of Felon Prisoners and Parolees*. Sacramento: California Department of Corrections.
- Chaiken, J. and M. Chaiken (1982) *Varieties of Criminal Behavior*. Rand Report R-2814-NIJ. Santa Monica: Rand Corporation.
- Chaiken, J. and J. Rolph (1980) "Selective Incapacitation Strategies Based on Estimated Crime Rates." *Operations Research* 28:1259-74.
- Chaiken, M. and J. Chaiken (1984) "Offender Types and Public Policy." *Crime and Delinquency* 30:195-226.
- (1985) *Who Gets Caught Doing Crime?* Final Report. Grant No. 84-BJ-CX-0003. Los Angeles: Hamilton, Rabinovitz, Szanton, and Alschuler Inc.
- (1987) "Selecting 'Career Criminals' for Priority Prosecution." Final Report. Grant No. 84-IJ-CX-0005. Abt Associates, Cambridge, MA.
- Clarke, S. (1974) "Getting 'Em Out of Circulation: Does Incarceration of Juvenile Offenders Reduce Crime?" *The Journal of Criminal Law and Enforcement* 65:528-35.
- Cohen, J. (1978) "The Incapacitative Effect of Imprisonment: A Critical Review of the Literature." In A. Blumstein, J. Cohen, and D. Nagin (eds.), *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*. Panel on Research on Deterrent and Incapacitative Effects, National Research Council. Washington, DC: National Academy of Sciences, pp. 187-243.
- (1982) "Patterns of Adult Offending." Unpublished Ph.D. dissertation. School of Public and Urban Affairs, Carnegie-Mellon University, Pittsburgh.
- (1983) "Incapacitation as a Strategy for Crime Control: Possibilities and Pitfalls." In M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*, Volume 5. Chicago: University of Chicago Press, pp. 1-84.
- (1984) "Categorical Incapacitation Effects: Empirical Issues." Paper presented at the 1984 meeting of the American Society of Criminology, Cincinnati. School of Urban and Public Affairs, Carnegie-Mellon University, Pittsburgh.
- (1985a) "Alternative Estimates of the Incapacitative Effect of Increased Penalties." In *Proceedings of the Attorney General's Crimeconference 85*. Sacramento: California Department of Justice.
- (1985b) "Empirical Estimates of the Incapacitative Effect of Imprisonment." Paper presented at the annual meeting of the American Association for the Advancement of Science, Los Angeles. School of Urban and Public Affairs, Carnegie-Mellon University, Pittsburgh.
- (1987) "Reconciling Collective Incapacitation Estimates." Unpublished paper. School of Urban and Public Affairs, Carnegie-Mellon University, Pittsburgh.
- Cook, P.J. (1980) "Research in Criminal Deterrence: Laying the Groundwork for the Second Decade." In N. Morris and M. Tonry (eds.), *Crime and Justice: An Annual Review of Research*, Volume 2. Chicago: University of Chicago Press, pp. 211-68.
- (1986) "The Demand and Supply of Criminal Opportunities." In M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*, Volume 7. Chicago: University of Chicago Press, pp. 1-28.
- Cullen, F. and K.E. Gilbert (1982) *Reaffirming Rehabilitation*. Cincinnati: Anderson.
- Currie, E. (1985) *Confronting Crime*. New Haven: Yale University Press.
- Ehrlich, I. (1974) "Participation in Illegitimate Activities: An Economic Analysis." In G.S. Becker and W.M. Landes (eds.), *Essays in the Economics of Crime and Punishment*. New York: Columbia University.

- Farrington, D., L. Ohlin, and J.Q. Wilson (1986) *Understanding and Controlling Crime: Toward a New Research Strategy*. Report commissioned by the MacArthur Foundation, Chicago. New York: Springer-Verlag.
- Forst, B. (1983) "Selective Incapacitation: An Idea Whose Time Has Come?" *Federal Probation* 46:19-23.
- Gendreau, P. and R. Ross (1983) "Correctional Treatment: Some Recommendations for Effective Intervention." *Juvenile and Family Court Journal* (Winter): 31-39.
- Gottfredson, M. and T. Hirschi (1986) "The True Value of Lambda Would Appear to be Zero: An Essay on Career Criminals, Criminal Careers, Selective Incapacitation, Cohort Studies, and Related Topics." *Criminology* 24:213-34.
- Gottfredson, D. and M. Tonry, (eds.) (1987) *Prediction and Classification: Criminal Justice Decision Making*. Chicago: University of Chicago Press.
- Gottfredson, S. (1986) "The Dynamics of Prison Populations." Unpublished manuscript. Presented at the National Research Council Workshop on Prison and Jail Crowding, Chicago. School of Criminal Justice, Temple University, Philadelphia.
- Gottfredson, S. and D. Gottfredson (1985) "Selective Incapacitation?" *Annals of the American Academy of Political and Social Sciences* 478:135-49.
- (1986) "Accuracy of Prediction Models." In A. Blumstein, J. Cohen, J. Roth, and C. Visher (eds.), *Criminal Careers and "Career Criminals,"* Volume 2. Washington, DC: National Academy Press, pp. 212-90.
- Greenberg, D. (1975) "The Incapacitative Effect of Imprisonment: Some Estimates." *Law and Society Review* 9:541-80.
- Greenwood, P.J., with A. Abrahamse (1982) *Selective Incapacitation*. Rand Report R-2815-NIJ. Santa Monica: Rand Corporation.
- Greenwood, P.J. and S. Turner (1987) *Selective Incapacitation Revisited: Why the High-Rate Offenders are Hard to Predict*. Rand Report R-3397-NIJ. Santa Monica: Rand Corporation.
- Greenwood, P.J. and F. Zimring (1985) *One More Chance: The Role of Rehabilitation in Reducing the Criminality of Chronic Serious Juvenile Offenders*. Rand Report R-3214-OJJDP. Santa Monica: Rand Corporation.
- Hoffman, P.B. (1983) "Screening for Risk: A Revised Salient Factor Score." *Journal of Criminal Justice* 1:539-47.
- Janus, M.G. (1985) "Selective Incapacitation: Have We Tried It? Does It Work?" *Journal of Criminal Justice* 13:117-29.
- Klein, S. and M. Caggiano (1986) *The Prevalence, Predictability, and Policy Implication of Recidivism*. Rand Report R-3413-BJS. Santa Monica: Rand Corporation.
- Lipton, D., R. Martinson, and J. Wilks (1975) *The Effectiveness of Correctional Treatment: A Survey of Treatment Evaluation Studies*. New York: Praeger.
- Marsh, J. and M. Singer (1972) "Soft Statistics and Hard Questions." Discussion paper HI-1712-DP. Croton-on-Hudson, NY: Hudson Institute.
- Martinson, R. (1974) "What Works?: Questions and Answers about Prison Reform." *Public Interest* 35:22-54.
- Monahan, J. (1981) *Predicting Violent Behavior: An Assessment of Clinical Techniques*. Beverly Hills: Sage Publications.
- Moore, M., S.R. Estrich, D. McGillis, and W. Spelman (1984) *Dangerous Offenders: The Elusive Target of Justice*. Cambridge, MA: Harvard University Press.
- Morris, N. and M. Miller (1985) "On 'Dangerousness' in the Judicial Process." In M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*, Volume 6. Chicago: University of Chicago Press, pp. 1-50.
- Paternoster, R. (1987) "The Deterrent Effect of the Perceived Certainty and Severity of Punishment: A Review of the Evidence and Issues." *Justice Quarterly* 4:101-46.
- Paternoster, R., L.E. Saltzman, T.G. Chiricos, and G.P. Waldo (1983) "Perceived Risk and Social Control: Do Sanctions Really Deter?" *Law and Society Review* 17:457-79.
- Petersilia, J. and P.J. Greenwood, with M. Lavin (1977) *Criminal Careers of Habitual Felons*. Rand Report R-2144-DOJ. Santa Monica: Rand Corporation.
- Peterson, M.A. and H.B. Braiker (1980) *Doing Crime: A Survey of California Prison Inmates*. Rand Report R-2200-DOJ. Santa Monica: Rand Corporation.

- Reiss, A.J. (1980) "Understanding Changes in Crime Rates." In S.E. Fienberg and A.J. Reiss (eds.), *Indicators of Crime and Criminal Justice: Quantitative Studies*. Bureau of Justice Statistics. Washington, DC: Department of Justice, pp. 11-17.
- Rolph, J. and J. Chaiken (1987) *Identifying High-Rate Serious Criminals from Official Records*. Rand Report R-3433-NIJ. Santa Monica: Rand Corporation.
- Sechrest, L., S.O. White, and E. Brown, (eds.) (1979) *The Rehabilitation of Criminal Offenders: Problems and Prospects*. Panel on Research on Rehabilitative Techniques, National Research Council. Washington, DC: National Academy of Sciences.
- Shinnar, R. and S. Shinnar (1975) "The Effect of the Criminal Justice System on the Control of Crime: A Quantitative Approach." *Law and Society Review* 9:581-612.
- Spelman, W. (1986) "The Depth of a Dangerous Temptation: Another Look at Selective Incapacitation." Final Report to the National Institute of Justice. Contract No. 80-NIJ-84. Police Executive Research Forum, Washington, DC.
- Tillman, R. (1987) "The Size of the 'Criminal Population': The Prevalance and Incidence of Adult Arrest." *Criminology* 25:561-79.
- Tonry, M. (1987) "Prediction and Classification: Legal and Ethical Issues." In D. Gottfredson and M. Tonry (eds.), *Prediction and Classification: Criminal Justice Decision Making*. Chicago: University of Chicago Press, pp. 367-413.
- Van Dine, S., S. Dinitz, and J.P. Conrad (1977) "The Incapacitation of the Dangerous Offender: A Statistical Experiment." *Journal of Research in Crime and Delinquency* 15:135-39.
- Van Dine, S., J.P. Conrad, and S. Dinitz (1979) *Restraining the Wicked: The Dangerous Offender Project*. Lexington, MA: Lexington Books.
- van den Haag, E. (1983) "Thinking About Crime Again." *Commentary* (December):73-77.
- Visher, C.A. (1986) "The Rand Inmate Survey: A Reanalysis." In A. Blumstein, J. Cohen, J. Roth, and C. Visher (eds.), *Criminal Careers and "Career Criminals,"* Volume 2. Panel on Research on Criminal Careers, National Research Council. Washington, DC: National Academy Press, pp. 161-211.
- von Hirsch, A. (1984) "The Ethics of Selective Incapacitation: Observations on the Contemporary Debate." *Crime and Delinquency* 30:175-94.
- (1985) *Past or Future Crimes: Deservedness and Dangerousness in the Sentencing of Criminals*. New Brunswick, NJ: Rutgers University Press.
- von Hirsch, A. and D. Gottfredson (1984) "Selective Incapacitation: Some Queries on Research Design and Equity." *New York University Review of Law and Social Change* 12:11-51.
- Wilson, J.Q. (1975) *Thinking About Crime*, first edition. New York: Basic Books.
- Wish, E. and B. Johnson (1986) "The Impact of Substance Abuse on Criminal Careers." In A. Blumstein, J. Cohen, J. Roth, and C. Visher (eds.), *Criminal Careers and "Career Criminals,"* Volume 2. Panel on Research on Criminal Careers, National Research Council. Washington, DC: National Academy Press, pp. 52-88.
- Wolfgang, M., R. Figlio, and T. Sellin (1972) *Delinquency in a Birth Cohort*. Chicago: University of Chicago Press.