Selective Incapacitation

Peter W. Greenwood
with Allan Abrahamse

Rand

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PREFACE

This report is one of several analyzing various aspects of criminal careers, drawing chiefly on surveys of prison and jail inmates. Other reports resulting from this project supported by the U.S. Department of Justice include:

1. Mark Peterson, Jan Chaiken, Patricia Ebener, and Paul Honig, Survey of Prison and Jail Inmates: Background and Method, N-1635-NIJ, August 1982. Describes the purposes of the survey, its design and administration, the data collected, and response patterns.
2. Kent Marquis with Patricia Ebener, Quality of Prisoner Self-Reports: Arrest and Conviction Response Errors, R-2637-DOJ, March 1981. Analyzes the reliability of the survey's self-reported arrest and conviction data, using both the retest method and a comparison with official records.
3. Jan Chaiken and Marcia Chaiken, with Joyce Peterson, Varieties of Criminal Behavior: Summary and Policy Implications, R-2814/1-NIJ, August 1982. Gives conclusions from analyses of the survey and official record data concerning the identification of serious criminal offenders and the implications of their behavioral characteristics for public policy.
4. Jan Chaiken and Marcia Chaiken, Varieties of Criminal Behavior, R-2814-NIJ, August 1982. Identifies ten subgroups of offenders and describes their behavioral characteristics, with special

reference to the most serious offenders. Shows how, and the extent to which, serious offenders and high-crime-rate offenders can be identified from their characteristics and criminal records. Appendixes describe (a) an analysis of the internal consistency of survey responses and their correspondence with official record data, and (b) the construction of scaled predictor variables.

5. Joan Petersilia, Paul Honig, with Charles Hubay, The Prison Experience of Career Criminals, R-2511-DOJ, May 1980. Describes the treatment need and program participation rates of prison inmates.

This report is the culmination of a six-year effort. In 1975, Rand received one of the original Research Agreements Program (RAP) grants from the National Institute of Justice. After the original two-year grant, Rand received two additional two-year grants. Rand's work was to focus specifically on habitual offenders.

When the work first began, the subjects of criminal careers and incapacitation were both emerging fields. The primary research approach adopted by Rand involved surveys of incarcerated offenders--a methodology that had not been developed fully. In the six-year period during which Rand has been involved in this work, there has been considerable progress. The basic parameters of the criminal career have been defined and explored, and our understanding of incapacitation has advanced considerably. Other researchers have begun to explore related topics using alternative methodological approaches.

This final report is not "final" in the sense that we have learned everything there is to know, or even that we have accomplished everything we set out to do. Rather, it represents the end of one phase of research. Invariably, some tasks consumed more resources than originally anticipated--the costs of administering the surveys, cleaning and interpreting the survey data, analyzing reliability and validity, etc. As a result, many issues that we intended to examine remain untouched--i.e., the psychological and attitudinal variables from the second survey, and the comparisons of estimated offense rates and offender characteristics with official record data on crimes and offenders, etc.

Nevertheless, this report does represent the completion of a major phase of Rand's criminal career research. The analyses it describes provide a clear picture of individual offense patterns across states. The report demonstrates how high-rate offenders can be identified and shows the potential crime reduction that could be achieved through more selective sentencing policies. We can only hope that the new research areas we have developed will continue to be pursued and that future criminal justice policies will be enlightened by these findings.

This report should be of interest to researchers and practitioners who are concerned with sentencing policy and its effects on crime rates.

EXECUTIVE SUMMARY

The American system of criminal justice is now at a crossroad. Deprived of rehabilitation as an organizing theme, pressed by a fearful and dissatisfied public to provide greater protection from violent crimes, saddled with dangerously overcrowded and decrepit prisons, and facing the prospect of severely limited resources to carry out its functions, the justice system is now searching for new ways to control crime. This study examines one possible approach to the problem--selective incapacitation. Selective incapacitation is a strategy that attempts to use objective actuarial evidence to improve the ability of the current system to identify and confine offenders who represent the most serious risk to the community.

We begin by reviewing the principles that have traditionally guided sentencing policy--rehabilitation, deterrence, "just deserts," and incapacitation. For many years, the rhetoric of sentencing policy, if not its actual practice, was governed by the goal of rehabilitation. Sentences and treatment were intended to be tailored to an offender's individual needs. Moreover, release from custody was contingent on rehabilitative progress.

Such concepts are no longer in general vogue. The notion of diagnosing an offender's needs, or structuring a program that will reduce the likelihood of his future criminality, has been consistently discredited by critical evaluations that have found rehabilitation to be an elusive goal. The most generally accepted view now is that the likelihood of an offender's recidivism is not a function of the type of

sentence he receives. In other words, our current level of knowledge about the rehabilitation process does not provide compelling guidelines for sentencing policy, although it may have something to say about how we treat offenders we choose to confine.

Deterrence theory holds that increasing the likelihood or severity of sanctions decreases the propensity of potential offenders to commit crimes. Specific deterrence refers to the effects of a given sanction on the specific individual to whom it is applied. Evaluators have failed to find any specific deterrent effects. The evidence concerning general deterrence, which refers to the effect of aggregate sanction patterns on all potential offenders, is ambiguous. Studies comparing jurisdictions that vary in the severity of their sanctions have found that crime rates are generally lower where conviction or incarceration rates are higher or sentences are longer. The first effect is much more pronounced than the latter. However, it is not clear whether higher sanctions lead to less crime through deterrence, whether higher crime rates reduce sanctions because of resource constraints, or whether the observed relationships are due to such spurious factors as errors in measuring the actual crime rate.

Research on deterrence continues to be plagued by a number of methodological problems not easily solved. Therefore, the only sentencing guidance provided by empirical deterrence studies (as opposed to various deterrence theories) is that increasing the probability of arrest, the conviction rate, or the incarceration rate appears to reduce crime rates more than do comparable changes in sentence length. Research on deterrence tells us nothing about the relative effects of sanctions on different types of offenders.

The principle of "just deserts" holds that sentence severity should be proportional to the severity of the conviction offense: Two offenders who have committed similar crimes should receive similar sentences, regardless of their educational, employment, or family background. This approach focuses on setting sanctions that are proportional to the crime committed, whereas the rehabilitation approach considers the defendant's background. One could argue that "deserts" is the predominant basis for current sentencing decisions. Offenders who commit the most heinous crimes are likely to serve the longest terms, regardless of their need for treatment or likelihood of future recidivism. For instance, murderers serve longer terms than other offenders, although they are generally less likely to recidivate.

There are at least two problems with using deserts as the sole basis for sentencing decisions. First, there is no objective basis for determining how the relative severity of sentences should vary among different crime types. Do we poll the public or do we rely on elected officials? How do we distinguish among all of the foreseeable variations for a particular type of crime? How do we treat a robber who used a knife versus one who used a gun? Suppose the knife wielder actually cut someone. Suppose he was drunk. What about accessories who were present but did not participate?

It can be argued that we should rely on judges to tailor sentences to fit the particular circumstances of any given crime. But judges vary considerably in their views as to the appropriate sentence for any specific act. Reliance on judges to determine appropriate sentences based on just deserts will thus not only move the system away from the

goal of consistency in sentencing, but also reopen the door to extensive sentence bargaining.

The other problem with deserts is that it ignores any potential connection between incarceration policy and crime rates. Given the current prison overcrowding problem and the public demands that more be done to reduce crime, it may be both unrealistic and undesirable to rely on sentencing rules that ignore the potential impact of sentences on crime. Although it is likely that deserts will continue to exert a primary influence on sanction severity, this principle alone is unlikely to provide adequate guidance for all aspects of sentencing decisions.

INCAPACITATION AS A BASIS FOR SENTENCING

With respect to a sentencing policy, the term "incapacitation effects" refers to those crimes prevented while offenders are incarcerated. The higher the rate at which an offender would commit crime if free, the greater the incapacitation effect of any given sentence. Systematic research on incapacitation effects has only begun in the last seven years. The principal focus of this research has involved estimating the rate at which individual offenders commit crime and modeling the effects of sentencing policies on their time at risk. The recent attention devoted to incapacitation theory has also renewed interest in the question of whether incarceration may extend or aggravate criminal behavior, and whether the incarceration of one offender may result in another offender being recruited to take his place. These questions turn out to be the reverse side of those raised by the theories of specific and general deterrence and are just as difficult to answer.

For purposes of incapacitation analysis, the sentencing policy for any specified group of offenders can be described by three parameters: q--the probability of arrest and conviction, J--the probability of incarceration given conviction, and S--the expected sentence length. The expected or average sentence for any one crime is the product qJS. Increasing qJS increases the prison population and decreases the number of active offenders on the street.

To estimate the amount of crime prevented by incapacitation, it is necessary to formulate a model of the interactions between sentencing policy and criminal behavior. The most accepted model of this process incorporates a number of simplifying assumptions. First, the model deals with only one type of crime in any given analysis. All offenders are assumed to commit this crime at random intervals at the same average rate (λ), and are subject to the same probability of arrest and conviction (q) and incarceration given conviction (J) for any one crime. Among those incarcerated, sentence lengths are assumed to be exponentially distributed with mean S. It is also assumed that the sentences imposed do not change the probability of subsequent recidivism or the propensity of other potential offenders to engage in crime. The only effect that incarceration is assumed to have on an individual offender is to confine him during part of his active career.

Given these assumptions, it can be shown that the amount of crime offenders commit under a sentencing policy qJS, expressed as a fraction of the amount they would commit if they were never incarcerated, is

$$\eta = \frac{1}{1 + \lambda qJS}$$

This model suggests that if offenders commit, on the average, ten crimes per year, are subject to arrest and conviction with probability .03, are incarcerated with probability 0.5, and serve an average of two years for each prison commitment, the time they can be expected to serve for each crime will be .03 years (.03 x .5 x 2) and the number of crimes they commit will be reduced by 23 percent from what it would have been had they never been incarcerated.

The principal issue in estimating the effects of incapacitation lies in determining the offense rates of individual offenders. This can be done by either of two methods: (1) by inferring their offense rates from their recorded arrests over time; or (2) by asking them directly. This study, based on the second method, relies on a survey administered to 2100 male prison and jail inmates in California, Michigan, and Texas in 1977. Combined with official record data from case folders, this survey provided detailed information on each inmate's prior criminal activity, drug use, employment, juvenile history, and contacts with the criminal justice system. A variety of reliability and validity analyses performed on these data--checking each inmate's responses for both internal consistency and agreement with official record information--indicate that the responses are unbiased along all important dimensions, such as age, race, main conviction crime, or self-reported level of criminal activity.

The offense rates reported by this sample reflect several important variations from the assumptions of the model described above. First,

most offenders were not specialized in one particular type of crime; rather, most were active in several major types. Furthermore, for any one type of offense, all offenders did not commit crimes at the same annual rate. The distribution of individual offense rates was heavily skewed toward the high end. Only a small fraction of offenders reported very high rates. For instance, among all offenders reporting the commission of robberies, 50 percent committed fewer than 5 per year. But 10 percent committed more than 87 per year. Among active burglars, 50 percent committed fewer than 6 per year, while 10 percent committed more than 230 per year.

Finally, these variations in offense rates were not distributed randomly across the respondent population. Rather, the reported offense rates were correlated with a number of variables that previous studies have shown to be related to recidivism rates. If we modify the incapacitation model described above to allow for several different types of offenders (each with a different average offense rate), the new model suggests that the amount of crime prevented by any given incarceration level can be increased if we lengthen the terms of those in the high-rate groups and shorten the terms of those in the low-rate groups. We call this type of sentencing policy "selective incapacitation." Increasing the accuracy with which we can identify high-rate offenders or increasing the selectivity of sentencing policies can lead to a decrease in crime, a decrease in the prison population, or both. Selective incapacitation is a way of increasing the amount of crime prevented by a given level of incarceration.

The concept of selective incapacitation is, of course, controversial. Many policymakers and scholars have expressed interest

in identifying and isolating the "most dangerous" group of offenders, but others have interpreted the lack of identifiable rehabilitation or deterrent effects to mean that incarceration serves no useful purpose. There are those who believe that the high incarceration rate in the United States, as compared with other free world countries, indicates a misguided and unjust approach. It is not our purpose here to take sides, but to provide objective evidence that can inform the debate.

THE IDENTIFICATION OF HIGH-RATE OFFENDERS

Although there is no strict specialization in crime types, some offenders tend to be high-rate for one type of offense while not for others. Therefore, an identification of high-rate offenders requires a prior specification of which offenses are to be considered. For this analysis, we attempted to discriminate among offenders only on the basis of their robbery or burglary offense rates. For each of these crimes we limited the analysis to respondents who had been convicted for the respective crime we were attempting to analyze. Robbery rates were examined for convicted robbers; burglary rates were examined for convicted burglars.

This decision was based on our perception of how selective sentencing decisions might be applied in practice. Robbery and burglary are the predatory street crimes about which the public is most concerned. Given the current prison overcrowding problem and the general reluctance to use imprisonment except as a last resort, we think it much less likely that selective incapacitation would be used to reduce property crimes less serious than robbery or burglary. Furthermore, although we do not have a sufficient number of murderers or sex offenders in our sample to analyze these crimes in detail, prior

studies have shown that these offenses are extremely difficult to predict or to reduce through incapacitation, because of the low rate at which they are committed by any one offender. Therefore, we limited our analysis to respondents convicted of robbery and burglary, because we believe that just deserts requires that a defendant be sentenced primarily for the crimes for which he is convicted, and that incapacitation effects are considered secondarily.

Previous studies have identified a number of factors that appear correlated with individual rates of offending or future recidivism--prior record, age at first arrest, drug use, etc. There are also a number of factors that have traditionally been used as a basis for increasing the sentences of convicted offenders--number of prior convictions, prior prison terms, conviction on multiple counts, etc. Our procedure in developing a scale to identify high-rate offenders was as follows. First, we examined the simple correlation of each candidate prediction variable with individual offense rates. Next we combined those variables most strongly correlated with offense rates into a simple additive scale. We then did some sensitivity testing to determine whether there was much loss in prediction accuracy by removing some of the more controversial predictor variables.

The seven binary variables that we finally selected to make up the scale were these:

1. Incarcerated more than half of the two-year period preceding the most recent arrest.
2. A prior conviction for the crime type that is being predicted.

3. Juvenile conviction prior to age 16.
4. Commitment to a state or federal juvenile facility.
5. Heroin or barbiturate use in the two-year period preceding the current arrest.
6. Heroin or barbiturate use as a juvenile.
7. Employed less than half of the two-year period preceding the current arrest.

A positive response to any of these seven variables adds one point to an offender's score.

This scale was used to distinguish between low-, medium-, and high-rate burglars or robbers. In our analysis, offenders who score 0 or 1 on this scale are predicted to be low-rate, those who score 2 or 3 are medium-rate, and those who score 4 or more are predicted to be high-rate. The distribution and mean offense rates for each group in each of the three sample states are shown in Table ES.1.

In most instances, the average offense rate (λ) for the predicted high-rate offenders exceeds that of the predicted low-rate group by a factor of 4 or more.

Another striking feature of these figures is the low rate of criminal activity reported by Texas offenders compared with that for California and Michigan. In fact, the data indicated that Texas offenders were in every way far less active--as juveniles, in drug use, in their possession of weapons, etc. Whether this low rate of criminal activity among Texas offenders is a result of generally harsher sentencing practices (convicted offenders in Texas are much more likely to be sentenced to prison) or the result of some other social forces, we cannot say at this time.

Table ES.1

DISTRIBUTION AND MEAN OFFENSE RATES FOR OFFENDERS IN THE THREE SAMPLE STATES

State	Predicted Offense Rate	Robbery		Burglary	
		N	$\bar{\lambda}$	N	$\bar{\lambda}$
California	Low	36	2.2	37	12.6
	Medium	58	11.0	69	87.6
	High	84	30.9	54	156.3
Michigan	Low	52	6.1	25	71.6
	Medium	72	11.7	65	34.0
	High	26	20.6	34	101.4
Texas	Low	49	1.4	70	6.0
	Medium	49	5.4	92	20.5
	High	19	7.7	41	51.1

ESTIMATING INCAPACITATION EFFECTS

In California, the probability of arrest and conviction (q) computed from official data for either robbery or burglary is .03--three chances out of 100. The probability of incarceration after conviction (J) is .86 for robbery and .72 for burglary. The probability of being committed to prison (as opposed to jail) and the average prison term actually served for the different offense rate groups in California and Texas are shown in Table ES.2.

The figures in Table ES.2 indicate that judges and prosecutors do fairly well in discriminating between high- and low-rate offenders in deciding who goes to prison, but that the parole board or legislature that determines the length of prison terms does not discriminate very

Table ES.2

DISTRIBUTION OF COMMITMENTS AND MEAN PRISON TERM BY PREDICTED OFFENSE RATE

State	Offense Type	Predicted Offense Rate	Percentage Committed to Jail	Percentage Committed to Prison	Average Prison Term (in months)
California	Robbery	Low	.88	.12	49.5
		Medium	.65	.35	53.3
		High	.53	.47	50.6
	Burglary	Low	.99	.01	29.6
		Medium	.94	.06	21.6
		High	.82	.18	20.0
Texas	Robbery	Low		1.0	52.8
		Medium		1.0	57.6
		High		1.0	114.0
	Burglary	Low		1.0	33.6
		Medium		1.0	58.8
		High		1.0	52.8

well, except in Texas. We were not able to analyze incapacitation effects in Michigan because we did not have reliable estimates of their current sentencing patterns, particularly the frequency of jail and prison commitments.

For California and Texas inmates, we estimated the impacts of a number of selective policies extending terms for high-rate offenders and reducing terms for low-rate offenders. There were considerable differences between the two states. Among California robbers, we found

that a selective incapacitation strategy that reduced terms for low- and medium-rate robbers while increasing terms for high-rate robbers could achieve a 15 percent reduction in the robbery rate with only 95 percent of the current incarcerated population level for robbery. An unselective attempt to increase incapacitation effects by increasing terms for all robbers equally requires a 25 percent increase in population to bring about the same 15 percent reduction in crime. Among burglars, the best selective policy required a 7 percent increase in prison population to bring about a 15 percent reduction in crime.

In Texas, we found that additional incapacitation effects would be much more expensive. For robbers it would require a 30 percent increase in incarceration level to achieve a 10 percent reduction in crime. For burglars, a 15 percent increase in incarceration would be required to achieve a 10 percent reduction in crime. This higher cost is due to the low offense rate among Texas inmates.

CONCLUSIONS

In this report we have shown how incapacitation theory might provide a rational means for allocating scarce prison space. We have used self-reported data from prison and jail inmates to demonstrate that there is wide variation in individual offense rates and that the factors associated with higher rates of recidivism are also associated with higher rates of offending. Finally, we have shown that selective incapacitation strategies may lead to significant reductions in crime without increasing the total number of offenders incarcerated.

The concept of selective incapacitation will undoubtedly be controversial for a number of reasons. As long as our ability to discriminate between high- and low-rate offenders is imprecise, there

will be legitimate concern about those who are improperly classified. Furthermore, there will be differences of opinion as to the legitimacy of using some of the factors that are correlated with rates of offending (e.g., juvenile record, drug use, employment) for sentencing purposes. Finally, there will be opposition to the notion of preventive detention--sentencing offenders for crimes that they might commit in the future. Nevertheless, any discussion of the moral and ethical issues related to selective incapacitation should include consideration of the alternatives to such a policy.

The criminal justice system currently attempts to discriminate among offenders on the basis of predicted risk by using less explicit and less accurate methods than those involved in selective incapacitation. The end result is a wide range of sentences for similar crimes that generate more "false positives" (low-rate offenders mistakenly given heavier sentences) than does the system discussed in this report. The predictive factors considered in this analysis, along with many others that have less predictive validity, are currently the normal input for presentence investigation reports and sentencing decisions.

The reader should recognize that our analysis of selective incapacitation was subject to several limitations. We relied on self-reported retrospective information from incarcerated offenders in only three states. Among these states, the pattern of offense rate varied considerably. At the very least, our work should be replicated in different sites, using prospective data obtained from both surveys and arrest histories. Additionally, the critical assumptions of the model should be tested. Specifically, are there any replacement or career

extension effects of incarceration that would tend to reduce the estimated crime reduction effects? Are offense rates stable over time? Moreover, the incapacitation model presented here should be improved to handle multiple offense types and more complicated sentencing policies.

Finally, more thought should be devoted to the problem of how selective incapacitation could be implemented in practice. Is it enough to publish the results as advice for judges or should sentencing guidelines be defined? Should police and prosecutors adopt selective policies? Serious efforts to reduce crime and hold down prison costs should include more extensive investigation of the possibilities and merits of selective incapacitation.

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This report represents the culmination of six years of work on criminal careers that was conducted under a Research Agreements Program grant from the National Institute of Justice. Many colleagues at Rand have played important roles in developing this line of research. Joan Petersilia helped develop some of the basic concepts of criminal career development and was the first to try interviewing prison inmates. Harriet Braiker developed the basic format for the inmate surveys. Mark Peterson played a primary role in the analysis of Survey I and the design and administration of Survey II. Patricia Ebener developed and managed the field procedures used in the administration of the survey. Paul Honig designed and supervised the collection of official record data. Jan Chaiken developed the statistical procedures for analyzing individual crime rates. Marcia Chaiken did exploratory analyses on the predictor variables. Kent Marquis conducted some of the reliability and validity analyses and Suzanne Polich did most of the programming and data base management.

During the course of this work, we benefited from interactions with our advisory committee consisting of Arthur Rosett (UCLA Law School), Alfred Blumstein (Carnegie-Mellon), Norval Morris (Chicago Law School), Hans Zeisel (Chicago Law School), and Daniel Glaser (USC). We also benefited from discussions with Franklin Zimring (Chicago Law School), James Q. Wilson (Harvard), and Marvin Wolfgang (University of Pennsylvania).

The Research Agreements concept was developed by Gerald Caplan during his tenure as Director of the National Institute of Justice. His intention in awarding these grants, which were to continue over five or six years, was to provide both continuity and flexibility to a number of research centers addressing broadly defined topic areas. We are indebted to our Institute project officer, Dr. Patrick Langan, for his enthusiasm and cooperation in this effort.

Finally, this work would not have been possible without the extensive cooperation of corrections officials in California, Michigan, and Texas, who provided us access to both inmates and data.

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I. INTRODUCTION

In 1978, approximately 300,000 adults were incarcerated in state or federal prisons across the United States (Carlson, 1980). Another 150,000 convicted offenders were serving time in local jails or pre-release centers. It is estimated that if the current crime rates and sentencing patterns continue (and there is no reason to believe they will not), the prison population will reach 340,000 by 1984 (Carlson, 1980). In other words, in addition to the problem of epidemic crime itself, the criminal justice system faces a critical and increasing problem of prison capacity.

If we set a minimum standard of 60 square feet of living space per inmate, the existing prison facilities have a capacity for only 256,500 inmates--62 percent of their current population. Out of approximately 150,000 maximum-security inmates, 40 percent are housed in facilities that were constructed prior to 1927 (Mullen, 1980). It is estimated that the construction of additional high-security prison space to house even the current overload would cost $51,000 per bed (in 1978 dollars) and require two and one-half years to complete (Singer and Wright, 1976).

In this country, the criminal justice system justifies the incarceration of convicted offenders on several grounds. Rehabilitation, retribution, deterrence, and incapacitation all play a role in determining sentencing practice.

In the last century, rehabilitation has received the most attention. Rehabilitation was one of the principal justifications for

the indeterminate term (Morris, 1974; Fogel, 1975; von Hirsch, 1976). The parole authority was assumed to be in the best position to determine, on the basis of reports of institutional behavior and progress in various treatment programs, when an offender was ready to be released back into society. However, recent evidence on the effectiveness of treatment programs has failed to support this assumption. Institutional programs have proven to be no more successful in curbing subsequent criminal behavior than community programs or no program at all (Sechrest, 1979). Furthermore, in the majority of cases, institutional behavior provides little basis for predicting future recidivism (Cohen, 1976).

At this time, the principle of retribution, or "just deserts," probably has more influence on sentencing practices than any other factor (Conrad, 1982). In most states, sentence severity is based on the gravity of the offense, rather than on any explicit consideration of what the sentence will accomplish. Murderers and assaulters usually serve the longest terms, although many are among the least likely to recidivate. The few burglars and thieves who are incarcerated serve fairly short terms, although they are more likely to be rearrested than any other group (Williams, 1979). In any case that attracts substantial press attention, the sentence decision is usually justified on the basis of the seriousness of the crime rather than on the basis of other possible considerations. Indeed, it was a desire to remove sentencing decisions from the glare of media attention that motivated reformers to push for indeterminate sentencing in the first place, quite apart from the issue of rehabilitation [1]. The primary problem with using deserts

[1] One motivation for the indeterminate sentence was a desire to insulate the decision about when a prisoner was to be released from the

as a basis for determining relative sentence severity lies in the difficulty of specifying all possible variations in a particular crime type and establishing a consistent pattern of sentences (Sherman and Hawkins, 1981). Use of the deserts principle also ignores any connection between sentences and crime rates.

Criminal justice literature identifies two types of deterrence that are relevant to sentencing decisions--general and specific (Blumstein, Cohen, and Nagin, 1978). General deterrence refers to the inhibiting effect of sentences on all potential offenders. Specific deterrence refers to the inhibiting effect of a sentence on the particular offender to whom it is applied. Deterrence theory assumes that potential offenders are somewhat rational in weighing the consequences of engaging in crime: If the expected penalties are increased, fewer offenders should be willing to risk them. In practice, the effects of specific deterrence are indistinguishable from those of rehabilitation. In other words, if a longer term or participation in some particular form of treatment results in reduced recidivism, we can never know whether the cause is specific deterrence or rehabilitation. The issue is now moot, however, since no such effects have been consistently observed.

The effects of general deterrence should be observable. As penalties change or vary across jurisdictions, we should be able to observe the effects on the aggregate crime rate. This has not been the case. The problem is one of measuring and accounting for extraneous factors that might also affect the level of crime rates. Sanctions in

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public or victim's pressure for retribution and punishment. Under indeterminate sentencing, a judge could satisfy the victim by announcing that he sentenced an offender to a term of five years to life, yet the offender could be released in 20 months.

any jurisdiction seldom change quickly. Even when the state legislature enacts tough new penalties for specific types of offenders, such as armed robbers, drug dealers, or habitual offenders, compensating changes by other segments of the system tend to counter the effects of the harsher penalties. For instance, if a new law required that anyone who uses a gun serve an extra two years, fewer offenders would be charged with using guns and base terms might be reduced [2].

Since sanctions seldom change dramatically in any one place, the basic research design used to study the effects of general deterrence involves comparisons of sanctions and crime levels across sites (Nagin, 1978). With few exceptions, all of these studies have found results that are consistent with deterrence theory. Where sanctions--measured by either arrest rates, incarceration rates, or average sentence length--are higher, crime rates are lower. However, this consistent inverse correlation between sanction levels and crime rates does not prove that higher sanction levels reduce crime. It is possible that higher crime rates cause a jurisdiction to impose lower sanctions, due to constraints on capacity (prison space, court caseloads, etc.). It could also be that errors in the measurement of crime rates, which are known to be large (Nagin, 1978), cause the apparent correlation. A recent review of evidence concerning deterrence by a special panel of the National Academy of Sciences (Blumstein, Cohen, and Nagin, 1978) concluded that neither the existence nor the magnitude of the deterrent effects of sanctions could be inferred from the existing literature.

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[2] Under California's determinate sentencing law, convicted robbers could be sentenced to one of three possible base terms--two, three, or four years--depending on the severity of their offense. When the legislature raised the upper term to five years, the average term for robbery actually declined from 57 months to 56 months, because judges imposed the upper terms less frequently (Pannell, 1981).

Even if the existence and magnitude of deterrence effects were established, there is little reason to believe that these findings would be useful in determining how sentences should vary among different types of offenders. Most states have little ability to measure sentence variations or crime rates across different types of offenders. Without such information, deterrence theory can never provide guidance on how offenders of different ages or with different prior records should be sentenced, since it cannot measure their responses to different levels of risk.

The lack of evidence on the effects of either rehabilitation or deterrence leaves incapacitation as the only utilitarian basis for rationalizing differences in sentence severity for different types of offenders [3]. If we eliminate retribution as a consideration, the only reason for varying sentence lengths among different types of offenders is the predicted future risk of these offenders to society [4].

Even with incapacitation, our state of knowledge is woefully deficient, due to the limited evidence concerning how incarceration affects subsequent criminal behavior. During his term of incarceration

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[3] We do not include retribution among the utilitarian purposes of sentencing. Differences in sentence severity can always be justified by some group's opinion about what punishment is deserved. However, without knowledge about rehabilitation, deterrence, or incapacitation effects, these differences cannot be justified by their supposed impacts on crime. It can also be argued that since offenders are punished each time they are convicted, it is unjust to inflict additional punishment for past crimes at the time a new sentence is imposed, if retribution is the only purpose.

[4] A recent survey of California adults (The Field Institute, 1981) disclosed that incapacitation was the rationale for imprisonment most supported by respondents. Ninety-three percent agreed that incarceration protects the community; only 67 percent believed in general deterrence; 58 percent believed in rehabilitation; and only 50 percent viewed prison as a form of retribution.

an offender is physically restrained from committing crimes against the larger society. Incarceration only reduces crime rates through incapacitation if the number of active offenders is reduced or their average individual crime rate is reduced [5].

The amount of crime prevented by incapacitation obviously depends heavily on the amount of crime that can be attributed to a single offender. If the overall crime rate is the result of many offenders committing a few crimes per year, the effects of incapacitation will be small. But if crime is the result of a few offenders committing many crimes per year, the effects of incapacitation will be large.

Current incapacitation models assume that incarceration does not affect career length or individual crime rates. If incarceration simply postpones career termination, or offenders tend to have higher crime rates after incarceration, incapacitation effects will be smaller than

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[5] Crimes against other prisoners are not usually counted in figuring aggregate crime rates. The formal model that has been used most frequently for estimating incapacitation effects (Wilson, 1975; Blumstein, Cohen, and Nagin, 1978; Greenwood, 1982) was developed by Avi-Itzhak and Shinnar (1973). The model assumes that all offenders commit crimes according to a Poisson process with the same average annual rate (λ) and have the same probability of arrest and conviction for any one crime (q). Individual career lengths are assumed to be long in relation to sentence lengths, and unaffected by sanctions. The effective crime rate, expressed as a fraction (η) of the crime rate that would prevail if no offenders were incarcerated, is

$$\eta = \frac{1}{1 + \lambda q J S} ,$$

where J equals the probability of incarceration after conviction and S is the average sentence length. η is also an estimate of the fraction of an offender's career during which he will present a risk, or the fraction of active offenders free at any point in time.

indicated by the model [6]. If new offenders are recruited by active offenders to replace those incarcerated, then incapacitation effects will be smaller than predicted. Reiss (1980) argued that because many crimes are committed in groups, and because there may be an optimal group size preferred by offenders, incarcerating some of the group's members may lead the remaining members to recruit replacements.

INCAPACITATION THEORY

A number of models have been proposed for estimating the incapacitation effects of imprisonment (Clarke, 1974; Marsh and Singer, 1972; Greene, 1977; Greenberg, 1975; Avi-Itzhak and Shinnar, 1973; Shinnar and Shinnar, 1980). Cohen (1978) has shown that all of these models involve the same basic assumptions and lead to similar estimates if one assumes the same individual crime rate (λ) for all offenders. Most of these models assume that all offenders are alike and that there is only one type of crime. More recent research on incapacitation has

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[6] In a recent report by the California Department of Corrections (CDC), Berocochea and Jaman (1981) provide strong evidence that lengthening terms does not extend the career. In theory, if longer terms do not extend careers, the recidivism rate over some specified follow-up period for a group of inmates released at time t should be higher than the recidivism rate for a similar group released at a later time, t + e. This is because there will be fewer active offenders among the inmates released at time t + e, since some number will have terminated their careers during the period e. If, however, the two groups have the same recidivism rate, this means that no offender terminated his career during the time period e and the termination of career was postponed. The report by Berocohea and Jaman examines the recidivism rates of approximately 1100 inmates who were randomly assigned to either of two groups. The only difference between the two groups was that the experimental group had its normal parole dates advanced by six months. In a two-year follow-up period (from the time of release) the experimentals with the shorter terms had a significantly higher recidivism rate: the 95 percent confidence intervals for the probability of unfavorable two-year outcomes were (according to our calculations) .43 to .52 for the experimental group and .36 to .44 for the control group.

been devoted to estimating individual crime rates (Peterson and Braiker, 1980; Blumstein and Cohen, 1979) and the length of individual careers.

In reality, the complexities of both criminal behavior and sentencing policies are insufficiently accommodated by existing incapacitation models. Most offenders commit several different types of crime at different rates; the probability of arrest varies with the type of crime (Peterson and Braiker, 1980; Blumstein and Cohen, 1979). The probability of incarceration and of expected sentence length vary across crimes and are affected by the defendant's characteristics (Greenwood, 1982).

Until quite recently there was no firm basis for estimating individual crime rates. Researchers attempting to estimate incapacitation effects were using estimates of average individual offense rates that ranged from less than one index crime per year (Clarke, 1974; Greenberg, 1975) to ten per year (Shinnar and Shinnar, 1975). However, two recent studies have finally provided fairly consistent estimates of average individual offense rates for different types of crime. In the first Rand survey, Peterson and Braiker (1980) conducted a survey of 624 California prison inmates in which the respondents reported the number of crimes they had committed during the three years preceding the arrest that led to the prison term they were currently serving. The self-reported offenses covered nine different types of crime: homicide, assault, rape, armed robbery, burglary, theft, auto theft, cons, and drug sales. Chaiken (1980) used these self-reports of prisoners to estimate average offense rates for an incoming cohort of prisoners and for offenders on the street.

Blumstein and Cohen (1979) estimated individual offense rates from arrest histories. Their primary source of data was an FBI data tape containing the adult criminal histories of all 5364 adult offenders arrested for an index offense at least once in 1973 in the District of Columbia. This file contains records of all prior adult arrests and all subsequent arrests up to October 1975.

Both of these studies show that most active offenders are engaged in several different types of crimes rather than a particular offense category. They also show that the distribution of individual offense rates is skewed toward the high side. Most offenders commit crime at a fairly low rate--one or two crimes per year. A much smaller percentage commit crimes at high rates of more than 20 crimes per year. This means that the average offense rate for any group (and thus the number of crimes prevented by incapacitation) is dominated by the activities of a few very active offenders.

The incapacitation effect of imprisonment is heavily dependent on the average offense rate of the incarcerated offenders. Any change in sentencing patterns that increases the average offense rate of the incarcerated offenders--by increasing the proportion of high-rate offenders--will increase the incapacitation effect achieved by a given prison population level.

ORGANIZATION OF THIS REPORT

This report describes the results of a research project designed to determine the potential benefits of selective incapacitation. The data for this research consist of a survey administered to approximately 2100 male prison and jail inmates in three states--California, Michigan, and

Texas. They also include information from official records for the prison inmates. The survey provides information about each respondent's criminal activity during various phases of his career and relevant information on individual behavioral characteristics. The officially recorded information provides details about prior arrests and sentences.

In the next section we review prior research on criminal careers and then describe the survey data on which this study is based. In Sec. III we introduce and describe the concept of selective incapacitation. In Sec. IV we summarize findings on the distribution of individual offenses and describe a predictive scale for identifying high-rate offenders. In Sec. V we estimate the potential impacts of selective incapacitation policies. The final section summarizes what we think we have learned about selective incapacitation and suggests the kind of research that remains to be done.

This report is not a sentencing handbook, nor does it provide judges with explicit guidance on how different types of offenders should be sentenced. The research is retrospective, looking back over the careers of offenders who are already incarcerated, with all of the benefits that hindsight has to offer. The results vary somewhat across the different jurisdictions that were studied. In order to rigorously determine the accuracy with which high-rate offenders can be identified, it will be necessary to conduct studies in which samples of convicted or incarcerated offenders are studied after they are released. Such a study is possible with our inmate sample and has been proposed. Only through a study of this kind can we deal with the issues of differential dropout rates and regression to the mean for individual offense rates as well as the fact that some offenders are not incarcerated.

II. RESEARCH ON CRIMINAL CAREERS

In order to develop models for estimating the effects of incapacitation, it is necessary to understand the characteristics of criminal careers. Self-reporting studies have shown that many people break the law at least once in their lives (Elliott and Voss, 1974; Hindelang, 1973; Gold and Reimer, 1975), but very few people ever commit the more serious crimes of homicide, assault, rape, robbery, or burglary (Hindelang, Hirschi, and Weis, 1981). There are even fewer who continue to commit these crimes over an extended period of time (Wolfgang, Figlio, and Sellin, 1972). It is this latter group which is the focus of criminal career research.

At what age do offenders begin their crimes? What kinds of crime do they commit as juveniles? How does their pattern of criminal behavior change as they grow older? How many crimes do they commit in a year? What is their employment pattern? What is their involvement with drugs? What distinguishes those with long careers from those whose careers are brief? What distinguishes the high-rate offender from those who commit crimes infrequently? These are not idle questions of academic concern, inasmuch as their answers represent a potential guide to determining which offenders are more suitable for probation, which should be incarcerated, and which should be incarcerated for longer periods of time.

CRIMINAL CAREER RESEARCH

Information about the characteristics of criminal careers comes from a variety of sources. Between 1930 and 1950, when the emphasis of criminal justice research was on prevention and rehabilitation, a number of studies of young offenders collected extensive information on family backgrounds and social environment, but did not focus explicitly on criminal activities (Shaw and McKay, 1942; Glueck and Glueck, 1950). Other studies from this period used extensive interviews to describe the activities of particular adult offenders, but did not try to draw a representative picture of adult criminality (Sutherland, 1937).

Recent research on criminal careers, which has been more responsive to current sentencing issues, has followed three different approaches. The first is the cohort study, an approach pioneered by Wolfgang, Figlio, and Sellin (1972) at the University of Pennsylvania and replicated by Shannon (1978) and Farrington (1979). These cohort studies involved assembling criminal justice and social (school, employment, etc.) records for all youths born in a given year in a given geographic area who continued to reside there through a given age (usually 18). The Philadelphia cohort consisted of all males born in 1945 who resided in the city from ages 10 to 18. This form of study is the most accurate means of determining the prevalence and distribution of criminal activity, as reflected in official records, across the general population. It also provides a useful means to examine such issues as the age of onset of criminality and the age of desistance as a function of socioeconomic and other behavioral characteristics.

The second method of studying criminal careers involves collecting self-reported information from a sample of known offenders, usually while they are incarcerated. This method of research was pioneered at Rand by Petersilia, Greenwood, and Lavin (1977) in a study of 49 incarcerated robbers, and by Peterson and Braiker (1981) in a study of 624 California prison inmates. These self-report studies have the advantage of providing a picture of an offender's criminal activities that is more complete than one drawn exclusively from facts known to the police. The first inmate survey (Peterson and Braiker, 1981) included 624 male California inmates who were a random sample of the general prison population. A second Rand survey included 2190 male jail and prison inmates from California, Texas, and Michigan (Peterson et al., 1982).

Hindelang, Hirschi, and Weis (1981) and Marquis and Ebener (1981) have shown that while there is considerable variation between self-reports and official records (i.e., police contacts or convictions), there is no systematic bias toward either over- or under-reporting across different types of offenders, as categorized by age, race, or conviction offense. The primary problem with self-reported studies of incarcerated populations is the sample bias inevitably introduced by criminal justice processing decisions.

The third approach to criminal career studies involves the analysis of longitudinal criminal justice contact data (arrests, indictments, convictions) for a sample of known offenders in a given geographic area. This form of research has recently been pursued by Williams (1979) at The Institute for Law and Social Research (INSLAW) and Blumstein and

Cohen (1979) at Carnegie-Mellon. The use of arrest histories has the advantage of avoiding the expensive data collection required for self-report studies (all of the studies to date have used computerized contact files) and avoids the problems of respondent veracity (although criminal justice records have their own reliability problems). The disadvantage of this approach is that criminal justice data provide information on only a fraction of each individual's crimes and usually say nothing about his social background.

In general, of the three approaches, cohort studies provide the most complete picture of criminal career development. But when data collection costs are limited, self-report and official record studies are better at focusing on the most serious types of offenders, who are rarely encountered in cohort studies.

PRIOR RAND RESEARCH

As discussed above, Rand's first attempt to obtain self-reported crime information from serious offenders involved interviews with 49 California prison inmates, who were serving terms for robbery and had served at least one prior prison term (Petersilia, Greenwood, and Lavin, 1977). The interviews, which covered the respondents' entire careers, were administered individually, face to face. Prior to that study, self-reported crime surveys had been administered to general population groups or students (Hindelang, Hirschi, and Weis, 1979).

The Petersilia study demonstrated that inmates were willing to provide self-reported crime data to researchers [1]. The data also

[1] The interviewers included both men and women. The respondents were promised that criminal justice and correctional officials would not have access to their responses.

passed some simple tests of validity (Petersilia, 1978a). More important, this study produced two of the principal findings to come out of criminal career research. First, it demonstrated that offenders are largely unspecialized--they engage in a variety of crime types at any one time [2]. And second, it demonstrated that the distribution of individual crime rates is skewed heavily toward the high end, with most offenders committing crimes at a fairly low rate and only a few committing crimes at high rates.

The Petersilia study was followed by a much larger survey designed to include all types of male prison inmates (Peterson and Braiker, 1981). The respondents were 624 inmates selected from five California prisons to represent the entire male prison population in custody level, age, offense, and race. The survey used a self-administered questionnaire given to groups of between 10 and 20 inmates by specially trained consultants [3]. The questionnaires were anonymous, and no attempt was made to verify responses, other than through the use of redundant questions. The questions about criminal activity focused on the three years prior to the start of the inmates' current terms and asked for the number of times the respondents committed eleven different types of crime.

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[2] This finding helped explain why the Wolfgang cohort study found little correlation in offense type from one arrest to the next. The Wolfgang findings were interpreted according to the belief that offenders committed small numbers of crimes--e.g., that the recorded arrests were the only offenses. If a juvenile arrested in 1960 for burglary was arrested again in 1962 for robbery, he was described as having "switched" from burglary to robbery. The Rand survey suggests he was probably committing both robbery and burglary, and maybe several other crimes, all along.

[3] Survey administrators were selected to be acceptable to inmates. We used mostly black or hispanic male graduate students who were either excons or who had worked with inmate groups before.

The survey of California prison inmates confirmed the findings of nonspecialization and skewed offense rates and extended them in several important ways. The self-reported crime data provided a means to estimate average annual offense rates for different types of crimes across different categories of offenders. Moreover, the extensive background, behavioral, and psychological data provided by each respondent allowed researchers to explore how these variables were associated with rates of individual criminality.

The crime data showed that most offenders committed a number of different types of crime during the three-year period preceding current incarceration. Forty-nine percent of those reporting any of the crimes on the list reported four or more. Only 19 percent reported only one type of crime and in these cases the crimes were generally committed at a very low rate. Table 2.1 shows the percentage of inmates incarcerated for a particular category of offense who were active in other categories. Table 2.2 shows the average annual offense rate (λ) for these same categories.

Among respondents reporting the commission of armed robberies, half reported fewer than 1.5 per year. However, the average commission rate was 5.2 armed robberies per year. Among respondents who reported committing burglaries, half committed as few as 3 burglaries per year, but the average was over 14. This same pattern was found for every crime type studied.

In attempting to determine the characteristics of high-rate offending, Peterson and Braiker explored a variety of models. Some of the strongest factors associated with high-rate offending were the

Table 2.1

ESTIMATED PREVALENCE OF CRIMES BY COMMITMENT OFFENSE FOR COHORT OF INCOMING PRISONERS

Conviction Offense	Prevalence[a]							
	Rape	Armed Robbery	Assault	Drug Sales	Burglary	Auto Theft	Forgery	Cons
Homicide & robbery	10	48	76	38	67	48	29	67
Homicide & another crime	7	43	93	43	43	36	21	43
Homicide only	8	19	77	38	32	23	13	47
Rape	100	25	50	19	56	31	25	63
Robbery & assault	--	82	100	55	55	73	36	46
Robbery & burglary	8	58	58	67	100	25	58	92
Robbery & another crime	13	56	63	63	44	38	19	63
Robbery only	4	62	60	37	52	32	38	66
Assault	3	22	100	31	50	22	47	44
Burglary	4	27	60	46	100	40	41	71
Drugs	5	20	39	91	46	19	40	61
Theft	3	26	39	40	68	60	41	65
Fraud	--	7	25	33	20	--	95	64
Other	19	38	76	24	81	43	29	76

SOURCE: Peterson and Braiker (1981).

[a]Prevalence indicates the percent of prisoners in each group who committed a given type of crime prior to incarceration. Prisoners are assumed to have committed the actual offense for which they were convicted.

Table 2.2

AVERAGE CRIME RATES BY CONVICTION OFFENSE FOR COHORT OF INCOMING PRISONERS

Conviction Offense	Crime[a]								
	Homicide	Rape	Armed Robbery	Assault	Drug Sales	Burglary	Auto Theft	Forgery	Cons
Homicide & robbery	0.31	0.07	7.1	4.0	59	9.9	3.2	12.6	6.5
Homicide & another crime	0.11	0.05	0.3	1.5	376	3.2	0.4	0.2	1.0
Homicide only	0.27	0.27	0.2	6.5	77	1.7	0.3	0.2	3.7
Rape	--	1.23	4.8	2.0	3	4.6	0.9	0.2	2.3
Robbery & assault	--	--	1.5	2.5	1	3.1	5.3	0.5	0.6
Robbery & burglary	--	0.41	1.8	2.4	26	14.6	10.7	2.5	8.3
Robbery & another crime	--	0.09	17.8	4.5	72	1.5	1.3	1.7	8.0
Robbery only	--	0.04	4.9	3.1	34	7.2	0.7	1.0	6.0
Assault	--	--	0.7	2.9	167	2.5	0.2	1.2	4.0
Burglary	--	0.04	0.6	2.0	40	35.9	0.7	1.7	7.9
Drugs	--	0.04	0.4	1.0	176	3.1	0.4	1.0	4.6
Theft	--	0.14	1.3	2.5	17	11.5	7.0	2.7	11.3
Fraud	--	--	0.05	0.5	21	0.3	--	8.0	6.9
Other	--	0.12	0.6	4.1	22	3.4	3.7	8.5	2.5
TOTAL	0.03	0.08	1.93	2.6	74	8.1	1.6	2.2	5.8

SOURCE: Peterson and Braiker (1981).

[a]These averages are derived from figures that include people who, according to their own reports, did not commit the crimes for which they were convicted.

seriousness of juvenile criminality, drug use, and the presence of a prior felony conviction. Age was only weakly associated with offense rates (younger offenders were active in more types of crime). The fact that an inmate had served a prior prison term had no association with his current offense rate. Peterson and Braiker also included in their models a number of psychological variables, such as self-image and attitudes toward crime, that proved highly predictive of high-rate offense. High-rate offenders tended to share a set of beliefs that were consistent with their criminal lifestyle--e.g., that they could beat the odds, that they were better than the average criminal, that crime was exciting, and that regular work was boring. The respondents whom Peterson and Braiker predicted to be the 25 percent highest in rate of crime commission accounted for 58 percent of the armed robberies, 46 percent of the assaults, 48 percent of the drug sales, and 65 percent of the burglaries reported by the sample.

THE SECOND INMATE SURVEY

Rand's second inmate survey, which provided the data used in this report, was designed to remedy a number of deficiencies in the first survey and to test to what extent the findings of the first inmate survey could be generalized to other jurisdictions. The sample was larger, consisting of 2190 prison and jail inmates in three states--California, Michigan, and Texas. Jail inmates were included to provide information on offenders the system apparently viewed as less serious. California was included for replication. Texas and Michigan were picked as representatives of southern and eastern jurisdictions and because they had computerized records for sample selection. This survey was not

anonymous. The identity of the respondents was retained for follow-up purposes [4], and a number of official record items were coded for the prison inmates. The crime questions were modified to allow high-rate offenders to give rates (e.g., more than once a month, but less than once a week) rather than total counts of crime [5]. A number of redundant questions were interspersed throughout the questionnaire as reliability checks on earlier responses, and 250 respondents were retested one week after they completed their first response.

The Sample

The sample of prison inmates in each state was chosen to represent an incoming cohort of inmates [6] from the selected counties shown in Table 2.3. Jail inmates from the same counties were selected on a random basis from those serving post-conviction sentences. The number of respondents selected from each prison and jail is shown in Table 2.4. The sample was restricted to a few counties in each state so that prison and jail inmates would be from the same geographic area. The counties were selected to represent both large and medium size metropolitan areas.

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[4] The actual identifiers of the respondents are maintained on a separate computer file. Only one individual has the ability to link this file with the survey responses and this can only be done with the consent and supervision of Rand's Human Subjects Review Board.

[5] This format was found to provide more accurate information in pretests where police officers were asked to recall arrests that they had made.

[6] An incoming cohort is more representative of the offenders the court has to sentence (and therefore more appropriate for incapacitation studies) than an in-prison sample, which tends to overrepresent murderers, rapists, and others serving very long terms. If every year 10 men are sentenced to prison, 8 for 2 years and 2 for 10 years, then the steady state prison population will be 36--16 men serving 2-year terms and 20 serving 10-year terms.

Table 2.3

COUNTIES FROM WHICH INMATES WERE SAMPLED

State	County	Central City
California	San Diego	San Diego
	Ventura	Ventura
	Fresno	Fresno
	San Joaquin	Stockton
	San Francisco	San Francisco
Michigan	Wayne	Detroit
	Genesee	Flint
	Kent	Grand Rapids
	Ingham	Lansing
	Washtenah	Ann Arbor
Texas	Dallas	Dallas
	Travis	Austin
	Nueces	Corpus Christi
	Jefferson	Beaumont

NOTE: Both prison and jail inmates sampled in the second inmate survey were convicted in these counties only. Jail inmates in Texas were not used in the final analyses (see text).

The final sample differed from the selected sample in a number of ways. Some of the selected sample did not show up for their scheduled session or refused to complete the questionnaire [7]. An analysis of response patterns (Peterson et al., 1982) revealed that there was no response bias by age group, prior record, race, or custody level except

[7] Participation was voluntary. Respondents who completed a questionnaire were paid $5.00.

Table 2.4

INSTITUTIONS FROM WHICH INMATES WERE SAMPLED

State	Institution	Sample Size
California (prisons)	California Correctional Institute, Tehachapi	77
	Deuel Vocational Institute, Tracy	76
	San Quentin State Prison	123
	Correctional Training Facility, Soledad	81
		357
California (county jails)	San Diego	144
	Ventura	44
	Fresno	42
	San Joaquin	106
	San Francisco	101
		437
Michigan (prisons)	State Prison of Southern Michigan, Jackson	244
	Michigan Reformatory, Ionia	112
	Michigan Training Unit	66
		422
Michigan (county jails)	Wayne	200
	Genesee	28
	Kent	101
	Ingham	28
	Washtenah	16
		373
Texas (prisons)	Wynne Unit	99
	Ellis Unit	89
	Coffield Unit	275
	Ferguson Unit	138
		601

in California, where Hispanic inmates were underrepresented. An examination of the administrators' logs revealed that most of the Texas jail inmates had in fact been sentenced to prison and were only in jail awaiting transportation. Because their inclusion did not improve the representativeness of the sample, they were dropped from further analysis. To correct for differences in response rates across institutions, the sample of Texas prison inmates was weighted.

Survey Administration

The questionnaire was administered to groups of between 20 and 30 men in classrooms, visiting rooms, or other facilities available inside the institutions. Eight survey administrators were hired and trained to conduct the survey sessions. Sessions were usually run by two or three administrators, each of whom had received approximately 20 hours of training on the procedures and the questionnaire, and had participated in two pretests before beginning fieldwork. All but one of the administrators had had previous experience working with felons in correctional institutions. The inmates selected for the survey were notified by mail. The institutions divided the men into groups, assigning them to sessions.

At a typical session, men arrived in small groups and had an opportunity to talk with the survey administrators before the session began. One administrator passed out the questionnaires while the other explained the purpose of the survey and the response task. Then an administrator read the Agreement To Participate form aloud and asked the men who wanted to participate to sign their names on the forms. Those who refused were asked to leave. The administrators reviewed the

instructions on how to fill out the questionnaire and offered to help with any questions or problems. They also offered Spanish versions of the questionnaire to men who could not read English and asked the nonreaders to identify themselves so that other arrangements could be made.

Sessions generally ran smoothly. Respondents worked on their own to fill out the questionnaire, asking administrators for help when necessary. When a respondent finished, he turned in his sealed questionnaire and signed his name to a list to receive the $5.00 payment for participating.

Procedures for men in disciplinary segregation varied. In Texas, they were not allowed to participate. In California, administrators went to the man's cell. In one Michigan prison, the men in disciplinary segregation were included in a single group session; otherwise, individual administration was arranged.

The Questionnaire

The self-administered questionnaire, which took about 50 minutes for the average respondent to complete, asked about the following:

1. Background in crime (e.g., age first arrested, number of felony convictions).

2. Attitudes toward criminal behavior and criminal justice system.

3. Criminal behavior during a specific time period, arrests during the "street months," and current convictions.

4. Other behavior during the specific time period, such as use of drugs and alcohol, employment, and changes in residence.

5. Motivations for criminal behavior.

6. Details of crime resulting in the current conviction.

7. Arrests, incarceration, and criminal behavior during two earlier reference periods.

8. Demographics.

9. Participation in prison treatment programs during current term.

As indicated in item 3 above, the questionnaire asked about criminal behavior during a time period called the "street months," a period which the respondent defined for himself following questionnaire instructions. The period ended with the month of the arrest leading to his current conviction. It began two Januaries before the month of arrest (or one January before if the arrest month was January) and excluded any months during which the respondent was in jail or prison. The length of the "street month" period varied among respondents from 1 to 24 months. The respondent marked his complete street month time period on a large card and could refer to it when necessary while completing the questionnaire.

The Reliability and Validity of Responses

Do inmates provide accurate information when asked about their prior criminal activities? The evidence suggests that they do.

Visual inspection of the survey booklets and the field reports of the administrators suggest that most inmates were trying to provide accurate information. For instance, figures were frequently crossed out or erased and changed by one or two numbers. Respondents asked the administrators technical questions about whether a particular crime was a theft or a burglary. And marginal notes were often included by the respondents to explain their answers.

Perhaps more definitive evidence on the validity of self-reported responses was provided when the prison inmates' accounts of their current conviction offense and prior arrests were compared with data from official records (Marquis and Ebener, 1981). First, this analysis revealed that, on the average, prisoners do not deny arrests and convictions. Amounts reported in the questionnaire were usually equal to or greater than the amounts coded from the records. Response reliability was moderately high for self-reports of convictions, but uncertain for reports of arrests. Discrepancies between survey and record value could not be predicted well by ability, memory, or demographic variables, so we did not identify the "kinds" of prisoners prone to lying or to other response errors.

As an alternative means of determining the effects of questionable responses on research results, Chaiken and Chaiken (1982b) constructed a number of validity indicators that could provide an overall validity assessment for each questionnaire [8]. They were then able to determine the consequences of dropping the most unreliable respondents from the analysis. The validity indicators were 14 items comparing survey responses with official records (age at first arrest, age at time of survey, number of arrests, etc.) and 15 items comparing the consistency of responses within the questionnaire on redundant items.

The failure patterns for the external and internal validity indicators were generally uncorrelated with self-reports of crime. Dropping the respondents with poor validity scores did not result in any systematic pattern of changes in aggregate crime measures, nor did it change any of the analytic results.

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[8] This was an attempt to identify respondents who were either confused or consistently lying.

III. THE CONCEPT OF SELECTIVE INCAPACITATION

In this report we introduce the term "selective incapacitation" to refer to sentencing policies that attempt to distinguish between high-rate and lower-rate criminal offenders in determining who will be incarcerated and for how long. For instance, if convicted robbers who have a prior conviction for robbery or use particular types of drugs are found to have the highest average offense rates for robbery, then under selective incapacitation sentencing they might be given longer terms than other convicted robbers.

One obvious argument against selective incapacitation rests on moral and ethical grounds. This involves the classic problem of "false positives"--i.e., our ability to discriminate high-rate from low-rate offenders. Under a policy of selective incapacitation, some of the offenders who would be categorized as high-rate offenders and sentenced to longer terms would not actually have high offense rates. This possibility may offend some who would apply the same standards required for conviction--proof beyond a reasonable doubt--to the identification of high-rate offenders. Nevertheless, for a number of reasons, the concept of selective incapacitation should not be immediately judged categorically unacceptable on ethical grounds.

Most states now use highly subjective criteria to single out particular types of offenders for more severe sentences. In some instances, deterrence is used as the theoretical justification for these longer terms (e.g., longer terms for offenders who use guns, for those whose victims are elderly or infirm, or for those who rob transit

employees) even though there is no clear evidence of their deterrent effect. In other instances, the longer terms are clearly designed to incapacitate those thought to represent high risks to society (e.g., offenders with serious prior records). Habitual offender statutes and career criminal prosecution programs obviously fall in this category. Since legislators are likely to continue distinguishing particular groups of offenders for harsher sentencing, it may make more sense to base these distinctions on valid predictors of risk rather than on emotional responses to particular crimes or on mere hunches.

As a moral or ethical issue, the problem of false positives is not exclusive to selective incapacitation. At this time in the development of criminal justice, both research evidence and conventional wisdom support incapacitation as the most direct means of reducing street crime [1]. In response to the continuing high rate of crime, citizens are demanding tougher sentences to reduce crime.

Suppose we adopt the Blumstein and Cohen (1973) position that society will adjust its laws and sentencing practices to incarcerate a fixed proportion of the population, which is roughly the same as assuming that the current pressure for tougher sentences will result in the available prison space being filled to capacity. In either case, a given number of offenders will be incarcerated. The limiting factor on sentence severity, then, is capacity, not society's view of appropriate sentences. On the average, offenders will be serving shorter terms than society believes is just. The issue becomes whether all offenders should be granted equal leniency or whether the leniency required by

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[1] A recent public opinion survey by The Field Institute (1981) found that of all the possible justifications for imprisonment--rehabilitation, deterrence, punishment, or incapacitation--incapacitation was the one most strongly endorsed.

strained prison capacity should be granted selectively to those who statistically pose the least risk. Currently, it is on similar grounds that probation is often granted.

As an alternative, we might assume that society can and will continue to increase overall sentence severity until the crime rate falls below an acceptable level. As will be discussed in a later section, it can be shown that selective incapacitation can achieve the same reduction in crime as a general incapacitation approach, but at a considerably lower level of incarceration. More important, by using selective incapacitation to achieve a given crime level we can reduce the number of false positives within the category of those low-rate offenders (or offenders not likely to recidivate) who are incarcerated.

In summary, incapacitation offers the only objective or functional basis for distinguishing among different offenders as to their appropriate sentence length. The severity of the offense (robbery is more serious than theft) can be used to order punishment severity among different crime types, but not to establish a scale of severity within the crime types. The concept of selective incapacitation suggests which offenders should serve longer terms. Whether one believes that the prison population is constrained by capacity or driven by the prevailing crime rate, selective incapacitation provides a means of minimizing unnecessary incarceration.

For those who are troubled by the idea that two people who commit the same crime may receive different sentences, we point out that this has always been the case. For instance, men serve longer terms than women (Pannell, 1981); defendants with prior records are more likely to be incarcerated than those without (Greenwood, 1980). We are simply

offering a more rational method for distinguishing among offenders. Every offender would be on notice as to what sentence he would face in the future. The different prescribed terms for different categories of offenders would be published in the form of sentencing guidelines or legislatively prescribed sanctions. An offender would know exactly what risks he faced. In this way, selective incapacitation is no different than the selective career criminal prosecution programs adopted by many prosecutors across the country (Chelimsky, 1980; Petersilia, 1978; Greenwood, 1980), with the one exception that under selective incapacitation, those identified for longer terms would be distinguished on a scientific or objective basis. Under career criminal prosecution, the process of identifying the career criminal is more subjective.

The above discussion of selective incapacitation should not be interpreted as uncritical endorsement. The decision to adopt such policies would involve difficult choices among conflicting values and such choices are not the purpose of this report. Our discussion is intended to present a controversial concept in a reasoned context so that it can be weighed against the other feasible alternatives.

DEFINITION OF THE CONCEPT

As we define it, the concept of selective incapacitation involves three elements:

1. A prediction or classification scheme that divides offenders into groups with substantially different average offense rates.
2. A perception of the sentencing framework as a device for allocating the available incarceration (prison and jail) capacity.

3. A procedure for developing sentencing criteria that improve or optimize the incapacitation effects achieved for any given level of incarceration.

A sentencing policy has an "incapacitation effect" to the extent that crimes are prevented by the incarceration of offenders who would otherwise be active. The amount of crime prevented is a function of the rate at which offenders commit crimes and the amount of time they are restrained. For instance, if at any given time a state has 40,000 offenders and 10,000 of them are incarcerated, the actual crime rate would be only 75 percent of what it would be without incarceration. If an identifiable group of 5000 offenders accounted for half the crimes of the total group, then incarcerating these offenders for half of their careers would reduce the crime rate by 25 percent even if no one else were locked up. In the second case, a 25 percent reduction in crime would be achieved by an incarceration level of only 2500 instead of 10,000.

A MODEL FOR ESTIMATING INCAPACITATION EFFECTS

The basic concepts for the model used in this study to estimate the effects of incapacitation were developed by Shinnar and Shinnar (1975). They assumed that there is only one type of crime and that all offenders committed crimes at random intervals at the same average rate (λ). They further assumed that all offenders are subject to the same probability of arrest and conviction (q) for any one crime and have the same probability of being incarcerated upon conviction (J). Among those incarcerated, they assumed sentence lengths to be exponentially distributed with average length S.

With this model, the average or expected time served for any one crime is qJS, the product of the probability of arrest and conviction times the probability of incarceration times the average term. The fraction of time that an offender will be free to commit crime is

$$\eta = \frac{1}{1 + \lambda qJS} .$$

As an example, assume that we have a jurisdiction with 100 offenders (N), each of whom commits crime at the rate (λ) of 10 per year. Further assume that the probability of arrest and conviction (q) for any one crime is .03, the probability of being incarcerated after conviction (J) is 0.5, and the average time served (S) is two years. If no one were incarcerated, the crime rate would be 1000 ($N\lambda$) crimes per year. Under sentencing policy qJS, each offender is free to commit crimes only 77 percent of the time:

$$\eta = \frac{1}{1 + \lambda qJS} = .77 .$$

With 100 offenders, 23 are incarcerated at any one time. Those who are free commit 770 crimes per year. Every year, approximately 11.5 offenders ($\lambda qJN\eta$) enter prison and another 11.5 are released.

We have shown elsewhere that all offenders do not have the same offense rate. In fact, they vary considerably. To make our example more realistic, assume that 90 offenders have an offense rate of 5 crimes per year and 10 have an offense rate of 55. The average offense

rate for all offenders is still 10. The sentencing policy of q = .03, J = .5, and S = 2 would now work as follows:

- The low-rate offenders would be free 87 percent of the time and the high-rate offenders would be free only 48 percent of the time.
- The total incarcerated population would be 18--11.77 low-rate offenders and 6.23 high-rate offenders. The difference in incarceration rates between the two groups is caused by the fact that the high-rate offenders will be arrested and incarcerated much more quickly due to their higher rate of activity.
- The total number of crimes committed in any one year will now be 599. Notice this is lower than the estimated amount of crime when we assumed that all offenders had the same offense rate, because the high-rate offenders have a greater likelihood of being incarcerated at any specific time.

If we were able to identify the high-rate offenders and we wanted to maximize the incapacitation effect achieved by the incarcerated population of 18, we would increase the terms of the high-rate offenders or increase their probability of going to prison, and decrease the terms of low-rate offenders until we approached a situation where we had all 10 high-rate offenders and 8 low-rate offenders in prison, leaving at risk only 82 low-rate offenders, who would commit 410 crimes per year. This is a 30 percent reduction in the amount of crime that would result from a policy of sentencing all offenders equally.

Of course, we cannot identify all of the high-rate offenders with certainty. The best that we can do, as we demonstrate in the following section, is identify a number of characteristics associated with high-rate offenders. Suppose that 30 percent of the offenders can be identified as drug users. Assume further that they are distributed as follows:

		Offense Rate		
		5	55	
Drug Users	No	68	2	70
	Yes	22	8	30
		90	10	

If we interviewed the incarcerated offenders, we would learn that 80 percent of the high-rate offenders were drug users compared with only 24 percent of the low-rate offenders. Therefore, we might choose drug use as a factor on which to base selective incapacitation.

Table 3.1 shows what happens under various policies that increase sentence lengths for drug users while decreasing sentence lengths for non-drug users in order to maintain a steady incarcerated population of 18. Increasing the terms of the drug users by 50 percent to three years results in a 5 percent reduction in crime; doubling their terms causes a 7.6 percent reduction in crime. In neither case is there an increase in the number of inmates.

What about those offenders who are predicted to be high-rate offenders because of their drug use, but are not? The obvious answer is that they will be penalized and serve longer terms. But overall, the number of low-rate offenders held in prison will decline. If the sentence for drug users is increased from two to three years, while the sentence for non-drug users is decreased to 1.56 years, the total number of inmates will remain unchanged. But the number of low-rate offenders incarcerated will decline from 11.74 to 11.14. If this hypothetical jurisdiction attempted to achieve the same 5 percent decrease in crime rate through a strategy of general incapacitation, by increasing all terms equally, the average term served would increase to 2.36 years, the prison population would increase to 20, and the number of low-rate offenders incarcerated would increase to 13.5--20 percent more than if selective incapacitation were used.

Table 3.1

IMPACT OF HYPOTHETICAL SELECTIVE SENTENCING POLICIES

Sentence Length for Drug Users (in years)	Length for Non-Drug Users (in years)	Number of Inmates				Total Crimes Per Year
		Low-Rate, Non-Drug	High-Rate, Non-Drug	Low-Rate, Drug	High-Rate, Drug	
2	2	8.9	1.2	2.9	5.0	599
2.5	1.76	7.9	1.2	3.5	5.4	582
3.0	1.56	7.1	1.1	4.1	5.7	569
4.0	1.23	5.7	1.0	5.1	6.2	553

This shift in the nature and size of the prison population is a critical characteristic of what we are calling "selective incapacitation" policies. If a jurisdiction is attempting to reduce its crime rate through selective incapacitation and its ability to differentiate high-rate from low-rate offenders is not perfect, as it can never be, then some low-rate offenders will serve longer terms. However, the average term served by all low-rate offenders will be lower and the number of offenders incarcerated will be smaller than if the same crime reduction were achieved by a generalized incapacitation strategy.

Thus far we have described selective incapacitation policies as if all sentencing were done by a machine, as if information on the defendant's characteristics and his current offense goes in and out comes his sentence--"5.2 years, next defendant please." This is obviously not the way the system currently works, nor the way it is likely to work in the future. The sentencing policies used as examples here are simplifications adopted for analytical and expositional purposes. In reality, the concept of selective incapacitation could enter into the felony disposition process in a variety of ways, just as the concepts of rehabilitation or deserts enter into the current process. There are a number of distinct phases of the process in which the concept could be relevant.

Many police departments are not able to conduct complete investigations for every reported felony or even for every felony suspect in custody. They need to ration their resources. Moreover, the chances of successful prosecution depend almost exclusively on the

quality and thoroughness of the police investigation efforts--the availability of physical evidence, the testimony of several witnesses (University of California at Davis, 1981; Forst, Lucianovic, and Cox, 1977), and amount of detail conveyed to the prosecutor in written reports or recorded testimony (Greenwood, Chaiken, and Petersilia, 1977). The police might want to use the concept of selective incapacitation to help develop priorities concerning which cases they will investigate most thoroughly.

Similarly, the prosecutor must dispose of more cases than he can ever bring to trial or even completely prepare. Most cases are now disposed of through informal negotiations between the prosecution and defense. Career criminal prosecution[2] was developed as a method of providing greater attention to cases involving serious repetitive defendants. The concept of selective incapacitation is consistent with that of career criminal prosecution and would provide a more systematic means of identifying who should be the target of such programs.

In sentencing decisions, selective incapacitation concepts could be written into explicit guidelines concerning choices between probation or incarceration or in setting term lengths. These guidelines could range from simply advising to mandating specific terms.

Similarly, in those states where a parole board still retains the power to set release dates, selective incapacitation concepts could be incorporated into their decisions. The great diversity in sentencing practices that currently exists across states and the limited amount of

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[2] Basically, a career criminal prosecution unit concentrates on the small number of defendants with lengthy prior records. One deputy prosecutor follows each case all through the process and attempts to get the longest sentence possible (Chelimski and Dahlmann, 1980).

research on the effects of changes in sentencing practices on case outcomes make it impossible to be more specific about how selective incapacitation concepts could best be incorporated into practice. A lot will depend on which agency--legislative, prosecutor, parole board, etc.--is motivated to adopt them.

IV. INDIVIDUAL OFFENSE RATES

In preceding sections we have summarized recent research findings on the pattern of criminal careers and introduced the concept of selective incapacitation as a method of incorporating this information into sentencing policies to increase the impact of incarceration on crime reduction. We have also shown that the effectiveness of selective incapacitation policies depends critically on the distribution of individual offense rates and on the ability of the system to identify high-rate offenders.

In this section we use self-reported data provided by Rand's second inmate survey to describe the distribution of individual rates and to develop and evaluate a simple scale for identifying high-rate offenders. In Sec. V we will use this scale to estimate the potential impacts of several selective sentencing policies [1].

THE SECOND INMATE SURVEY

The primary objective of Rand's second inmate survey was to obtain accurate estimates of individual crime rates and their variation across sites. The survey instrument used a complex series of questions about each crime type in order to elicit accurate responses (Peterson et al., 1982). Specifically, each respondent filled in a calendar that showed whether he was incarcerated, hospitalized, or out on the street during each month of a one- to two-year period (see discussion of prior Rand research in Sec. II). All of the questions about his recent criminal

[1] For more detailed information on individual patterns or rates of offense, see the two reports by Chaiken and Chaiken (1982, a and b).

behavior referred to periods in this calendar. Figure 4.1 (reproduced from the inmate survey booklet) shows the format of the crime questions for business robbery.

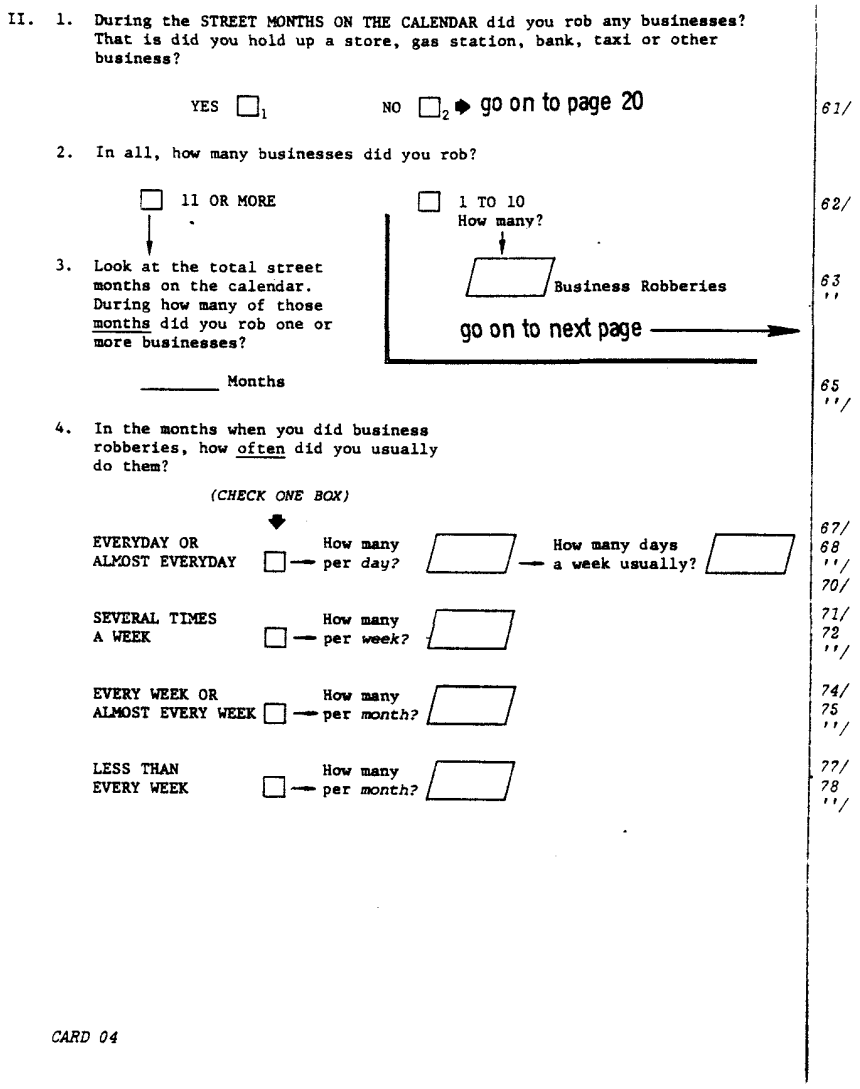

Fig. 4.1--Sample page from survey questionnaire

PREVALENCE OF VARIOUS CRIME TYPES

Previous studies of criminal career patterns have shown that there is little specialization among offenders (Petersilia, 1980). Studies of arrest histories (Wolfgang, Figlio, and Sellin, 1972; Blumstein and Cohen, 1979; Williams, 1979) also show that there is little correlation among offense types in subsequent arrests. In other words, the probability that an offender's next arrest will be for burglary is virtually independent of what the last arrest was for.

In the first Rand survey, Peterson and Braiker (1981) found that more than half of the sample engaged in at least four different types of crime during the three-year period before their current term. The results from the second Rand survey are basically consistent with these prior findings. However, there was some evidence that offenders could be classified in terms of the maximum degree of violence or force they were likely to use.

Table 4.1 shows the percentage of respondents in the second survey who were active in various crime types, broken down by state and conviction offense. For example, out of the 178 convicted robbers in the California sample, 76 percent reported committing robberies during the two-year window preceding their current term, 58 percent reported committing burglaries, and 57 percent sold drugs. Among the 24 percent of the convicted robbers who did not report committing any robberies, some denied committing any crime, while others reported committing other related types of crime, such as kidnapping or assault.

Table 4.1 shows several interesting patterns. First, convicted robbers are more likely to be engaged in any given type of crime than

Table 4.1

PERCENTAGE OF RESPONDENTS CONVICTED OF SPECIFIC CRIMES
BUT ACTIVE IN OTHER SURVEY CRIME CATEGORIES

State	Conviction Crime	Prevalence						
		N	Robbery	Burglary	Assault	Theft	Forgery or Fraud	Drug Sales
California	Robbery	178	76	58	49	59	39	57
	Murder/assault	126	23	42	56	38	30	43
	Sex	9	11	22	33	22	0	22
	Burglary	145	25	94	24	61	37	52
	Theft or fraud	136	26	38	18	76	54	46
	Drug	33	12	19	18	15	15	97
	Other	125	20	39	29	42	28	53
Michigan	Robbery	150	64	48	40	51	23	42
	Murder/assault	105	26	33	43	38	18	31
	Sex	40	18	34	27	48	20	32
	Burglary	115	26	91	30	62	18	51
	Theft or fraud	130	18	43	16	76	47	30
	Drug	34	06	12	09	21	26	88
	Other	142	14	30	27	32	22	43
Texas	Robbery	117	72	53	40	54	34	38
	Murder/assault	65	08	15	42	18	12	17
	Sex	33	09	21	19	19	12	06
	Burglary	191	16	88	21	53	32	39
	Theft or fraud	84	12	33	11	70	57	29
	Drug	23	04	09	09	09	13	--
	Other	52	12	26	17	26	23	45

any type of offender other than the type convicted of the given crime. For instance, the only type of offender who is more likely to be selling drugs than convicted robbers is a convicted drug dealer. Second, in Texas all of the offenders other than convicted robbers tend to be active in fewer types of crime than offenders in California or Michigan. Third, Chaiken and Chaiken (1982b) found that the 20 percent of the sample who reported committing only one type of crime were primarily drug dealers, assaulters, and burglars.

INDIVIDUAL OFFENSE RATES

Six years ago there was virtually no available information on individual rates of criminal activity. Estimates of average offense rates, which were based on various methods of estimation from aggregate crime and arrest data, ranged from less than one felony per year (Greenberg, 1975) to five or more (Shinnar and Shinnar, 1975). Petersilia's (1977) study of 49 robbers estimated that this group averaged about 20 crimes per year. Subsequently, Peterson and Braiker (1981) and Blumstein and Cohen (1979) developed estimates for specific offense types based on self-reports and arrest histories, respectively.

Table 4.2 shows the average annual individual offense rates among active offenders[2] in the three sample states, broken down by conviction offense type. From these data several patterns emerge. Among California and Michigan inmates, the offense rates within any conviction crime category are considerably higher than those previously reported. In California, convicted robbers reported committing, on the average, 53 robberies per year. Those who were active in burglary (58

[2] Those who committed at least one of that specific crime type.

Table 4.2

AVERAGE ANNUAL OFFENSE RATE FOR ACTIVE OFFENDERS

	Conviction Crime	Robbery	Assault	Burglary	Theft or Fraud	Drugs
California	Robbery	53	4	90	163	646
	Murder/assault	11	6	22	98	849
	Sex	--	0	1	52	162
	Burglary	6	1	281	348	756
	Theft or fraud	3	1	41	573	601
	Drug	21	0	9	40	2268
	Other	16	1	6	88	691
Michigan	Robbery	77	2	50	141	902
	Murder/assault	27	2	14	64	571
	Sex	1	1	7	460	127
	Burglary	7	1	176	156	523
	Theft or fraud	7	1	45	719	374
	Drug	1	1	13	23	1354
	Other	10	1	20	87	257
Texas	Robbery	9	1	24	98	356
	Murder/assault	1	1	1	62	115
	Sex	4	1	4	9	13
	Burglary	1	1	60	91	327
	Theft or fraud	5	0	2	289	86
	Drug	6	1	2	35	1416
	Other	1	1	33	31	157

percent) reported 90 per year. The offense rates reported by Texas offenders were considerably lower than those in the other two states.

Previous research (Petersilia, 1977; Peterson and Braiker, 1981) showed that the distribution of offense rates among active offenders was heavily skewed toward the high end. In other words, most offenders reported fairly low rates of crime. The average rate for any particular group is thus extremely sensitive to the rates of the few offenders out in the right-hand tail of the distribution. It is this uneven distribution and the potential capacity to identify the relatively few high-rate offenders that provide the motivation for developing a selective incapacitation strategy.

The extreme skewness of the offense rate distributions can be seen in Fig. 4.2, which shows the distribution of individual burglary rates. In Table 4.3, which shows the median and 90th percentile offense rates for various offenses, a similar distribution is apparent. By definition, half of the respondents who committed the crime reported rates that were below the median and 10 percent reported rates above the 90th percentile. As the figures from Table 4.3 indicate, incarcerating one robber who is above the 90th percentile for one year would prevent more robberies than incarcerating 18 offenders who are below the median

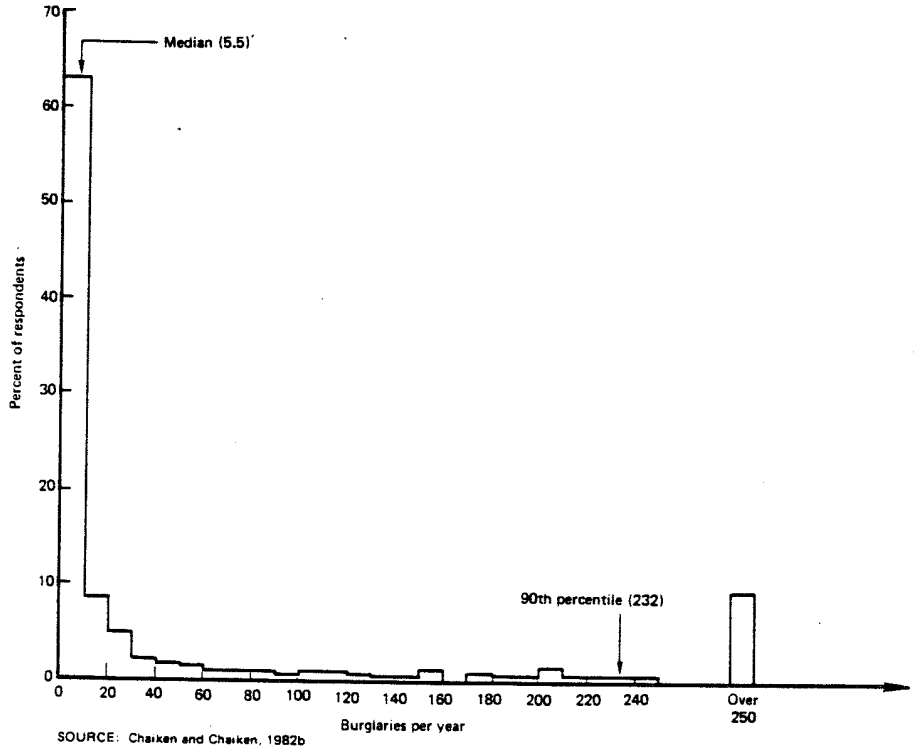

Fig. 4.2 -- Distribution of self-reported burglary rates, entire sample

Table 4.3

MEDIAN AND 90TH PERCENTILE OF INDIVIDUAL CRIME RATES
(All respondents in the three states)

Crime Type	Median	90th Percentile
Burglary	5.45	232
Robbery	5.00	87
Business	4.60	57
Person	4.29	57
Assault	1.71	12
Theft	8.59	425
Auto	3.43	77
Other	8.00	485
Forgery and credit cards	4.50	206
Fraud	5.05	258
Forgery + fraud + theft	10.29	531
Forgery + fraud + theft + burglary	16.00	634
All except drug dealing	14.77	605
Drug dealing	100.00	3251
Total	41.60	2126

SOURCE: Chaiken and Chaiken (1982b).

for the same period of time [3]. The difficulty lies in identifying those with high rates.

METHODS OF IDENTIFYING HIGH-RATE OFFENDERS

The impact of incarceration on street crime is a direct function of the rate at which incarcerated offenders would have committed crime if they had not been confined. If the average offense rate of the incarcerated population can be increased by more careful selection of who goes to prison or by adjusting sentence lengths, the amount of crime on the street can be reduced.

There are two basic methods for attempting to identify dangerous or high-rate offenders. One is subjective and relies on expert evaluations of an offender's background, behavior, and psychological characteristics. The other relies on actuarial data.

The subjective approach has been the traditional method used in sentencing. A convicted defendant may be referred to a panel of court-appointed psychologists or psychiatrists or to a reception clinic within the correctional system. The evaluations of the panel or clinic are then considered by the court in determining the sentence. If a defendant is sentenced to an indeterminate term, periodic evaluations will be made to determine when he is suitable for release. Recent evaluations of these procedures (Monahan, Brodsky, and Shah, 1982) have shown that they have very little predictive accuracy.

The second method of prediction, based on actuarial data, has been used most frequently in the form of parole experience tables to guide

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[3] For a more detailed description of the individual offense rates, see Chaiken and Chaiken (1982b).

release decisions (Hoffman and Adelberg, 1980). These tables, which use a variety of factors to predict an offender's chances of success on parole, have been shown to be more accurate than diagnostic studies.

The method of identifying high-rate offenders that we propose in this study is also based on actuarial data, rather than subjective judgments about individual offenders. Basically, the approach involves analyzing data from a large sample of offenders to determine which of many individual characteristics are associated with high offense rates.

From a scientific viewpoint, the most appropriate method of conducting this analysis to develop information for selective incapacitation would be roughly as follows. First, within some specified geographic area and time period, we would randomly select a large sample of offenders convicted for crimes for which selective incapacitation is to be considered. Second, for each offender, we would gather and code information on characteristics that could conceivably be made available to the court for sentencing purposes. These would obviously include such factors as prior convictions and age, and might also include such factors as juvenile record, drug use, and employment history. They would clearly not include such factors as race, income, or mental attitudes. Third, at some point in the future, when the defendants had each had an opportunity to accumulate a significant amount of street time (at least two years), we would estimate their individual offense rates through self-reports or from their recorded arrests [4]. And finally, having assembled these data, we could then use

[4] An offender's offense rate over time can be estimated by dividing his arrest rate, for any particular offense type, by his probability of arrest (Blumstein and Cohen, 1979). See Petersilia (1980) for a comparison of self-report and arrest history research designs.

a variety of multivariate statistical procedures to estimate the relationships among the possible predictive factors and offense rates. In order to test the accuracy of these estimates, it would be necessary to test them against a set of data separate from that from which they were derived.

The approach described above was not feasible for this study, given the nature of our sample. In our analysis, we proceeded as follows. First, using the self-reported data from the second inmate survey, we estimated the offense rates and characteristics of the respondents during the two-year period preceding their current arrest and confinement. Then, starting with a list of all characteristics measured in the survey, we identified a set of candidate predictive factors that satisfied both of the following criteria: (1) possible legal relevance and appropriateness for the court's consideration; and (2) relevance on the basis of prior research or theory. (See Appendix A for a discussion of all characteristics measured in the survey.) Limiting our analysis to defendants convicted of either robbery or burglary, we then categorized the respondents within each of the six combinations of state and conviction offense type (three states and two crimes) according to their self-reported offense rate for their conviction crimes as follows:

Low rate = below the medium rate reported for their offense type and state.

Medium rate = between the 50th and 75th percentile for their offense type and state.

High rate = above the 75th percentile for their offense type and state.

Next, we cross-tabulated each of the candidate predictors against these three self-report offense rate groups. This cross-tabulation is shown in Table 4.4. Finally, on the basis of the distributions shown in Table 4.4, we selected the following seven variables to comprise a simple additive prediction scale:

1. Prior conviction for the instant offense type.
2. Incarcerated more than 50 percent of preceding two years.
3. Conviction before age 16.
4. Served time in a state juvenile facility.
5. Drug use in preceding two years.
6. Drug use as a juvenile.
7. Employed less than 50 percent of the preceding two years.

The selection of these variables was based on the strength of their association with individual crime rates and their suitability for sentencing purposes.

This scale can be used to assign any individual offender a score ranging from 0 to 7 [5]. Offenders with a high score should have higher offense rates. Table 4.5 shows how offenders at each level of the scale are distributed across the three offense rate groups.

From these figures alone we can see that the scale discriminates fairly well. Although 50 percent of the respondents are by definition low-rate offenders (below the median offense rate in their state), only 18 percent of those who score 5 or more are low-rate. Conversely, while 25 percent of the full sample are by definition high-rate (above 75th percentile), only 9 percent of those who score 0 or 1 are high-rate.

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[5] Missing data were always scored as a zero, biasing scores downward.

Table 4.4

DISTRIBUTION OF REPORTED OFFENSE RATES VERSUS CANDIDATE PREDICTORS
(N=781)

Candidate Predictors	Survey Answers	Number of Cases	Self-Reported Offense Rate Categories[a] (in percent) Low (below the median)	Medium (between 50-75 percentile)	High (above 75th percentile)	Significant?[b]
1. Convicted on multiple counts	No	473	52	25	23	No
	Yes	308	47	25	27	No
	Missing	0	0	0	0	
2. Prior felony convictions	No	161	53	26	34	No
	Yes	590	49	25	26	No
	Missing	30	67	17	17	
3. Prior conviction for current offense	No	284	52	21	27	No
	Yes	257	42	28	30	Yes
	Missing	240	58	26	16	
4. Prior prison term	No	447	50	25	24	No
	Yes	308	48	26	26	No
	Missing	25	76	12	12	
5. Incarcerated more than 50% of 2 yrs preceding current arrest	No	621	55	25	21	Yes
	Yes	158	33	27	40	Yes
	Missing	2	100	0	0	
6. Convicted before age 16	No	509	55	25	20	Yes
	Yes	225	40	26	34	Yes
	Missing	16	63	19	19	
7. Juvenile commitment to state facility	No	549	53	25	21	No
	Yes	209	39	26	34	Yes
	Missing	22	77	9	9	

Table 4.4--continued

Candidate Predictors	Survey Answers	Number of Cases	Self-Reported Offense Rate Categories[a] (in percent) Low (below the median)	Medium (between 50-75 percentile)	High (above 75th percentile)	Significant?[b]
8. Drug use in past 2 years	No	378	68	17	15	Yes!
	Yes	365	34	31	35	Yes!
	Missing	37	30	46	24	
9. Drug use as a juvenile	No	279	65	21	14	Yes
	Yes	389	36	29	35	Yes
	Missing	112	64	20	16	
10. Employed less than 50% of 2 yrs preceding current arrest	No	209	59	23	18	Yes!
	Yes	436	43	27	30	Yes!
	Missing	45	69	16	16	
11. More than 3 jobs in the preceding 2 years	No	668	50	25	25	No
	Yes	60	46	33	21	No
	Missing	53	64	17	19	
12. Less than 23 yrs old at time of arrest	No	356	54	23	23	No
	Yes	419	47	27	26	No
	Missing	6	67	0	33	
13. Prior arrests for current offense type	No	534	57	23	20	Yes!
	Yes	212	31	31	38	Yes!
	Missing	35	66	14	20	

[a]Category for each offender is based on his offense rate for his conviction offense compared with others convicted of the same offense within his state.

[b]We test the hypothesis that of those who give the indicated response (Yes, No), 50 percent fell below the median offense rate (the "low" category), 25 percent fell in each of the other ("medium," "high") categories. "Yes" means hypothesis is rejected with significance between 1 and 5 percent. "Yes!" hypothesis is rejected with significance under 1 percent.

Table 4.5

PREDICTED VERSUS ACTUAL OFFENSE RATES

Score on Seven-Factor Scale	Actual Crime Rates (in percent)			
	Low	Medium	High	N
0	82	9	9	58
1	73	19	8	151
2	61	25	14	180
3	41	29	31	155
4	33	29	38	105
5 or more	18	32	50	131

Although it would be possible to make sentencing distinctions based on this seven-part scale, for analytic purposes we collapsed the scale into three categories of predicted offense rates--low, medium, and high. The collapsing is required to ensure that for each combination of state and offense type, there will be an adequate number of offenders in each category to generate meaningful statistics. These categories are as follows:

Collapsed Scale	Full Scale
Low	0-1
Medium	2-3
High	4 or more

Before we proceed further in evaluating the scale that resulted from this process, a number of comments are in order. First, the amount of effort we devoted to developing the scale falls far short of a serious attempt to find an optimal prediction scale for a specific offense type in a specific state. The data were pooled across offense types and across states, partly to provide an adequate sample size and partly because we did not have the resources to develop individual scales for each state and offense type. Second, we did not have time to conduct the type of multivariate analysis that would allow us to weight the individual predictor variables in a way that better fits the data.

Literature comparing the value of more sophisticated statistical prediction models with simple scales of the type we developed suggests that while the more sophisticated scales do somewhat better at fitting the data from which they are derived, both types of scales do about equally well when it comes to predicting a relationship in a new data set (Gottfredson and Gottfredson, 1980; Wilkins, 1973). The issue of how to construct the most efficient scale is one that will have to be considered in another study where there is an opportunity to test scales against an appropriate validation sample.

THE EFFECTIVENESS OF THE PREDICTION SCALE

There are a variety of ways to test how well the prediction scale described above discriminates between low-rate and high-rate offenders. Here we discuss three:

1. A comparison of median offense rates among predicted offense rate groups.

2. A comparison of average offense rates among predicted offense rate groups.
3. An analysis of what fraction of the respondents are labeled erroneously.

Perhaps the clearest evidence is provided by a comparison of the medians of the predicted offense rate groups within each state. These are displayed in Table 4.6. By definition, within each scale category, half the respondents reported offense rates lower than the median. In four out of six groups, the median of the predicted high group is more than ten times larger than the median for the predicted low group. In the other two cases, the difference is greater than a factor of 5. This comparison of medians is fairly insensitive to the rates provided by the outliers in the extreme right-hand tail of the distribution.

In order to estimate the effects on crime rates of using the prediction scale for sentencing decisions, we need a mean offense rate for each category of offense, not a median. As we have shown earlier in this section, the average offense rate for any group of respondents is always several times larger than the median. Therefore, the median is far too conservative a predictor. We also know from data described earlier in this section that the average offense rate reported by any sample of respondents, although unbiased, is an unstable estimate of their true mean, since it is very sensitive to the offense rates reported by the few respondents in the extreme right-hand tail [6]. Therefore, the estimate of the group average we have chosen to use in

[6] See Chaiken and Chaiken (1982b) for a further discussion of this statistical problem.

Table 4.6

MEDIAN ANNUAL OFFENSE RATES FOR PREDICTED OFFENSE RATE GROUPS

Crime Type	Predicted Rate	Median Annual Offense Rate		
		California	Michigan	Texas
Burglary	Low	1.4	1.2	0.9
	Medium	6.0	6.0	2.5
	High	92.9	12.0	17.9
Robbery	Low	0.6	0	0.6
	Medium	1.8	2.2	2.0
	High	12.6	3.0	4.0

analyzing incapacitation effects is a measure we call the truncated mean. It is calculated as follows:

1. Within each state and offense type we determine the 90th percentile of the offense rate distribution.
2. All offenders in that state who report offense rates greater than the 90th percentile have their rate set at the 90th percentile for the entire state.

The truncated mean is a more realistic estimate of the true mean than the median, and is much less sensitive to extreme outliers than the average.

Table 4.7 displays the truncated means for various offense categories grouped by state, conviction offense type, and predicted offense rate category. The truncated mean offense rates shown in Table 4.7 represent conservative estimates of the amount of crime that can be prevented by incarcerating different types of offenders. According to this test, the prediction scale works best for California and least well for Michigan. In California, our predicted high-rate burglars commit 33 times as many burglaries per year as the predicted low-rate burglars. High-rate and low-rate robbers differ by a factor of 15. In Michigan, the predicted low-rate burglars actually commit more crimes than the predicted median-rate burglars. This is due to two respondents who reported very high rates but had no prior records.

Notice that offenders predicted to be high-rate for their conviction crimes are also higher-rate for other crimes. Among inmates in California convicted of robbery, those predicted to be high-rate robbers also commit burglary at 30 times the rate of predicted low-rate offenders and sell drugs 8 times as frequently.

The third method of evaluating the scale is to determine what fraction of respondents are correctly categorized. Table 4.8 shows the comparison of each respondent's self-reported offense rate with his predicted rate.

The right-hand column shows that out of the 781 respondents who were convicted of either robbery or burglary, and for whom we can calculate offense rates for those crimes, 27 percent were categorized by our scale as low-rate, 44 percent as medium-rate, and 29 percent as high-rate for their conviction offense type and state. The three columns to

Table 4.7

TRUNCATED MEAN OFFENSE RATES FOR PREDICTED OFFENSE RATE GROUPS

State	Conviction Crime Type	Predicted Rate	Burglary	Robbery	Theft or Fraud	Assault	Drug Sales
California	Burglary	Low	12.6	0.1	33.0	0.3	8.4
		Medium	87.6	1.5	89.7	0.6	210.7
		High	156.3	3.8	124.6	1.4	388.2
	Robbery	Low	0.5	2.2	3.6	0.3	57.9
		Medium	7.2	11.0	29.3	1.8	224.5
		High	16.8	30.9	54.9	4.2	448.8
Michigan	Burglary	Low	71.6	0.5	7.6	0.2	21.2
		Medium	34.0	1.2	20.5	0.5	184.4
		High	101.4	1.7	30.4	0.8	250.7
	Robbery	Low	4.3	6.1	18.1	0.4	74.8
		Medium	6.2	11.7	26.8	1.0	294.3
		High	11.2	20.6	27.1	2.3	316.3
Texas	Burglary	Low	6.0	0.2	8.2	0.2	6.4
		Medium	20.5	0.2	35.3	0.3	49.7
		High	51.1	0.7	53.3	0.5	116.4
	Robbery	Low	1.6	1.4	13.8	0.4	44.7
		Medium	2.9	5.4	18.4	1.0	154.5
		High	5.9	7.7	50.4	1.2	324.4

Table 4.8

PREDICTED VERSUS SELF-REPORTED OFFENSE RATES FOR ROBBERY AND BURGLARY (in percent, N = 781)

Score on Prediction Scale	Self-Reported Offense Rates			
	Low	Medium	High	Total
Low (0-1)	14	10	3	27
Medium (2-3)	12	22	10	44
High (4-7)	4	10	15	29
Total	30	42	28	100

NOTE: Each respondent is compared only against other respondents from his state who were convicted of the same offense type.

the left show how the respondents should be categorized based on their self-reported offense rates. As this table demonstrates, 51 percent of the respondents were labeled correctly by our scale (the sum of the percentages along the diagonal running from upper left to lower right); 4 percent who were low-rate were falsely labeled high-rate; 3 per cent who were high-rate were falsely labeled low-rate; and the remaining 42 percent were equally divided between being labeled one category higher or lower than appropriate.

This information can be condensed as follows:

Labeled correctly..... 51%

Labeled high-rate,
actually low-rate.... 4%

Labeled low-rate,
actually high-rate... 3%

In order to evaluate the figures in Table 4.8, we need some basis for comparison. One obvious basis is that implied by the sentences being served by the respondents. If we categorize each group convicted of either robbery or burglary within each state as high-, medium-, or low-rate offenders on the basis of their sentence length, we can evaluate the accuracy of the predictions implicit in the sentences in the same way we evaluated (in Table 4.8) our prediction scale. A comparison of the two approaches yields the following results:

Accuracy	Seven-Factor Scale	Scale Implied by Sentences
Labeled correctly	51%	42%
Labeled high-rate, actually low-rate	4%	7%
Labeled low-rate actually high-rate	3%	5%

On the scale implied by their sentences, only 42 percent of the respondents were correctly categorized. Seven percent who were among

the lowest in offense rate were among the highest in sentence length, and 5 percent who were among the highest in offense rate were among the lowest in sentence length. According to these data, our scale increases the fraction of respondents who are accurately labeled by about 20 percent and decreases the percentage who are grossly mislabeled by almost half. This pattern is generally found across each combination of offense type and state, as shown in Table 4.9.

Clearly, our prediction scale does discriminate between low-rate and high-rate offenders. Better scales can probably be developed. Simpler scales will work almost as well.

SCALES USING FEWER FACTORS

As we discussed earlier in this report, any jurisdiction that adopts some form of selective incapacitation must confront the issue of which characteristics should be chosen for prediction purposes. From a statistical point of view, the answer is simple: A characteristic is a valid predictor only if it can be correlated with individual offense rates. For instance, although some state penal codes allow the court to impose a longer period of imprisonment if the defendant has served a prison term in the past, our analysis showed that the number of prior prison terms was not correlated with the rate of offense. Therefore, the number of prior prison terms is not a statistically valid characteristic for determining selective incapacitation policies.

From a legal or ethical point of view, the issue is more difficult. Which of the individual characteristics that can be statistically correlated with offense rates should the court be permitted to use in determining sentences? If marital status or education level were associated with individual offense rates, should the court be permitted to consider these factors in sentencing?

Table 4.9

PREDICTION ACCURACY OF SEVEN-FACTOR SCALE VERSUS SCALE IMPLIED BY CURRENT SENTENCES
(In percent)

State	Accuracy	Burglary		Robbery	
		Seven-Factor Scale	Scale Implied by Sentences	Seven-Factor Scale	Scale Implied by Sentences
California	Labeled Correctly	52	39	55	48
	Labeled High-Rate, Actually Low-Rate	2	9	6	9
	Labeled Low-Rate, Actually High-Rate	2	7	4	4
Michigan	Labeled Correctly	50	42	52	37
	Labeled High-Rate, Actually Low-Rate	5	4	5	6
	Labeled Low-Rate, Actually High-Rate	3	1	3	6
Texas	Labeled Correctly	50	43	47	42
	Labeled High-Rate, Actually Low-Rate	1	5	2	7
	Labeled Low-Rate, Actually High-Rate	1	6	2	6

Although such characteristics as marital status and education level may be regarded by some as inappropriate criteria for sentencing purposes, it is characteristics such as these that comprise the basis for the social history section contained in many presentence reports. If they are clearly inappropriate factors, why are they brought to the court's attention in many sentencing hearings today? The answer is, of course, that they are considered informally, as part of the court's overall evaluation of a defendant. They are used to make intuitive judgments about a defendant's future risk to the community and his need for, or amenability to, treatment. In this context it may be easier to approve of their use.

But when the objectives of imprisonment shift from rehabilitation toward punishment or incapacitation, it is much more difficult to justify longer terms for defendants who are not married or did poorly in school, since these factors have no direct relationship to criminal conduct.

In our seven-factor scale, the two factors determined from the defendant's adult criminal record--prior convictions for the crime being predicted and incarceration for more than half of the two years preceding the start of the current term--are the least likely to be deemed controversial. The two factors determined from the juvenile record--conviction prior to the 16th birthday and commitment to a state juvenile facility--are more likely to arouse controversy. The last three factors are not necessarily determined from either the adult or juvenile record, although two of them might be: use of hard drugs in

the two-year period preceding the current commitment and use of hard drugs as a juvenile. Drug use can be determined either from the arrest record or by observation or tests recorded at the time of arrest, and included in subsequent probation reports. The last factor, "employed less than half of the preceding two years of street time," is very likely to raise controversy.

Here we describe a sensitivity analysis designed to determine how well more restrictive sets of predictor variables identify high-rate robbers. In the following section we show the consequences, in terms of predicted incapacitation effects, of using these more restrictive predictors. Specifically, we test two predictive scales that are subcomponents of the seven-factor scale used in this study. Scale A uses only the two factors derived from the adult record--"prior convictions for robbery" and "incarcerated more than 50 percent." The three possible levels on the scale (0,1,2) divide the sample into three predicted offense rate categories--low, medium, and high. Scale B uses the two factors from Scale A plus the two juvenile record factors--"conviction prior to the 16th birthday" and "commitment to a state juvenile facility." To get a reasonable distribution of the sample across predicted offense rate categories, we divide them as follows: 0 = low; 1,2 = medium; 3,4 = high. Scale C is the seven-factor scale. The components of the three scales are summarized in Fig. 4.3.

Table 4.10 shows how the incarcerated population of robbers in California divides up according to the three scales. According to Scale A, 57.9 percent are classified low-rate and only 10 percent are high-rate. Using Scale C, 43.4 percent are high-rate.

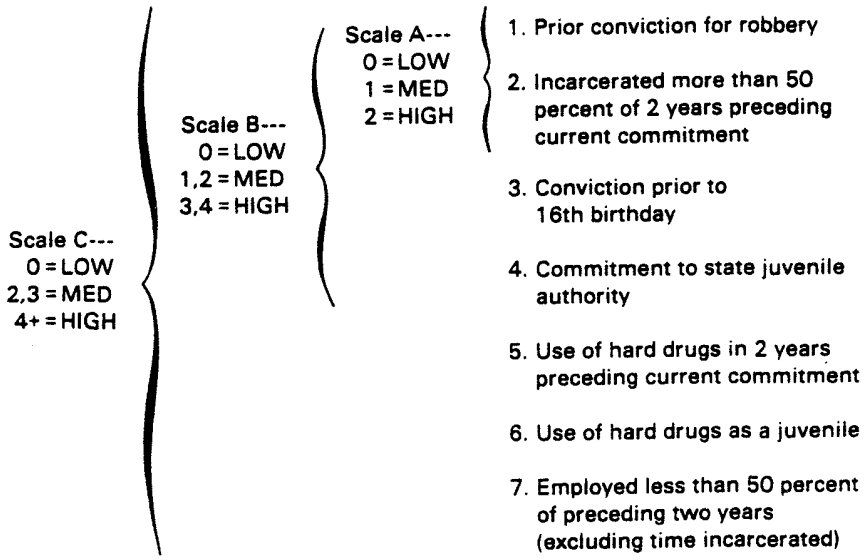

Fig. 4.3--Subcomponent scales for identifying high-rate offenders

Table 4.10

PREDICTED OFFENSE RATES FOR INCARCERATED CALIFORNIA ROBBERS
(In percent)

Rate	Scale A	Scale B	Scale C
Low	57.9	33.0	25.1
Medium	32.1	45.0	31.5
High	10.0	22.0	43.4
	100.0	100.0	100.0

Table 4.11 shows the average annual offense rates for offenders in the three groups on each scale. Clearly, the more complex scales do a better job of sorting out high- and low-rate offenders. For instance, on the simplest scale (A), the predicted high-rate offenders have an average offense rate of 32.0 robberies per year, but only 10 percent of the population is identified as high-rate.

Scale C identifies 43.4 percent of the population as high-rate, with an average offense rate of 30.8 robberies per year--almost as high. If we increase the threshold for high-rate offenders on Scale C from 4 to 5, the average offense rate for the high group would be raised considerably, while still retaining many more than 10 percent of the population in this category.

Table 4.11

AVERAGE ANNUAL OFFENSE RATES FOR INCARCERATED CALIFORNIA ROBBERS
(In percent)

Rate	Scale A	Scale B	Scale C
Low	6.7	3.7	2.0
Medium	27.3	21.3	10.1
High	32.0	27.0	30.8

THE SIMILARITY BETWEEN PREDICTORS OF RECIDIVISM RATES AND PREDICTORS OF OFFENSE RATES

The factors that we found to predict individual offense rates are not unlike those that have been found to be predictive of parole success. For instance, the salient factor scale that has been used by the U.S. Board of Parole in setting terms for federal inmates and which is based on parole experience tables consists of the nine factors shown in Table 4.12.

The total salient factor score is used to classify inmates into one of four categories, based on their expected parole outcome:

11-9	very good
8-6	good
5-4	fair
3-0	poor

Although there is not a one-to-one correspondence between our predictors and the salient factors used by the Parole Board, there is a very close similarity. An affirmative answer for any of our predictors would invariably result in a lower salient factor score.

Our predictors have no link with four of the salient factors--items 4, 5, 7, and 9. However, any inmate who scored 0 on our predictor scale would have a salient factor score of between 10 and 3, or an average of 6, which is considered good. Any inmate who scored a 7 on our predictor scale would have a salient score between 4 and 0--basically poor. Therefore, there is a direct positive correlation between an inmate's predicted offense rate and his prognosis for success on parole. The difference in average recidivism rate among groups is

Table 4.12

SALIENT FACTOR SCALE USED BY THE U.S. BOARD OF PAROLE IN SETTING FEDERAL TERMS

	Factor	Categories	Score
1.	Prior conviction (adult or juvenile)	none	2
		1 or more	1
		3 or more	0
2.	Prior incarceration (adult or juvenile)	none	2
		1 or 2	1
		3 or more	0
3.	Age at first conviction	18 or older	1
		less than 18	0
4.	Commitment offense involved auto theft	No	1
		Yes	0
5.	Prior parole revocation or commitment	No	1
	For new offense while on probation	Yes	0
6.	History of heroin, cocaine or barbiturate dependence	No	1
		Yes	0
7.	Completed 12th grade or GED	Yes	1
		No	0
8.	Verified employment of full time school attendance for at least 6 months of last 2 years in the community	Yes	1
		No	0
9.	Release plan to live with spouse and/or children	Yes	1
		No	0

quite large. In a 2-year followup, the percentage with unfavorable outcomes (conviction resulting in a 60-day sentence or return as a parole violator) was as follows (Hoffman and Adelberg, 1980):

Score Category	Percentage with Unfavorable Outcome
Very good	5.5
Good	18.6
Fair	31.5
Poor	42.0

V. POTENTIAL IMPACTS OF SELECTIVE INCAPACITATION

Selective incapacitation is a concept explicitly designed to take advantage of the finding that offenders commit crimes at widely different rates and thereby represent substantially different risks to the community. The pragmatic test of the concept is the amount of crime it prevents over and above that prevented by current sentencing practices. In this section we will use the results reported in previous sections to estimate these crime reduction effects for several different selective sentencing policies.

In order to carry out this analysis it is necessary to have a fairly accurate statistical picture of how offenders are currently sentenced. Data are currently available for only one of our sample states--California. For Texas we have much cruder estimates, and for Michigan none at all. Therefore, our analysis will concentrate on California offenders, with rougher estimates for Texas.

We begin by describing the selective sentencing schemes to be evaluated. We then describe the mathematical model we developed to make the estimates and identify the parameters that describe the offender population and current sentencing policy in California. Finally, we estimate how selective sentencing policies would affect crime and incarceration rates.

SELECTIVE SENTENCING POLICIES

In theory, any change, within certain limits, in sentencing practices that results in shorter terms for low-rate offenders or longer terms for high-rate offenders should result in an increase in the number

of crimes prevented per year of incarceration (estimated crimes prevented in a year divided by the average number of inmates incarcerated). The limits to this theory are concerned with how far we can reduce terms for low-rate offenders or increase terms for high-rate offenders without violating the underlying assumptions of the existing models. If we decrease or increase terms by small amounts, we have more faith in the assumption that there will be no observable changes in the criminal behavior patterns of individuals as a result of these changes, than if we make much larger changes. If some defendants have their terms reduced to almost zero, or others have their terms increased by a factor of 2 or 3, we are less sure that these changes will not change behavior. The problem, of course, is that such widely divergent policies have not been evaluated in the past. Therefore, the further we move from current sentencing policies, the greater the likelihood of some unforeseen consequences that will not be included in our estimates.

There are basically three sentencing options for convicted felons that are relevant to incapacitation--probation, jail, and prison. Under probation we include any sentences that do not include incarceration--fines, community service projects, restitution, etc. Jail terms are typically for definite terms of less than one year. Prison terms may be either determinate or indeterminate and are usually in excess of one year.

At any given time, the total incarcerated population of convicted robbers or burglars includes a substantial number of both prison and jail inmates. Since many offenders who are committed to prison begin serving their terms in a local jail, the distribution of offenders

between these two types of institutions can be controlled somewhat by how long offenders committed to prison are allowed to remain in jail. From an analytic point of view, it makes sense to lump these two populations together and consider the total required number of beds or cells, since they are somewhat interchangeable. For descriptive purposes we will refer to terms of less than a year as jail terms and terms longer than a year as prison terms.

If you want to describe a sentencing policy, the primary figures you require for any given group of offenders are:

1. The probability of conviction given arrest;
2. The probability of incarceration given conviction; and
3. The average time served by those incarcerated.

Because these figures tell us much more about how a group of offenders were sentenced than does the specific language of the sentencing statutes, in describing selective sentencing policies we will avoid defining them in terms of statutory language.

In all of the hypothetical sentencing policies we consider, we assume that the probability of arrest and conviction and the probability of incarceration given conviction remain the same as they are under the current policy [1]. Our hypothetical policies differ only with respect

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[1] Some readers may wonder why we have not included policies that increase the probability of incarceration given conviction, particularly for predicted high-rate offenders. In a previous study that estimated the potential incapacitation effects that might be derived from various mandatory sentencing laws, Petersilia and Greenwood (1978) found that among convicted offenders who were not incarcerated, those with minor records recidivated more frequently than those with serious records. Since this relationship is just the opposite of what we find in a general population of offenders, it indicates that judges are somewhat successful in identifying offenders with a low probability of recidivism among those with major prior records. It further suggests that it would be unwise to force judges to incarcerate offenders with serious records.

to the probability that offenders in any one of the three predicted offense rate groups will be committed to prison if they are incarcerated, and the average length of prison terms for offenders in the three predicted offense rate groups.

The six hypothetical policies we consider are the following:

1. Nonselective increase in prison commitment rate. The fraction of those incarcerated who are committed to prison is increased equally across all three types of offenders.
2 Nonselective increase in prison term length. The probability of being committed to prison remains unchanged for all three groups. The average prison term increases as a constant percentage of the base term for all three groups.
3. Selective increases in prison term length. Sentences for predicted low- and medium-rate offenders remain unchanged. The length of prison terms for predicted high-rate offenders is increased.
4. Selective changes in commitment rate and sentence length. The low-rate offenders who are incarcerated get jail terms. All medium-rate offenders who are incarcerated are committed to prison for the current term, and all high-rate offenders who are incarcerated are sent to prison for terms increased at a constant rate.
5. Further selective changes in commitment rates and sentence length. The same as policy 4, except that the prison term length for predicted medium-rate offenders is cut in half.

6. Imprisonment for only high-rate offenders. Low- and medium-rate offenders are sentenced to jail and high-rate offenders are sentenced to prison for terms of increasing length.

A SELECTIVE INCAPACITATION MODEL

The model developed by Shinnar and Shinnar (1975) assumed that all offenders committed crimes at the same average rate. Given a probability of arrest and conviction for any one crime (q), a probability of incarceration given conviction (J), and average sentence length S, the fraction of offenders who will be on the street at any one time is

$$\eta = \frac{1}{1 + \lambda qJS}$$

If we find that R offenders are incarcerated at any one time under a policy defined by qJS, the total number of offenders (N) is equal to

$$N = \frac{R}{(1 - \eta)}$$

For our analysis of any one particular crime type we assume that there are low-, medium-, and high-rate offenders. We further assume that offenders in each of these three groups have the same probability of arrest and conviction and of incarceration, since we have no evidence to the contrary. From our survey we know that offenders in these three

groups do have different offense rates, probabilities of being sent to prison, and prison term lengths. The sentencing policies we test vary the probability of being sent to prison if incarcerated and the sentence length.

If these modifications are incorporated into the Shinnar model, the estimated fraction of his career that an offender in group i will be at risk is

$$\eta_i = \frac{1}{1 + \lambda q J \left((1-p_i)\, s_i + p_i\, S_i\right)} ,$$

where p_i = the probability of going to prison if incarcerated,

s_i = the average length of a jail term, and

S_i = the average length of a prison term.

Under a sentencing policy defined by the parameters q, J, p_i, s_i, and S_i, then, the estimated number of crimes per year is

$$C = \Sigma\, C_i = \Sigma\, N_i\, \eta_i\, \lambda .$$

The average number of offenders incarcerated is

$$R = \Sigma\, R_i = \Sigma\, N_i\, (1 - \eta_i) .$$

Of course, for our analysis we do not know the actual values of N_i, the number of offenders of each type. However, this number can be

estimated from information on the current sentencing policy parameters and incarcerated population as follows:

$$N_i = \frac{R_i}{1 - \eta_i} .$$

The details of these calculations are shown in Appendix B. The complete set of parameters required for the robbery analysis is shown in Table 5.1.

As a check on the accuracy of the model, we can compare the amount of crime it predicts for the current sentencing policy with the number of crimes reported to the police (appropriately adjusted for victim reporting rates and multiple offenders). The number of individual robberies estimated from crimes reported to the police (see Table B.1, Appendix B) is 347,146; the number of individual burglaries is 1,554,574.

Assuming that adults and juveniles have the same probability of arrest for any one crime, the percentage of individual crimes involving adults should be the same as the percentage of arrests for any one crime type involving adults. These percentages for California are 72 for robbery and 49 for burglary.

Applying these percentages to the total number of individual crimes, we get 249,945 robberies and 761,643 burglaries estimated from police reports. The number of individual adult crimes estimated from the second Rand inmate survey are 205,525 robberies and 696,733 burglaries.

These estimates are in remarkably close agreement given the rough estimates of parameters available for the model itself. Although these

Table 5.1

PARAMETERS FOR THE INCAPACITATION MODEL

Parameter	Symbol	Predicted Offense Rate Scale C			
		Low	Medium	High	Total
Number of offenders	N	20,471	11,895	9,028	--
Average annual offense rate[a]	λ	2.0	10.1	30.8	--
Probability of arrest and conviction	q	.03	.03	.03	--
Probability of incarceration given conviction	J	.86	.86	.86	--
Probability of prison given incarceration	p	.12	.35	.57	--
Average jail term (months)	s	12	12	12	--
Average prison term (months)	S	49.5	53.3	50.6	
Incarcerated population	R	3,480	4,401	6,049	13,930
Fraction of time free	η	.93	.63	.33	
Total Crime	C	38,076	75,688	91,761	205,525

NOTE: The last six parameters reflect current sentencing policy.

[a]These values of λ for the three groups differ slightly from those presented in the previous section. This is because we weighted the jail sample to represent the true proportion of jail inmates. The justification for these weights is given in Appendix B.

figures by themselves do not prove either the accuracy of the parameter estimates or the model, they do add to their credibility.

THE IMPACT OF SENTENCES ON CRIME RATES

The six policies we described earlier in this section will affect both the overall crime rate and the number of offenders who are incarcerated. The estimated impact of applying each option to reduce robberies in California is shown by the curves in Fig. 5.1. Each curve represents a specific policy and shows the expected adult robbery rate that will result for a range of incarceration levels. Both crime rates and incarcerated population levels are expressed as a percentage of their current estimated value. For each curve, the incarceration level

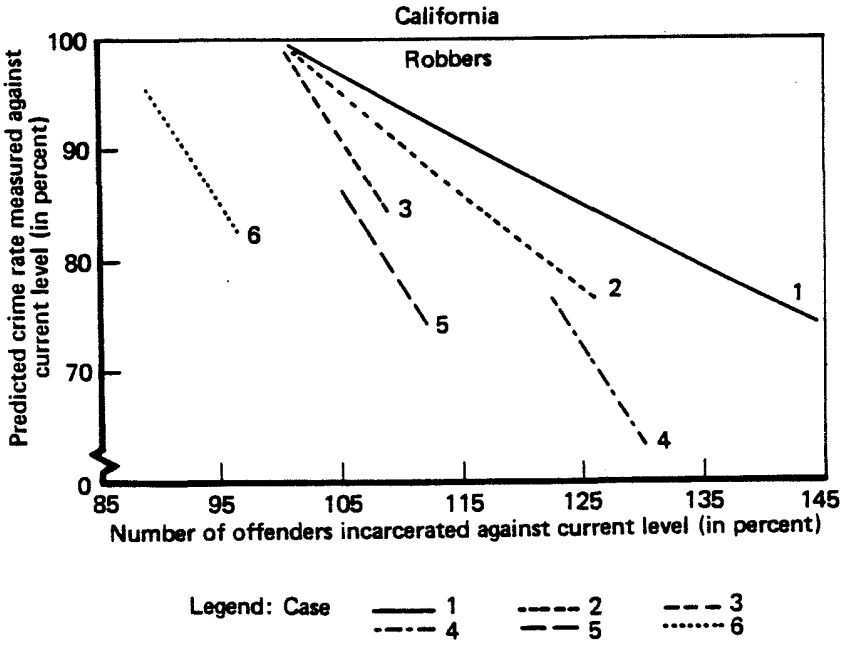

Fig. 5.1 -- Crime/incarceration-level tradeoffs under alternative selective incarceration policies (California robbers)

increases and the crime rate decreases as the variable sentencing parameter increases. For instance, the curve for Policy 1 shows how the prison population will increase and crime rates decrease as the probability of being committed to prison upon conviction increases equally across all three groups.

These curves tell us a number of things about the respective policies. First, all of the selective policies (2 through 6) do considerably better than a general incapacitation approach (Policy 1). Using either Policy 3 or 5, it is possible to achieve a 20 percent reduction in crime with only a 10 percent increase in incarceration. Using Policy 6 it would be possible to achieve a 20 percent reduction in crime without any increase in the incarcerated population. In none of the curves that are plotted are the sentence lengths for high-rate offenders increased by more than a factor of 2.

The same six policies are plotted for burglary in California in Fig. 5.2. All of the policies except Policy 1 are about equally selective. Since most incarceration for burglary currently takes place in jail, we do not have the option of moving a large number of low-rate offenders out of prison and into jail. Using one of the selective policies, California could achieve a 20 percent reduction in adult burglaries with only about an 8 percent increase in the incarcerated population. With burglary, adults only account for about 49 percent of total arrests while for robbery they account for 72 percent of the total.

Figures 5.3 and 5.4 show the results for similar policies applied to Texas [2]. Because of the low individual offense rates in Texas, a

[2] We assume that Texas offenders have the same probability of arrest, conviction, and incarceration as California offenders, although

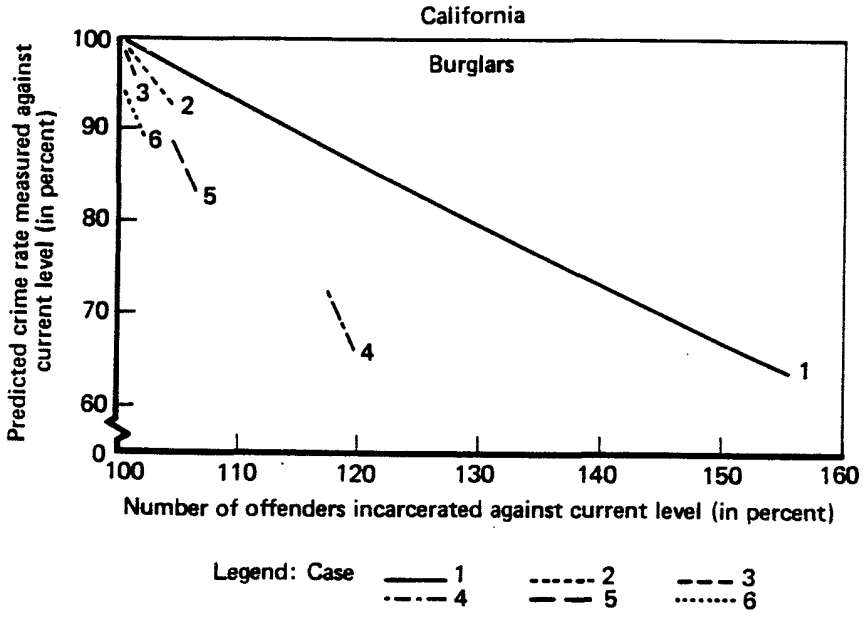

Fig. 5.2 -- Crime/incarceration-level tradeoffs under alternative selective incapacitation policies (California burglars)

10 percent increase in incarceration will bring only a 3 percent reduction in robbery and a 7 percent decline in burglary. Selective policies do not offer much of an improvement because there are so few high-rate offenders.

MORE LIMITED PREDICTION SCALES

In designing selective incapacitation policies, the more factors used, the greater the predictive accuracy and the fewer the false positives. Nevertheless, the use of many predictors, such as juvenile drug use or employment, can be expected to be questioned on ethical grounds.

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we have no data to verify this. In Texas, virtually all convicted felons are incarcerated in prison rather than jail.

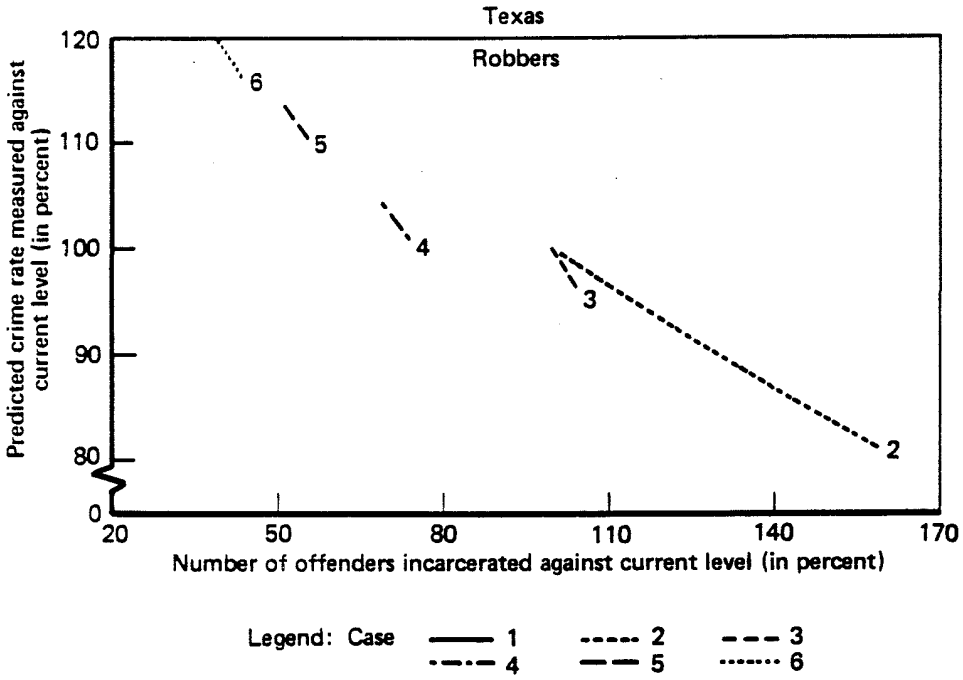

Fig. 5.3 -- Crime/incarceration-level tradeoffs under alternative selective incapacitation policies (Texas robbers)

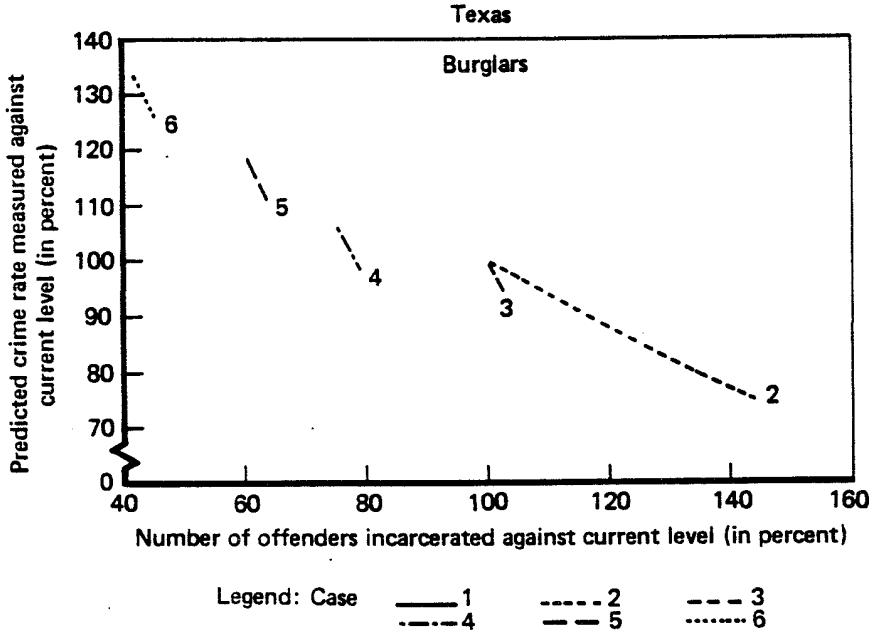

Fig. 5.4 -- Crime/incarceration-level tradeoffs under alternative selective incapacitation policies (Texas burglars)

In Sec. IV, we described and analyzed two subscales of the seven-factor scale for California robbers, using only two and four of the seven predictor variables. In order to test the two subscales (A and B) against the original seven-factor scale (C), we estimated the robbery rate and total incarcerated population of convicted robbers that would result from different sentencing policies that make use of these scales.

We consider three different selective sentencing policies:

1. Increase Terms for High-Rate Offenders. The predicted low- and medium-rate offenders are sentenced as they are now. The proportion of high-rate offenders sentenced to jail and prison remains unchanged. The terms of high-rate offenders in prison are extended by a percentage of their current term.
2. Selective Imprisonment. All low-rate offenders who are incarcerated are sentenced to jail for one year. All high-rate offenders who are incarcerated are sentenced to prison. The fraction of convicted offenders who are incarcerated in all three groups and the sentences of medium-rate offenders remain unchanged. The terms of the high-rate offenders are increased by a percentage of their current term.
3. Imprisonment for High-Rate Offenders Only. The fraction of convicted offenders who are incarcerated remains unchanged. All predicted low- and medium-rate offenders who are incarcerated receive jail terms of one year. All high-rate offenders who are incarcerated receive prison terms that are extended by a fixed percentage of their current terms.

In all three policies, the total fraction of convicted offenders who are incarcerated in either prison or jail remains unchanged. The policies differ in who goes to prison and who goes to jail. And in all three policies we consider a range of prison terms for high-rate offenders, extending from the current average terms to terms four times as long.

The predicted robbery rate and total incarcerated population of convicted robbers, both expressed as a percentage of their value under current policy, are plotted in Fig. 5.5 for some combinations of the prediction scales and selective sentencing policies described above. The plots labeled 2A, 2B, and 2C depict the results for Policy 2 (Selective Imprisonment) using the three scales. In each case the range of the plot represents various prison term lengths for high-rate offenders ranging from their current length to terms four times as long.

Policy 2A results in a significant drop in the incarcerated population because of the large number of predicted low-rate offenders shifted to jail and the small number of high-rate offenders shifted to prison. If plot 2A were extended to the right, it appears that it would provide a greater reduction in crime than would using either Scale B or C. This is because the average offense rate of the high-rate offender identified by Scale A is higher than that of Scale B or C. However, the right end of plot 2A already represents terms for the predicted high-rate offenders that are four times their current length, averaging 16 years. The resulting differences in terms between predicted low and high rates is surely too great from an equity standpoint. Furthermore, 16-year terms exceed the prediction capabilities of the model, which

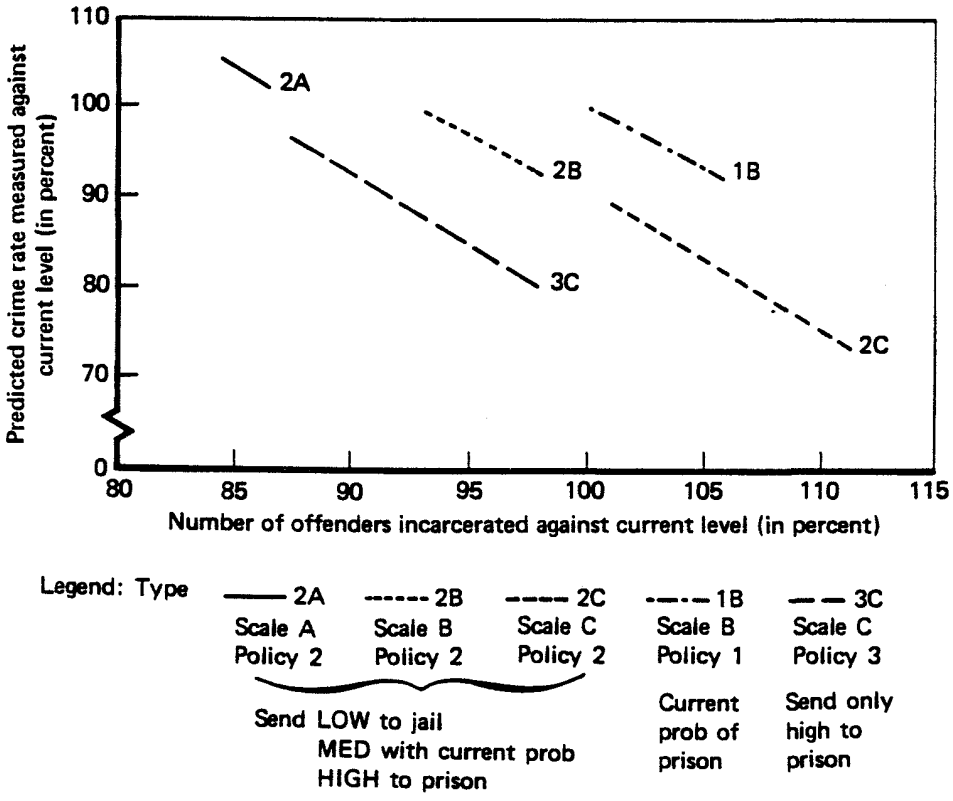

Fig. 5.5 -- Crime/incarceration-level tradeoffs using alternative prediction scales

assumes that terms are only a fraction of the entire career length. (In fact, most of the high-rate offenders would have ended their careers within the 16-year period.) Scale A is not effective for selective incapacitation because it fails to identify a significant number of high-rate offenders.

Scale B can only be used for Policies 1 and 2. If we tried to use it for Policy 3, shifting all low- and medium-rate offenders to jail, we

would end up with crime rates higher than the current rate, even if the terms of high-rate offenders were increased by a factor of 4.

Comparing plots 2B and 3C, we see that at 95 percent of the current incarcerated population, 3C results in a 15 percent reduction in robberies, while 2B results in only a 2 percent reduction. As we have defined these policies, 2C results in an increase over the current incarcerated population and 3B results in an increase over the current crime rate, no matter how long the terms of high-rate offenders.

This example only illustrates what happens when we eliminate some predictor variables on policy grounds. It may be that a more carefully constructed scale (e.g., one using logit analysis) would predict more accurately with fewer variables [3]. This is a matter that needs to be explored in a specific context with an appropriate data set.

IMPLEMENTATION

Any state deciding to use selective incapacitation in determining its sentencing policies would have to follow a number of steps. First, it would have to determine the distribution of individual offense rates among its offenders and identify those factors that predict high offense rates. This can be done by using either arrest histories [4] or self-reports. Of course, to be used as predictor variables, the arrest histories would have to be combined with another file containing the individual characteristics.

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[3] Solomon (1978) has shown that a four-factor scale based on multidimensional contingency table analysis predicts parole success more accurately than the best simple additive scale based on nine factors.

[4] Longitudinal arrest histories can give the rate at which offenders are arrested for any specific crime (u). Their offense rate is then just

$$\lambda = \frac{u}{\text{probability of arrest}}$$

(Blumstein and Cohen, 1979).

It would also be necessary to estimate current sentencing patterns for each different type of offender in order to estimate the total number of offenders and to provide a base case for comparing alternative policies. The final step would involve specifying and evaluating alternative sentencing strategies.

It is unlikely that incapacitation will be the sole consideration in setting terms. Punishment and deterrence will probably play a role as well, even if their effects cannot be quantified. This means that selective incapacitation would be applied as follows:

1. Using its current crime rates and incarceration levels (including jails and prisons), the state must project both its future crime rates and incarceration capacity, probably ignoring the effect of incarceration on crime rates at this gross level. Incapacitation is unlikely to have much effect on such crimes as homicide, rape, and assault, which make up a fair proportion of the total incarcerated population.
2. The state must assign a pattern of minimum sentences based on just deserts or deterrence considerations alone, ignoring incapacitation. For instance, despite the fact that their recidivism rate is usually quite low, offenders convicted of manslaughter might be required to serve terms of six years, based on punishment alone. Similarly, the terms for unarmed and armed robbery might be set at 18 months and three years, with an additional two years added for seriously injuring a victim.

3. Using this pattern of minimum sentences and the expected crime rate, it is then possible to estimate the incarcerated population that would be generated by these terms. The difference between the population to be generated by the minimum terms and the predicted capacity is the amount of space available for selective incapacitation. For instance, in California, the projected population to be generated by the minimum terms might be 30,000, while the available capacity might be 32,000. If all this excess capacity were used to reduce robberies, and the projected minimum robbery population were 8,000, a 25 percent increase would result. According to the curves in Fig. 5.1, any of the options could be selected that increased the robbery population by no more than 25 percent.

Of course, after one such cycle of estimates, it would be possible to go back and revise the minimum terms in order to provide more or less capacity for incapacitation.

VI. CONCLUSIONS AND QUALIFICATIONS

In the preceding sections we introduced a policy concept, selective incapacitation, that is bound to be controversial. Initial reactions to this policy already indicate objections on moral or ethical grounds, as well as unwillingness to accept any proposal that purports to reduce crime. The methodology underlying the research on selective incapacitation has also been challenged. Although we are aware that our research design is far from perfect and certainly can be improved, we believe our results are actually fairly robust. In this final section, therefore, we wish to clarify a number of points and to address some of the major concerns that have been expressed about this study, so that the debate that is certain to take place over this concept will be as informed and productive as possible.

THE CONCEPT

The concept of selective incapacitation put forth in this paper includes the following two elements. First, arrest history files or self-report surveys can be used to generate estimates of individual offense rates and to correlate these rates with other behavioral characteristics (prior record, drug use, employment, etc.) to distinguish between high- and low-rate offenders. And second, sentencing rules can be modified to provide longer terms for those predicted to be high-rate offenders and shorter terms for those predicted to be low-rate offenders in order to increase the amount of crime prevented for any given level of incarceration. This adjustment of terms should explicitly consider prison capacity constraints and provide for minimum sentences based on just deserts.

We have evaluated sentencing schemes based on the concept of selective incapacitation by using self-reported retrospective information from a sample of prison and jail inmates. Our analysis shows that selective incapacitation might result in significant reductions in crime without any overall increase in the level of imprisonment.

THE DATA

Our findings rely exclusively on self-reported data generated from surveys of incarcerated offenders, a source of information that can be open to question.

The Sample

Our sample has been criticized for including only incarcerated offenders. This criticism would perhaps be justified if there were evidence to suggest the existence of a significant group of offenders not subject to arrest and incarceration. There is no such evidence. Furthermore, it is the offenders now incarcerated who are the logical focus of selective incapacitation policies (Blumstein and Cohen, 1979).

Response Rates

Our response rates varied from 40 to 90 percent among institutions. We believe these response rates to be reasonable for the type of survey we conducted and the uses we make of the data. In many institutions, the inmates were given complete discretion in deciding whether to respond to our written request to appear for the survey, and they did so in many cases with very limited information on the survey itself. Our extensive analysis of response rate patterns did not find any serious

distortion of the sample except for an underrepresentation of Hispanics from California prisons.

Validity/Reliability

The results of our research are based importantly on self-reported data obtained from prison inmates. Self-reported data were compared with official records for consistency with respect to current conviction offense and prior arrests. Moreover, a whole set of internal and external logic checks disclosed no systematic bias. We believe it unlikely that respondents systematically distorted--through problems of recall or a desire to inflate or hide their true criminal activity--those items on the questionnaire not subject to checking. It has been shown that random errors contained in the data simply attenuate the observed correlations between predictor variables and offense rates (Marquis and Ebener, 1981). This suggests that more accurate data would lead to even greater prediction accuracy. If anyone seriously believes that the high-rate offenders systematically refused to participate, or underrepresented their crimes, then the use of arrest histories in future studies may find even greater potential gains from selective incapacitation policies.

THE MODEL

The statistical models that we used to estimate incapacitation effects can be challenged on several grounds.

Criminogenic Effects

The estimated effects of incapacitation reported in earlier sections would constitute overestimation if we had failed to consider the potential criminogenic consequences of incarceration--i.e.,

replacement of incarcerated offenders by others, prisons as schools-for-crime, prolonging of the criminal career, etc. However, we have not overlooked these issues. Our review of prior research on these criminogenic effects does not find sufficient evidence to support arguments that incarceration consistently extends or retards criminal careers. In fact, incarceration probably does both. Any speculation that the effects of incarcerating one offender may be cancelled out by his replacement on the streets by another must be balanced by speculation about possible deterrence effects. The existing evidence suggests that these effects cancel each other out.

Regression to the Mean

Because our identification of high-rate offenders is based on retrospective data, it can be argued that there would be a substantial loss in predictive accuracy with a new prospective sample. It is important to note that our prediction model has not been carefully fitted to the retrospective sample. It is based on a set of predictor variables that previous studies have consistently found to be correlated with future criminality. We would not expect the same decrease in predictive accuracy in applying our scale to a new sample that one might expect with a more sophisticated model. This is an issue that can be easily tested with another sample.

In general, those who are worried about the quality of our data or the accuracy of our models should note that the total number of robberies and burglaries estimated for California, by our model, is in close agreement with the number actually reported (adjusted for underreporting and group participation).

MORAL, ETHICAL, AND PRACTICAL ISSUES

There are a variety of reasons for objecting to the concept of selective incapacitation, aside from issues of its effectiveness in reducing crime.

False Positives

Any policy implementing the concept of selective incapacitation will inevitably result in some offenders being incorrectly classified. In other words, some offenders who are incorrectly identified as high-rate will be incarcerated for longer periods of time than they deserve. It should be remembered that the model defined in this report should properly be tested not against completely accurate predictions, which we can never have, but against the current system.

Preventive Detention

Selective incapacitation can be construed to operate by incarcerating offenders in order to prevent crimes they might commit in the future--in other words, by a form of post-conviction preventive detention. In fact, the system we now have implicitly accepts this concept for both criminals and mental patients. Preventive detention is a fundamental premise of incapacitation. (Deterrence may be viewed as even more conceptually disturbing since it involves locking up offenders to prevent crimes that others might do.) The only alternative to preventive detention is a pure just deserts model, which rests on principles that are at odds with what the public now seems to want and with how the system currently operates.

"No Escape"

According to the particular prediction scale described in this report, once an offender is classified as high-rate, he retains that classification for life, every time he comes back into the system. He has, one might object, "no escape." It should be kept in mind that this high-rate classification is only invoked when the offender is again convicted for a serious crime. Nevertheless, valid concerns can be raised about the hypothetical offender who, although somewhat reformed despite a former high-rate classification, is arrested after a long period of absence from crime. It would be possible to construct and test a number of factors designed to reduce his predicted classification. For instance, the prediction scale could ignore all juvenile record factors after a period of five years without arrest, if in fact this absence of arrest for this period is indicative of a lower rate of offending.

The Accurate Measurement of Predictive Factors

Our data relied on self-reports of juvenile record, drug use, and employment. Although the current system does not have accurate information on these variables, it might have better information in the future. For example, if drug use is determined to be important, an offender could be tested when he is arrested for a serious crime, and the information could then be recorded in his file.

The Precedent of Habitual Offender Laws

Critics of selective incapacitation point out that so-called "habitual offender statutes," which impose very long terms on people

with several prior convictions, have never been effective. These laws have, in fact, been infrequently and arbitrarily applied, and this may well account for their ineffectiveness. If the worst offenders were identified, and prosecutors and judges were aware of this fact, more reasonable sentencing laws would probably be more consistently applied.

In conclusion, this study does not attempt to prove the case for selective incapacitation or to provide unequivocal guidance for future sentencing policies. These results do, however, pose a serious challenge to the belief that sentencing policies have no effect on crime rates. In posing this challenge, the report also provides practical suggestions for how selective incapacitation policies might be designed and tested in the future.

Appendix A

DISCUSSION OF CANDIDATE PREDICTION VARIABLES

This Appendix describes the candidate prediction variables considered in Sec. IV.

Was the offender convicted of multiple counts?

In the first Rand survey of California prison inmates, there was some indication that offenders convicted of robbery or burglary and additional crimes tended to be high-rate offenders. In a criminal proceeding, it is unusual for the prosecutor to insist on a plea to multiple counts, even when the evidence is clear. The primary reason for attempting to get a conviction on multiple counts is to extend the expected length of the prison term through consecutive terms or to ensure that the conviction is sustained even if the most serious charge is eventually overturned on appeal.

A conviction on multiple counts can come about in several ways. If an offender is frequently committing robberies or burglaries, it is likely that he will be active in the same general area and use the same modus operandi. Once the offender is identified for one crime, it is much easier for the police to link him to others, through lineups for robbery or fingerprints for burglary. If conviction on multiple counts came about in this way, we would expect those convicted of multiple counts to be disproportionately high-rate offenders.

If, however, the multiple counts are the result of a single crime spree or one complicated incident (e.g., the offender who starts to

burglarize a house and ends up shooting, raping, or kidnapping one of its occupants and stealing a car), they may more typically identify the hot-headed opportunist or amateur rather than the more experienced high-rate offender. Because in our survey multiple counts were only coded for different offense types, not for multiple charges of the same offense, many of the multiple counts probably represent the latter situation, although we cannot be sure.

The percentage of convicted robbers and burglars who were convicted on multiple counts is shown in Table A.1.

Table A.1

RESPONDENTS CONVICTED OF MULTIPLE COUNTS
(In percent)

Main Conviction Crime[a]	State		
	California	Michigan	Texas
Robbery	61.8	41.3	33.9
Burglary	35.6	26.6	33.2

[a]Convicted robbers include any offender convicted of robbery, regardless of other counts. Convicted burglars also may be convicted of any other crime except robbery.

The distribution shown below indicates that multiple counts were not a good prediction of high-rate offending, although they were

slightly more prevalent among high-rate offenders. If a candidate predictor variable is unrelated to the rate of offending, then the distribution of offenders possessing that attribute will be the same as the distribution of offenders across the three groups in general, which is, by definition: low-rate = 50 percent; medium-rate = 25 percent; high-rate = 25 percent.

Distribution of Respondents Convicted on Multiple Counts

Low-Rate	Medium-Rate	High-Rate
47%	25%	27%

Does the offender have prior felony convictions?

The first Rand inmate survey indicated that offenders with prior felony convictions committed more offenses than those without. In sentencing decisions, the existence of a prior felony record often plays a strong role in determining whether and for how long a convicted offender will be sent to prison (Greenwood, 1982). Under California's determinate sentencing law, a prior felony conviction can be used as a basis for selecting the upper rather than the middle prison term. Prior felony convictions are also the basis for selecting offenders for career criminal prosecution.

Among convicted burglars and robbers in our sample, about 80 percent had at least one prior felony conviction. The distribution of prior felonies is shown in Table A.2.

Table A.2

RESPONDENTS' PRIOR FELONY CONVICTIONS
(Cumulative percent)

Number of Prior Felony Convictions	Robbers			Burglars		
	Calif.	Mich.	Texas	Calif.	Mich.	Texas
0	22.8	26.6	30.8	13.6	8.3	19.3
1	59.1	71.9	74.3	49.7	52.5	73.9
2	63.7	76.3	74.3	63.9	76.7	73.9
3+	100.0	100.0	100.0	100.0	100.0	100.0

According to these figures, Texas respondents tend to have the least serious records, while California respondents have the most serious. Some of the difference is due to differences in imprisonment policy. Texas sends a higher proportion of offenders to prison, while California more frequently grants probation. In any one offense category, the offenders not sentenced to prison are likely to be those with the lighter records.

As the figures below on the distribution of respondents with prior felony convictions indicate, prior felony convictions did not turn out to be a good predictor of high-rate offending.

Distribution of Respondents with a Prior Felony Conviction

Low-Rate	Medium-Rate	High-Rate
49%	25%	26%

Has the offender ever been convicted for the offense we are trying to predict?

For about one-quarter of the convicted burglars and robbers, we could not tell if there had been prior convictions for the current offense. About half the remainder did have such convictions. The distribution of those with priors for the same offense type across the different offense rate groups is as follows:

Distribution of Respondents with a Prior Conviction for Same Offense Type

Low-Rate	Medium-Rate	High-Rate
42%	28%	30%

This is a factor we use in our subsequent prediction scale.

Has the offender ever served time in prison?

The first Rand survey did not find that offenders who had previously served time in prison were more active. Yet, prior prison terms are frequently used as a basis for sentencing offenders to prison and extending their terms. In California, a prior prison term can be

used to add one year to a sentence if it was for a non-violent offense and three years if it was for a violent offense.

About 40 percent of the respondents had served prior prison terms. This variable showed no association with robbery or burglary offense rates.

What fraction of the time was the offender incarcerated in the two-year period preceding his current conviction?

We would expect high-rate offenders to be incarcerated more frequently. In fact, one of the ways they were labeled high-rate offenders in our study was if they had had very little street time. The annual offense rate was calculated by dividing the number of offenses reported by the time an offender was on the street (at risk). A respondent who was free the whole two years and only reported eight burglaries would have an annual offense rate for burglary of four. Another respondent who reported eight burglaries but was only at risk for six months would have an annual offense rate for burglary of 16 crimes per year.

Overall, 42 percent of the respondents had not been incarcerated at all during the two years preceding their current conviction, 16 percent had been incarcerated more than 50 percent of the time, and 5 percent had been incarcerated more than 80 percent of the time. In general, Texas offenders were less likely to have been previously incarcerated than those in the other two states, while California offenders were more likely to have been incarcerated. This finding is probably caused by the fact that Texas incarcerates a higher percentage of its less serious offenders.

In order to keep our scale simple, we selected 50 percent incarceration as the cutoff point for this variable. The question we asked was, had the offender been incarcerated more than 50 percent of the two years preceding his current conviction? The distribution of offenders is shown below. (Note that if the variable is independent of the crime rate, the offenders should be distributed as follows: 50 percent, 25 percent, 25 percent.)

Distribution of Respondents Incarcerated More Than 50 Percent of the Time

Low-Rate	Medium-Rate	High-Rate
30%	27%	40%

Had the offender been convicted of a crime before age 16?

Previous research has consistently shown that the earlier an offender comes in contact with the system, the longer his career is likely to be and the higher his offense rate. Age of first conviction is now a routine item included in most presentence reports. Table A.3 shows the distribution of age at first conviction for convicted robbers and burglars.

Again, notice that California offenders are more likely to be convicted at younger ages and Texas offenders less likely. Also notice that in California, convicted burglars are less likely to have been convicted at a young age than convicted robbers, while the opposite is true in Michigan and Texas. Whether this represents differences in

Table A.3

RESPONDENTS' AGE AT FIRST CONVICTION
(Cumulative percent)

	Robbery			Burglary		
Age	Calif.	Mich.	Texas	Calif.	Mich.	Texas
14 or younger	35.7	15.6	15.8	30.8	22.0	18.7
16	58.5	34.7	28.8	45.3	38.2	35.1
18	77.8	72.1	63.3	74.8	75.6	72.7
21	89.5	87.1	79.2	90.6	90.3	89.5

handling juvenile arrests, differences in adult sentencing patterns, or true differences in career patterns across states, we cannot say.

The cutoff point we chose for this variable is age 16. It turned out to be a good predictor, as shown below:

Distribution of Respondents Convicted Prior to Age 16

Low-Rate	Medium-Rate	High-Rate
40%	26%	34%

Was the offender ever sentenced to a state or federal facility as a juvenile?

About 27 percent of the convicted robbers and burglars in the survey had served time in a state or federal juvenile facility. The distribution is shown in Table A.4.

Table A.4

RESPONDENTS COMMITTED AS JUVENILES TO STATE OR FEDERAL FACILITIES

	Crime	
State	Robbery	Burglary
California	42.7	28.9
Michigan	25.2	22.5
Texas	16.1	22.4

Notice that California offenders were most likely to have had a commitment and Texas offenders least likely. In California, robbers are more likely to have had a juvenile state commitment than burglars; the opposite is true in Texas.

This variable also turned out to be a good predictor of offense rates. The distribution is shown below.

Distribution of Respondents with Juvenile Commitment to State or Federal Facilities

Low-Rate	Medium-Rate	High-Rate
39%	26%	34%

Did the offender use heroin or barbiturates during the two-year period preceding his current conviction?

Previous studies strongly indicate that drug users are more likely to be high-rate offenders. In this sample, the rate of drug abuse varied considerably across states. The percentage of users in each crime category and state is shown in Table A.5.

Table A.5

RESPONDENTS WHO USED HEROIN OR BARBITURATES IN THE TWO-YEAR PERIOD PRECEDING CURRENT TWO-YEAR PERIOD OF COMMITMENT
(in percent)

	Crime	
State	Robbery	Burglary
California	58.6	53.3
Michigan	38.9	47.9
Texas	39.6	36.4

Clearly, the California respondents were more likely to be using drugs. Drug abuse was found to be a good predictor variable, as shown below.

Distribution of Respondents Who Used Drugs in Two-Year Period Preceding Current Commitment

Low-Rate	Medium-Rate	High-Rate
34%	31%	35%

Did the offender use heroin or barbiturates as a juvenile?

Since previous studies have shown that the earlier an offender starts engaging in crime, the more serious his criminal activities are likely to be as an adult, we might also suspect that this relationship would hold for drugs. Among all offenders convicted of robbery or burglary, 58 percent used drugs as juveniles. However, the rate of usage varied considerably across states. In California, 72 percent of the offenders used drugs as juveniles, compared with 58 percent in Michigan and 41 percent in Texas.

Juvenile drug use turned out to be almost as strongly associated with the rate of offense as current drug use, as shown below.

Distribution of Respondents Who Used Drugs as Juveniles

Low-Rate	Medium-Rate	High-Rate
36%	29%	35%

Was the offender employed less than 50 percent of the preceding two-year period?

Previous studies have shown that the more active offenders are more frequently unemployed. In this survey, 25 percent of the respondents

had no employment during the two-year period preceding their arrest, and 58 percent were employed less than 50 percent of the time. Only 45 percent of the Texas respondents were employed less than half of the time, compared with about 65 percent for California and Michigan.

This variable is somewhat associated with respondents' offense rates, as shown below, and was selected for use in our final scale.

Distribution of Respondents Who Were Employed Less than 50 Percent of Two-Year Period Preceding Current Sentence

Low-Rate	Medium-Rate	High-Rate
43%	27%	30%

Was the offender under 23 years of age?

The evidence from prior studies suggests that younger offenders tend to be more active. Particularly in an incarcerated sample, where there is some tendency to give younger offenders a break in sentencing, we might expect those young offenders who end up incarcerated to be more serious offenders.

In Rand's first survey we found that younger offenders tended to commit a greater variety of crimes, but for any one particular type in which they were active, they showed no greater tendency to be high-rate offenders.

In this sample there was only a slight inverse relationship between age and offense rates. This variable was dropped from further consideration.

Does the offender have a record of prior arrests during Window 3 for the crime for which he was eventually convicted?

Twenty-seven percent of the convicted robbers and burglars experienced at least one other arrest for their conviction crime type during the two years preceding their current conviction. We would expect that the more active offenders would be more likely to experience additional arrests. The distribution below shows that this is in fact the case.

Distribution of Respondents with at Least One Prior Arrest During Window 3 for Their Conviction Crime Type

Low-Rate	Medium-Rate	High-Rate
31%	31%	38%

However, in all of our subsequent analysis we have chosen to omit this variable from our prediction scales, since it is unlikely that it can or should enter into sentencing considerations [1].

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[1] In fact, after using all of the other variables, prior arrest adds very little to prediction accuracy.

Appendix B

ESTIMATING PARAMETERS THAT DEFINE CALIFORNIA'S CURRENT SENTENCING POLICY

For the purposes of incapacitation analysis, sentencing policies for any particular class of offenders are defined by three parameters:

q = the probability of arrest and conviction for any one crime;

J = the probability of incarceration given conviction; and

S = the expected sentence length.

Since we have no information to the contrary, we will assume that each category of offenders has, on the average, the same probability of arrest and conviction [1]. Our procedure for estimating these probabilities from official sources is shown in Table B.1.

Given a felony arrest, the probability of conviction and incarceration can be calculated directly from tables published by the state [2]. The relevant probabilities for adult arrests are shown in Table B.2.

In order to keep this analysis simple, we will consider only two types of sentences, jail and prison, and will combine sentences for mentally disordered sex offenders and sentences to California

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[1] Analyses of the previous Rand inmate survey showed that q and λ (offense rate) were not correlated. Previous studies of what factors influence conviction rates for any particular offense types have shown that the principal determinants are the quality of evidence and the existence of a prior relationship between victim and offender (Greenwood, 1982).

[2] These tables are published in California Department of Justice, 1975, 1977.

Table B.1

PROCEDURE FOR ESTIMATING JAIL AND PRISON POPULATIONS

	Item	Robbery	Burglary
A.	Crimes reported to the police (California 1978)[a]	67,920	485,742
B.	Fraction of crimes reported to the police[b]	.45	.50
C.	Actual number of crimes (A/B)	150,933	971,484
D.	Number of offenders per crime incident[c]	2.3	1.6
E.	Number of individual criminal acts (C x D)[d]	347,146	1,554,574
F.	Number of arrests[a]	22,359	81,117
G.	Individual probability of arrest for any one crime (F/E)	.06	.05

SOURCES: [a]State of California, Department of Justice, Crime and Delinquency in California, 1978, Table 1. [b]U.S. Department of Justice, Criminal Victimization Surveys in San Francisco, 1977, and Criminal Victimization Surveys in San Diego, 1977. [c]A. Reiss, Size of Group and Age of Offenders Involved in Major Crime Incidents Reported by Victims in the National Crime Survey (Nov. 1976), unpublished working paper for the Sociology Department, Yale University. (Cited in Blumstein and Cohen, 1979.)

[d]Three offenders committing one robbery results in three criminal acts. If one offender is arrested for this crime, the probability of being arrested for any offender is one-third.

Table B.2

DISTRIBUTION OF OUTCOMES FOR ADULT ARRESTS, CALIFORNIA

Outcomes	Robbery	Burglary
Conviction, given arrest	.51	.61
Go free	.14	.28
Jail sentence	.50	.62
Sentence to CRC or MDSO[a]	.02	.02
Sentence to California Youth Authority[b]	.09	.03
Prison sentence	.25	.05

[a]Civil commitments such as narcotic addicts or mentally disordered sex offenders.

[b]Offenders under the age of 21 are eligible for civil commitment to the California Youth Authority.

Rehabilitation Center and California Youth Authority facilities with the jail commitments. Jail terms are by definition for less than a year. Using Table B.2 to calculate the parameters required for the model, we get the following results:

	Robbery	Burglary
Probability of incarceration given conviction.....	.86	.72
Probability of prison given conviction.....	.25	.05

There are no appropriate published data on the average length of time served for prison and jail sentences. The figures published in occasional studies are subject to wide fluctuation. For instance, any calculations of the mean time served for offenders released in 1975 or 1978 are contaminated by the surge of releases connected with passage of the Determinate Sentencing Law. Since these releases included some men who had served very long terms, the means would be inflated. The figures that are available are shown in Table B.3.

Table B.3

AVERAGE LENGTH OF TERM ACTUALLY SERVED, BY TYPE OF INSTITUTION

Institution	Length of Stay (in months)	
	Robbery	Burglary
California Youth Authority	13	9
Prison	39[a]	34[a]
(Median prison terms, 1976)	30[b]	24[b]

SOURCE: Greenwood, Petersilia, and Zimring (1980); Lipson and Peterson (1980).

[a] 1st degree.

[b] 2nd degree.

The mean length of stay for male prison and jail inmates can be estimated directly from our inmate sample, based on each offender's expected term. For California prisoners, these means are 52.5 months for robbers and 21.6 months for burglars. For jail inmates, they are 12 months for robbers and 9 months for burglars.

The size of jail population (including California Youth Authority facilities, the California Rehabilitation Center, and mentally disordered sex offender facilities) and prison population can be predicted as shown in Table B.4.

Table B.4

PROCEDURE FOR ESTIMATING JAIL AND PRISON POPULATIONS

		Robbery	Burglary
A.	Adult arrests	16,058	40,150
B.	Conviction rate	.51	.61
C.	Convictions (A x B)	8,189.6	24,491.5
D.	Jail commitment rate (of those convicted)	.61	.67
E.	Jail commitments per year (C x D)	4,995.7	16,409.3
F.	Average jail term	12 months	9 months
G.	Jail population (E x F/12)	4,995.7	12,307.0
H.	Prison commitment rate (of those convicted)	.25	.05
I.	Prison commitments per year (C x H)	2,047.4	1,224.6
J.	Average prison term	52.5	21.6
K.	Prison population (I x J/12)	8,957.4	2,204.3

WEIGHTING OUR SAMPLE

The distribution of our California sample between prison and jail inmates is shown below.

Robbers (in percent, N = 178)		Burglars (in percent, N = 160)	
in jail	20.8	in jail	58.8
in prison	79.2	in prison	41.2

The appropriate distribution, as indicated in Table B.4 above, should be the following:

Robbers (in percent, N = 178)		Burglars (in percent, N = 160)	
in jail	29.5	in jail	78.8
in prison	70.5	in prison	21.2

In order to correct the sample to represent the true proportion of prison and jail inmates for each crime, the sample was weighted.

THE CURRENT SENTENCING POLICY AND ITS INCAPACITATION EFFECT

The probability of being incarcerated after conviction is .86 for robbers and .72 for burglars. Using the data in Table B.5, which are computed from our survey, and the data in the previous tables, we can compute the estimated total number of each type of offender and the probability that each will be sentenced to jail or prison if he is incarcerated. These calculations are summarized in Table B.6.

Table B.5

DISTRIBUTION OF INCARCERATED OFFENDERS
BY CONVICTION AND OFFENSE RATE

Conviction	Predicted Offense Rate	Sent to Jail (in percent)	Sent to Prison (in percent)	Mean Length of Prison Term (in months)
Robbery	Low	59.1	40.9	49.5
	Medium	25.2	74.8	53.3
	High	17.9	82.1	50.6
Burglary	Low	91.8	8.2	29.6
	Medium	83.9	16.1	21.6
	High	56.5	43.5	20.0

Notice in Table B.6 that judges in California are now somewhat selective in whom they send to prison. The higher-rate offenders have a higher chance of going to prison. However, notice that the length of prison terms is not selective. High-rate offenders do not serve longer terms. This is probably because the length of sentence is heavily determined by the seriousness of the instant offense--multiple counts, gun use, injury to victims--not prior record.

The relevant parameters for the incapacitation model are shown in Table B.7. The percentage of their career that each type of offender is not incarcerated (η) is

$$\eta_{ij} = \frac{1}{1 + \lambda_{ij}\, q_i\, J_{ij}\, S_{ij}}$$

Table B.6

PROCEDURE FOR ESTIMATING DISTRIBUTION OF INMATES BETWEEN PRISON AND JAIL

	A		B	C	D		E	F	G	H
	Number in Jail		Mean Jail Term (in months)	Jail Commitments per Year (A/B)	Number in Prison		Mean Prison Term (in months)	Prison Commitments (D/E)	Convictions per Year (C + F)	Probability of Prison Given Incarceration (F/G)
	Sample	State[a]			Sample	State[a]				
Robbers										
Low	24	2,262	12	2,262	17	1,218	49.5	295	2,973	.12
Medium	14	1,320	12	1,320	43	3,081	53.3	694	2,342	.35
High	14	1,320	12	1,320	66	4,729	50.6	1,122	2,840	.47
	53	4,996[b]		4,902	125	8,957[b]		2,111		
Burglars										
Low	40	3,907	9	5,209	4	252	29.6	102	7,376	.01
Medium	62	6,056	9	8,075	12	756	21.6	420	11,799	.06
High	24	2,344	9	3,125	19	1,196	20.0	718	5,338	.18
	126	12,307[b]		16,409	35	2,204[b]		1,240		

[a]Assume same distribution as in sample.

[b]From Table B.4.

Table B.7

DISTRIBUTION OF INCARCERATED OFFENDERS BY CONVICTION AND OFFENSE RATE

		Sentence		
Conviction	Predicted Offense Rate	Percent Sent to Jail	Percent Sent to Prison	Mean Length of Prison Term (in months)
Robbery	Low	59.1	40.9	49.5
	Medium	25.2	74.8	53.3
	High	17.9	82.1	50.6
Burglary	Low	91.8	8.2	29.6
	Medium	83.9	16.1	21.6
	High	56.5	43.5	20.0

NOTE: Jail terms are, by definition, for less than a year.

The percentage time at risk for the six different groups of offenders is shown below:

η_{ij}

	Low	Medium	High
Robbers	.93	.63	.33
Burglars	.82	.44	.23

These figures indicate that low-rate robbers are free for 93 percent of their active careers while high-rate robbers are free only 33 percent of the time. The smaller at-risk period for high-rate offenders represents the combined effects of greater likelihood of apprehension during any specific time period (because of higher offense rates and longer average

terms) and greater likelihood of being committed to prison given conviction.

The total population (N_{ij}) [3] of each type of offender is shown below:

	Low	Medium	High
Robbers	20,471	11,895	9,028
Burglars	23,106	12,164	4,597

The number of crimes per year attributable to each type of offender (C_{ij}) [4] is shown below:

	Low	Medium	High	Total
Robbery	38,076	75,688	91,761	205,525
Burglary	240,626	284,285	173,822	698,733

As a check on the accuracy of the model, we can compare the amount of crime predicted by the model with the number of crimes reported to

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[3] where $N_{ij} = \frac{R_{ij}}{1 - \eta_{ij}}$.

[4] where $C_{ij} = G_h T_{ij}\ G_g T_{ij}\ N_{ij}$.

the police (appropriately adjusted for victim reporting rates and multiple offenders).

The total number of criminal incidents (offenders involved in separate crimes) involving robbery or burglary in California in 1978 was estimated in Table B.1 to be 347,146 robberies and 1,554,574 burglaries.

Assuming that adults and juveniles have the same probability of arrest for any one crime, the percentage of individual crimes involving adults should be the same as the percentage of arrests. These percentages for California are 72 percent for robbery and 49 percent for burglary.

Applying these percentages to the total number of individual crimes we get:

	Robbery	Burglary
Number of individual adult crimes, estimated from UCR and victimization data	249,945	761,643
Number of individual adult crimes, estimated from Inmate Survey	205,525	696,733

These estimates are in remarkably close agreement given the rough estimates of parameters available for the model itself. Although these figures by themselves do not prove either the accuracy of the parameter estimates or the model, they do add to their credibility.

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