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INCAPACITATION STRATEGIES AND THE CRIMINAL CAREER

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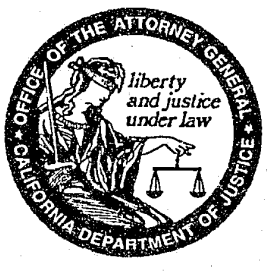

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INCAPACITATION STRATEGIES AND THE CRIMINAL CAREER

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INCAPACITATION STRATEGIES AND THE CRIMINAL CAREER

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AUGUST, 1992

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During the 1980's correctional populations in the United States experienced phenomenal growth. Concomitant with the population explosion has been an explosion in costs: corrections now is among the largest of state expenditures. Not surprisingly, the decade also saw renewed debate over the proper purposes of correctional treatment. Since recent Panels of the National Academy of Sciences have reported evidence for the efficacy of rehabilitation and deterrence to be disappointing, the incapacitation of criminal offenders has dominated criminal justice policy options of the 1980's and 90's. As a result, the concept of the "criminal career" has set the agenda for much of the nation's crime control research.

Incapacitation and "criminal careers" are critical crime control concepts.

Several concepts are key to the criminal career research paradigm. *Participation* reflects the distinction between those who engage in crime and those who do not. *Frequency* of offending is the rate of criminal activity of those who are active. Participation (sometimes called "prevalence") and frequency (also known as "incidence") give very different measures of criminal activity. The former is a measure of those who are criminally active, and the latter reflects numbers of crimes done by active offenders (usually expressed as a rate per year). Finally, the *seriousness* of criminal acts is seen to be critically important, as is the *career length*, or the length of time that an offender is active.

These components of the criminal career paradigm suggest different crime control policy options. It is thought that participation may best be affected through prevention or very early intervention. Frequency, seriousness, and career length are thought best to be affected through attempts at *career modification*. Conceptually, criminal careers may be modified through deterrence, rehabilitation or treatment, or through incapacitation. It is incapacitation that has been touted as holding most promise.

INCAPACITATION AND CRIME CONTROL

Incapacitation strategies are of two types: collective and selective. Under a collective incapacitation strategy, the same or very similar sanction would be applied to all persons convicted of common offenses, with the goal of decreasing the commitment of those offenses (by those persons) in the free community. Selective incapacitation strategies involve sanctioning based on predictions of future offending by individuals.

Whether collective or selective in nature, incapacitation strategies rest heavily on several general assumptions:

Important assumptions underlie incapacitation as a crime control strategy.

- *Criminal activity is "patterned" with respect to types of behaviors.*
- *The seriousness of offending changes in meaningful ways throughout the career.*
- *The rate of offending changes in meaningful ways throughout the career.*

The first assumption suggests that offender criminal activity is not random, but exhibits some degree of consistency. An incapacitation strategy may be based on the assumption, for example, that confining a persistent property offender for a specified time will result in a decrease in property crimes committed.

The second assumption acknowledges that offenders who commit crimes of a serious nature are more problematic than those who commit non-serious offenses. From an incapacitation standpoint, it would be desirable if the "common wisdom" that offenders progress from less to more serious offenses as their careers advance were true, for then the early identification and incapacitation of career criminals not only would decrease crimes committed, but would inhibit the commission of increasingly serious crimes.

The third assumption posits that ideally, the *rate* of offending by those criminally active would increase (no doubt to some limit) throughout the career. Were this true, incapacitation also would have the effect of inhibiting increasing numbers of offenses.

Incapacitation strategies require that the criminal career be predictable.

In short, incapacitation strategies rely fundamentally on assumptions about the *predictability* of criminal behavior. Tests of these assumptions have been impeded by a lack of reliable, comprehensive data on substantial samples of offenders followed for long periods of time. The study samples used in the present research have allowed us to test each of the assumptions underlying incapacitation crime control strategies.

A Typology of Crimes

Our study relied on an empirically based typology of criminal offenses that was designed to model the way the people think about crimes. There are six categories of criminal offenses in this typology. One crime type consists primarily of "nuisance" offenses: By-and-large, these offenses are relatively non-serious (although potential consequences -- such as in drunken driving or the use of drugs -- can be very serious indeed).

A crime typology is needed to test criminal career hypotheses.

The second category involves physical assault, personal harm, and interpersonal confrontation. The third represents theft, property damage or loss, and property crimes in general, while the fourth category represents crimes against the social order. In general, these are either crimes that are committed by an agent or agency in power, or social crimes, or both.

Offenses in the fifth category all involve serious drug offenses: the sale or manufacture of heroin, cocaine, hallucinogens, or barbiturates and amphetamines. The final category of offenses all involve primarily fraud or deception.

Study Samples

The primary group studied is a random sample of over 6,000 men incarcerated in California prisons in the early 1960's. General categories of data collected about these men in 1962 - 1963 include life history information, official institutional record information, inmate questionnaire responses, and psychological test data. Follow-up data were collected for each of these men in 1988 (providing a 26 year follow-up period) with the help of the California Bureaus of Criminal Statistics (BCS) and Criminal Identification (BCID).

The sample of men for whom records were requested was divided randomly in half, in order to provide a study sample and a validation sample. Statistical analyses demonstrated no substantive differences between the study and validation samples, and no serious bias associated with sample attrition during the follow-up period.

The second sample used was drawn from the BCS's Longitudinal File, and consists of a more recent cohort of California offenders. All persons first arrested during calendar year 1980 (irrespective of the disposition of that arrest) were selected for study. Thus, at least 10 years of arrest information is available for each of the 157,936 persons studied. This sample was used to ensure that findings from the study of the earlier cohort -- particularly those concerning the patterning of offenses -- have relevance to the current offending population.

The Class of 1962 has been active.

The Class of 1962

Members of the class of 1962 have been arrested well over 30,000 times since their release from that period of incarceration, and have been charged with several times that many offenses (since a man may be charged with more than one offense per arrest episode). Not surprisingly, this group of men has cycled in and out of prison and jail: the busiest offender was incarcerated 28 times during the follow-up period.

Figure 1: Arrest Offenses Post-Release
N = 4,897 Men/30,464 Arrests
(Most Serious Charge Per Arrest Episode)

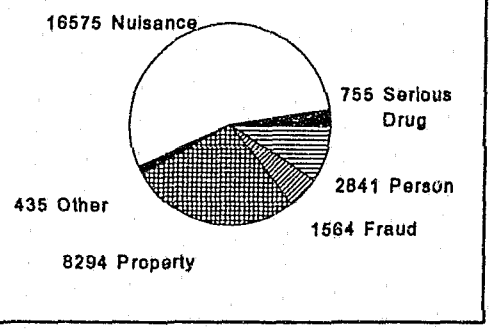


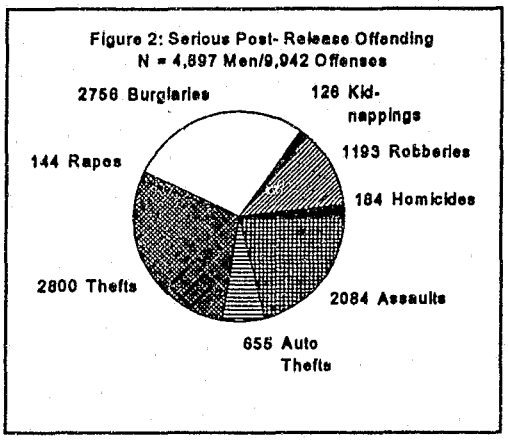
Figure 1 describes -- in accordance with our typology -- over 30,000 crimes that these men have committed since release from the 1962 period of incarceration.

Well over half of all offenses charged are of the nuisance variety: such offenses include parole and probation rules violations, drunken driving, possession or use of drugs, disorderly conduct, and gambling (as examples).

Property crimes also are common (most typically, burglaries, larcenies and attempts, and auto thefts). Offenses against the person

are proportionally infrequent, but unfortunately common: these include homicides, rapes, and assaults. Frauds include forgery and bad check offenses as well as a variety of others. Serious drug offenses, such as the sale or manufacture of large quantities of illegal substances, were relatively rare.

While nuisance offenses predominate the criminal behaviors with which this group has been charged, they also were charged with committing a large number of serious crimes. Figure 2 summarizes almost 10,000 non-nuisance offenses committed by these men since their release from the 1962 - 63 imprisonment.



The System Response: Records provided by the BCS gave more information concerning the dispositions of offenses charged than commonly is the case. Considering just the first charge post-release, 56.4% of the men were convicted for the offense, 22.7% were acquitted or had the charge dismissed, 2.1% were subject to some other action (such as being turned over to another jurisdiction), and in only 18.7% of the cases was the disposition unknown. The typical sanction applied was a prison or jail term: 58.7% of those men convicted on their first post-release charge were reincarcerated. Seven percent were sentenced to a term of probation, and 26.2% were subject to some other sanction. For only eight percent of the cases was a sentence not identifiable given that a conviction was noted.

Prison or jail terms were common. Two-thirds of the Class of '62 did additional time, and almost one-third were re-incarcerated within one year of release.

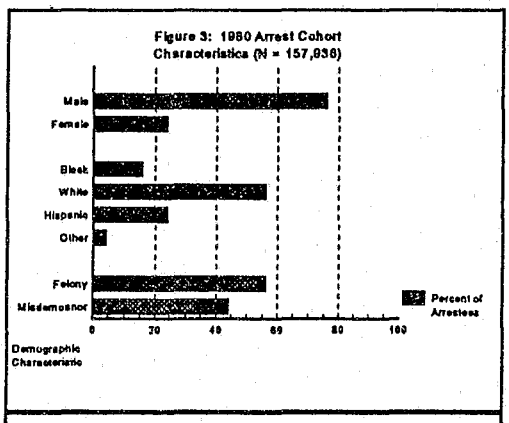
Although almost one-third of these men never were reincarcerated (31.3%), two-thirds did spend additional time under sentences in prison or jail, and nearly one man in five was reincarcerated at least six times. The average (median) number of re-incarcerations is 1.68. Offenders who failed tended to do so quickly: over 30% of these men were re-incarcerated within one year of release, and over half were re-incarcerated within three years of release.

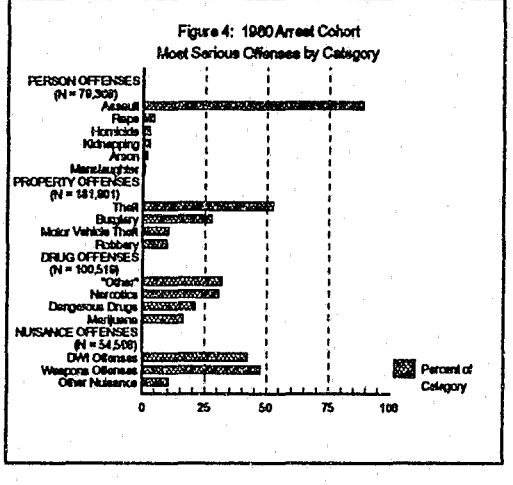
The Class of 1980

The typical member of the class of 1980 is a young white male first arrested for a felony offense (Figure 3). The arrest resulting in a Longitudinal File entry most usually will be the only such experience. Still, the 157,936 arrestees in the 1980 cohort were arrested a total of 462,957 times during the decade (the mean number of arrests is 4.83, while the median is 2.63). Further, they were charged with having committed a great deal of serious harm: During the 1980s this group was responsible for some 1,976 homicides, 3,371 rapes, 70,639 assaults, 44,885 burglaries, 15,406 robberies, and 84,643 thefts.

The Class of '80 was arrested almost a half-million times during the decade.

We recoded the felony and misdemeanor offense codes used by the BCS to approximate our offense typology. Because the Longitudinal File is less detailed than are rap sheets, some differences in the resulting typology should be noted. We were unable to distinguish between so-called "nuisance" drug offenses (e.g., the possession of marijuana) from more significant drug offenses (e.g., the sale of controlled substances). Accordingly, the "drug" and "nuisance" classes differ dramatically between the two typologies. All drug offenses ("nuisance" and otherwise) are classed together for the 1980 cohort, and the "nuisance" class is reduced proportionally (for similar reasons, it also is less detailed). Figure 4 summarizes, using the 1980 cohort offense typology, the criminal activity of this group over the decade.





RESULTS

We turn now to an empirical assessment of each of the critical assumptions that undergird incapacitation strategies based on the criminal career concept. We first discuss analyses of the 1962 offender samples: We will return to the 1980 arrest cohort later, to determine if our findings generalize to a more recently offending population.

Can We Predict? Results of prediction modeling efforts compare favorably with those of similar studies, and effect magnitudes are comparable to or greater than those generally observed. For example, Table 1 summarizes efforts to predict the number of arrests to desistance. Significant predictors include the number of prior periods of incarceration experienced, age (at imprisonment in 1962-63), history of opiate use, a rating of the seriousness of behavior of the commitment offense, an arrest-free period of five years or more prior to the period of incarceration served in 1962-63, the number of prior periods of *prison* incarceration experienced, the type of commitment to the 1962-63 incarceration, and the number of aliases used by the offender. All independent variables discussed are statistically significant, as is the entire model, which accounts for 16% of the variance in the number of arrests experienced.

The power of prediction is modest at best.

Similar models were developed for a variety of crime control-related outcome criteria, and with comparable results. However, not surprisingly -- but important from a public safety perspective -- we cannot predict the seriousness of the first offense committed post-release at all well. Although the seriousness score of the commitment offense and family criminal record are statistically significant predictors and the model is statistically significant, it has little *practical* significance: less than one percent of the variance in seriousness of subsequent offense is accounted for.

Table 1
Regression of Number of Arrests to Desistance on Selected Predictors

Predictor	B	Beta	t
No. of Priors	1.115	.270	11.02***
Age	-0.104	-.144	- 6.39***
Drug Use	-2.155	-.154	- 7.94***
Seriousness of Offense	-0.015	-.058	- 2.92**
Arrest-Free 5+ years	-0.899	-.062	- 3.18**
Prior Prison Terms	-0.413	-.085	- 2.37**
Type of Commitment	-0.706	-.050	- 2.31*
No. of Aliases	0.343	.046	2.31*
Constant	9.976		15.51***

R^2 = .159; $F_{(8,2423)}$ = 57.14, p < .001.
Notes: *** p < .001. ** p < .01. * p < .05.

On validation, all models suffered shrinkage (as is to be expected), but some were rather more robust than others. In particular, it is to be noted that the prediction of lambda -- the rate of offending -- is among the least robust of those examined.

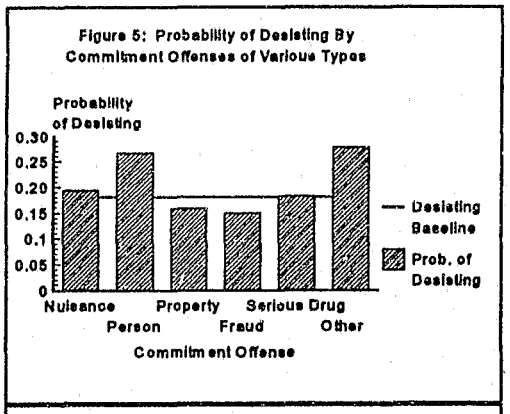
Summary: While the power of the prediction models developed meet or exceed those commonly found in similar studies, predictive power still may best -- and most politely -- be called "modest." No model developed on the construction sample performed substantially better on validation than did a simple Base Expectancy scale developed in the 1960's (on a very simple criterion).

Is Criminal Activity Patterned? For evaluation, incapacitation strategies depend strongly on the concept of "patterned" criminal activity. For example, an incapacitation strategy may be based on the assumption that confining a persistent property offender for a specified time will result in a specified decrease in property crimes committed. The concept of *specialization* is critical to the criminal career paradigm. Unfortunately, available research evidence does not provide strong support for the specialization assumption. Although some evidence of specialization commonly is found, the overwhelming weight of evidence is strongly supportive of versatility or generality of offending.

Although specialization in offending is observed, versatility is the norm.

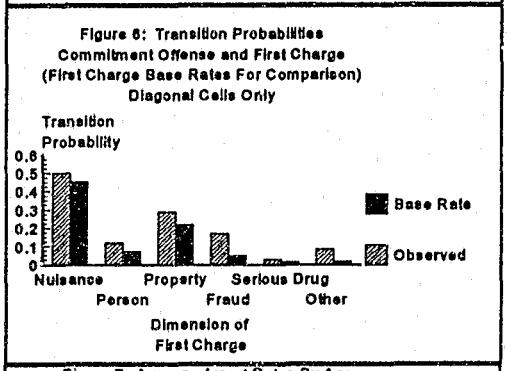
Using the offense typology discussed earlier, we have found somewhat stronger support for the specialization hypothesis than is typical. Still, it is fair to say that versatility overwhelms any "specialization" effect. Consider Figure 5 as illustration. The figure summarizes the probability of not experiencing any new arrest by type of commitment offense. Nuisance and Serious Drug offenders desist from criminal activity at the average rate for the sample. Those who offended against persons were significantly more likely to desist than the sample as a whole, while those who offended against property or were involved in frauds were significantly less likely to desist from crime.

Figure 6 directly addresses the question of specialization. It summarizes the diagonal cells of a transition probability matrix (relative to the base rate probabilities given that a next offense occurs) for the commitment offense and the first charge post-release. Like-offense transition probabilities each are elevated relative to base-rate probabilities, and -- although not summarized in this figure -- off-diagonal transitions (representing versatility) are depressed relative to base-rates.

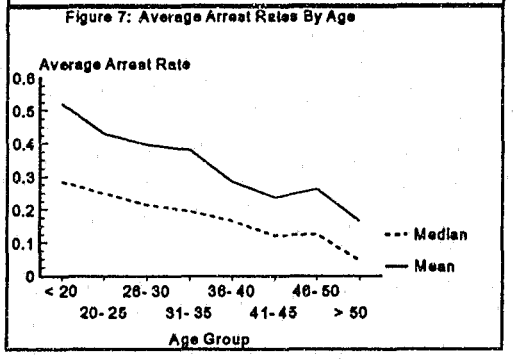


Specialization does not increase substantially as the career progresses.

Does Specialization Change with Transition? From the perspective of an incapacitation strategy, one would hope that specialization would increase over time. We did observe a very modest increasing trend for some types of transitions, but not for others. Although the trends are statistically significant, the slopes are exceedingly small. For all practical purposes, specialization does not change with increases in transitions.



Does the Rate of Offending Change in Meaningful Ways as the Career Progresses? A brief answer is possible: Yes, but not in a fashion that advantages incapacitation strategies (Figure 7). The rate of offending declines dramatically as offenders age: the rate for youthful offenders (25 and under) is about three times that for older offenders (50 and over).



Offenses do not tend to get more serious as the career progresses.

Does the Seriousness of Offending Change in Meaningful Ways as the Career Progresses? Again, an unfortunately brief answer to this question seems possible based on this examination of the careers of 6,000 offenders: No. The average seriousness score of offenses committed is invariant over offense episodes.

Are Findings Concerning Patterns of Offending Relevant to the Current Population?

We believe that they clearly are. Earlier, we noted that the initial arrest (which results in an entry in the Longitudinal File) most typically is the only arrest noted in the File: *57% of this cohort experienced only the initial arrest over the ten(plus) year observation period.* As described for the 1962 samples, those whose initial arrest was for a nuisance offense desist at a higher rate than for the cohort as a whole. Unlike our previously reported finding, however, all other cohort members (irrespective of the type of initial charge) desist at a rate indistinguishable from the baseline rate.

Observations concerning specialization generalize to the Class of 1980.

Findings concerning "specialization" also replicate: *The most likely occurrence at time $_{t+1}$, given any offense type at time$_t$, is desistance. Failing this, the next most likely occurrence is an offense of the same type as the first -- but these transition probabilities are very low.*

When offense transition matrices are examined, all diagonal cells are statistically significant by tests of the Adjusted Standardized Residual, and all off-diagonal cells either are not statistically significant, or are statistically significant but negative in sign (suggesting transitions that are not likely to occur). This same pattern of findings obtains irrespective of the transition sequence examined. Finally, we should note that the slight trends for increasing "coefficients of specialization" observed in the 1962 sample also are replicated in the 1980 cohort. Again, however, the slopes are so slight as to be substantively meaningless.

CONCLUSION: THE WISH LIST AND THE REALITY

Three related features of the state of nature desirable from the standpoint of incapacitation strategies involve *prediction*, *offense specialization*, and *characteristics of arrests and of their rates* when persons are observed over time. If incapacitation strategies are to be effective, the behaviors of offenders (and of the criminal justice system) must be reasonably predictable.

A simple and straightforward incapacitation strategy could be formulated if (a) both the termination of offending and the rate of committing crimes could be predicted with confidence, (b) the rate of doing crime was constant or increasing, and (c) there was a high degree of specialization in crime types committed (or, if the tendency to specialize increases with time). Thus, for implementation of a selective incapacitation strategy, it would be helpful if we could identify future high rate offenders who specialize in serious crimes (with both specialization and rates of crime commission constant or increasing over time).

A more complex strategy could be formulated if the termination from criminal activity and the rate of committing new offenses could be predicted reasonably well, if the distribution of the rate of new crimes (arrests, charges, or convictions) over time were known with some precision, and if (absent a high degree of specialization) probable crime switching could be defined with a reasonable degree of confidence. This section considers evidence from this study on these issues so that the feasibility of developing viable incapacitation strategies may be considered.

Incapacitation and Prediction: The prediction models developed provide very typical and quite modest estimation of a variety of outcomes relevant to incapacitation strategies. When tested on a second sample, most models hold up quite well, although with an expected small amount of "shrinkage" in validity coefficients. Still, the validity of the predictions must be described as modest at best.

Incapacitation and Specialization: The problem of specialization vs. versatility in offending was considered in terms of a classification of offenses into empirically derived groups based on how people consider crimes to be related. It may be assumed that if we had used a finer classification (that is, used more categories of offenses) we would have found less specialization. On the other hand, had we combined groups and used fewer classifications of offenses, we would have found more. If, however, the classifications are accepted as a reasonable and useful middle ground that appears to represent some cognitive reality, then four points must be concluded.

First, specialization in offending was observed; but the coefficients describing the degree of specialization -- although higher than those found in other studies -- were (like the predictive validity coefficients) quite modest. Second, a high degree of versatility was observed, which aptly may be described as overwhelming specialization. Third, the most probable next arrest (if indeed one is to occur) is for an offense either of the nuisance variety or of the type preceding this arrest. This is true irrespective of the offense episode examined. Fourth, such specialization as was observed increases very little with successive transitions.

Incapacitation and Characteristics of Lambda: Arrest rates were found to be inversely related to specialization: "Specialists" had lower arrest rates than did "generalists." Further, arrest rates decreased precipitously with age -- one of the best predictors of those rates in the context of the variables considered in this study.

THE FEASIBILITY OF INCAPACITATION STRATEGIES

A strong argument against the feasibility of *collective* incapacitation strategies based on the offense of conviction is given simply by examination of transition matrices. For example, locking up "burglars" to prevent burglaries may be expected first of all to confine a substantial number of persons who will commit no future offenses; second, to prevent future nuisance offenses; and only thirdly to prevent burglaries. Confining "robbers" similarly may be reasonably expected to prevent some robberies, but mainly it will prevent nuisance offenses and confine some persons who do not -- at least on grounds of incapacitation -- warrant confinement. Similarly, data presented provide little support for the *selective* incapacitation orientation. Rates of arrest or of conviction can be predicted, but not well. Rates of arrest for person offenses -- a most likely target for selective incapacitation strategies -- can be predicted, but even less well. Rates of arrest are inversely related to the degree of specialization. Specialization increases very little with age. Finally, arrest rates decline with age. For a century and a half it has been known that "participation" declines with age. Data reported here show that *arrest rates* for active adult offenders also decline with age.

It is apparent that those advocating selective incapacitation as a strategy for the more efficient or effective use of criminal justice resources will have many serious obstacles to overcome, even if serious ethical problems are set aside. The state of nature -- of offense behavior and criminal justice response -- does not appear conducive to the effective development of such strategies.

INCAPACITATION STRATEGIES AND THE CRIMINAL CAREER

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Background

During the 1980's correctional populations in the United States experienced phenomenal growth.[1] Concomitant with the population explosion has been an explosion in costs: corrections now is among the largest of state expenditures.[2] Not surprisingly, the decade also saw renewed debate over the proper purposes of correctional treatment.[3]

Recent Panels of the National Academy of Sciences have reported evidence for the efficacy of rehabilitation and deterrence to be disappointing.[4] As a result, the incapacitation of criminal offenders has tended to dominate criminal justice policy options of the 1980's and 90's -- and the concept of the "criminal career" has set the agenda for much of the nation's research efforts.[5]

The Career Criminal Paradigm

Several concepts are key to the "criminal career" research paradigm. The term *participation* reflects the distinction between those who engage in crime and those who do not. *Frequency* of offending is the rate of criminal activity of those who are active. Participation or "prevalence," and frequency ("incidence") give very different measures of criminal activity. The former is a measure of those who are criminally active, and the latter reflects numbers of crimes done by active offenders (usually expressed as a rate per year). The *seriousness* of criminal acts is seen to be important, as is the *career length*, or the length of time that an offender is criminally active.

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1 California's state prison population increased over 200% during that period (Webb, G. "Corrections program called 'utter failure.'" San Jose Mercury News, May 9, 1991, pg. 1-C.

2 In California, prison and jail construction needs alone were estimated at almost $12 billion for the period 1978 - 1990 (Tuma, D. "The American Way of Punishment -- In Search of a New Path. California Bureau of Criminal Statistics (mimeo). Sacramento, CA: Bureau of Criminal Statistics, Nov., 1990 (Table 1)). Operating costs also are staggering: California would spend some $8.2 billion annually (in FY 1989/90 dollars) to operate the adult and juvenile correctional programs reported to be necessary (Tuma, op cit., pp. 4 - 5).

3 Gottfredson, S.D., and Taylor, R.B. The Correctional Crisis: Prison Populations and Public Policy. Washington, D.C.: National Institute of Justice, 1983; Gottfredson, S.D., and Taylor, R.B. Public policy and prison populations: measuring opinions about reform. Judicature, 1984, 68(4-5), 190-201.

4 Blumstein, A., J. Cohen, and D. Nagin, eds. Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates. Washington, D.C.: National Academy of Sciences, 1978. Sechrest, L., S. White, and E. Brown, eds. The Rehabilitation of Criminal Offenders: Problems and Prospects. Washington, D.C.: National Academy of Sciences, 1979.

5 Blumstein, A., et al., eds. Criminal Careers and "Career Criminals." Washington, D.C.: National Academy of Sciences, 1986.

These components of the criminal career paradigm suggest different crime control policy options. It is thought that participation may best be affected through prevention or very early intervention. Frequency, seriousness, and career length are thought best to be affected through attempts at *career modification*. Conceptually, criminal careers may be modified through deterrence, rehabilitation or treatment, or through incapacitation. The latter has been touted as holding most promise (at least in the public press).[6]

Incapacitation and Crime Control

Incapacitation strategies are of two types: collective and selective. Under a collective incapacitation strategy, the same or very similar sanction would be applied to all persons convicted of common offenses, with the goal of decreasing the commitment of those offenses (by those persons) in the free community.[7] Selective incapacitation strategies involve sanctioning based on predictions of future offending by individuals.[8]

Whether collective or selective in nature, incapacitation strategies rest heavily on several general assumptions:

- *Criminal activity is "patterned" with respect to types of behaviors.*

By this it is meant that offender criminal activity is not random, but exhibits some degree of consistency. An incapacitation strategy may be based on the assumption, for example, that confining a persistent property offender for a specified time will result in a decrease in property crimes committed.

- *The seriousness of offending changes in meaningful ways throughout the career.*

Sociologists have long held that "the seriousness of criminal acts represents a conceptual dimension of criminality that is indispensable in common everyday discourse, in legal theory and practice, and in sociological work,"[9] and the measurement of crime seriousness has a long history in criminology. The concept is central to the career criminal paradigm in general, and to the evaluation of incapacitation strategies in particular.

In general, it is held that offenders who commit crimes of a serious nature are more problematic than those who commit non-serious offenses. From an incapacitation standpoint, it would be desirable if the seriousness of offending was non-stationary. Indeed, the "common wisdom" is that offenders progress from less to more serious offenses as their careers advance. If this is so, then the early identification and incapacitation of career criminals not only would decrease crimes committed, but would inhibit the commission of increasingly serious crimes.

- *The rate of offending changes in meaningful ways throughout the career.*

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6 "To Catch a Career Criminal," Newsweek, November 15, 1982, 77; "Cutting Crime Tied to Jailing of the Busiest Criminals," The New York Times, October 6, 1982; "Key to Criminals' Future: Their Past," U.S. News and World Report, October, 1982; "Making Punishment Fit Future Crimes," The New York Times, November 14, 1982, p. E-9.

7 Cohen, J. "Incapacitation as a Strategy for Crime Control: Possibilities and Pitfalls," In Tonry, M., and N. Morris, eds. Crime and Justice: An Annual Review of Research. Volume 5. Chicago: University of Chicago Press, 1983, pp. 1 - 84.

8 Greenwood, P., and Abrahamse, A. Selective Incapacitation. Santa Monica, CA: Rand Corporation, 1982.

9 Rossi, P., Waite, E., Base, C., and Berk, R. The seriousness of crime: normative structure and individual differences. American Sociological Review, 1974, 39, 224-237, at 224.

Ideally, the rate of offending by those criminally active also would be non-stationary, and would increase (no doubt to some limit) throughout the career. Were this true, incapacitation also would have the beneficent effect of inhibiting increasing numbers of offenses.

In short, both collective and selective incapacitation strategies rely fundamentally on assumptions about the *predictability* of criminal behavior. Tests of these assumptions have been impeded seriously by a lack of adequately reliable, comprehensive data on substantial samples of offenders followed for long periods of time. The study samples used in the present research have allowed careful tests of each of these fundamental assumptions.

Study Samples

The primary sample studied is over 6,000 men who were incarcerated in California prisons in the early 1960's.[10] The group was chosen to reflect a random sample of all men in California's prisons at that time. Their most frequent conviction offenses were burglary (18%) and armed robbery (12%). Five percent were sentenced for homicide or manslaughter, nine percent for other violent offenses, and sixteen percent for various narcotics offenses. Fifteen percent were sentenced for forgery or fraudulent checks, and a quarter of the men were convicted of various other offenses.

A substantial portion (43%) had a history of assault, and nearly a fourth had a record of use of a pistol or gun. One in ten had used knives as weapons. A fourth had used opiate drugs (typically heroin), and fifty-six percent had been in prison before.

General categories of data collected about these men in 1962 - 1963 include life history information,[11] official institutional record information (for a random subsample of 1,299 persons),[12] inmate questionnaire responses (from 3,652 men),[13] and psychological test data (from 3,975 persons).[14]

Follow-up data were collected for each of these men in 1988 (providing a 26 year follow-up period) with the help of the California Bureaus of Criminal Statistics and Criminal Identification (the state repository for arrest (and applicant) records).[15] In 1973 an automated information system was initiated for the gradual automation of

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10 These data were collected for research supported by Public Health Service Grant CM 823 from the National Institute of Mental Health. See Gottfredson, D.M., and Ballard, K.B., Jr., Prison and Parole Decisions: A Strategy for Study. Final report to the National Institute of Mental Health, 1965.

11 Offense, prior criminal record, offense seriousness (various rating scales), type of admission, birthdate, sentence, date of admission, marital status, educational history, work history, grades claimed and measured, intelligence classification, drug use history, Base Expectancy (parole prediction) score, and other items.

12 Custody classification, work assignment, vocational training, education, disciplinary infractions, counseling, therapy, visits and correspondence, and other items.

13 These include extensive self reports on program participation, attitudes, perceptions, and complaints.

14 The file includes the California Psychological Inventory and a variety of scales derived from it, parts of the Minnesota Multiphasic Personality Inventory, scales measuring self esteem, inmate cohesion, self conception, anomie, attitude toward authority, interpersonal maturity, various "faking" scales, and other measures.

15 In order for the California Bureaus of Criminal Statistics and Criminal Identification to succeed in finding current records on men in this sample, the staff needed as much identifying information as possible. As a result, it was necessary first to code additional data from microfilm records in the California Department

all files. A user's guide describes this system and the data it contains.[16] The Bureau of Criminal Statistics (BCS) provided us with computerized records for those men in our sample whose files had been entered into this system, and the Bureau of Criminal Identification (BCID) staff manually prepared records for the rest.

The sample of men for whom records were requested was divided rendomly in half, in order to provide a study sample and a potential validation sample. There were 3,108 persons in the first (or study) sample, and 3,202 in the second (validation) sample.

The limitations of arrest records for the purposes of the study are well known.[17] Since, however, the focus of this research was on classification and prediction related to the arrests and convictions subsequently for new serious offenses, these limitations appeared to be acceptable; and in any case it is on the basis of official records that practical implementations of the research may be expected to be designed.[18]

Coding forms, associated instructions, and definitions for coding the follow up data from arrest records were based upon procedures developed for an earlier study.[19] These procedures attend to charges filed, arrests known, and dispositions noted as well as to issues of the nature and seriousness of the offenses recorded.

The second sample used was drawn from the BCS's Longitudinal File, and reflects a more recent cohort of California offenders. This sample was used to ensure that findings from the study of the 1962 samples -- particularly those concerning the patterning of offenses -- have relevance to the current offending population.

Entries in the Longitudinal File emanate from two sources: Fingerprint Cards (FD249) and Disposition of Arrest and Court Action Forms (JUS 8715).[20] According to the Bureau of Criminal Statistics' description:

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of Corrections, which usually provided the full name and a date and place of birth and often provided also a CII number. A small portion of the microfilmed records (of five by eight cards with handwritten entries) in the Department of Corrections was missing, but this resulted in the loss of only a few records. Another portion of the sample was men for whom no record was found by the Bureau of Criminal Statistics (some unknown portion of this group may be due to error in the CII system, but most most probably is due to a periodic purging of records). Due to a California court order, all references to arrests with alleged offenses involving marijuana were to be removed from the records before they were provided to us, so this exception to the arrest records available for our study should be noted.

16 Bureau of Criminal Identification, Department of Justice, State of California, Criminal History User's Guide. Sacramento, California: California Department of Justice, March, 1987.

17 Gottfredson, D.M. and Gottfredson, M.R., "Data for Criminal Justice Evaluation: Some Resources and Pitfalls," in M.W. Klein and K.S. Teilman, (Eds.), Handbook of Criminal Justice Evaluation. Beverly Hills, California: Sage Publications, 1980, 97 - 118.

18 Further, as will be discussed in a later section, the arrest records provided far more information concerning dispositions for offenses alleged than is common.

19 Gottfredson, S.D., and Taylor, R.B., Community Context and Criminal Offenders, in A. Reiss and M. Tonry (eds.), Crime and Justice: An Annual Review of Research. Chicago: Univ. of Chicago Press, 1989; see also Gottfredson, S.D., and Taylor, R.B., "Person-Environment Interactions in the Prediction of Recidivism," in R. Sampson and J. Byrne (eds.), Environmental Criminology. New York: Springer/Verlag, 1986.

20 Discussion in this section is adapted from Kendall, D. Adult Criminal Justice System Longitudinal File. Technical User's Manual: Abridged Version. Sacramento: State of California, Department of Justice, December, 1989.

Records for offenders are identified by Criminal Identification and Investigation (CII) Numbers when their first arrest is received by DOJ. When a fingerprint card is received, the information is compared with the Department's Automated Name Index (ANI) and Automated Latent Print System (ALPS) to see if a history exists for the individual. If an established history exists, the information on the arrest print is added; if not, a new CII number is issued to the individual, the appropriate information is added to ANI and ALPS, and a new criminal history is initiated.[21]

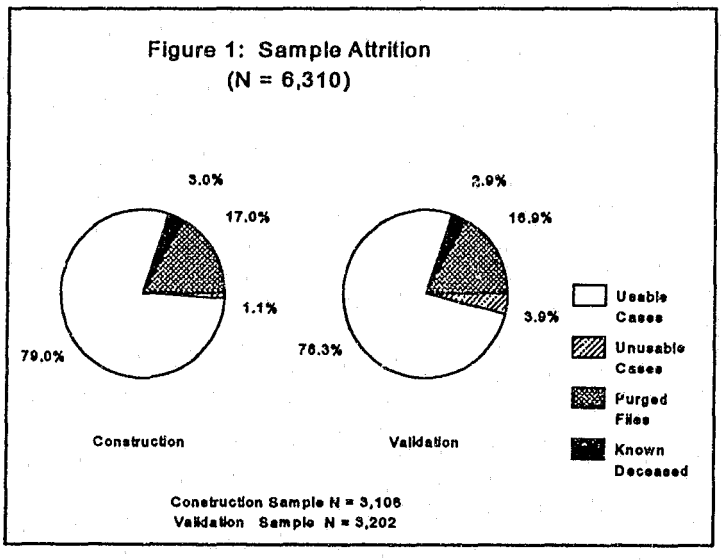
The Longitudinal File is updated quarterly, and contains identifying information (CII Number, birthdate, sex, race) as well as information pertaining to arrests and dispositions of these. The file used for the research reported here is known as the Secondary Fixed Length File, and contains information concerning only the most serious charge per arrest cycle (although the number of charges per cycle is known).

The sample chosen for examination here consists of all persons first arrested during calendar year 1980 (irrespective of the disposition of that arrest). The file extract was created in February of 1992, and contained information updated through the end of 1991, providing at least 10 -- and at most 11 -- years of arrest information for each of the 157,936 persons studied.

Attrition and Potential Bias

The 1962 Sample

Given the age of the "1962" samples, some attrition naturally occurred as the arrest records were retrieved. Some of the "rap sheets" returned were unusable (e.g., pages were missing, or the person identified clearly was incorrect). A few men never were released from the period of incarceration being served in 1962-63. Record requests for several men were returned noting that the man had died (and in most cases, the date and cause of death), but no record was provided. Finally, a large number of requests were returned with the notation that the file had been "purged" from the system. A summary of this attrition for each 1962 subsample is given in Figure 1:



Purging[22] Purging refers to the non-retention of records otherwise maintained by the California Department of Justice on persons arrested in the state or fingerprinted for licensing and employment purposes. In 1974, when the file was reduced markedly (from about five to three million records), the Department established retention schedules for these records and developed criteria for purging them. In 1987, the purge criteria were changed to extend the retention periods for some types of criminal records.[23]

The change in purging criteria did not affect the retention rules for the subjects in this

21 Kendall, D. op cit., 1989, pg. 2.

22 Douglas A. Smith and Gary Maggy of the California Bureau of Criminal Identification helped us better understand the arrest record system, including the purging process.

23 The procedures now used are described in Department of Justice, Criminal Record Purge and Sealing Handbook, Sacramento: State of California, Department of Justice, 1989.

sample. All cases were of course convicted felons;[24] and both before and after the 1987 change such records were to be retained until age 70. At age 70, the record could be purged only if there was no activity in the last ten years.

The criteria establish minimum retention periods, and records may be kept longer. The application of the purging criteria apparently has varied over the years and, it was reported, has been dependent somewhat on budget availabilities for the purging operation. The basic rule "all entries must meet purge criteria before the record can be destroyed" applies invariably. That rule is important to the application of some of the exceptions (relating to certain juvenile offenders required to register, records of certain marijuana charges, and records of deceased persons).[25]

Examples of other exceptions are:

1) Records of subjects convicted of offenses which require registration under Penal Code Section 290 will be retained until the individual is 100 years old, or for 10 years from the date of release from supervision, whichever is longer.

2) Records of subjects for which a handgun purchase has been denied will be retained until the individual is 100 years old.

3) Records of subjects sentenced to prison on felony convictions, then paroled for life, will be maintained until the subject has reached age 80. At age 80, the Department will contact the California Department of Corrections regarding the subject's status. Retention will revert to modified life when the subject has been discharged from parole.[26]

Certain marijuana and marijuana related entries should have been removed from all records provided to us. California Health and Safety Code Section 11361.5 requires destruction of these entries within two years of the date of conviction or the date of arrest if there was no conviction. And, pursuant to Health and Safety Code Section 11361.5 (b), certain of these entries are removed upon application by the subject of the record. Moreover, the Department is under court order to remove these entries from any record prior to dissemination. These include possession of marijuana, possession of paraphenalia for using marijuana, visiting or being in a place where marijuana is used, and being under the influence of marijuana.[27]

A substantial decrease in the entry of records for drunk driving arrests occurred about 1979. With the passage of Proposition 13, resources were reduced and the Department decreased entry of these records.[28]

Potential Purging Bias Any bias in the data used for this study, so far as long term careers is concerned, probably is toward removal of cases with more favorable outcomes (in California) or deaths. The

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24 For this purpose, felonies are defined as crimes that are punishable by death or imprisonment in the state prison system, regardless of the sentence imposed and whether or not the court deems the offense to be a misdemeanor.

25 The latter may be purged one year and one month after the death, unless the record is of a homicide victim, which may be purged ten years and one month after the death.

26 "Modified life" means until age 70. The examples are quoted from the Handbook, page 4.

27 This process appears to have been incomplete, as a substantial number of marijuana-related charges are noted on the rap sheets returned to us.

28 An effort to enter cases in a large accumulated backlog was terminated (partly because of an arguable duplication of effort with the record keeping of the Department of Motor Vehicles).

subjects whose records were destroyed would have been those who had reached age 70 with no known arrests in the prior ten years, or else known deaths.

The potential bias is reduced by the policy that the purge rules establish minimal criteria. Thus, records need not be purged -- and may not be -- when resources are scarce for this purpose. Thus, it is likely that some records in the sample met the purge criteria but actually were retained.

The bias in under-reporting of out-of-state arrests, discussed subsequently, is in the opposite direction to the probable bias due to the purging operation.

Potential Bias in the Reporting of Dispositions over Time: There may be a bias in the reporting of dispositions associated with improvement of the process over time. (This, of course, can be examined by looking at trends in the proportions of arrests to dispositions shown.)[29]

Potential Bias Associated with Deaths Deaths are recorded if and only if a fingerprint card is made or the subject was in prison at the time of death. If the death is a coroner's case, and the person is unknown to the coroner, fingerprinting may occur; but if the subject is known to the coroner, then it is unlikely. Deaths in prison are reported. Otherwise, deaths will not be known from these records. This could tend to inflate the value of time free (exposed to risk) and therefore inflate a decline in arrest rates with age.

Potential Bias Associated with Out-of-State Offenses Out-of-state records are thought to be far from complete. Over time, the Department has stopped entering these as a result of workload requirements. Thus, there may be some bias associated with time (more out-of-state entries being made earlier). Although the out-of-state entries shown are probably valid, they cannot be regarded as comprehensive. The probable bias in known events due to under-reporting of out-of-state arrests appears to be opposed to the potential bias from purging. Purging would tend to eliminate subjects with relatively good records; lack of complete out-of-state records would exclude crimes done but not recorded in California.

Examinations of Potential Bias The first concern, of course, is whether any actual bias resulted from the exclusion of the "purged" cases. Using the study sample, we compared characteristics of those men whose files were purged with the remainder; results are given in Tables 1 and 2.

No statistically significant differences were observed with respect to race, type of admission, completion of testing, whether the instant offense involved illegal economic gain, family criminal record, whether the instant offense involved checks or burglary, measured intelligence, tested grade level, or the Base Expectancy Score calculated in 1962-3. Differences observed were as follows: offenders whose files were "purged" were more likely to have had an arrest-free period of five or more years, more likely to have had a history of opiate use, been incarcerated earlier for the instant commitment offense, have a more serious commitment offense, and had experienced more prior incarcerations (including prison incarcerations). As detailed in Tables 1 and 2, the differences observed, while statistically significant, are not large. There appears to be little serious bias associated with sample attrition in the 1962 Study Sample.

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29 Several possible influences on changes in disposition reporting were mentioned by the Bureau of Criminal Identification staff. The Department has a program aimed at improving the recording of dispositions. Also, it is believed that the advent of county computerized systems, beginning in the early 1970s, may have helped increase the reporting of dispositions. And, at about the same time, programs supported by the Law Enforcement Assistance Administration may have helped improve the system.

Table 1

Comparison of "Purged" and Retained Cases

	Retained	Purged
Testing:		
Incomplete	15.7%	18.3%
Complete	52.5	50.9
Not Tested	18.2	18.5
Refused	13.7	12.2
($X^2(3) = 2.875$; n.s.)		
Race:		
White	54.0%	53.9%
Other	46.0	46.1
($X^2(1) = 0.001$; n.s.)		
Type of Admission:		
Parole Violator	25.1%	27.6%
New Commitment	74.9	72.4
($X^2(1) = 1.322$; n.s.)		
Instant Offense Involved Illegal Economic Gain:		
Yes	65.0%	60.5%
No	35.0	39.5
($X^2(1) = 3.423$; n.s.)		
Arrest-Free Period of Five or More Years:		
No	78.0%	71.8%
Yes	22.0	28.2
($X^2(1) = 8.603$; $p < .01$)		
History of Opiate Use:		
Yes	25.1%	33.8%
No	74.9	66.2
($X^2(1) = 15.546$; $p < .001$)		
Family Criminal Record:		
Yes	43.7%	40.7%
No	56.3	59.3
($X^2(1) = 1.422$; n.s.)		
Committment Offense of Checks or Burglary:		
Yes	34.4%	32.8%
No	65.6	67.2
($X^2(1) = 0.470$; n.s.)		

Table 2
Comparison of "Purged" and Retained Cases

Variable	N	Mean	S.D.
Measured Intelligence:[30]			
Retained	1,570	3.95	1.05
Purged	334	3.89	1.14
($t_{(1,902)} = 0.349$; n.s.)			
Year of Commitment:			
Retained	1,592	60.00	3.08
Purged	347	59.54	4.48
($t_{(1,937)} = 2.307$; $p = .02$)			
Tested Grade Level:			
Retained	2,405	3.34	3.16
Purged	474	3.31	3.12
($t_{(2,877)} = 0.168$; n.s.)			
Seriousness Score of Commitment Offense:[31]			
Retained	2,378	64.18	24.33
Purged	455	60.34	23.90
($t_{(2,831)} = 3.093$; $p = .002$)			
Number of Prior Incarcerations:[32]			
Retained	2,506	2.52	1.46
Purged	479	2.88	1.38
($t_{(2,983)} = 4.978$; $p < .001$)			
Number of Prior Prison Incarcerations:[33]			
Retained	2,506	1.07	1.26
Purged	479	1.40	1.41
($t_{(2,983)} = 5.139$; $p < .001$)			
Base Expectancy Raw Score:			
Retained	2,500	510.99	179.12
Purged	479	525.26	201.94
($t_{(2,977)} = 1.564$; n.s.)			

30 Seven point scale; four equals Normal (90 - 109).
31 Thirty-four point scale; scores range from 0 - 103.
32 Four equals four or more.
33 Four equals four or more.

The 1980 Cohort

All comments concerning potential for bias resulting from purging, deaths, and out-of-state arrests apply equally to the 1980 cohort. Unfortunately, tests of these potential biases are not possible. Of particular concern to BCS staff have been biases in the reporting of dispositions over time, and some evidence suggests that this may be a serious problem for the Longitudinal File as a whole.[34] Analyses reported here rely on arrest information only, thus obviating most such concerns.

The Class of 1962

The class of 1962 has been active: they have been arrested well over 30,000 times since their release from that period of incarceration, and have been charged with several times that many offenses (since a man may be charged with more than one offense per arrest episode).

This group of men has cycled in and out of prison and jail: the busiest offender was incarcerated 28 times during the follow-up period.

What kinds of crimes have these men committed? A major development in the measurement of crime has been the effort to improve upon behavioral representations through assessment of the seriousness of criminal acts.

Crime Seriousness Measures

Measurement of the seriousness of crimes dates from Thurstone,[35] and replications suggest that these judgments remain remarkably stable over time.[36] Others, using similar methods, have developed more comprehensive schemes.[37]

Several years ago, we took a multidimensional approach to the scaling of offense seriousness. Through principal components analyses of judgments of the seriousness of hundreds of discrete criminal acts, it appeared that six dimensions underlie people's judgments of such acts.

The first dimension can be interpreted in a number of ways. Many of the offenses which load heavily on this component are "nuisance" crimes: prostitution, gambling, use and possession of marijuana, adultery, disorderly conduct, homosexual acts, exposures, etc.. It is clear from the standardized item means that in general, people view crimes that loaded on this dimension as relatively non-serious.

The second component involves physical assault, personal harm, and interpersonal confrontation. The third component equally clearly represents theft, property damage or loss, and property crimes in general.

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34 Del McGuire, Bureau of Criminal Statistics (personal communication, May, 1991).

35 Thurstone, L.L., "The Method of Paired Comparisons for Social Values, Journal of Abnormal and Social Psychology, 1927, 21, 384 - 400.

36 Coombs, C.H., "Thurstone's Measurement of Social Values Revisited, Forty Years Later," Journal of Personality and Social Psychology, 1967, 6, 91-92; Krus, D.J., Sherman, J.L., and Krus, P., "Changing Values over the Last Half-century: The Story of Thurstone's Crime Scales," Psychological Reports, 1977, 40, 207-211.

37 Sellin, T., and Wolfgang, M., The Measurement of Delinquency, New York: Wiley, 1964; Rossi, P., Waite, E., Bose, C., and Berk, R., "The Seriousness of Crime: Normative Structure and Individual Differences," American Sociological Review, 1974, 39, 224 - 237; Gottfredson, S.D., Warner, B.D., and Taylor, R.B. "Conflict and Consensus in Justice System Decisions," in N. Walker and M. Hough, (Eds.), Sentencing and the Public. Cambridge Series in Criminology. London: Gower, 1988.

The fourth dimension seems to represent crimes against the social order. In general, these are either crimes that are committed by an agent or agency in power (an employer, a real estate agent, a police officer, a manufacturer, a producer, a doctor, a public official), or social crimes (e.g., racism, the pollution of a water supply, the marketing of contaminated products, price-fixing, false advertising), or both.

Offenses loading on the fifth dimension (with two exceptions) all involved serious drug offenses: the sale or manufacture of heroin, hallucinogens, or barbiturates and amphetamines. Offenses loading on the sixth (and final) dimension by-and-large involved fraud or deception.[38]

One power of this dimensional approach to the scaling of offense seriousness is that it allows a ready assessment both of the seriousness and of the nature of criminal offenses, thus allowing for a study of transitions in criminal careers both across seriousness dimensions and within the overall concept of seriousness. Schemes for coding criminal histories using this novel approach were developed in earlier projects,[39] and the method has been found useful for the prediction of criminal recidivism. Since this typology was developed to represent a better cognitive reality of the ways people think about crime, we hope that it also will better represent behavioral reality. In any event, it is useful in summarizing patterns of criminal activity.

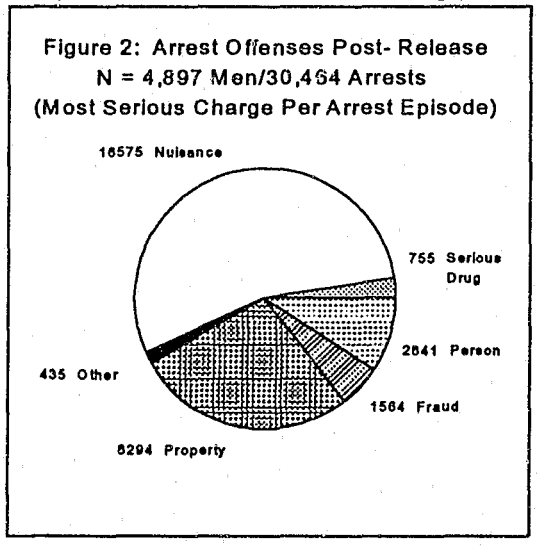

Figure 2 describes -- in accordance with this typology -- over 30,000 crimes that these men have committed since release from the 1962 period of incarceration. Well over half of all offenses charged are of the *nuisance* variety: such offenses include parole and probation rules violations, drunken driving, possession or use of drugs, disorderly conduct, and gambling (as examples).

Property crimes also are common (most typically, burglaries, robberies and attempts, larcenies and attempts, and auto thefts).[40] Offenses against the *person* are proportionally infrequent, but unfortunately common: these include homicides, rapes, and assaults. *Frauds* include forgery and bad check offenses as well as a variety of others. *Serious drug offenses*, such as the sale or manufacture of large quantities of illegal substances, were rare for this group.

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38 While the structure is clean and clear-cut, it quickly would lose its conceptual utility if in fact the dimensions merely represented "ranges" along a single underlying dimension. That is, it clearly would be of little interest simply to know (for example) that people generally judge nuisance-type offenses as less serious than assaultive, confrontational offenses, and that factor-analytic techniques can demonstrate this fact. In order for a dimensional structure to be theoretically and conceptually heuristic, we would like the distinction among factors or dimensions not to be simply one of relative magnitude. In fact, however, these dimensions substantially overlap one another along the "first-order dimension" of overall judged seriousness.

39 Gottfredson, S.D., and Taylor, R.B., "Person-environment Interactions in the Prediction of Recidivism," In J. Byrne and R. Sampson, (Eds.), The Social Ecology of Crime, New York: Springer Verlag, 1986; Gottfredson, S.D., and Taylor, R.B., Community Context and Criminal Offenders, in T. Hope and M. Shaw (Eds.), Communities and Crime Prevention. London: Her Majesty's Stationary Office, 1988.

40 We recognize that robbery is considered an offense against persons in most offense typologies. The typology described here, however, was empirically derived from the seriousness assessments of very large samples of persons, and has been demonstrated to have utility for diverse groups of decision-makers (e.g., police officers, judges, etc.).

While nuisance offenses predominate the criminal behaviors with which this group has been charged, they also were charged with committing a large number of serious crimes. Figure 3 summarizes almost 10,000 serious offenses committed by these men since their release from the 1962 - 63 imprisonment.

The Study Sample

Study sample characteristics (outcome and background) do not differ from those of the full sample.[41] Considering just the first arrest post-release (for those experiencing at least one arrest), over half were for a nuisance offense (Figure 4), over one-quarter were for property offenses, and about seven percent were for offenses against persons. This pattern remains the same irrespective of offense episode considered (Figure 5).

Figures 4A - 4D summarize the most serious offenses charged in each category. Assaults predominate person-category offenses (Figure 4A), although homicides, kidnaps and rapes are represented. Burglaries, thefts, and robberies predominate the property category (Figure 4B), forgery and check offenses make up the bulk of the fraud category offenses (Figure 4C), and rules violations, drunken driving, petty drug offenses, and disorderly conducts constitute the bulk of nuisance arrests (Figure 4D).

The System Response

The records provided by the California Bureau of Criminal Statistics were unusually rich and complete; and they provided far more information concerning the dispositions of offenses charged than commonly is the case.

Considering just the first charge post-release, 56.4% of the men were convicted for the offense, 22.7% were acquitted or had the charge dismissed, 2.1% were subject to some other action (such as being turned over to another jurisdiction), and in only 18.7% of the cases was the disposition unknown.

Figure 3: Serious Post- Release Offending
N = 4,897 Men/9,942 Offenses

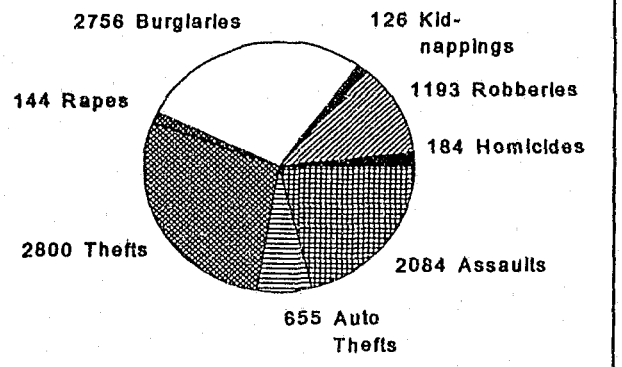


Figure 4: Offenses of First Post- Release Charge By Dimension (First Episode)

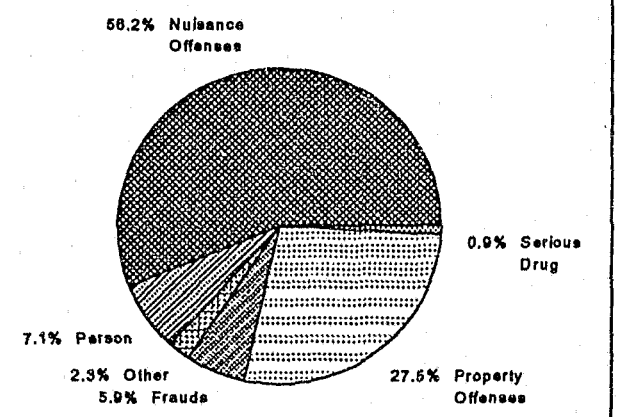
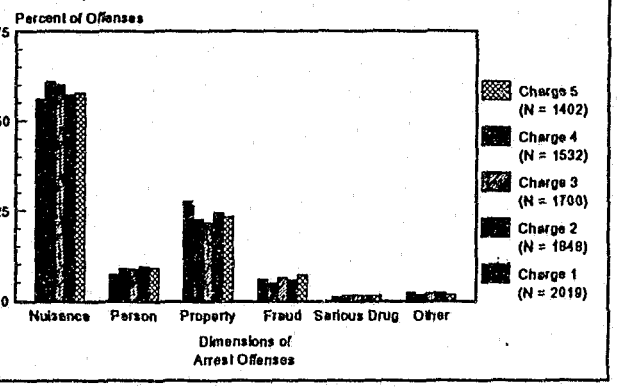
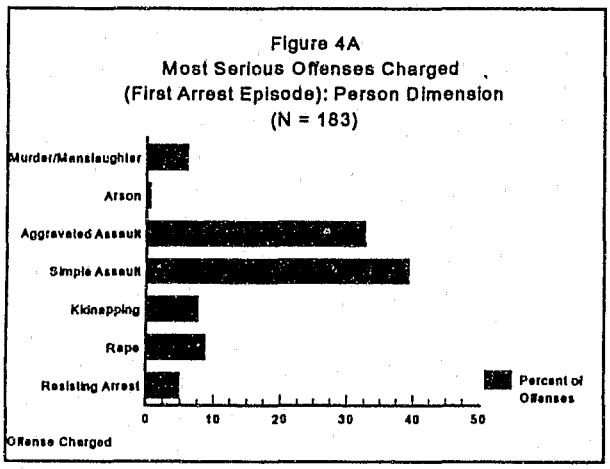
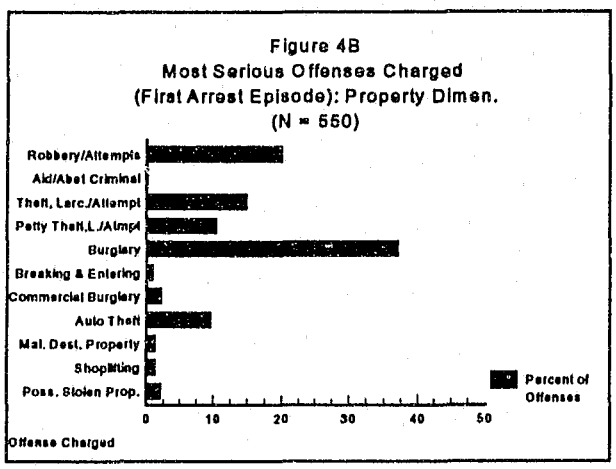


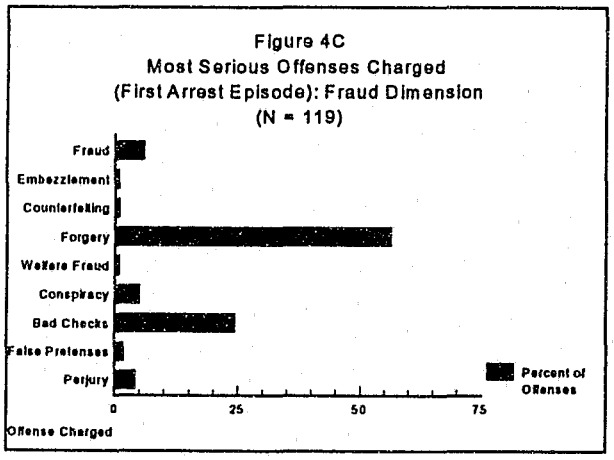
Figure 5: Percent of Post- Release Arrest Offenses By Dimension of Offense (First Five Charges Post- Release)

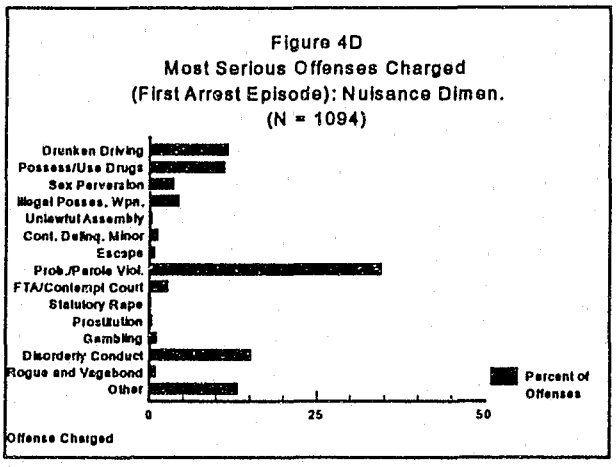


41 Significance tests supporting this statement are found in a later section.

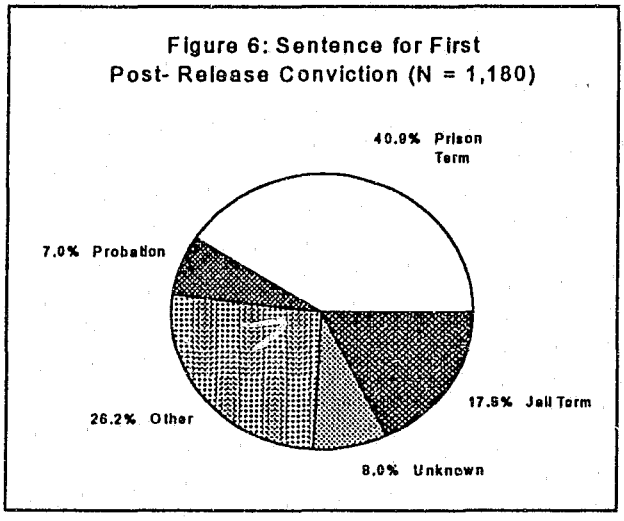








The typical sanction applied was a prison or jail term: 58.7% of those men convicted on their first post-release charge were reincarcerated (Figure 6). Seven percent were sentenced to a term of probation, and 26.2% were subject to some other sanction.[42] For only eight percent of the cases was a sentence not identifiable given that a conviction was noted. This general pattern of sanctioning is true irrespective of arrest episode (Figure 7).



42 These included (most typically) a suspended sentence, the imposition of fines or restitution orders, etc., but also could include the revocation of parole, or an order such as "jail or fine." Accordingly, the number actually incarcerated may exceed the figures cited here. If a term to prison or jail resulted for whatever reason, that is recorded elsewhere in the data file.

Although almost one-third of these men never were reincarcerated (31.3%), two-thirds did spend additional time under sentences in prison or jail. Nearly one man in five was reincarcerated at least six times. (The average (median) number of re-incarcerations is 1.68.)

Time In/Time Out

Offenders who failed tended to do so quickly: over 30% of these men were re-incarcerated within one year of release, and over half were re-incarcerated within three years of release. Others, of course, were free for 10, 15, or over 20 years before experiencing another period of incarceration. Figure 8 summarizes time free until the first incarceration post-release from the 1962-63 imprisonment, and the total number of years that these men spent in the free community following that release.

Considering just those men who fail from time$_n$ to time$_{n+1}$, the length of time free in the community decreases monotonically with n (Figure 9). Similarly, considering just those men incarcerated from time$_n$ to time$_{n+1}$, the length of incarceration decreases with n. Although this figure does not control for possible incapacitation effects, it is suggestive that the highest rate offenders commit relatively non-serious offenses.

Rates of Offending

Table 3 summarizes arrest rates, time free in the community post-release from the 1962-63 incarceration, and arrests for these men during the 26 year follow-up period (all cell entries are means). If all offenders in the sample are considered "active," they experienced an average of .368 arrests per year, were in the community an average of 20.7 years, and were arrested an average of just over six times. Considering just those offenders who experienced at least one arrest during the follow-up period, the yearly rate of offending (lambda)[43] increases to .447, the men

Figure 7: Sentence Imposed, First Five Convictions Post- 1962-63 Prison Release

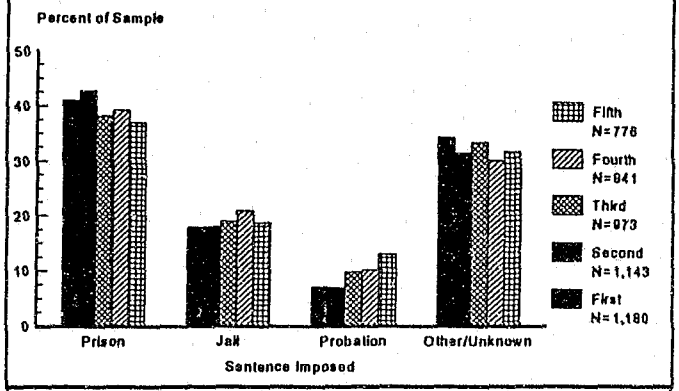


Figure 8: Years in Community and To First Term Post- Release From 1962-63 Period of Incarceration

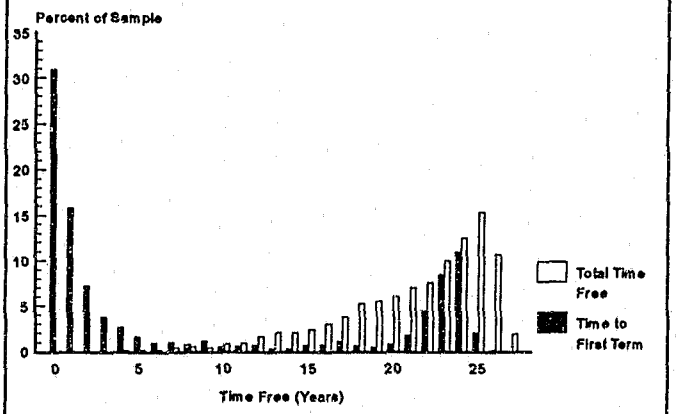
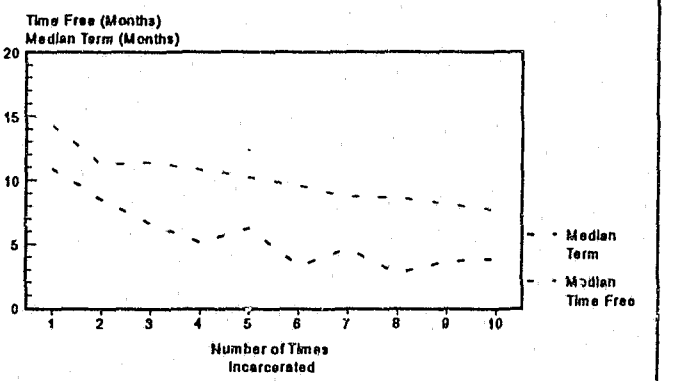


Figure 9: Median Lengths of Imprisonment and Time Free By Number of Times Incarcerated



43 The figures discussed are not lambda in the sense used by Cohen (Cohen, J. "Research on Criminal Careers: Individual Frequency Rates and Offense Seriousness." Appendix B in A. Blumstein et al., eds., Criminal Careers and "Career Criminals." Washington, D.C.: National Academy of Sciences, 1986, pgs. 292-449.), who adjusts Mu (the rate of arrest) by an estimated likelihood of arrest given the commission of a crime. We do not have those estimators. Hence, our lambda is Cohen's Mu.

were free just over 20 years in the community, and experienced an average of almost 7.5 arrests.

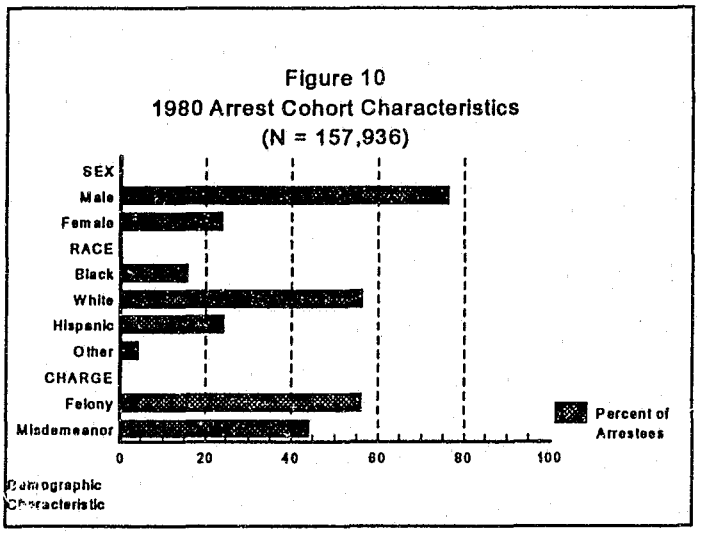
Table 3
Summary of Aggregate Individual Arrest Frequencies and Other Outcome Criteria by Type of "Active Offender"

Outcome Criterion	Type of "Active Offender": All Considered Active (N = 2,443)	At Least One Arrest (N = 2,019)	At Least One Conviction (N = 1,678)
Arrest Rate	.368	.447	.515
Years Free	20.653	20.065	19.318
Arrests	6.131	7.455	8.466

Restricting the sample just to men who experienced at least one period of incarceration post-release, the offense rate increases to .515, an average of just over 19 years were spent in the free community, and almost 8.5 arrests were experienced (on average).

The Class of 1980

The typical member of the Class of 1980 is a young white male first arrested for a felony offense (Figure 10).[44] The arrest resulting in a Longitudinal File entry most usually will be the only such experience.



Still, the 157,936 arrestees in the 1980 cohort were arrested a total of 462,957 times during the decade (the mean number of arrests is 4.83, while the median is only 2.63).[45] Further, they were charged with having committed a great deal of serious harm: If arrest statistics are to be believed, during the 1980s this group was responsible for some 1,976 homicides, 3,371 rapes, 70,639 assaults, 44,885 burglaries, 15,406 robberies, and 84,643 thefts. Their study may thus be seen to be warranted.

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44 Because the Longitudinal File is based on the Adult Criminal Justice Statistical System (ACJSS), arrests of juveniles are seriously underrepresented. The modal offender in this sample is 19 years old, but age ranges from 10 to 81. Sixty percent of the sample members are 24 or younger.

45 The range: 1 - 77 arrests. The distribution is very strongly positively skewed: the modal number of arrests is 1 (57.1% of the sample).

The offense classifications used by the Bureau of Criminal Statistics differ substantially from those used in our investigation of the 1962 samples. The analyses we report here are based on a recoding of the felony and misdemeanor offense codes used by the BCS in an attempt to approximate the offense typology discussed earlier in this report.

Because the Longitudinal File necessarily is less detailed, some significant differences in the resulting typology should be noted. First, the "nuisance" category is, for the 1980 cohort, substantially less detailed. Second, we were unable to distinguish between so-called "nuisance" drug offenses (e.g., the possession and/or use of marijuana) from more significant drug offenses (e.g., the sale of large quantitites of marijuana or other controlled substances). Accordingly, the "drug" and "nuisance" classes differ dramatically between the two typologies. All drug offenses ("nuisance" or otherwise) are classed together for the 1980 cohort, and the "nuisance" class is reduced proportionally. Third, we were unable to distinguish among the variety of fraudulent offenses that may be committed (recall Figure 4C): all are simply reported here as "frauds." The "Other" offense category similarly lacks detail. Figure 11 summarizes, using the 1980 cohort offense typology, the criminal activity of this group over the decade.

One area of potentially significant difference between the 1962 samples and the 1980 arrest cohort is that the latter includes women as well as men.[46] As shown in Figure 12, men are a bit more likely to have been charged with felonies than are women, and a larger proportion of Hispanic men than women are included in the cohort (in contrast, Black women are proportionally more represented than are Black men). These differences, however, are small.

Differences are observed also with respect to the types of offenses distributed by sex (Figure 13). Men more often were charged with offenses against persons and with nuisance offenses. Women, on the other hand, were charged with a larger proportion of property and fraud offenses than were men.

Figure 11: 1980 Arrest Cohort
Most Serious Offenses by Category
(N = 157,936 Offenders/462,957 Offenses)
("Other" and "Fraud" Categories Omitted)

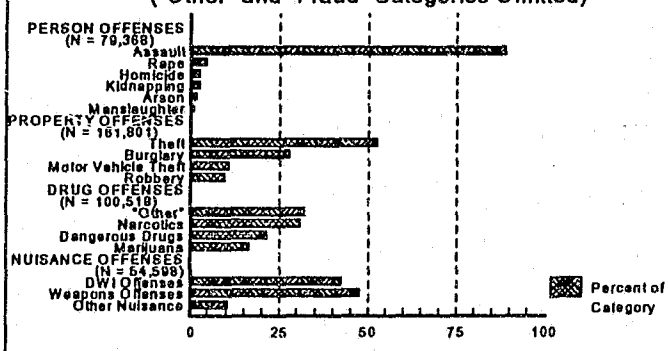


Figure 12: 1980 Arrest Cohort;
Charge and Race By Sex

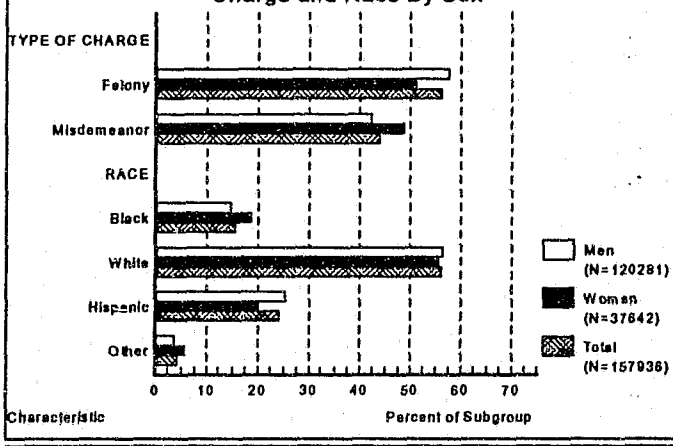
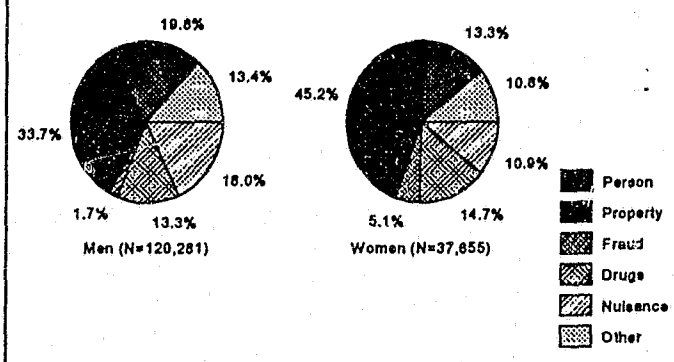


Figure 13: 1980 Arrest Cohort;
Offense Type at First Arrest, By Sex



46 Although women are available for study in the earlier samples, budgetary constraints prohibited their examination.

Having now described the 1962 samples in some detail -- and the 1980 arrest cohort briefly[47] -- we return to the principal research questions at hand.

Incapacitation and Crime Control

As noted in an earlier section, incapacitation strategies are of two types: collective and selective. Under a collective incapacitation strategy, the same or very similar sanction would be applied to all persons convicted of common offenses, with the goal of decreasing the commitment of those offenses (by those persons) in the free community. Selective incapacitation strategies involve sanctioning based on predictions of future offending by individuals.

We reported that whether collective or selective in nature, incapacitation strategies rest heavily on the following general assumptions:

- **Criminal activity is "patterned" with respect to types of behaviors.**
- **The seriousness of offending changes in meaningful ways throughout the career.**
- **The rate of offending changes in meaningful ways throughout the career.**

In short, both incapacitation strategies rest on assumptions about the predictability of criminal behavior.

Analyses presented and discussed in this and subsequent sections are based on the 1962 offender samples. We will return to the 1980 arrest cohort later, to determine the extent to which our findings generalize to more recently offending populations.

The Question of Prediction

Table 4 summarizes the variables examined for predictive utility relative to the variety of behavioral outcomes available for study. In addition to lambda (reported in Table 3), outcome criteria also are reported in Table 4.

Table 4: Descriptive Statistics
Variables Included in Regression Analyses

Name	Description	N	Mean	S.D.
Type	Type of Admission, Instant Offense (0 = Parole Violator, 1 = Original Commitment)	2,432	.75	.43
Age	Age at Current Commitment	2,432	29.79	8.37
Serious	Offense Seriousness Scale (0 = Walkaway, 103 = Criminal Circumstances Resulting in Death)	2,432	63.54	23.84
Gain	Commitment Offense Involved Illegal Economic Gain (0 = Yes, 1 = No)	2,432	.35	.48

47 The brevity of description of the 1980 arrest cohort is due primarily to the lack of descriptive information in the Longitudinal File, and secondarily to the fact that the principal use of the cohort for present purposes is to determine whether findings to be described based on the 1962 samples generalize to more recent offending groups.

Table 4 (Contd.)

Descriptive Statistics
Variables Included in Regression Analyses

Name	Description	N	Mean	S.D.
Priors	Prior Periods of Incarceration (0 = 0, 4 = 4 or More)	2,432	2.51	1.46
PriorsP	Prior Periods of Prison Incarceration (0 = 0, 4 = 4 or More	2,432	1.05	1.25
Free	Arrest Free Period of Five or More Years (Between First Arrest and Arrest Resulting in Instant Commitment (0 = No, 1 = Yes)	2,432	.22	.41
Drugs	History of Opiate Use (0 = Yes, 1 = No)	2,432	.75	.43
Family	Family Criminal Record (0 = Yes, 1 = No)	2,432	.56	.50
Checks	Commitment Offense Burglary or Checks (0 = Yes, 1 = No)	2,432	.65	.48
Alias	Number of Aliases (0 = None, 9 = Nine or More)	2,432	.49	.81
InstN	Commitment Offense, Nuisance (0 = No, 1 = Yes)	2,455	.21	.41
InstP	Commitment Offense, Person (0 = No, 1 = Yes)	2,455	.12	.32
InstPr	Commitment Offense, Property (0 = No, 1 = Yes)	2,455	.48	.50
Ser1	Seriousness Score, Most Serious Charge, First Arrest Episode (1 = Murder First)	2,021	34.46	16.67
Desist	Number of Arrests To Desistance	2,455	6.13	6.04
NuisT	Number of Arrests For Nuisance Offenses (To Desistance or to 20th Arrest Episode; Nuisance Offense Most Serious Charge/ Arrest Episode)	2,455	3.30	3.88

Table 4 (Contd.): Descriptive Statistics
Variables Included in Regression Analyses

Name	Description	N	Mean	S.D.
PersT	Number of Arrests For Person Offenses (To Desistance or to 20th Arrest Episode; Person Offense Most Serious Charge/ Arrest Episode)	2,455	.58	1.07
PropT	Number of Arrests For Property Offenses (To Desistance or to 20th Arrest Episode; Property Offense Most Serious Charge/ Arrest Episode)	2,455	1.72	2.60
FraudT	Number of Arrests For Fraud Offenses (To Desistance or to 20th Arrest Episode; Fraud Offense Most Serious Charge/ Arrest Episode)	2,455	.31	.81
Cdesist	Number of Charges to Desistance (Or to 20th Charge)	2,455	8.11	7.21
CnuisT	Number of Nuisance Charges to Desistance (Or to 20th Charge)	2,455	4.56	4.72
CpersT	Number of Person Charges to Desistance (Or to 20th Charge)	2,455	.69	1.33
CpropT	Number of Property Charges to Desistance (Or to 20th Charge)	2,455	2.10	2.95
CfraudT	Number of Fraud Charges to Desistance (Or to 20th Charge)	2,455	.46	1.32
CdrugsT	Number of Serious Drug Charges to Desistance (Or to 20th Charge)	2,455	.14	.59
Arrest	Any Subsequent Arrest (0 = No, 1 = Yes)	2,455	.82	.38
Incar	Any Subsequent Incarceration (0 = No, 1 = Yes)	2,455	.69	.46
Tarest1	Time to First Arrest (Days)	2,455	723.08	1179.46
Tinc1	Time to First Reincarceration (Days)	2,455	854.38	1223.70
Cser1	Seriousness Score of First Charge Post-Release (1 = Murder First)	2,021	35.33	16.23

Results of prediction modeling efforts compare favorably with those of similar studies, and effect magnitudes are comparable to or greater than those generally observed.[48]

For example, Table 5 summarizes efforts to predict the number of arrests to desistance. Significant predictors include the number of prior periods of incarceration experienced, age (at imprisonment in 1962-63), history of opiate use, a rating of the seriousness of behavior of the commitment offense,[49] an arrest-free period of five years or more prior to the period of incarceration served in 1962-63, the number of prior periods of *prison* incarceration experienced, the type of committment to the 1962-63 incarceration, and the number of aliases used by the offender. All independent variables discussed are statistically significant, as is the entire model, which accounts for 16% of the variance in the number of arrests experienced.

Table 5

Regression of Number of Arrests to Desistance on Selected Predictors (Minimum N = 1,998)

Predictor	B	Beta	t
Priors	1.115	.270	11.02***
Age	-0.104	-.144	- 6.39***
Drugs	-2.155	-.154	- 7.94***
Serious	-0.015	-.058	- 2.92**
Free	-0.899	-.062	- 3.18**
PriorsP	-0.413	-.085	- 2.37**
Type	-0.706	-.050	- 2.31*
Alias	0.343	.046	2.31*
Constant	9.976		15.51***

$R^2 = .159$; $F(8,2423) = 57.14$, $p < .001$.

Notes: *** p < .001.
** p < .01.
* p < .05.

Table 6 summarizes a model intended to predict the number of arrests for nuisance offenses. Age appears not to be predictive of nuisance offending. Significant predictors include prior periods of incarceration, history of opiate use, an arrest free period of five or more years, prior periods of incarceration in prison (negative, interestingly), the seriousness rating of the instant offense (also negative), and whether the instant offense involved illegal economic gain. The model and each independent variable discussed is statistically significant, and accounts for about 10% of the variance in nuisance offending.

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48 For a review of many such studies, see Gottfredson, S., and D. Gottfredson, "Accuracy of Prediction Methods," in A. Blumstein et al., eds., Research in Criminal Careers and "Career Criminals." Vol. 2, Washington, D.C.: National Academy of Sciences, 1986.

49 This was a rating scale developed by D. Gottfredson in an unpublished study conducted at the time of the initial data collection. Ratings are of behaviors rather than of legal offense categories. Details are available from the author.

Table 6

Regression of Number of Arrests for Nuisance Offenses
on Selected Predictors
(Minimum N = 1,998)

Predictor	B	Beta	t
Priors	0.592	.223	8.85***
Drugs	-1.215	-.135	- 6.55***
Free	-0.819	-.087	- 4.33**
PriorsP	-0.271	-.087	- 3.59**
Serious	-0.010	-.059	- 2.87**
Gain	0.355	.044	2.16*
Constant	3.677		11.10***

R^2 = .096; $F_{(6,2425)}$ = 43.09, p < .001.

Notes: *** p < .001.
** p < .01.
* p < .05.

One third of the men whose records were available for study were charged with at least one offense against the person after release from prison on the term served in 1962-1963. Considering just those rearrested at least once during the follow up period, this figure increases to 40%.

Not surprisingly, we cannot predict violent offending (offending against persons) well. The regression of the number of arrests for offenses against persons on selected predictors is shown in Table 7. Age (inversely), prior incarcerations, a committment offense against persons, prior prison incarcerations (negative), a commitment offense against property and involving burglary or checks are statistically significant predictors. But the model, also significant, is weak, accounting for only six percent of the variance in arrests for person offenses.

Table 7
Regression of Number of Arrests for Person Offenses
on Selected Predictors
(Minimum N = 1,998)

Predictor	B	Beta	t
Age	-0.022	-.174	- 7.85***
Priors	0.134	.184	7.45***
InstP	0.253	.076	3.35***
PriorsP	-0.066	-.077	- 2.91**
InstPr	0.114	.053	2.47**
Checks	0.113	.050	2.46*
Constant	0.812		7.99***

R^2 = .061; $F_{(6,2425)}$ = 26.44, p < .001.

Notes: *** p < .001.
** p < .01.
* p < .05.

Despite the modesty of the correlation of scores on this scale to person offense arrests (.25), the relation warrants further consideration for at least two reasons. First is the importance, for incapacitation strategies, of the problem of prediction of serious harms. Second, it is well known that predictors with only weak validity coefficients may nevertheless be useful in some applications, depending particularly on the selection ratio.[50]

Property offense arrests are considerably more predictable (Table 8). Prior incarcerations, age, history of opiate use, commitment offense against property, type of admission (probation or parole violator or not), number of aliases, and commitment offense of the nuisance variety all are significantly associated with later property offense arrests. The model is statistically significant, and accounts for 13% of the variability in property offense arrests (R = .36).

Table 8: Regression of Number of Arrests for Property Offenses on Selected Predictors (Minimum N = 1,998)

Predictor	B	Beta	t
Priors	0.349	.196	9.24***
Age	-0.056	-.180	- 8.89***
Drugs	-0.887	-.147	- 7.28***
InstPr	0.708	.136	6.08***
Type	-0.301	-.050	- 2.28*
Alias	0.144	.044	2.21*
InstN	0.290	.046	2.05*
Constant	2.927		11.35***

R^2 = .131; $F_{(7,2424)}$ = 52.12, p < .001.
Notes: *** p < .001. ** p < .01. * p < .05.

The number of arrests for frauds (Table 9) is only slightly more predictable (R = .26) than offending against persons. Significant predictors include a commitment offense of the property type, the seriousness of the commitment offense, and whether the commitment offense involved illegal economic gain. All effects are in the expected direction, and the overall model is statistically significant, while accounting for about 7% of the variance.

Table 9: Regression of Number of Arrests for Fraud Offenses on Selected Predictors (Minimum N = 1,998)

Predictor	B	Beta	t
Serious	-0.005	-.136	- 6.25***
Checks	-0.124	-.073	- 3.12**
Gain	-0.142	-.083	- 3.18**
InstPr	-0.235	-.145	- 5.05***
InstN	-0.225	-.114	- 3.94***
InstP	-0.201	.080	- 2.88**
Constant	0.916		17.36***

R^2 = .065; $F_{(6,2425)}$ = 29.21, p < .001.

Notes: *** p < .001.; ** p < .01; * p < .05.

50 Cronbach, L., and Gleser, G. C., Psychological Tests and Personnel Decisions. Urbana: University of Illinois Press, 1957.

Perhaps most important from a public safety perspective, we cannot predict the seriousness of the first offense committed post-release at all (Table 10). Although the seriousness score of the committment offense and family criminal record are statistically significant predictors and the model is statistically significant, less than one percent of the variance in seriousness of subsequent offense is accounted for (R = .08).

Table 10

Regression of Seriousness Score of Most Serious Charge, First Post-Release Arrest Episode, on Selected Predictors (Minimum N = 1,998)

Predictor	B	Beta	t
Serious	-0.045	-.065	- 2.90**
Family	-1.699	-.051	- 2.27*
Constant	38.285		33.67***

R^2 = .007; $F_{(2,1999)}$ = 6.81, p < .001.

Notes: *** p < .001.; ** p < .01.; * p < .05.

Can we predict the rate of offending? Table 11 summarizes efforts to predict lambda for all offenders in the sample. Significant predictors include the number of prior periods of incarceration, age (with a negative effect -- older offenders have lower lambdas),[51] history of opiate use, number of aliases, and a committment offense of the nuisance variety.

Table 11

Regression of Lambda (All Offenders) on Selected Predictors (Minimum N = 2,432)

Predictor	B	Beta	t
Priors	0.790	.229	11.13***
Age	-0.012	-.206	-10.23***
Drugs	-0.151	-.129	- 6.37***
Alias	0.032	.050	2.49**
InstN	0.054	.044	2.20*
Constant	0.626		14.99***

R^2 = .116; $F_{(5,2416)}$ = 63.62, p < .001.

Notes: *** p < .001.; ** p < .01.; * p < .05.

The model accounts for 12% of the variation in lambda and is statistically significant (R = .34).

When desistors are excluded, prediction is not quite so successful (Table 12). The model is almost identical to that just described. It is statistically significant, but accounts for less than ten percent of the variation in lambda.

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51 As we will show later, lambda decreases monotonically with age.

Table 12
Regression of Lambda (Arrested Offenders) on Selected Predictors
(Minimum N = 2,012)

Predictor	B	Beta	t
Priors	0.064	.180	7.83***
Age	-0.012	-.188	- 8.3[illegible]***
Drugs	-0.138	-.114	- 5.03***
Alias	0.040	.062	2.73**
InstN	0.075	.059	2.63**
Constant	0.702		14.56***

R^2 = .088; $F_{(5,1987)}$ = 38.30, p < .001.

Notes: *** p < .001.; ** p < .01.

Finally, if we restrict attention just to those offenders who experienced at least one period of incarceration during the follow-up period, our ability to predict lambda erodes further (Table 13). The same variables are predictive, but the model, although statistically significant, accounts for less than eight percent of the variance in lambda (R = .28).

Table 13
Regression of Lambda (Incarcerated Offenders) on Selected Predictors
(Minimum N = 1,678)

Predictor	B	Beta	t
Drugs	-0.135	-.106	- 4.25***
Age	-0.011	-.181	- 7.26***
Priors	0.054	.145	5.69***
Alias	0.050	.073	2.93**
InstN	0.094	.070	2.86**
Constant	0.788		14.22***

R^2 = .074; $F_{(5,1655)}$ = 26.56, p < .001.

Notes: *** p < .001.; ** p < .01.; * p < .05.

Because the distribution of lambda is positively skewed, we also examined models of its logarithmic transformation. In all cases, this resulted in very modest increases in predictive utility; and in no case did it change the substantive nature of the model.

Prediction for "Early Career" Offenders

It would be hoped, from an incapacitation perspective, that persistent and/or serious offenders could be identified early in their careers -- thereby increasing the effectiveness of the sanctioning policy. To see if predictions differed from those of the general sample of offenders, we restricted attention to those who had not experienced a prior period of prison incarceration (that is, to those for whom the 1962 - 1963 imprisonment was the first such experience).

Prediction models are little different for these 1,118 men and for the sample as a whole. The models account for approximately the same proportion of variation in the outcomes of interest, and similar items of information are similarly predictive (see Tables 14 - 16 for examples).

Table 14: Regression of Lambda on Selected Predictors ("Early Career Offenders;" Minimum N = 1,116)

Predictor	B	Beta	t
Priors	0.089	.227	7.82***
Age	-0.013	-.195	- 6.73***
Drugs	-0.161	-.041	- 3.96***
Alias	0.092	.107	3.75***
InstN	0.092	.069	2.39*
Constant	0.788		14.22***

R^2 = .146; $F_{(5,1111)}$ = 37.86, $p < .001$.

Notes: *** p < .001.; ** p < .01.; * p < .05.

Table 15: Regression of Arrests to Desistance on Selected Predictors ("Early Career Offenders;" Minimum N = 1,116)

Predictor	B	Beta	t
Priors	1.168	.283	9.90***
Age	-0.137	-.197	- 7.24***
Drugs	-1.973	-.132	- 4.80***
Alias	0.849	.093	3.38***
Serious	-0.016	-.061	- 2.19*
Constant	9.668		11.42***

R^2 = .201; $F_{(5,1112)}$ = 56.01, $p < .001$.

Notes: *** p < .001.; ** p < .01.; * p < .05.

Table 16: Regression of Number of Arrests for Person Offenses on Selected Predictors ("Early Career Offenders;" Minimum N = 1,116)

Predictor	B	Beta	t
Age	-0.023	-.181	- 6.19***
Priors	0.123	.166	5.64***
Checks	0.158	.067	2.27*

R^2 = .066; $F_{(3,1114)}$ = 26.10, $p < .001$.

Notes: *** p < .001.; ** p < .01.; * p < .05.

Validation of Prediction Models

As we have discussed in detail elsewhere,[52] there is a danger of overestimating the extent to which relations found in one sample can be used to explain relations in another (similar) sample. Within the original sample alone, there is no adequate way to distinguish how much of the observed relation is due to characteristics and underlying associations that will be shared by new samples and how much is due to unique characteristics of the first sample. This is because the apparent power of a prediction device developed on a sample of observations derives from two sources: (a) the detection and estimation of underlying relations likely to be observed in any similar sample of subjects, and (b) the peculiar or individual properties of the specific sample on which the model has been created. *Cross-validation* is important in estimating the relative importance of these two sources of predictive power.

Cross-validation is simply an empirical approach to the problem of obtaining an unbiased estimate of the accuracy of prediction (whether this is based on a single item of information or on some combination of items). Typically, this is accomplished by dividing the sample at hand in two, constructing the device on one, and using the other to estimate predictive accuracy. Despite some disadvantages, this is the approach used here.[53]

Prediction Models Developed on the Construction Sample

As described earlier, the sample of over 6,000 men imprisoned in California in 1962 -1963 randomly was divided in half to provide a study and a validation sample. Tables 17 and 18 demonstrate that the samples are indeed similar. Of the statistical tests performed, only one (instant offense of the property type) is marginally significant.

Table 17
Comparison of Construction and Validation Samples
(N's = 2,432 and 2,415)

Type of Admission	Construction	Validation
Parole Violator	24.7%	23.7%
New Commitment	75.3	76.3
($X^2(1) = 0.641$; n.s.)		
Instant Offense Involved Illegal Economic Gain		
Yes	65.4%	64.7%
No	34.6	35.3
($X^2(1) = 0.231$; n.s.)		

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52 Gottfredson, S.D. Prediction: An Overview of Selected Methodological Issues. In D. Gottfredson and M. Tonry (eds.), Crime and Justice: An Annual Review of Research. Volume 9: Prediction and Classification. Chicago: University of Chicago Press, 1987; Gottfredson, S.D., and Gottfredson, D.M. Accuracy of prediction models. In A. Blumstein et al. (eds.), Criminal Careers and "Career Criminals". Washington, D.C.: National Academy of Sciences, 1986; Gottfredson, S.D., and Gottfredson, D.M. Screening for Risk: A Comparison of Methods. Washington, D.C.: National Institute of Corrections, 1979.

53 Problems of cross-validation are far from simple, and there is no "best" approach to use. For a complete discussion of the advantages and disadvantages of several approaches, see Gottfredson and Gottfredson, op cit., 1986.

Table 17 (contd.)
Comparison of Construction and Validation Samples
(N's = 2,432 and 2,415)

	Construction	Validation
Arrest-Free Period of Five or More Years		
Yes	22.0%	22.2%
No	78.0	77.8
($X^2_{(1)}$ = 0.027; n.s.)		
History of Opiate Use		
Yes	24.8%	25.1%
No	75.2	74.9
($X^2_{(1)}$ = 0.058; n.s.)		
Family Criminal Record		
Yes	43.9%	45.5%
No	56.1	54.5
($X^2_{(1)}$ = 1.376; n.s.)		
Committment Offense of Checks or Burglary		
Yes	34.6%	37.0%
No	65.4	63.0
($X^2_{(1)}$ = 2.925; n.s.)		
Instant Offense Nuisance		
Yes	21.3%	23.2%
No	78.7	76.8
($X^2_{(1)}$ = 2.378; n.s)		
Instant Offense Person		
Yes	11.7%	11.1%
No	88.3	88.9
($X^2_{(1)}$ = 0.369; n.s)		
Instant Offense Property		
Yes	48.3%	55.0%
No	51.7	45.0
($X^2_{(1)}$ = 5.242; $p < .05$)		

Table 18
Comparison of Construction and Validation Samples

Variable	N	Mean	S.D.
Seriousness Score of Commitment Offense[54]			
Construction	2,432	63.54	23.84
Validation	2,415	63.66	23.22
$(t_{(4,845)} = 0.170;$ n.s.)			
Number of Prior Incarcerations[55]			
Construction	2,432	2.51	1.46
Validation	2,415	2.54	1.46
$(t_{(4,845)} = 0.730;$ n.s.)			
Number of Prior Prison Incarcerations[56]			
Construction	2,432	1.05	1.25
Validation	2,415	1.00	1.20
$(t_{(4,845)} = 1.51;$ n.s.)			
Base Expectency Raw Score			
Construction	2,427	51.04	17.84
Validation	2,412	50.19	18.21
$(t_{(4,837)} = 1.64;$ n.s.)			
Age at Last Imprisonment			
Construction	2,432	29.79	8.37
Validation	2,415	29.40	8.29
$(t_{(4,845)} = 1.65;$ n.s.)			
Number of Aliases			
Construction	2,432	.49	.81
Validation	2,415	.48	.80
$(t_{(4,845)} = 0.44;$ n.s.)			

Table 19 provides construction estimates and validity coefficients for several prediction models described earlier. Although all show some shrinkage (as is to be expected), some models are rather more robust than others. In particular, it is to be noted that the prediction of lambda -- the rate of offending -- is among the least robust of those examined. Models of "early career" offenders fare little better than those developed on the full sample.

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54 Thirty-four point scale; scores range from 0 - 103.
55 Four equals four or more.
56 Four equals four or more.

Table 19
Validity of Several Prediction Models

Model Considered	Association in Construction Sample	Validity Coefficient
Arrests to Desistance (Table R-2)	.399	.359
Nuisance Offending (Table R-3)	.310	.295
Person Offending (Table R-4)	.247	.201
Rate of Offending (Table LR-1)	.341	.169
Arrests to Desistance, "Early Career" Offenders (Table R-8)	.449	.343
Person Offending, "Early Career" Offenders (Table R-9)	.256	.178
Rate of Offending, "Early Career" Offenders	.382	.206

The Base Expectancy Scale

Among the more prominent criminal justice prediction applications have been those developed by Gottfredson (various scales called "base expectancy" measures that have been used extensively in California, and after which a number of related prediction methods have been patterned).[57,58] Scores for one of these scales (as well as the items needed to produce it) were coded for the 6,000 men in the study samples. To differentiate it from related scales developed at about the same time, the scale was named BE 61 B.[59]

The BE scale considered here was developed from a study of case files on 873 men selected by a procedure designed to approximate random selection from all men released from prison to California parole supervision in 1956. A dichotomous outcome criterion was used, defined as the presence or absence of "major difficulty" within two years after release. "Major difficulty" meant: awaiting trial or sentence at the end of two years; absconding, with a felony warrant issued for arrest; sentenced to jail for 90 days or more; or return to prison (including return for technical parole violation). The criterion, scored 0 (unfavorable) or 1 (favorable), was regressed on available predictor candidates in a multiple regression, and items failing to add appreciably to R^2 (arbitrarily, one percent or more) were dropped and the final regression equation was calculated.

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57 Gottfredson, D.M., and Bonds, J.A., A Manual for Intake Base Expectancy Scoring. Sacramento, California: California Department of Corrections, mimeo, 1961.

58 A number of related scales were developed. For examples of these for adult men, women, and young offenders, see Gottfredson, D.M. and Beverly, R.F., "Development and Operational Use of Prediction Methods in Correctional Work." Proceedings of the Social Statistics Section. Washington, D.C.: American Statistical Association, 1962.

59 Gottfredson, D. M. and Ballard, K. B., Jr., The Validity of Two Parole Prediction Scales: An Eight Year Follow Up Study, Vacaville, California: Institute for the Study of Crime and Delinquency, December, 1965.

The validity coefficient in a second sample of 937 men paroled the same year and followed for two years after release was .29 (point biserial correlation coefficient). A later study extended the follow-up study of the same sample to eight years. A similar, but slightly different, criterion definition was used. "Major difficulty" meant absconding or prison return (with or without a new felony offense). The validity coefficient (point biserial correlation) was .32.

The associations between the Base Expectancy Scale and a variety of outcome criteria available for the present study are summarized in Table 20. The scale is remarkably robust with respect to several important outcome criteria even after this extended period of time.

The criterion most similar to that used in the original construction and validation of the scale is "any incarceration." The point biserial correlation coefficient of .32 is the same as that found earlier on the basis of the eight year follow-up study cited. Although the offenders in the prior study were paroled at least five years earlier than men in the present sample were released, and those in the later sample were followed for a much longer time, the relation of scores to outcomes is the same.

Similar correlations were obtained showing the relation of scores to the number of arrests to desistance (r = -.34), the number of property arrests (r = -.31), and the logarithmic transformation of arrest rates (lambda). The latter coefficients were .33 for both all offenders and all arrested offenders. The relations are markedly lower for scores with number of person arrests and with number of fraud arrests.

Table 20: Correlation of Base Expectancy (BE) Scores and Various Outcomes

Outcome	Correlation
Any Arrest	-.260
Any Incarceration	-.318
Number of Arrests to Desistance	-.344
Time to First Arrest	.209
Time to First Reincarceration	.125
Number of Nuisance Arrests	-.249
Number of Person Arrests	-.120
Number of Property Arrests	-.306
Number of Fraud Arrests	-.122
Lambda (All Offenders)	-.289
Lambda (Offenders Arrested)	-.248
Lambda (Offenders Incarcerated)	-.217
Ln(Lambda) (All)	-.328
Ln(Lambda) (Arrested)	-.328
Ln(Lambda) (Incarcerated)	-.277

Summary: While the power of the prediction models developed exceed those commonly found in similar studies, predictive power still may best -- and most politely -- be called "modest." No model developed on the construction sample performs substantially better on validation than does the original Base Expectancy scale developed in the 1960's (on a very simple criterion).[60]

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60 Actually, this is not an unexpected finding. Reasons why this may be expected to occur are given in Gottfredson, S.D. Prediction: An Overview of Selected Methodological Issues. In Gottfredson, D. and Tonry, M. (eds.), Crime and Justice: An Annual Review of Research. Volume 9: Prediction and Classification. Chicago: University of Chicago Press, 1987.

Is Criminal Activity Patterned?

We have stressed that both selective and collective incapacitation strategies rely heavily on predictions of future behavior, and this project has attempted to improve upon available predictions. For evaluation, both strategies also depend strongly on the concept of "patterned" criminal activity.[61] By this it is meant that offender criminal activity is not random, but exhibits some degree of consistency. For example, an incapacitation strategy may be based on the assumption that confining a persistent property offender for a specified time will result in a specified decrease in property crimes committed.

Unfortunately, available research evidence does not provide strong support for the specialization assumption.[62] Although some evidence of specialization commonly is found, the overwhelming weight of evidence is strongly supportive of versatility or generality of offending.

Although definitions of "specialization" have varied, the concept is very straightforward: specialization is given by the diagonal cells of a transition matrix, where cell entries are the probability of occurrence of offensej at times t and t+1 (where these are successive). Off-diagonal cells represent versatility or generality in offending.

Table 21 gives an example of such a transition matrix based on the offense that resulted in the 1962-63 period of confinement and the first arrest episode post-release from that confinement. The first entry in each cell of the matrix gives the number of cases observed to fit the particular classification (e.g., 545 persons committed a nuisance offense resulting in the 1962-63 confinement, and also committed a nuisance offense the first time arrested following release from confinement). The second cell entry gives the number of cases expected to fall in the classification by chance alone (given the marginal distributions for the table), and the third entry gives the cell observation as a proportion of the row total.

The Adjusted Standardized Residual (abbreviated ASR in the table) is based on deviations from expectancy for each cell of the matrix, and is distributed as a unit normal variable.[63] Thus, it provides a test of the statistical significance of each cell of the matrix. In the table, ASRs are given only for the diagonal cells (those representing transition to like offenses).

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61 See, for example, Cohen, J. "Research on Criminal Careers: Individual Frequency Rates and Offense Seriousness." Appendix B in A. Blumstein et al., eds., Criminal Careers and "Career Criminals". Washington, D.C.: National Academy of Sciences, 1986, pgs. 292-449.

62 Cohen, J. op cit., Wolfgang, M., R. Figlio, and T. Sellin. Delinquency in a Birth Cohort. Chicago: University of Chicago Press, 1972; Farrington, D. "Longitudinal Research on Crime and Delinquency," in N. Morris and M. Tonry, eds., Crime and Justice: An Annual Review of Research. Chicago, University of Chicago Press, 1979; Farrington, D. "Age and Crime." In M. Tonry and N. Morris, eds., Crime and Justice: An Annual Review of Research. Vol. 7. Chicago: University of Chicago Press; Blumstein, A., J. Cohen, and D. Farrington. "Criminal Career Research: Its Value in Criminology." Criminology, 1988, 26, 1 - 35; Blumstein, A., J. Cohen, and D. Farrington. "Longitudinal and Criminal Career Research: Further Clarifications." Criminology, 1988, 26, 57 - 74; Farrington, D., H. Snyder, and T. Finnegan. "Specialization in Juvenile Court Careers." Criminology, 1988, 26, 461-487; Bursick, R. "The Dynamics of Specialization in Juvenile Offenses." Social Forces, 1980, 58, 851 - 864; Kempf, K. "Specialization and the Criminal Career." Criminology, 1987, 25(2), 399 - 420.

63 Haberman, S.J. Analysis of Qualitative Data. Volume 1. New York: Academic Press, 1978. For examples of use for similar purposes, see Bursick, R. J. The dynamics of specialization in juvenile offenses. Social Forces, 1980, 58, 851-864; Cohen, J. Research on Criminal Careers: Individual Frequency Rates and Offense Seriousness. Appendix B in A. Blumstein et. al. (eds.), Criminal Careers and "Career Criminals". Vol. 1. Washington, D.C.: National Academy Press, 1986.

Finally, a "standard summary measure of specialization vs. generalization" is given (symbolized C_F).[64] This coefficient, given by the ratio

$$\frac{\text{Observed - Expected}}{\text{Row Total - Expected}}$$

would equal zero in the event of complete generalization, and one in the event of perfect specialization.

Table 21: Offense Transition Matrix, Instant and First Charge Post-Release (Most Serious Charge Dimensions Only, N = 4,847)

		First Charge Offense Dimension							
		None	Nuisance	Person	Property	Fraud	Serious Drug	Other	Totals
Instant Charge Dimension	Nuisance	212 196.1 .194	545 493.2 .500	77 80.7 .071	192 237.5 .176	26 51.9 .024	18 11.9 .017	20 18.7 .018	1,090 C_F = .087 ASR = 3.6
	Person	149 100.6 .267	262 252.9 .469	67 41.4 .120	62 121.8 .111	6 26.6 .011	5 6.1 .009	8 9.6 .014	559 C_F = .049 ASR = 4.4
	Property	362 411.3 .158	948 1034.3 .415	172 169.3 .075	659 498.0 .288	91 108.9 .040	17 25.0 .007	37 39.1 .016	2,286 C_F = .090 ASR =11.2
	Fraud	93 112.1 .149	280 281.9 .449	26 46.1 .042	103 135.7 .165	105 29.7 .169	4 6.8 .006	12 10.7 .019	623 C_F = .127 ASR =15.2
	Serious Drug	46 45.5 .182	147 114.5 .581	15 18.7 .059	32 55.1 .126	3 12.1 .012	7 2.8 .028	3 4.3 .012	253 C_F = .017 ASR = 2.6
	Other	10 6.5 .278	11 16.3 .306	2 2.7 .056	8 7.8 .222	0 1.7 .000	2 0.4 .056	3 0.6 .083	36 C_F = .068 ASR = 3.1
	Totals	872 .180	2193 .452	359 .074	1056 .218	231 .048	53 .011	83 .017	4,847

Note: $X^2_{(30)} = 454.81$; $p < .001$

64 Farrington, D. Age and Crime. In M. Tonry and N. Morris (eds.) Crime and Justice: An Annual Review of Research. Volume 7. Chicago: University of Chicago Press, 1986.

Using the offense typology discussed in an earlier section, we have found somewhat stronger support for the specialization hypothesis than is typical. As is clear from the table, ASRs for like-offense transitions all are statistically significant, and the "summary measures of specialization" are within bounds commonly observed in related studies.

Although the "summary measure of specialization" (C_F) provides one index of the magnitude (if any) of a specialization effect, we prefer a related way of looking at the question -- one that examines transition probabilities relative to base rate considerations.

Consider Figure 14 as illustration. Based on Table 21, the figure summarizes the probability of not experiencing <u>any</u> new arrest by type of commitment offense. Nuisance and Serious Drug offenders desist from criminal activity at the average rate for the sample. Those who offended against persons were significantly <u>more</u> likely to desist than the sample as a whole, while those who offended against property or were involved in frauds were significantly <u>less</u> likely to desist from crime.[65]

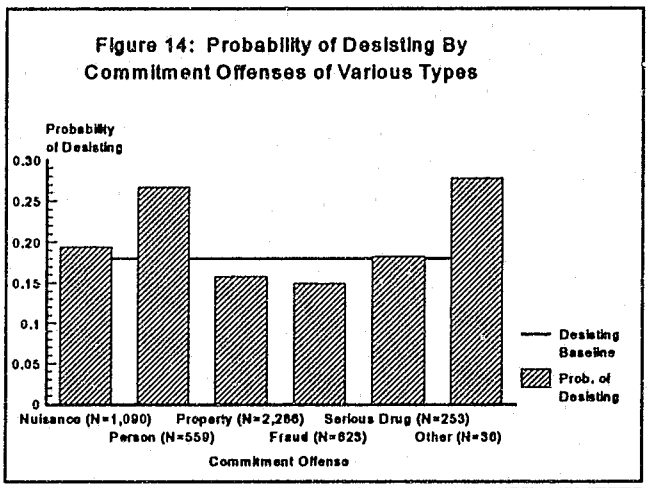
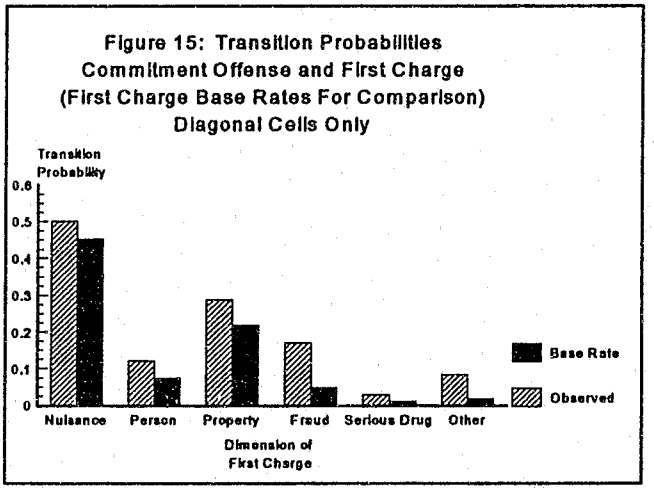


Figure 15 directly addresses the question of specialization. Also based on Table 21, it summarizes diagonal cell transition probabilities (relative to the base rate probabilities given that a next offense occurs) for the commitment offense and the first charge post-release.



Like-offense transition probabilities each are elevated relative to base-rate probabilities, and -- although not summarized in this figure -- off-diagonal transitions (representing versatility) are depressed relative to base-rates.[66]
Figure 15 - Transition Probabilities - Commitment Offense and First Charge

This figure shows one thing very clearly and dramatically: The most likely transition at time t, given any type of charge at the time of commitment (t-1), is to a nuisance offense. The next most likely occurrence is to a charge of the same type (e.g., property to property), but the extremely high base-rate probability associated with nuisance offending simply overwhelms the specialization effect.

Analysis of this particular transition may be misleading, because it compares charges for which the men were convicted and incarcerated with only the first offense charged post-release. It seems highly likely that

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65 Although those who committed "Other" types of offenses would appear from the Figure to desist at a high rate, the difference observed is not statistically significant, due at least in part to the small numbers of persons in that category.

66 All diagonal transitions are statistically significant by the Adjusted Standardized Residual, and almost all off-diagonal transitions either support the null hypothesis or are statistically significant but negative -- suggesting that the transition is significantly <u>not</u> likely to occur.

offenses for which the men were incarcerated in 1962-63 may not be typical of offenses committed or alleged to have been committed; they probably are more serious. Accordingly, generosity to the specialization hypothesis requires attention to analysis only of charges subsequent to release from the period of confinement defining the cohort for this study.

Figures 16 and 17 provide these analyses, and show little in the way of substantive difference from the conclusions examined above. Differences noted are: Those committing a fraud at first offense post-release do not significantly differ from the total with respect to the probability of desisting from crime, while both serious drug offenders and "other" offenders are significantly more likely to desist (Figure 16); and probabilities appear higher for serious drug/serious drug transitions than discussed previously (Figure 17). All other substantive conclusions remain the same.

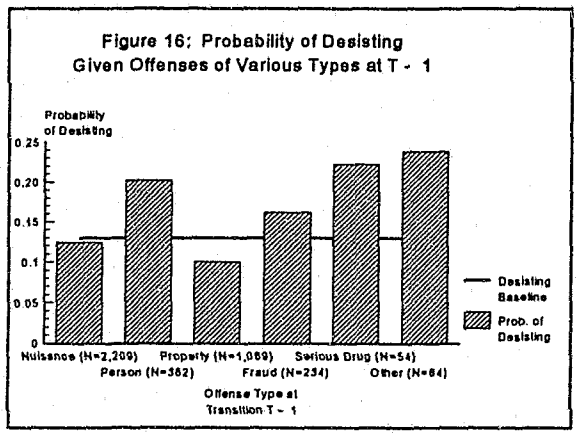


Figure 16: Probability of Desisting Given Offenses of Various Types at T - 1

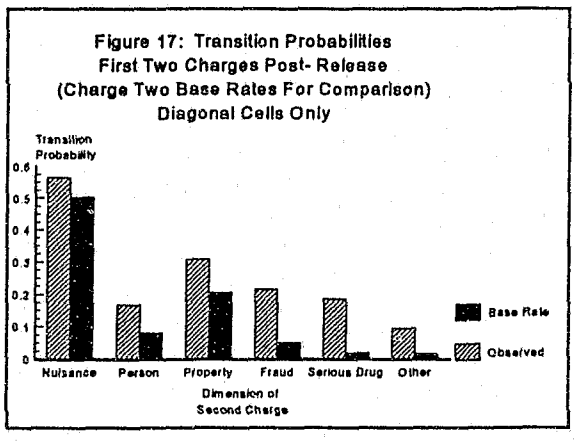


Figure 17: Transition Probabilities First Two Charges Post- Release (Charge Two Base Rates For Comparison) Diagonal Cells Only

Some have argued that examination of criminal careers properly should be restricted to "chronic" offenders.[67] Although most would accept the defining characteristic of this cohort as indicative of "chronicity," a more restrictive criterion arguably could be urged.

Accordingly, Figures 18 and 19 repeat analyses just described while restricting the sample to those offenders who have experienced at least three periods of incarceration.

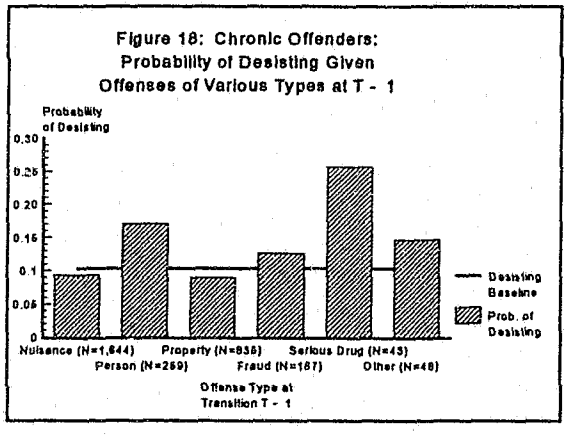


Figure 18: Chronic Offenders: Probability of Desisting Given Offenses of Various Types at T - 1

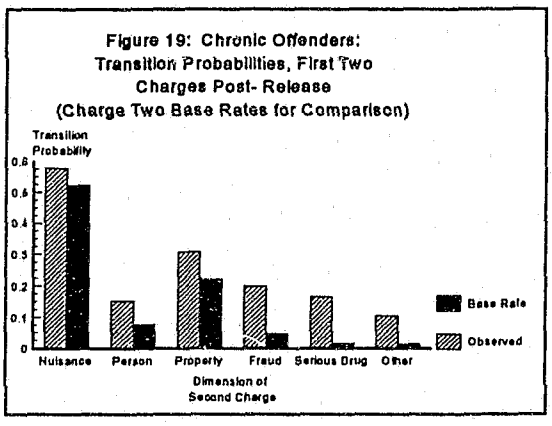


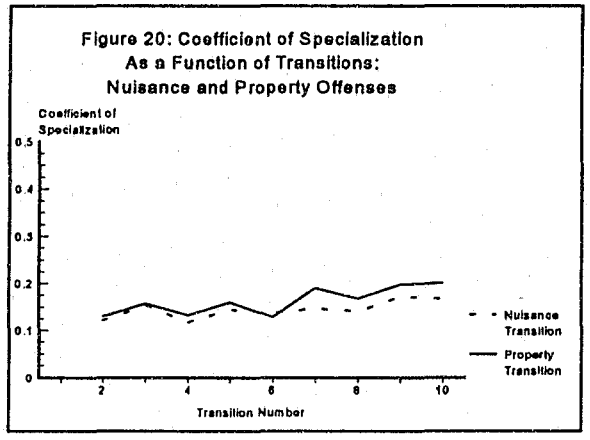
Figure 19: Chronic Offenders: Transition Probabilities, First Two Charges Post- Release (Charge Two Base Rates for Comparison)

67 E.g., Klein, M. Offence specialization and versatility among juveniles. British Journal of Criminology, 1984, 24, 185-194; Kempf, K. Specialization and the criminal career. Criminology, 1987, 25(2), 399-420.

The only substantive difference noted is that all but person and serious drug offenders fitting this definition of "chronic" offending seem to desist at the rate of the group as a whole. All other conclusions remain the same.[68]

Does Specialization Change with Transition?

From the perspective of an incapacitation strategy, one would hope that specialization would increase over time. We have observed a very modest linear increasing trend for nuisance/nuisance and for property/property transitions, but not for others (Figure 20).

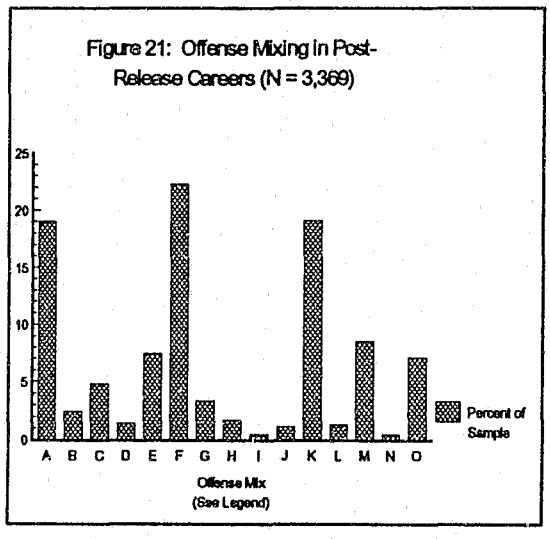


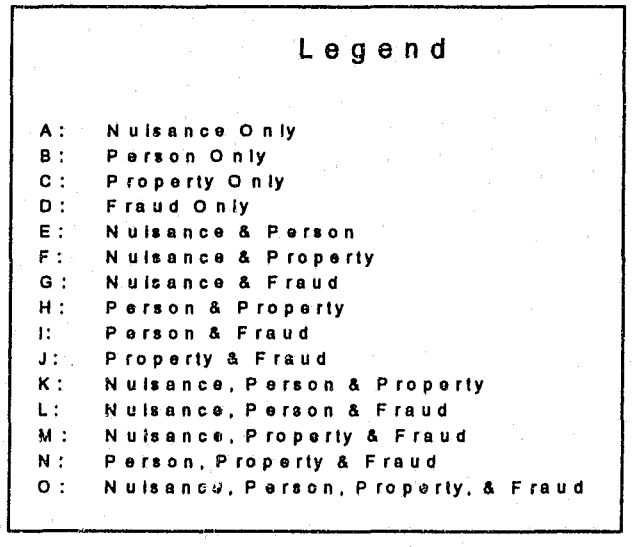
Although the trends are statistically significant, the slopes are extremely small.[69] For all practical purposes, specialization does not change with increases in transitions.

The Question of Offense Mix

Another way of considering the specialization vs. versatility in offending question is through examination of the mix of offenses committed. For example, a person who completely specialized in property crimes would commit those and only those types of crimes. Similarly, a person who only offended against persons could be considered to specialize in crimes against the person.

When offenders are grouped in terms of the mix of offenses they committed subsequent to release from incarceration, almost 28% are found to be complete specialists -- that is, they were subsequently charged with only one type of offense (Figure 21). Two offense mixes are quite common: nuisance and property offending, and nuisance, person, and property offending. Other mixes were not likely to occur (e.g., person and fraud).





68 Identical analyses restricted to the "early career" offenders also show no substantive difference from those reported here. Tables are available from the author.

69 Defining equations are as follows:

Nuisance Coefficient: $.120 + .00483$(Transition No.); $R^2 = .514$; $p < .03$.

Property Coefficient: $.120 + .00842$(Transition No.); $R^2 = .638$; $p < .01$.

Among "specialists," so defined, the bulk (69%) specialize in nuisance offending. Seventeen percent specialize in property offenses, 9% in offenses against persons, and about 5% specialize in frauds. Moreover, considering all offenses committed by "specialists," the vast majority are of the nuisance variety (82%).

Finally, it might be argued that "specialists" are important because they tend to commit offenses at a high rate. In this sample, however, specialization is negatively correlated with the rate of offending (that is, "specialists" have the lowest rates of offending, and "generalists" the highest).[70]

Does the Seriousness of Offending Change in Meaningful Ways as the Career Progresses?

An unfortunately brief answer to this question seems possible based on this examination of the careers of 6,000 offenders: No (Figure 22). The average seriousness score of offenses committed is invariant over offense episodes.

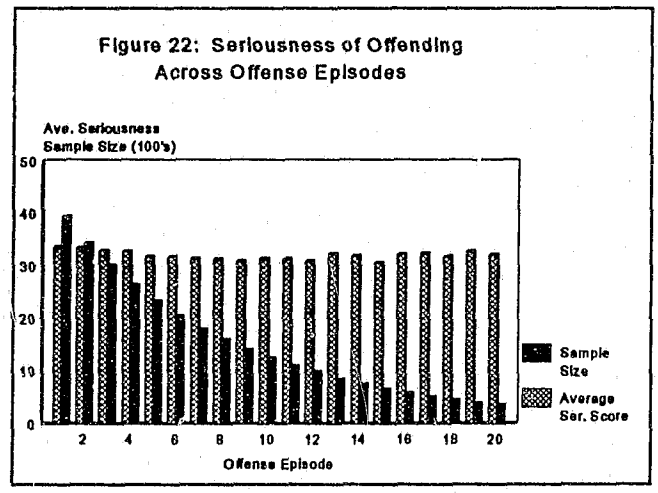


Figure 22: Seriousness of Offending Across Offense Episodes

Does the Rate of Offending Change in Meaningful Ways as the Career Progresses?

Again, a brief answer is possible: Yes, but not in a fashion that advantages incapacitation strategies (Figure 23). The rate of offending declines dramatically as offenders age: the rate for youthful offenders (25 and under) is about three times that for older offenders (50 and over).Figure 23 - Average Arrest Rates by Age

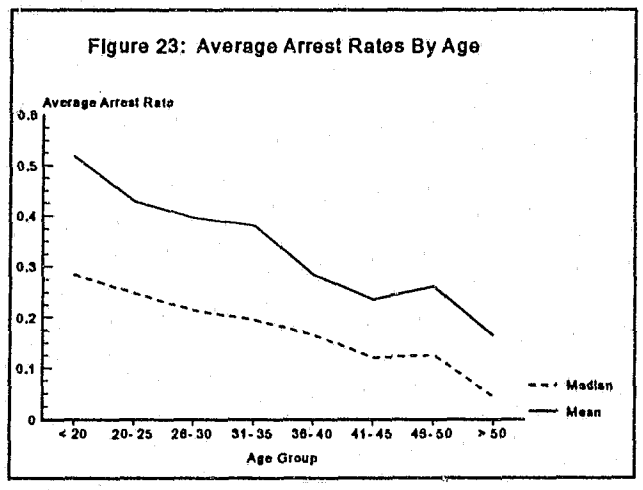


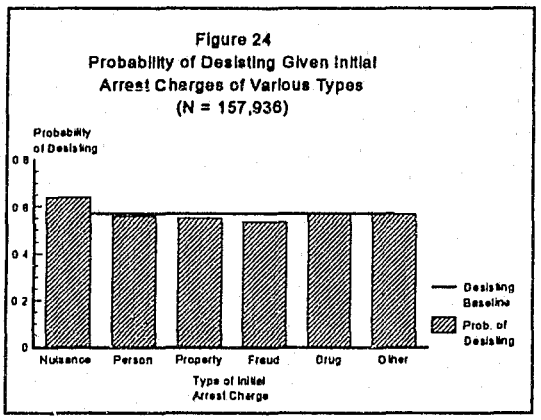
Figure 23: Average Arrest Rates By Age

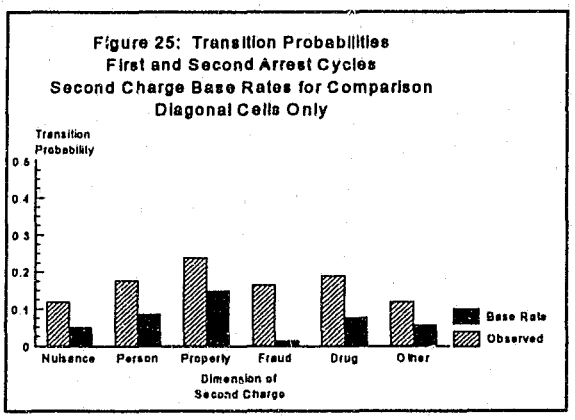
Are Findings Concerning Patterns of Offending Relevant to the Current Population?

We believe that they clearly are. Earlier, we noted that the initial arrest (which results in an entry in the Longitudinal File) most typically is the only arrest noted in the File: *57% of this cohort experienced only the initial arrest over the ten(plus) year observation period.* As described for the 1962 samples, those whose initial arrest was for a nuisance offense desist at a higher rate than for the cohort as a whole (Figure 24). Unlike our previously reported finding, however, all other cohort members (irrespective of the type of initial charge) desist at a rate indestinguisable from the baseline rate.

Findings concerning "specialization" also replicate: *The most likely occurrence at time$_t$+1, given any offense type at time$_t$, is desistence. Failing this, the next most likely occurrence is an offense of the same type as the first* (Figure 25).

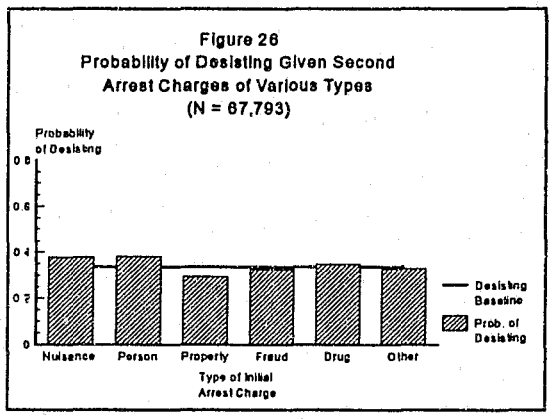
70 It also is important to note that the rate of offending is inversely correlated with the age of the offender -- another finding contradictory to well-conceived incapacitation strategies.

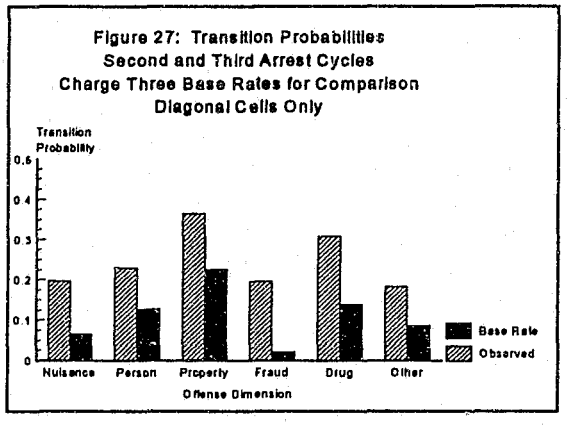




When offense transition matrices (like that illustrated earlier in Table 21) are examined, all diagonal cells are statistically significant by tests of the Adjusted Standardized Residual, and all off-diagonal cells either are not statistically significant, or are statistically significant but negative in sign (suggesting transitions that are not likely to occur).

This same pattern of findings obtains irrespective of the transition sequence examined (Figures 26 and 27).





Figures 25 and 27 do seem to suggest a bit higher degree of "specialization" than did comparable analyses conducted on the 1962 sample -- and this particularly is true for the "property/property" and "drug/drug" transitions. Some of the latter (and the small decline noted in these analyses for "nuisance/nuisance" transitions) no doubt is due to differences in category definitions noted earlier.[71]

Finally, we should note that the very slight trends for increasing "coefficients of specialization" also are replicated in the 1980 cohort (Figures 28 and 29). Again, however, the slopes are so slight as to be substantively meaningless.[72]

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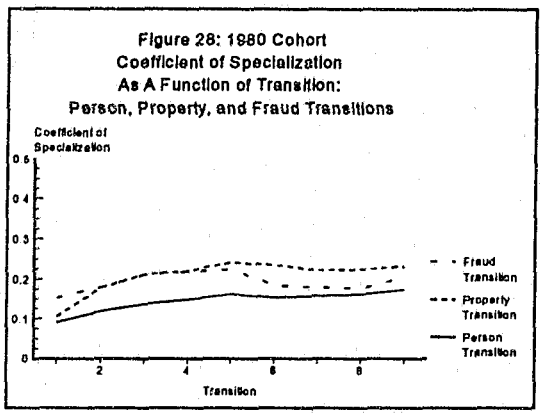
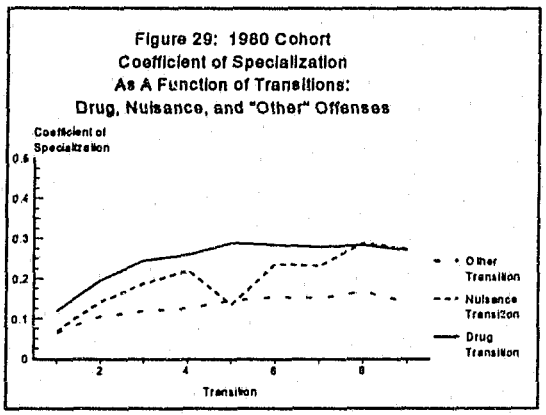
71 Recall that we were unable to distinguish serious and "nuisance-type" (e.g., simple use and/or possession) drug offenses for the 1980 cohort, as we did when analysing the 1962 samples.

72 Interestingly, "drug/drug" transistions increase fairly significantly for the first few transitions, but then level off (and perhaps even decline) by the fifth transition.





Incapacitation Strategies: The Wish List and The Reality

Three related features of the state of nature desirable from the standpoint of incapacitation strategies involve *prediction*, *offense specialization*, and *characteristics of arrests and of their rates* when persons are observed over time. If incapacitation strategies are to be effective, the behaviors of offenders (and of the criminal justice system) must be reasonably predictable.

The predictions required usually are of arrests or convictions for specific crime types, and therefore could be made more easily and with a greater degree of validity if offenders tend to specialize in the types of crimes committed. Or, at any rate, the nature of "crime switching" (that is, of transistions from one offense type to another) must be reasonably predictable; and it would be helpful if expected transitions are to a more serious crime type. Arrest or conviction *rates* also must be reasonably predictable, and it would be desirable that these tend to be constant or increasing. Further, it would be helpful to incapacitation strategies if the persons classified as "specialists" have higher arrest rates than those classified as "generalists."

A simple and straightforward incapacitation strategy could be formulated if (a) both the termination of offending and the rate of committing crimes could be predicted with confidence, (b) the rate of doing crime was constant or increasing, and (c) there was a high degree of specialization in crime types committed (or, if the tendency to specialize increases with time). Thus, for implementation of a selective incapacitation strategy, it would be helpful if we could identify future high rate offenders who specialize in serious crimes (with both specialization and rates of crime commission constant or increasing over time).

A more complex strategy could be formulated if the termination from criminal activity and the rate of committing new offenses could be predicted reasonably well, if the distribution of the rate of new crimes (arrests, charges, or convictions) over time were known with some precision, and if (absent a high degree of specialization) probable crime switching could be defined with a reasonable degree of confidence.

This section considers evidence from this study on these issues so that the feasibility of developing viable incapacitation strategies may be considered.

Incapacitation and Prediction

The prediction models developed provide very typical and quite modest estimation of a variety of outcomes relevant to incapacitation strategies. When tested on a second sample to provide better estimates of true validity, most models hold up quite well, although with an expected small amount of "shrinkage" in validity coefficients. Still, the validity of the predictions must be described as modest at best.

Incapacitation and Specialization

The problem of specialization vs. versatility in offending was considered in terms of a classification of offenses into empirically-derived groups based on how people consider crimes to be related. It may be assumed that if we had used a finer classification (that is, used more categories of offenses) we would have found less specialization. On the other hand, had we combined groups and used fewer classifications of offenses, we would have found more. If, however, the classifications are accepted as a reasonable and useful middle ground that appears to represent some cognitive reality, then four points must be concluded.

First, specialization in offending was observed; but the coefficients describing the degree of specialization -- although higher than those found in other studies -- were (like the predictive validity coefficients) quite modest. Second, a high degree of versatility was observed, which aptly may be described as overwhelming specialization. Third, the most probable next arrest (if indeed one is to occur) invariably is for an offense of the nuisance variety. This is true irrespective of the offense episode examined. Fourth, such specialization as was observed does not increase very much with successive transitions; there was a very small trend of increasing specialization in nuisance and property offending for the 1962 sample, but none when the more serious person offenses were considered. Although trends were observed for most offense categories for the 1980 cohort, the slopes (indicating the extent of the trend) are so small as to be substantively meaningless.

Incapacitation and Characteristics of Lambda

Arrest rates were found to be inversely related to specialization: "Specialists" had lower arrest rates than did "generalists."

Arrest rates decreased precipitously with age -- which was one of the best predictors of those rates in the context of the predictive variables considered in this study. The observed decline of arrest rates with age is consistent with the results of much other research. For example, a study of a substantial sample of California Youth Authority wards institutionalized for serious offenses in the 1960s and followed for 15 to 20 years found the same result over a variety of classifications of offenders (as well as a decline with age in participation).[73]

The Feasibility of Incapacitation Strategies

A strong argument against the feasibility of *collective* incapacitation strategies based on the offense of conviction is given simply by the transition matrices considered earlier. For example, locking up "burglars" to prevent burglaries may be expected (a) to confine a substantial number of persons who will commit no further offenses, (b) to prevent future nuisance offenses, and (c) only thirdly to prevent burglaries. Confining "robbers" similarly may be reasonably expected to prevent some robberies, but mainly it will prevent nuisance offenses and confine some persons who do not -- at least on incapacitative grounds -- warrant confinement.[74]

For the 1962 sample, the expected next offense (if any) for any of the classifications of offenses studied is a nuisance offense. Nuisance and drug offenses (under the presumption that most of these constitute use and/or possession charges) similarly predominate for the 1980 cohort. Thus, small reductions in the targeted crime(s) would have to be considered in the context of large expenditures that principally would (a) unnecessarily confine false positives, and (b) prevent nuisance offenses.

Indeed, the quotation marks around the words "burglar" and "robber" above are well justified. If a person convicted of burglary is more apt to be a nuisance offender next time, then it is not very helpful to classify him as a burglar for the purpose of suggesting the form of his next most likely offense. As with offenders in other crime categories, he is more aptly described as an expected nuisance offender.

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73 Haapanen, Rudy A., Selective Incapacitation and the Serious Offender: A Longitudinal Study of Criminal Career Patterns, Sacramento, California: Department of the Youth Authority, September, 1988.

74 There may of course be other grounds to warrent confinement, such as the satisfaction of desert principles.

Similarly, data presented in relation to the predictive requirements of a *selective* incapacitation strategy provide little support for that orientation. Rates of arrest or of conviction can be predicted, but not well. Rates of arrest for person offenses -- a most likely target for selective incapacitation strategies -- can be predicted, but even less well.

Rates of arrest are inversely related to the degree of specialization, so the small specialist group is less apt to be arrested at a high rate. Specialization increases very little with age, and not at all for the crime groups most likely to be targeted in a selective incapacitation strategy.

Finally, arrest rates decline with age. For a century and a half it has been known that "participation" declines with age:

> Of all the causes which influence the development of the propensity to crime, or which diminish that propensity, age is unquestionably the most energetic.[75]

Data reported here show that *arrest rates* for active adult offenders also decline with age.[76]

It is apparent that those advocating selective incapacitation as a strategy for the more efficient or effective use of criminal justice resources will have many serious obstacles to overcome even if ethical arguments surrounding the issue (considered briefly in the next section) are set aside. The state of nature --- of offense behavior and criminal justice response --- does not appear conducive to the effective development of such strategies.

Ethical Considerations[77]

The serious ethical questions raised by the selective incapacitation concept are of two types. One set of issues focuses on the consequences of errors of prediction. The other group of concerns addresses more basic questions about the proper purposes of sentencing and correctional practice. Taken together, these issues lie at the heart of a fundamental conflict between values of fairness and equity in sentencing and the values of utilitarian efforts at societal protection.

Since predictions *always* must be imperfect, two types of errors *always* will be made; and this is the case regardless of the basis of the predictions. The first type, called false negatives, are persons mistakenly predicted to be good risks. For these persons, a policy of selective incapacitation will fail to provide the public protection sought. False positives, on the other hand, are "false alarms" --- persons mistakenly predicted to be recidivists or to commit crimes at a high rate. Under a selective incapacitation strategy, these persons would be imprisoned for crimes that in fact never would be committed.

The resulting dilemma for correctional policy is posed by the conflict between the offender's right not to be a false positive -- and kept in prison unfairly and unnecessarily -- and the citizenry's right not to be victimized by a false negative.

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75 Quetelet, Lambert A. J., A Treatise on Man and the Development of His Faculties. A Facsimile Reproduction of the English Translation of 1842 with an introduction by Solomon Diamond, Gainsville, Florida: Scholars' Facsimiles and Reprints, 1969, p.92.

76 It has been found that arrest rates for offenders age nine through 16 increase with age (Loeber, Rolf, and Snyder, Howard N., "Rate of Offending in Juvenile Careers: Findings of Constancy and Change in Lambda," Criminology, 28, 1, 1990, pp. 97 - 109).

77 Portions of this section are adapted from Gottfredson, Stephen D. and Gottfredson, Don M., "Selective Incapacitation?," Annals of the American Academy of Political and Social Science, 478, March, 1985.

The false positive problem has received the most attention from critics on ethical grounds. Given current levels of predictive accuracy, with strategies that select any sizable group for incapacitation, large numbers of persons would be subjected to increased terms of confinement as a result only of their misclassification.

The debate also addresses more fundamental issues of sentencing and correctional treatment. Should people be sent to prison for *deserved punishment* or for *utilitarian* purposes? The latter include any purposes with a crime control intent. *All* such purposes -- including incapacitation -- require predictions. The conflicting ethical theory of *just desert* asserts that it is unfair to punish for harms expected but not yet done --- that is, for expected crimes that might never be committed. Moreover, this ethical postion requires that punishments must be similar in severity for offenders convicted of similar crimes with similar culpability. The basic focus of this theory is on blameworthiness, and critics of selective incapacitation have pointed out that some predictive information used may have nothing to do with the blameworthiness of the offender; hence, they should not be used in determination of the penalty.

These issues are fundamental to policy questions about the applicability of the study results reported here, and we will return to them in a later section. Next, however, some implications of current levels of predictive validity should be discussed.

Is Prediction Accurate Enough? We have discussed the predictive validities shown in this study, and the level of validity to be expected from each of the models described, as modest. The levels of predictive accuracy in the criminological prediction literature generally are aptly described by that term, or, perhaps more accurately, as rather low.[78] There is no escaping the question of whether statistically based prediction tools such as discussed in this report are accurate enough to justify their use in policy formulation or practice.

Some scholars and practitioners argue against the use of prediction in any case on ethical grounds alone. This is true of a strict just desert argument, in which prediction may be seen as properly irrelevant to decisions made about criminal offenders. However, if aims of crime control in sentencing and correctional practice are thought ethically permissable, then prediction must be regarded as central to the attainment of those ends. This is the case even if it is believed that crime control purposes may be sought but only within limits of punishments justly deserved.[79] *Prediction is a central problem to the extent that crime control objectives are believed to be permissable in the formulation of sentencing or correctional policies.*

Remaining arguments against the use of statistically based prediction tools all reduce to considerations of their accuracy. The technically sophisticated arguments directly confront the accuracy issue. They cite low proportions of explained variance and resulting high error rates. Commonly, the focus is on false positives, although false negatives may be equally, or more, undesirable depending on the application. Other arguments cite misspecification of prediction models: this too is essentially a complaint about accuracy. Less technically sophisticated critics complain of reducing people to numbers and observe that human behavior is too complex to allow judgmental decisions to be made on the basis of an equation. This complaint too is essentially one of accuracy.

Part of the answer to the question of whether statistical prediction methods are accurate enough to justify their use depends on the use to which the resulting tools will be put. Over a decade ago, it was reported that:

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78 For a detailed review of issues of accuracy in prediction, see Gottfredson, S.D., and Gottfredson, D.M., supra note 41.

79 See, e.g., Morris, Norval, "Punishment, Desert and Rehabilitation," in U. S. Department of Justice, Equal Justice Under the Law, Bicentennial Lecture Series, Washington, D. C.: U. S. Government Printing Office, 1976; von Hirsch, Andrew, Past and Future Crimes, New Brunswick, New Jersey: Rutgers University Press, 1985.

> the data accumulated to date on criminal careers do not permit us, with acceptable confidence, to identify career criminals prospectively or to predict the crime reduction efforts of alternative sentencing proposals.[80]

In respect to a study that directly proposed selective incapacitation as a possible panacea for correctional problems, it has been reported that

> ... for purposes of selective incapacitation, where predicted high rate offenders will be subject to longer prison terms than all other offenders, much better discrimination of the high-rate offenders would seem to be required.[81]

Nothing from our twenty-year year study of the careers of over 6,000 adult felons or from our examination of the over 150,000 members of the 1980 cohort over a decade, would lead to a different conclusion. *Proposals for dramatic change in sentencing and incarceration policies based on individual level prediction studies are at best premature. Prediction of such low validity as thus far demonstrated cannot justify the policy changes proposed under the banner of selective incapacitation.*

Prediction tools of equal validity can, however, be used appropriately for other purposes, and we will try to explain this argument next. In doing so, we will focus on the two types of errors to be made in any predictive selection problem and on ethical considerations involved in the type of policy changes involved in the proposed use of prediction tools.

The Predictive Selection Problem:[82] Predictive selection decisions require the specification of cut-off scores. For example, in selective incapacitation strategies, values of the predictor score at or above which an individual is expected to fail, or commit crimes at a high rate, must be identified. Similarly, values of the criterion variable at or above which a case is considered an actual failure and below which persons are considered to have succeeded must be specified. Thus, at or above a selected cutting-score on the predictor scale distribution, we predict failure and select accordingly. Below that cutting-point, we predict success. The value decided upon for the predictor cut-off determines what is known as the *selection ratio*: This is the ratio of the number of persons to be selected to all persons available for selection. Irrespective of the prediction made, some persons would fail, and others would succeed: The ratio of these is called the *base rate*.

Simultaneous consideration of the base rate and the selection ratio gives rise, necessarily, to the four potential consequences to any predictive selection decision. There are two types of errors to be made: We will predict some persons to fail who in fact succeed (false negatives), and we will predict some persons to succeed who in fact will fail (false positives). There are also two types of "hits" or correct predictions to be made. There are the persons predicted not to fail who in fact do not; these are known as negative hits. Some persons predicted to fail will in fact fail; these are called positive hits. The two types of correct predictions and the two types of errors exhaust the possible outcomes of the predictive selection problem.

Placement of the selection ratio and the definition of the base-rate determine (within the expectation of the marginal distributions) the errors of each type to be made. In selective incapacitation proposals, the cutting score will be selected somewhere above the mean of the risk distribution (or else the high risk cases would not be selected). The criterion cutting score would lie above the mean of the distribution representing subsequent

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80 Petersilia, J., "Criminal Career Research: A Review of Recent Evidence." In N. Morris and M. Tonry (eds.), Crime and Justice: An Annual Review of Research. Chicago: University of Chicago Press, 1980, at 322.

81 Cohen J., supra note 7.

82 For a more complete explication of the argument made in this section, see Gottfredson, S. and Gottfredson, D. M., supra note 41.

criminal behavior (or else the scheme would call for selectively incapacitating average or below average offenders).

As mentioned, the placement of the cutting scores (base rate and selection ratio) will determine the relative numbers of false positives and false negatives experienced. The *number* of errors to be made cannot be manipulated in this way -- only the relative proportion of the two types may be changed.[83] Thus, either false positives or false negatives may be increased or decreased, but always at the expense of the other; one has only to change the cutting score(s).

Clearly, neither error is desirable in the context of selective incapacitation. False positives must be abhorred from the ethics of desert, false negatives from the ethics of utility. Which error is more important is a question that may never be settled in moral philosophy or in public policy. Moreover, it may well be that the two types of error are not equal in either human or monitary costs.

Selective Deinstitutionalization: Consider instead a policy not of selective incapacitation but one of "selective deinstitutionalization." Assume the population of interest to be persons already incarcerated (or to be incarcerated) under any existing incarceration policy. Suppose that we wish to reduce the institutional population (e.g., due to a court-ordered population cap). Obvious selection criteria for the decision as to who not to keep incarcerated could include the risk of recidivism, or the risk of serious harms, or the risk of serious harms to be committed at a high rate.[84]

Now the selection criterion (the cutting-score on the risk measure) would lie *below* the mean of the distribution of risk scores. That is, we wish to select those inmates or otherwise prison-bound offenders who appear to represent the *least* risk of repeated offending. Since we seek to identify the best risks, the criterion cutting score also likely would lie below the mean. Just as before, the trade-off of false positives and false negatives could be manipulated by moving the cutting-scores for the risk measure up or down. For any given value of the criterion cutting score, the value of the risk cutting-score will determine size of the selected group but also whether more false positive or false negative errors will be made.[85]

Errors, Ethics, and Policy: The ethical consequences of errors made under the strategy of selective incapacitation and that of selective deinstitutionalization are quite different. In a selective incapacitation strategy, the effect of a false positive is to deny liberty based on faulty prediction. The aim is to minimize false negatives; that is, it is sought to minimize the failure to select those who in fact pose a substantial risk of continued criminal behavior. And, unless predictive accuracy can be increased, reducing false negatives can be done only at the expense of increasing false positives.

In the selective deinstitutionalization scenario, it also is the case that false positives will be punished more harshly than will those selected for release or non-incarceration based on the selection device. *The critical distinction is that they will not be punished more harshly than they would have been had the device -- and prediction -- not been used*. Rather than falsely treating some persons more harshly than is believed to be justly deserved, this proposal treats some persons less harshly than that and treats some persons no more harshly than that.

The selective deinstitutionalization proposal does rely, for its ethical justification, on a permissive rather than positive retributivism. Attention recently has been called to these two types of retributive principles, along

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83 The only way to change the *number* of errors to be made is to increase the accuracy of the prediction tool used.

84 Other criteria of course could be used. For example, those classified as least deserving of punishment could be released or excluded from incarceration.

85 Manipulation of the criterion cutting score would, of course, present the same trade-off.

with one other: negative retributivism.[86] The principle of negative retributivism asserts that one who is not guilty must not be punished. (One may think that negative retributivism is non-controversial; yet, it is precisely one point of criticism of selective incapacitation proposals that some persons expected to commit crimes will be punished for offenses not yet committed and which might not ever be committed.) That of positive retributivism states that one who is guilty ought to be punished. The principle of permissive retributivism posits that one who is guilty *may* be punished.

A selective incapacitation proposal and a selective deinstitutionalization proposal differ substantially with respect to proposed policy changes and the consequences of these. Proponents of selective incapacitation clearly suggest that a proper purpose of incarceration is the prevention of crime by removal of offenders from society in order that they can not engage in criminal activity in the community. The suggestion then has been made for a radical change in sentencing and imprisonment policy, based in part on the claims made for the accuracy of prediction.

The selective deinstitutionalization proposal relies on no presumption of a need for radical change in sentencing policy in general. The strategy could be adopted even if it is assumed that all purposes for sentencing as currently practiced are equally valid. The scheme does propose that risk -- and an incapacitative purpose -- should be a primary consideration in decisions aimed at prison population reduction.

There is a fundamental difference between the two situations, and this difference requires clarification of the earlier question: Is prediction currently accurate enough to be useful? When the question is stated in this way, the answer can only be yes and no. Prediction in criminal justice settings clearly is not sufficiently accurate to form the basis of social policy. Proposals for dramatic changes in policy and practice that rely on the accuracy of prediction are premature at best.

Once social policy has been set, however, prediction clearly is sufficiently accurate to be useful, and the decisions made will be more accurate if statistically based prediction tools are used.[87] Even when validity is quite low, it has been demonstrated that such selection devices provide significant improvements in accuracy.[88]

We prefer the selective deinstitutionalization proposal over the selective incapacitation proposal and note that the choice mainly is an ethical one. But the consequences of the proposal are more benign than are those arising from the selective incapacitation concept. Predictive accuracy, while sufficient for the former, is insufficient for the latter. Thus, the selective deinstitutionalization concept is believed to meliorate the ethical concerns discussed and to hold promise for reducing prison crowding without endangering the public.

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86 Mackie, J.L., "Morality and the Retributive Emotions," Criminal Justice Ethics, Winter/Spring, 1982, 3 - 10.

87 For reviews, see Meehl, Paul E., Clinical vs. Statistical Prediction, Minneapolis: University of Minnesota Press, 1954; Goldberg, L. R., "Diagnosticians vs. Diagnostic Signs: the Diagnosis of Psychosis vs. Neurosis from the MMPI," Psychological Monographs, 79 (whole no. 9), 1965; idem, "Seer Over Sign: The First "Good" Example? Journal of Experimental Research in Personality, 3:168-71, 1968; idem, "Man vs. Model of Man: A Rationale, plus Some Evidence of a Method of Improving on Clinical Inference," Psychological Bulletin, 73:422-32, 1970; Sawyer, J., "Measurement and Prediction, Clinical and Statistical," Psychological Bulletin, 66:178-200, 1966; Dawes, Robyn M., "Case-by-case versus Rule-generated Procedures for the Allocation of Scarce Resources," in Human Judgment and Decision Processes in Applied Settings, Martin F. Kaplin and Steven Schwartz, eds., New York: Academic Press, 1975, pp. 83-94; Dawes, Robyn M., "The Robust Beauty of Improper Linear Models in Decision Making," American Psychologist, 34 (7):571-82, 1979.

88 Dunnette, M. D., Personnel Selection and Placement, Belmont, California: Brooks / Cole, 1966, pp. 173-83.