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# VALIDATION OF THE IOWA RISK ASSESSMENT SCALE ON A 1982 RELEASE COHORT OF COLORADO INMATES

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# ON A 1982 RELEASE COHORT OF COLORADO INMATES

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# VALIDATION OF THE IOWA RISK ASSESSMENT SCALE ON A 1982 RELEASE COHORT OF COLORADO INMATES

Prison overcrowding is the correctional theme of the 80's, emerging from the loss of faith in rehabilitation in an era of economic retrenchment. The prison population crunch directed attention to new options, such as an emergency powers act, and improved decision tools, such as actuarial risk assessment scales.

Like many other states, Colorado is struggling with prison capacity problems. Since 1982, offenders sentenced to a state prison term have been backlogged in jail awaiting a prison cell. There are about 300 such offenders currently in Colorado jails, and, as elsewhere, lawsuits are pending. In such a situation, correctional policy is largely driven by the need to manage the overcrowding.

A scale developed in Iowa appeared to be particularly promising for this purpose. It was developed by the Iowa Statistical Analysis Center (SAC) in response to a legislative request for development of a risk assessment tool to be used in selecting inmates for early parole under the Iowa Emergency Release Act. The Scale, developed over a 10 year period, uses six major indicators. These are a prior violence score based on the seriousness and frequency of prior violent arrests, a street time score, a criminal history score based on the seriousness, disposition, and time at risk of each conviction offense, a current offense score, an escape score, and a substance abuse score. A "serious offender" classification is used

in the Violence Risk Assessment scale in the final determination of the "very poor" violence risks. Each of these indicators is in fact a sub-scale, and the final assessment tool is a combination of the seven sub-scales.

In 1983, and again in 1985, Fischer reported validation of the Iowa Scale at an 88 percent accuracy rate. This was phenomenal indeed compared to the existing 33 percent accuracy rate (Monahan, 1981: 77). The scale had not been cross-validated in other areas, however, and how well it would generalize was an issue. Other methodological issues included possible bias in the construction sample (only cases with no missing data were included) and a measure of the outcome variable which exaggerated predictive accuracy. With this outcome variable, Fischer claimed 92 percent accuracy (Fischer, 1985: 48). In the meantime, as we will see later, other criticisms have appeared.

This study was designed to validate the Iowa Scale on a group of Colorado offenders, but the results have implications which go beyond the usefulness of the Iowa Scale for Colorado. To put the study in the context of the national body of work on risk assessment, we discuss (1) issues in prediction; (2) the Iowa Risk Assessment Scale; (3) the literature since 1983 (4) validation design; (5) the sample; (6) data collection; (7) data analysis; (8) findings, and (9) conclusions and implications.

## Issues in Prediction

Prediction work requires that attention be given to two broad issues. The first area is methodological; the second ethical.

## Methods of Prediction

Traditionally, predictive decisions in the criminal justice system have been based on subjective case reviews and/or clinical assessments. Thus, the type and length of treatment, incarceration, and release was based on perceived needs, response to treatment, and subjectively determined risk. The results of these practices eventually brought criticism from one side for the unjust detention of individuals as a threat to public safety and from the other side for release of dangerous offenders. Monahan's (1980) review of this period describes the beginning development of the research and prediction technology that provides empirical data on outcome probabilities. It became clear that large numbers of individuals had been incorrectly detained as dangerous. The field of prediction research using base expectancy rates developed rapidly during and following the growing criticism of clinical decisionmaking in corrections. Actuarial scales were developed in several states to be used in parole release decisions as well as for determining supervision needs.

With the emergence of actuarial scales, the literature turned to critiques of predictive accuracy in terms of the base rate, time at risk, selection ratio, false positives and false negatives, and measures of predictive accuracy.

### Base Rate

The base rate (base expectancy rate) is the proportion of individuals in some population during a specific time period who do the behavior being predicted (Monahan, 1981: 49). For example, 13 percent of the offenders

released from Colorado prisons in 1982 were rearrested for violent offenses within two years of their release. According to Monahan, one of the most common predictive errors made is ignoring the base rate (1981: 59). For the most efficient prediction scale, the base rate and the selection ratio--the proportion predicted to fail--should be nearly the same. The prediction of infrequently occurring events is very difficult. The lower the base rate, the greater the predictive error.

Time at Risk

The time at risk is defined as opportunity time (street time) for reoffending. For the purposes of this study, the time at risk has been set at two years. The development of a valid actuarial scale generally requires that all cases be observed for a uniform time at risk. The uniform time at risk controls for "censored" data. That is, if time at risk varied, some offenders may offend just beyond the observation period. This still occurs. Some of the "successful" offenders in a two year time at risk will be "unsuccessful" in a four-year time at risk. Also, if not returned to prison following a first rearrest, some offenders would commit multiple offenses in the time at risk period. This creates a methodological problem in terms of determining true recidivism rates. For further information on this issue, see Maltz, 1984.

False Positives and False Negatives

The distribution of error, determined by the cutoff point, separates errors into two types, false positives and false negatives. The false positives usually account for most of the error. For example, the greatest

number of errors will occur in predictions that an individual will commit a violent offense: predicting 40 percent of a population to be violent in a 13 percent base rate situation would lead to a very high false positive rate.

The false negative, that is, an erroneous prediction of success, is of the most concern for those whose objective is public safety. As a rule, the proportion of false negatives is much smaller than the proportion of false positives.

The Selection Ratio

The selection ratio decision is determined by policy with the goal of minimizing the proportion of offenders detained as high risk who would not offend, or minimizing the proportion of offenders released who would offend, or finding the best balance between the two types of error. Current work is forcusing on a systematic method for weighting false positives and false negatives in terms of politically determined priorities.

Measures of Predictive Accuracy. We use two of the most commonly used measures of predictive accuracy in this study, (1) the Mean Cost Rating (MCR) and (2) Relative Improvement Over Chance (RIOC). The Mean Cost Rating is an index of effectiveness developed by Berkson (1947). MCR evaluates predictive devices by comparing costs, in terms of false positives and false negatives, and utilities in terms of true positives and negatives. As it is closely related to Tau C, it can also be used as a test of statistical significance of an index. The formula is given below:

$$MCR = C_i U_{i-1} - U_i C_{i-1}$$

where

$C_i$ = the cumulative relative frequency of successes at the ith risk level (top down) and

$U_i$ = The cumulative relative frequency of failures at the ith risk level (top down).

The Relative Improvement over Chance (RIOC) compares actual classification accuracy to the maximum accuracy possible and the random accuracy associated with the selection ratio and base rates in sample. The formula is as follows:

$$RIOC = \frac{\text{Percent Relative Improvement Over Chance}}{\text{Maximum Percentage Correct - Percentage Required by Chance}} (100)$$

For a full discussion of RIOC, see Loeber and Dishion, 1983.

Ethics

The ethics of prediction have been widely discussed (Clear; 1984); Petersilia (1985); Morris and Miller (1986). The ethics issue is based on three major arguments. The first is a just deserts argument, based on the philosophical tenet that one can be justly punished only for deeds done; therefore, any policy that depends on prediction is by definition unjust.

A second objection is based on the argument that prediction technology is poor and leads to the detention of large numbers of individuals who would not do crimes (false positives) in order to detain some of the individuals who would do crimes. According to this argument, everyone has

a constitutional right not to be a false positive; therefore, prediction devices lead to an unconstitutional deprivation of liberty.

The third of the ethics arguments focuses on the predictors used: is it ethical to use predictors such as age, sex, education, employment, and marital status which are not directly related to the offense (and which may be related to race) to determine sentence severity?

The first two arguments must be considered in the context of the administration of criminal justice. The just deserts philosophy has been called non-utilitarian because it is based on the belief that punishment is an inseparable part of the criminal act, and as such, an end in and of itself. The issues in administering a system of just deserts are equity and proportionality, and require designing a system in which the punishment fits the crime. This requires information on the seriousness of offenses, offender culpability, and appropriate punishment. In the absence of an objective basis for ranking crimes on seriousness, and selecting an appropriate punishment, some version of public opinion is called into play, either poll results or political representation. In terms of culpability, determination of the correct punishment becomes even more complex: how old or young is the offender, the victim; was there cruelty, misuse of authority, injury, use of a weapon, exploitation of vulnerability, deliberation or impetuosity? Do prior arrests or convictions affect the deserved sentence? Thus, to say that just deserts is the only fair sentencing scheme is to ignore the technology required for deciding just sentences. This question is usually ignored, and justice

becomes whatever any decisionmaker in the criminal justice system thinks or decides it is. Further, a decision made at one point affects decisions made at other points: the description of the offense varies within and between departments, and changes as it is processed through the system; information is entered into the record or left out depending on the decision to be made, and varying again both within and between agencies; suspects are set free to prepare their case or held in jail, and the contingencies surrounding this decision are many. The point is, information technology affects the administration of all sentencing schemes.

The sentencing philosophies of rehabilitation, incapacitation, and deterrence are called utilitarian because they are purposive; they are oriented to the future, and require prediction. Predictions can be either clinical or actuarial. We know that actuarial predictions are more accurate than clinical predictions. We also know that socio-economic factors are related to clinical decisions, and are statistically related to recidivism. When the socio-economic predictors are included in an actuarial scale, however, the ethical considerations become more clear. Some argue that the use of socio-demographic items in the clinical or subjective decision method is less ethical than their inclusion in an objective risk assessment scale (Greenwood, 1982; Morris and Miller, 1986). These issues have not been resolved and the debate continues. To summarize, Morris and Miller propose three principles for the use of predictions in sentencing. These are:

- Punishment should not be imposed, nor the term of punishment extended, by virtue of the use of predictions of dangerousness, beyond that which would be justified as a deserved punishment independent of that prediction.

- Provided that the previous limitation is respected, predictions of dangerousness may properly influence sentencing decisions and other decisions in the criminal law.

- The base expectancy rate for violence of the criminal predicted as dangerous must be shown by reliable evidence to be substantially higher than the base expectancy rate of another criminal with a closely similar record and convicted of a closely similar crime, but not predicted to be usually dangerous, before the greater dangerousness of the former may be relied on to intensify or extend his punishment (1986: 6).

## The Iowa Risk Assessment Scale

The Iowa risk assessment scale was developed in response to the same pressures operating in Colorado and other states with prison crowding--the need to manage the prison population without increasing public risk. Beginning in 1975, the cases of over 6000 Iowa probationers and parolees were analyzed to construct the Iowa Scale. It was then validated in the late 70's on a separate sample of over 9000 cases. The predictive accuracy of the scale, as measured by the Mean Cost Rating (MCR) was between .55 and .65 depending on the outcome variable used. This compares to an MCR of .35 for the Federal Salient Factor Score and .40 for the Michigan Assaultive Risk Scale. According to Fischer (1983), the scale translated into effective policy: parole releases were increased 52 percent in 1982-83 and violent crime among parolees decreased 35 percent. [However, these figures

are questioned in a recent summary of objective parole guidelines currently in use (Baird, 1986)].

Given the early success of the Iowa Scale, and some of the criticisms emerging, further research was undertaken to streamline the scale and to document its construction and validation. For this purpose, a sample of 1000 offenders released between 1980 - 1984 from Iowa prisons was randomly selected, except that if a complete presentence investigation report was missing, the case was excluded. Each case was followed for four years, using state criminal history files to identify cases with new criminal charges, months to each new charge, new convictions, and months until return to prison as a parole violator (Fischer, 1985).

For selection of predictors, the Iowa researchers selected three outcome measures: (1) A new charge for a violent felony (murder, attempted murder, rape, attempted rape, kidnapping, robbery, attempted robbery, arson, attempted arson, voluntary manslaughter, aggravated assault, terrorism, extortion, sodomy, personal larceny, and aggravated burglary); (2) a new prison sentence for conviction for the previously listed violent crimes in addition to involuntary manslaughter, conspiracy to commit a violent felony, weapons crimes, property crimes, and drug dealing; (3) any of the previously listed events (Fischer, 1985: 27). The predictor variables were then selected by statistical and manual analysis of the independent variables in the data base. The end product was a "four-factor" score consisting of four recidivism indicators: current offense classification, substance abuse classification, criminal history,

and age at conviction or commitment. The latest revision of the scale (1984) substituted mathematical formulas (not derived from the data) for the special risk factors included in earlier versions. The special risk factors required manual screening of each case and was the source of much criticism of the scale on the grounds of complexity and unreliability.

The mathematical formulas are based on a seriousness scale for prior felonies weighted by age of the felony in street time and disposition of the felony. Prior violence was also measured by classifying prior violent arrests in terms of seriousness and age of the arrest (time between age 14 and arrest date). See Appendix A for the Iowa Scale coding instructions.

This scheme requires collecting data on every prior violent felony arrest including type of offense and date of arrest, and on every prior felony conviction including type of offense, date of conviction, disposition and street time since last conviction, and total street time since age 14.

Once this information is collected, the formulas are applied to produce a single prior violence score and a single criminal history score. The scores are then collapsed into risk categories.

The other recidivism indicators are substance abuse, street time, current escape status, current offense type, and a serious offender classification. A serious offender is defined as an individual who has at least one of the following characteristics:

- Current conviction for violent felony
- Current conviction for escape, jailbreak, or flight
- Prior conviction for felony against persons in last five

years street time
- o Prior violence score (raw) of 35 or more
- o History of PCP use, non-opiate injections, or sniffing of volatile substance.

Once the individual is classified on the six basic indicators, the final outcome scores are computed. Although Fischer reports the use of multivariate techniques for this purpose, he provides no further specification about the analysis. The classification scores are computed as follows: First the "X" factors are summed (current offense classification, prior violence score, street time score); second, the "Y" factors are summed (criminal history score, current escape score, and substance abuse score); third, the X and Y scores are matrixed to arrive at a "general risk" assessment; and, fourth, the X and Y scores are matrixed to arrive at the final "violence risk" assessment (Fischer, 1985: 26). The Iowa Scale scoring sheet is included in Appendix A.

Predictive Validity of the 1984 Version

Fischer used 814 cases of the sample of 1000 referred to earlier for the development of the revised model, and reserved 186 as a validation sample. Using the violent crime and safety crime outcome measures described previously, the construction sample MCR values of the 1980 and 1983 versions, and the validation sample MCR values for the 1984 version are as follows:

| | Violent Crime | Safety Crime |
|---|---|---|
| 1980 Version | .529 | .518 |
| 1983 Version | .673 | .617 |
| 1984 Version | .705 | .618 |
| 1984 Validation | .692 | .669 |

In addition to the Mean Cost Rating, Fischer also uses a measure of "rated accuracy" to describe the total accuracy of the scale. Rated accuracy is defined as the sum of chance rated accuracy and the Mean Cost Rating multiplied by (one minus chance rated accuracy). Thus, for the 1984 validation sample, the Rated Accuracy is .868 compared to the MCR of .655.

Fischer goes on to develop a "total violence threat" criterion which incorporates seriousness, frequency, and time measures, and a "coefficient of predictive efficiency" (CPE) to estimate the predictive efficiency of the scale related to incapacitation. Much of the criticism of the Iowa Scale stems from the degree of predictive accuracy Fischer computed from this criterion using CPE and MCR. See Fischer (1985: 33 - 74) for a discussion and description of these issues, and Gottfredson & Gottfredson (1984: 100 - 110) for a critique.

The Literature Related to the Iowa Scale

The Colorado replication project, planned in 1983, began in the fall of 1984, before the 1984 version of the Iowa Scale was published. Publicity about its accuracy and effectiveness was at a high point, and, as a result, critical attention was given to the scale. The most thorough and thoughtful work was done by Gottfredson and Gottfredson (1984) at the request of the National Academy of Sciences. Baird and Lerner (1986) also reviewed the scale. The Washington, D.C. parole board did a partial replication of the 1983 version and Rand (Klein & Caggiano, 1986) did a partial replication of the 1984 version using self-report data.

Most Iowa Scale reviewers have criticized the author for the lack of

published information on scale construction and validation. The Gottfredsons talk about the constraints this imposes on a thorough critique of the scale; however, they focused their criticism on scale construction and measures of predictive accuracy. Scale construction issues include problems with the weighted outcome measure as well as the positive aspects of Fischer's techniques of developing scales for various subgroups which are then combined into final scales. The development of sub-group scales can reduce the effect of sample heterogeneity on the accuracy of predictive devices (Gottfredson & Gottfredson, 1984: 98).

The Outcome Measure. Several aspects of Fischer's weighted outcome measure are criticized by the Gottfredsons as well as by Baird and Lerner (1986). Fischer based scale accuracy results on an analysis of a weighted outcome variable which includes seriousness, frequency and recency weights of the failure event. He then computes a mean failure rate for each risk level, a practice which eliminates all within-group variance, and enhances measures of accuracy. (Gottfredson & Gottfredson, 1984: 102). Baird and Lerner criticized the outcome variable as not having mutually exclusive categories. The same offender, for example, could fail as a property offender as well as a violent offender. For example, Fischer writes:

> . . . using our definition of recidivism, 262 or 135.3% were classified as recidivists while 124 or 17.2% had a new violent felony, and 190 or 26.3% had new non-violent felonies (1983: 9).

Baird and Lerner conclude that the issues concerning the Iowa Scale may have more to do with the outcome measure than with "purported accuracy" (1986: 20). They quote the Iowa Assistant Attorney General who reports

that while the total volume of violent crime dropped by one percent, the total volume of property crime increased by 65 percent. Thus, the same number of violators were being returned, but fewer of them were returned for new violence (1986: 20).

The Coefficient of Predictive Efficiency

Fischer developed and used for estimating accuracy of the Iowa Scale a "coefficient of predictive efficiency" (CPE) with values ranging from 0 to more than 1; thus, predictive accuracy, as measured by CPE, can be greater than 100 percent. The Gottfredson's examine the measure and conclude that CPE contributes "nothing of value" in assessing scale accuracy (1984: 105). For a discussion of the scale, see Fischer (1984: 48-74) and Gottfredson & Gottfredson (1984: 104-106).

The Washington and Rand Replications

The Washington Parole Board conducted a partial replication of the 1983 version of the Iowa Scale to assess the feasibility of implementing the Scale in the District of Columbia. They drew a 59 percent random sample of 1980 D.C. parolees. The Washington researchers concluded that the Scale is of limited use in D.C. (no name, no date: ii):

> Although tabular data indicate that the tool distinguishes low and high risk individuals in that low risk individuals had a 28% failure rate (viz., rearrest) and high individuals a 67% failure rate, at no point did our correlation between real and predicted outcomes exceed .3 on a scale where 0.00 indicates no correlation and 1.00 a perfect correlation.

Klein & Caggiano (1986) of the Rand Institute provide another assessment of the Iowa Scale (and five others) using data collected in the Rand Inmate Survey (RIS). These researchers used the data collected by Rand in California, Michigan and Texas prisons and jails to assess a collection of risk prediction instruments, including the Iowa Scale. Rand Inmate Survey data were used for classification and outcome data were collected from rap sheets provided by the respective states. The sample was divided into three time-at-risk groups for follow-up: 12 months; 24 months; and 36 months.

Of necessity, modifications were necessary for constructing several of the classification items. For example, disposition of conviction offense was not available for computation of the criminal history score, so all disposition multipliers were set to equal 1. Also, months of street time between convictions was set to 0 as this information was not available.

The Iowa scale, thus modified, was then used to classify the sample. The Klein-Caggiano analysis found that none of the scales tested had a high correlation between actual and predicted recidivism, but the Iowa scale performed the worst: the highest correlation (.16) reported for the Iowa scale was in the 24 months-at-risk California sample; the lowest (.07) were for the Michigan and Texas 24 months-at-risk samples.

Validation on a Colorado 1982 Release Cohort

Validation of the Iowa Scale in Colorado is based on a sample of 1982 releases from the Colorado Department of Corrections. Four jurisdictions were selected for inclusion in the sample: Denver; Jefferson; El Paso; and Mesa. These judicial districts were selected for the number of releases,

the quality of criminal justice records, and for accessibility. In 1982, about 700 prisoners were released in these districts. This constitutes 44 percent of prison releases.

The sample year 1982 was selected for two reasons. First, a presumptive sentencing law became effective July 1, 1979. The offense class data needed for sentencing decisions under the presumptive law led to more complete descriptions of the instant offense. Thus, 1982 data would be more reliable than that contained in records prior to 1982. Second, selection of a 1982 cohort provided a uniform time at risk of two years for the entire sample.

Collection of Classification Data

Data were collected on all the variables needed to classify offenders on the Iowa Risk Assessment Scale as well as other items found to be related to recidivism (see Appendix B).

Data were collected from Department of Corrections casefiles. The data collectors were trained and experienced in the collection of data from offender files.

Data collection for the Iowa Scale variables was extremely tedious, with up to an hour and one-half required for each case. For example, to collect data for the prior violence score, it was necessary to study all prior arrests and to sort out the prior violent arrests in order to obtain exact information on each violent arrest (up to eight counts). The information needed to compute the prior violence score includes offense type (to rank for seriousness) and the date of arrest (to weight for age).

To collect data for the criminal history score, in addition to offense type, additional information is required on the disposition of each conviction (incarceration/other) and on the street time between the conviction/incarceration date and the reference date (instant offense incarceration date).

Collection of Outcome Data

Our research design called for collection of three outcome variables. These were seriousness (none, technical, felony non-violent, felony violent); number of recidivism events; and date of first recidivism event. We also coded the outcome variable on type of recidivism offense. Data on return to prison for technical violations were collected from the case files. However, these events were related more to the time available for incarceration than to the nature of the recidivism offense. The presumptive sentencing law under which the majority of the sample was sentenced specified a mandatory one year parole term, and further required that revocation terms be limited to the unserved portion of the parole term with the offender eligible for good time of 50 percent of this remaining amount. Thus, the short time available for revocation led to a decreased number of Complaint and Revocation filings. Our research was already underway when Fischer published his 1985 paper describing the outcome variable weighted by date and seriousness of each event. We recorded the most serious recidivism offense as well as the total number, but did not collect such data for each recidivism offense. Thus, the Violence Risk Scale will be validated on Fischer's Criterion I for violent recidivism.

We also obtained all termination data on each case, including successful completion of the two-year at-risk period, death, and out-of-state move.

For both the recidivism and termination items, available data were collected from the offender casefiles and the Department of Correction's management information system during the classification data collection, but the primary data source for the recidivism data was the automated criminal history file maintained by the Colorado Bureau of Investigation (CBI). We first tried a computer match of our sample with the criminal history files, using names and birthdates, but the matching system used by CBI could not "find" 20 percent of our sample. Therefore, we accessed each case online and extracted the desired outcome information. Using this method, we were able to match all but 18 cases. To further increase the reliability of the outcome data, we reviewed the parole/probation records of all offenders who had no recorded rearrest or technical violation record. This manual review provided recidivism information on four additional cases.

Missing Data Problems

Fischer chose not to deal with missing data problems by excluding from the sample cases with missing data. Since data are generally missing on 15 to 25 percent of the items in a sample, this is not an insignificant problem. Decisions must be made on cases whether or not all the information is available, and scale accuracy can be dramatically affected by method used for scoring when data are missing. If no procedures for

handling such cases have been developed, it becomes an idiosyncratic process: the missing item may be scored high in one case, low in another, or it may be simply ignored. The end result may be a serious loss of scale accuracy.

One of the objectives of the Colorado project is to assess the effects of missing data. The first test will use only cases with complete information. Of the 654 cases in the Colorado sample with outcome data, 242 cases (37 percent) contained data on all items. The second test will be based on missing data weights derived from the data; the third test will assume all missing items have high weights; and the fourth test will assume all missing items have low weights.

Data Analysis

The Statistical Package for the Social Sciences (SPSSX) was used to program and analyze the data. Frequencies for the six major indicators are compared in Table 1 for the Colorado and Iowa samples:

Table 1: Major Iowa Scale Indicators: Iowa and Colorado Sample Frequencies (in Percents)

| | | Iowa | Colorado |
|---|---|---|---|
| Prior Violence | 0 | 68.5 | 57.1 |
| | 3 | 23.9 | 32.1 |
| | 5 | 7.6 | 10.8 |
| | Missing | | (N=40, 6.1% of total) |
| Criminal History | 0 | 50.4 | 84.4 |
| | 1 | 18.0 | 10.9 |
| | 5 | 20.5 | 4.7 |
| | 6 | 11.1 | 0.0 |
| | Missing | | (N=379,57.9% of total) |
| Conv. Off. | 0 | 50.0 | 31.7 |
| | 1 | 50.0 | 68.3 |
| | Missing | | (N=2, <1.0% of total) |
| Substance Abuse | 0 | 26.6 | 32.6 |
| | 1 | 54.0 | 45.0 |
| | 4 | 13.4 | 14.0 |
| | 7 | 6.0 | 8.3 |
| | Missing | | (N=41, 6.2% of total) |
| Current Offense | 0 | 16.0 | 13.8 |
| | 1 | 53.1 | 50.3 |
| | 3 | 30.9 | 35.9 |
| | Missing | | 0 |
| Street Time | 0 | 27.3 | 27.9 |
| | 1 | 11.4 | 16.6 |
| | 2 | 37.7 | 38.6 |
| | 3 | 23.6 | 16.9 |
| | Missing | | (N=99, 15.1% of total) |
| Escape | 0 | 90.6 | 95.4 |
| | 2 | 3.3 | 0 |
| | 4 | 6.1 | 4.6 |
| | Missing | | (N=19, 2.9% of total) |
| Serious Offender | 0 | 50.0 | 31.7 |
| | 1 | 50.0 | 68.3 |
| | Missing | | (N=2, <1.0% of total) |

As the data displayed in Table 1 indicate, data on all the items needed to compute the criminal history score are more likely than not to be missing. Only 42 percent of the cases contained information on all data items. Specific dispositional information on priors is unreliable, and information on dates associated with prior incarcerations is even more spotty. This also affects computation of the street-time score which has 15.1 percent missing data.

Bivariate Analysis

The next step in the analysis was examination of the bivariate relationship between predictors and outcome variables. Tau C correlation coefficients are given in Table 2 for each indicator with four outcome measures. Examination of the coefficients between the Iowa Scale predictors and VIOLENT (the outcome variable most consistent with the Iowa Scale outcome variable), reveals a very weak or no relationship with violent rearrest, and a weak relationship with general recidivism. The data also reveal the overlap among the outcome variables. Except for the "violent rearrest" outcome, there is little variation by type of outcome. This finding is consistent with other prediction research results (Klein & Caggiano, 1986: 17; Baird & Lerner, 1986).

Although it is doubtful that missing data problems would have much effect, given the weak statistical relationship shown in Table 2 between the Iowa Risk Scale predictors and the violence outcome variable, we will complete the analysis as it may have some heuristic value.

Table 2: Risk Predictors and RECID, CRIMINAL, VIOLENT and GENRECID*

| Predictor/Score | Correlation Coefficient | | | |
|---|---|---|---|---|
| | RECID | CRIMINAL | VIOLENT | GENRECID |
| Prior Violent Arrest | .08 | .07 | .09 | .07 |
| Prior Criminal History | .02 | .04 | .01 | .04 |
| Street Time | .10 | .15 | .04 | .15 |
| Current Offense | .02 | .06 | .06 | .06 |
| Current Escape | .03 | .03 | .00 | .04 |
| Substance Abuse | .02 | .04 | .00 | .04 |
| Serious Offender | .18 | .18 | .06 | .18 |
| The X Score | .10 | .11 | .12 | .11 |
| The Y Score | .06 | .07 | .07 | .12 |
| General Risk Scale | .07 | .08 | .09 | .08 |
| Violence Risk Scale | .06 | .06 | .11 | .06 |
| Employed > 50% | .16 | .15 | .11 | .16 |
| Felony Conviction < 5 yr. | .19 | .19 | .08 | .21 |
| Prior felony probation | .08 | .10 | .04 | .11 |
| Prior felony parole | .14 | .13 | .06 | .16 |
| Arrest < 17 yrs. | .16 | .16 | .05 | .19 |
| Prior Burglary Conv. | .17 | .17 | .10 | .18 |

*The outcome variables are defined as follows:

1. RECID is an ordinal level measure (treated as interval for analysis) with four categories, none, technical violation, nonviolent rearrest, violent rearrest.
2. CRIMINAL is a dichotomous variable which collapses none and technical violation into one category and non-violent and violent rearrest into another.
3. VIOLENT is a non-violent/violent dichotomy which separates violent recidivists from all others in the sample.
4. GENRECID is a dichotomy which separates non-recidivists from all the recidivists.

## Iowa Risk Scale Classification Frequencies

A comparison of the Iowa Violent Risk Scale (VRA) frequency distributions on Iowa and Colorado prison releases, reported in Table 3 reflects only one major difference in the distribution of the two samples. Only 2.9 percent of the Colorado releases are classified as "very poor" risk compared with 10.5 percent of the Iowa group.

Table 3: Iowa Risk Scale Frequencies for Iowa and Colorado Prison Releases

| | Iowa | | Colorado | |
|---|---|---|---|---|
| Risk Category | Number | Percent | Number | Percent |
| Very Poor | 105 | 10.5 | 7 | 2.9 |
| Poor | 204 | 20.4 | 55 | 22.7 |
| Fair | 182 | 18.2 | 49 | 20.2 |
| Good | 161 | 16.1 | 47 | 19.4 |
| Excellent | 348 | 34.8 | 84 | 34.7 |
| Total | 1000 | 100.0 | 242 | 100.0 |

To test the scale with all cases with missing data excluded, contingency tables were run on the Violence Risk Scale with the outcome variables, and MCR and RIOC were then computed. With a base rate of 13 percent for violent recidivism, the MCR is .27 including all categories, and .15 if the good and poor categories are collapsed. Given the small number of cases in the "failure" cells, statistics computed on all categories are meaningless. Table 4 displays predicted and observed performance for all categories for cases with no missing data. The base rate in this table is 12 percent because of missing data.

Table 4: Iowa Scale Predictions and Observed Violent Felony Rearrests on a Colorado 1982 Prison Release Cohort, Missing Values Excluded

| | No Violent Rearrest | | Violent Rearrest | | Total Row |
|---|---|---|---|---|---|
| No Violent | Number | Percent | Number | Percent | Percent |
| Very Poor | 7 | 100.0 | 0 | 0 | 2.9 |
| Poor | 42 | 76.4 | 13 | 23.6 | 22.7 |
| Fair | 47 | 95.9 | 2 | 4.1 | 20.2 |
| Good | 36 | 76.6 | 11 | 23.4 | 19.4 |
| Excellent | 81 | 96.4 | 3 | 3.6 | 34.7 |
| TOTAL | 213 | 88.0 | 29 | 12.0 | 100.0 |

Tau C = .11, Significance = .009

As Table 5 shows, while "excellent" predictions are 96.4 percent accurate with only 4 percent rearrested for a violent felony (N=3), the "very poor" category does even a better job of predicting successes (100 percent). The "poor" and "good" categories equally predict failure, and the "fair" category predicts success.

To compute RIOC, the categories were dichotomized in two ways. With the fair risk category collapsed with poor and very poor. RIOC is 10.8 percent. If fair is included in the good and excellent categories, RIOC increases to 25.9 percent. This is not surprising given the observed outcomes in the "fair" category.

Weighted Missing Values

For test one, derivation of empirically based weights, weights for missing values were derived by running contingency tables with the missing values category by the violent rearrest outcome measure. The score of the

category with the distribution most similar to the missing values category on the outcome measure was assigned to the missing value cases.

For test two, assumption of low score missing values, missing values were defined as the lowest risk score on each predictor. For test two, assumption of high score missing values, missing values were defined as the highest risk score on each predictors. Table 5 gives the Tau C correlation coefficient for each of the tests.

Table 5: Tau C Coefficient for Weighted Predictors and Violent Rearrest

| Predictor | No Missing | Weighted Missing | Wgt.Msng. Low | Wgt. Msng. High |
|---|---|---|---|---|
| Prior Violence | .09 | .11 | .10 | .11 |
| Criminal History | .01 | .01 | .00 | .00 |
| Substance Abuse | .00 | .00 | .00 | .01 |
| Current Offense | .06 | .06 | .06 | .06 |
| Serious Offender | .06 | .06 | .05 | .06 |
| Escape | .00 | .00 | .00 | .00 |
| Street Time | .04 | .03 | .06 | .02 |

As expected, given that the predictor variables are only weakly, or not at all, related to rearrest for a violent offense, not much happens to the coefficients on each of the alternate tests. However, a comparison of the crosstabs of each predictor with rearrest for a violent crime shows dramatic changes in the distributions of scores in each version of the predictors. The largest variation between versions is found on the criminal history score: 58.8 percent of the cases could not be scored because of missing values on at least one of the components needed to compute the score. Most frequently absent were "street time since age 14"

and disposition of prior felony convictions. Frequency distributions for each version of the criminal history score are given in Table 6.

Table 6: Frequency Distribution of Iowa Criminal History Score With No Missing Values, Weighted Missing Values, Missing Values Weighted Low, and Missing Values Weighted High

| Criminal History Score | No Missing | Weighted Missing | Wgt. Msng. Low | Wgt. Msng High |
|---|---|---|---|---|
| 0 | 84.4 | 35.5 | 93.4 | 35.5 |
| 1 | 10.9 | 62.5 | 4.6 | 4.6 |
| 5 | 4.7 | 2.0 | 2.0 | 2.0 |
| 6 | 0.0 | 0.0 | 0.0 | 58.0 |

Missing = 379 cases (57.9)

These data demonstrate how predictive errors as a result of missing data can be increased, and biased either toward false positives (assume high) or false negatives (assume low). Because of the low violence base rate, the greatest degree of error results from the assumption of a high score when data are missing. In the Colorado sample, for example, none of the cases are classified in the highest risk category on the criminal history scale (1) if the assumption is that missing values are weighted according to the missing cases' outcome values, or (2) if the values of the missing cases are assumed to be low; however if the assumption is that missing values are weighted high, 58 percent of the cases are classified in the highest risk category on the criminal history scale.

## Weighted Scale Effects

Weighting the missing data improves somewhat the face validity of the relationship between predicted and observed outcomes. For example, if the weights derived from the outcomes of the missing cases are used, we see in the "very poor" category 82 percent with no violent rearrest and 18 percent with a violent arrest. The false negatives in the "excellent" category increase from 4 percent to 7 percent. Regardless of the weighting method employed, however, the pattern of high false negatives (20 percent) in the "good" category and low failure rates in the "fair" category (eight percent) remains. Tables 7, 8, and 9 display these data.

## SUMMARY AND CONCLUSIONS

Validation of the Iowa Risk Assessment Scale was undertaken in Colorado to test the Scale's usefulness as a release decision tool. The scale had been widely publicized as a device that enabled Iowa to increase paroles over 50 percent with an accompanying 35 percent decrease in the rate of new violence among parolees (Iowa SAC, 1983: 5).

A validation on a Colorado inmate cohort (1982 releases in four districts) with a uniform two-year at risk period found that the Iowa Scale was not predictive. Some of the problems we identified were a low base rate outcome measure; missing data problems; and computational complexity. The low base rate problem is endemic to prediction of violence. The Iowa violence base rate was 20 percent. When a new prison

TABLE 7: Iowa Scale Predictions and Observed Violent Felony Rearrests on a Colorado 1982 Prison Release Cohort Empirically Weighted Missing Values

| Risk Level | No Violent Rearrest Number | No Violent Rearrest Percent | Violent Rearrest Number | Violent Rearrest Percent | Total Row Percent |
|---|---|---|---|---|---|
| Excellent | 221 | 93.2 | 16 | 6.8 | 36.3 |
| Good | 118 | 79.7 | 30 | 20.3 | 22.7 |
| Fair | 98 | 91.6 | 9 | 8.4 | 16.4 |
| Poor | 107 | 80.5 | 26 | 19.5 | 20.4 |
| Very Poor | 23 | 82.1 | 5 | 17.9 | 4.3 |
| TOTAL | 567 | 86.8 | 86 | 13.2 | 100.0 |

Tau C = .09 Significance = .001

TABLE 8: Iowa Scale Predictions and Observed Violent Felony Rearrests on a Colorado 1982 Prison Release Cohort Missing Values Weighted Low

| Risk Level | No Violent Rearrest Number | No Violent Rearrest Percent | Violent Rearrest Number | Violent Rearrest Percent | Total Row Percent |
|---|---|---|---|---|---|
| Excellent | 231 | 92.8 | 18 | 7.2 | 41.3 |
| Good | 102 | 81.6 | 23 | 18.4 | 20.7 |
| Fair | 86 | 93.5 | 6 | 6.5 | 15.3 |
| Poor | 92 | 78.0 | 26 | 22.0 | 19.6 |
| Very Poor | 18 | 94.7 | 1 | 5.3 | 3.2 |
| TOTAL | 529 | 87.7 | 74 | 12.3 | 100.0 |

Tau C = .08 Significance = .002

TABLE 9: Iowa Scale Predictions and Observed Violent Felony Rearrests on a Colorado 1982 Prison Release Cohort Missing Values Weighted High

| Risk Level | No Violent Rearrest Number | No Violent Rearrest Percent | Violent Rearrest Number | Violent Rearrest Percent | Total Row Percent |
|---|---|---|---|---|---|
| Excellent | 83 | 96.5 | 3 | 3.5 | 13.2 |
| Good | 50 | 79.4 | 13 | 20.6 | 9.6 |
| Fair | 209 | 90.9 | 21 | 9.1 | 35.2 |
| Poor | 146 | 82.5 | 31 | 17.5 | 27.1 |
| Very Poor | 79 | 81.4 | 18 | 18.6 | 14.9 |
| TOTAL | 567 | 86.8 | 86 | 13.2 | 100.0 |

Tau C = .08 Significance = .002

sentence for a "safety" crime was added, the base rate increased to 35 percent (Iowa SAC, 1985: 28-30). The violence base rate among Colorado releases from prison was 13 percent. Applying the Iowa Scale to the Colorado cohort resulted in a loss of 66 percent of the cases because of missing data. A test of the scale on the cases with complete data (N=242) found an MCR of .15 with 10 percent false positives in the good and excellent combined categories and 79 percent false positives in the poor and very poor combined categories.

The computational complexity issue has several dimensions. One, it increases the number of missing data elements to the point that the scale is virtually meaningless. For example, the criminal history score could not be computed on 58 percent of the Colorado cases without assumptions about missing data items. The items most frequently missing were specific dates of incarceration.

Another related dimension is over-specification. Burgess's work in risk assessment suggests that the most accurate scale may likely be the most simple scale (dichotomies weighted 0,1) because of the degree of measurement error in criminal justice records. The implication is that measurement error increases with complexity of measurement. Paradoxically, once the specific items are entered into the formula, scores are computed for each offense or arrest, and then added to a main score, the categories are collapsed into a few categories for inclusion in the overall risk score.

Even if the scale had been found to have predictive accuracy in

Colorado, a very serious implementation problem remains. The scale is a black box to practitioners. This is an important issue because risk scales, even under the best of circumstances, are viewed as a threat to practitioners accustomed to the subjective decision-making process. They react with "why not just replace us with a computer?" A to-be-expected reaction to a very complicated scale is implementation in theory: that is, the scale is published and perhaps made a part of the decisionmaking policies and procedures, but is generally ignored as a real part of the process. Even if decisionmakers were to accept such a scale, there is a question as to whether good decisions are possible in a system where the decision-maker has no understanding of instrument logic.

In view of these findings, the conclusion to be drawn from the Colorado validation of the Iowa Risk Assessment Scale is that it has no empirical or practical value as a tool for estimating the risk of Colorado prisoners. Further, it adds another case to the growing body of evidence that the Iowa model specifically, and perhaps all region-specific models generally, do not generalize well to other regions or states. Although the core of predictors is the same, predictive utility of the operationalized versions appears to be dependent upon the policies and practices of record keeping specific to each region or state.

# APPENDIX A

# OFFENDER RISK ASSESSMENT: THE IOWA MODEL

## 1984 VERSION

## CODING SPECIFICATIONS

Statistical Analysis Center
Office for Planning and Programming
State of Iowa
523 E. 12th Street
Des Moines, Iowa 50319
(515) 281-8091

April, 1984

# OFFENDER RISK ASSESSMENT
## THE IOWA MODEL

| G | V | CURRENT OFFENSE SCORE (A) |
|---|---|---|
| 2 | 3 | Robbery/Attempted Robbery |
| 2 | 3 | Larceny from a Person |
| 2 | 3 | Aggravated Burglary |
| 2 | 3 | Arson/Attempted Arson |
| 1 | 3 | Murder/Attempted Murder |
| 1 | 3 | Manslaughter |
| 1 | 3 | Kidnapping |
| 1 | 3 | Rape/Attempted Rape |
| 1 | 3 | Sodomy |
| 2 | 1 | Burglary/Attempted Burglary |
| 2 | 1 | Selling Narcotics |
| 2 | 1 | Motor Vehicle Theft |
| 2 | 1 | Forgery/Bad Checks/Fraud |
| 1 | 1 | Aggravated Assault/Terrorism |
| 1 | 1 | Extortion |
| 1 | 1 | Going Armed with Intent |
| 1 | 1 | Conspiracy to Commit a Violent Felony |
| 1 | 1 | Larceny/Stolen Property |
| 1 | 0 | Vandalism |
| 1 | 0 | Weapons Offense |
| 1 | 0 | Conspiracy to Commit a Non-Violent Felony (above) |
| 0 | 0 | None of Above |

| G | V | PRIOR VIOLENCE SCORE (B) |
|---|---|---|
| 4 | 5 | 91+ |
| 2 | 3 | 11-90 |
| 0 | 0 | 0-10 |

| G | V | STREET TIME SCORE (C) |
|---|---|---|
| 3 | 3 | 0-6 Years |
| 2 | 2 | 6-11 Years |
| 1 | 1 | 11-14 Years |
| 0 | 0 | 14+ Years |

| G | V | CRIMINAL HISTORY SCORE (D) |
|---|---|---|
| 6 | 6 | 140+ |
| 3 | 5 | 41-139 |
| 1 | 1 | 16-40 |
| 0 | 0 | 0-15 |

| G | V | CURRENT ESCAPE SCORE (E) |
|---|---|---|
| 3 | 4 | Convicted |
| 1 | 2 | Arrested/Charged Only |
| 0 | 0 | Not as Above |

E = EXCELLENT G = GOOD

| G | V | SUBSTANCE ABUSE SCORE (F) |
|---|---|---|
| 5 | 7 | History of PCP Use |
| 5 | 7 | History of Non-Opiate Injections |
| 5 | 7 | History of Sniffing Volatile Substance |
| 4 | 4 | History of Opiate Addiction |
| 3 | 4 | History of Heavy Hallucinogen Use |
| 2 | 1 | History of Drug Problem |
| 1 | 1 | History of Opiate or Hallucinogen Use |
| 1 | 1 | History of Alcohol Problem |
| 0 | 0 | No History as Above |

SERIOUS OFFENDER CLASSIFICATION

| | |
|---|---|
| Yes | Current Conviction for Violent Felony |
| Yes | Current Conviction for Escape/Jailbreak/Flight |
| Yes | Prior Conviction for Felony Against Persons in Last Five Years Street Time |
| Yes | Prior Violence Score 35+ |
| Yes | Substance Abuse Score 7 |
| No | No Factor as Above |

| G | V | |
|---|---|---|
| ___ | ___ | X-SCORE = A + B + C |
| ___ | ___ | Y-SCORE = D + E + F |

GENERAL RISK ASSESSMENT

| Y-SCORE | X-SCORE 0-1 | 2-3 | 4 | 5 | 6+ |
|---|---|---|---|---|---|
| 0 | E | E | E | E | P |
| 1 | E | E | G | G | P |
| 2 | E | G | G | P | P |
| 3-4 | E | G | P | P | P |
| 5 | E | P | P | P | VP |
| 6 | P | P | P | P | VP |
| 7 | P | P | P | VP | VP |
| 8+ | P | P | VP | VP | VP |

VIOLENCE RISK ASSESSMENT
*(Higher Rating for Serious Offender)*

| Y-SCORE | X-SCORE 0 | 1-2 | 3 | 4-5 | 6-7 | 8 | 9+ |
|---|---|---|---|---|---|---|---|
| 0 | E | E | E | E | G | G | F/P |
| 1 | E | E | E | G | G/F | F/P | F/P |
| 2-3 | E | G | G | G | F/P | F/P | F/P |
| 4-6 | E | G/F | F | F/P | F/P | F/P | F/VP |
| 7-8 | F | F | F/P | F/P | F/P | F/VP | F/VP |
| 9+ | F | F | F/P | F/P | F/VP | F/VP | F/VP |

F = FAIR P= POOR VP = VERY POOR

## DEFINITIONS OF CODING CATEGORIES

The Iowa model of Offender Risk Assessment provides two assessments of risk, one a measure of general risk to society, and the second a measure of the specific risk of new violence. The scoring system uses the same risk factors for assessing the two types of risk, but applies distinct point schedules for these two purposes. On the coding form, the symbol G refers to the General Risk Scoring and the symbol V to the Violence Risk Scoring.

The scoring system is set up to provide two intermediate assessments of risk (both for general and for violence risk), the first referred to as the X-SCORE and the second as the Y-SCORE. The X-SCORE is the sum of the scores from three risk factors: CURRENT OFFENSE, PRIOR VIOLENCE, and STREET TIME, and the Y-SCORE the sum of the scores for three additional factors: CRIMINAL HISTORY, CURRENT ESCAPE, and SUBSTANCE ABUSE. The X-SCORE and Y-SCORE are then matrixed to obtain the final General and Violence Risk Assessments. The final Violence Risk Assessment is based also on what is referred to as the Serious Offender Classification, which identifies offenders who are prone to a higher Violence Risk Assessment.

The following is an item-by-item description of the elements that must be considered to obtain an offender's risk assessment classification.

### Current Offense Score

The Current Offense Score (G/V) is the highest score applicable to current arresting (charged) or convicting offenses. Score an offense even if the charge is dropped, dismissed, reduced, or otherwise modified, e.g., score a robbery charge even if the charge is reduced to larceny.

An offense is counted as current if the offender: 1) is currently awaiting adjudication or sentencing for the charge, 2) is currently serving a sentence (prison, jail, probation, parole, etc.) for conviction of the offense, 3) was charged for the offense on or after the date of arrest for any offense satisfying 1) or 2), or 4) was awaiting adjudication or sentencing for the charge at the time of arrest for any current offense. For example, if John Doe is currently convicted of larceny, and in the meantime has been arrested for robbery, then the robbery charge is scored as a current offense. Also, if Sam Smith was awaiting adjudication of a robbery charge when arrested for a current burglary, then the robbery charge is again scored as current.

### Prior Violence Score

The Prior Violence Score (G/V) attaches a weight to the offender's history of prior arrests for violent felonies (those listed below). An arrest is scored under this item if the date of arrest was prior to the date of the most recent arrest counted as current according to above definitions. Thus, if the offender was originally convicted of robbery, was placed on probation, was subsequently convicted of larceny, and is now serving time for both offenses (probation revoked), then the robbery charge is scored as prior under this item. Also score any arrest for a violent felony which satisfies the definition of current, but which does not constitute the most recent arrest resulting in a conviction for which the offender is currently sentenced. Thus, if John Doe was originally convicted of larceny, and then was arrested for, but not convicted of, robbery, then the robbery arrest is scored as prior under this item.

For each arrest scored under this item, up to eight separate counts of violent felonies may be scored. Each such count is scored according to the following severity of offense scale, and according to the age of the arrest.

| | | | |
|---|---|---|---|
| 80 | Murder | 60 | Larceny from a Person |
| 70 | Attempted Murder | 60 | Felony Assault |
| 70 | Rape | 60 | Terrorism |
| 70 | Kidnapping for Ransom | 60 | Arson |
| 70 | Aggravated Robbery | 50 | Involuntary Manslaughter |
| 70 | Aggravated Burglary | 50 | Attempted Robbery |
| 70 | Arson of a Dwelling | 50 | Extortion |
| 60 | Voluntary Manslaughter | 50 | Going Armed with Intent |
| 60 | Attempted Rape | 40 | Aggravated Assault |
| 60 | Sodomy | 40 | Attempted Arson |
| 60 | Kidnapping | 40 | Conspiracy to Commit a Violent Felony |
| 60 | Robbery | | |

The age of a prior arrest for a violent felony is scored as the number of months from the arrest in question to the current reference date used for scoring this system. The reference date may be the current arrest date, conviction date, or commitment date, depending on just which stage of the justice system the model is applied to.

For each prior violent felony (count), we then have a severity score S and an age score A. These two scores are combined as follows to arrive at a single age-adjusted severity score S':

$$S' = \frac{24 \times S}{12 + A}$$

S' takes on a maximum value of 2S when A = 0, and decreases to 0 as A grows indefinitely. Note also that S' = S when A = 12, i.e., when the arrest is one year old.

When each prior violent felony is scored as above, the resulting values of S' are added to arrive at a single measure P of the seriousness and recency of the offender's history of violence.

$$P = \text{Sum}(S')$$

Prior Violence Score (raw)

The offender's Prior Violence Score P is then collapsed as follows to obtain the risk assessment scoring for this item:

Prior Violence Scoring

| G | V | Range of P |
|---|---|---|
| 4 | 5 | 91+ |
| 2 | 3 | 11-90 |
| 0 | 0 | 0-10 |

Street Time Score

The Street Time Score (G/V) attaches a weight to the amount of street time that the offender has experienced since turning age 14. First the number of years from age 14 to the current reference date is calculated (to one decimal). Then the total number of years that the offender has been incarcerated (prison, jail, or juvenile) on prior felonies (see specifications for prior felony scoring under the next item) is determined. Finally, the latter is subtracted from the former to obtain the raw street time score T.

The offender's Street Time Score T is then collapsed as follows to obtain the risk assessment scoring for this item:

Street Time Scoring

| G | V | Range of T |
|---|---|---|
| 3 | 3 | 0-6 Years |
| 2 | 2 | 6-11 Years |
| 1 | 1 | 11-14 Years |
| 0 | 0 | 14+ Years |

Note In the above scoring, the high end of each range is scored into the subsequent category. Thus 6.0 years of street time is scored as 2/2, while 5.9 is scored as 3/3.

Criminal History Score

In a fashion similar to the Prior Violence Scoring, this item attaches a weight to the offender's history of prior felony convictions and incarcerations. To calculate the raw score for this item, it is necessary to collect information on all prior adult felony convictions, all juvenile felony adjudications, and all returns of release violators (juvenile or adult) upon rearrest for felonies. As indicated, we refer to the target group of such incidents as "prior felony convictions and incarcerations." A felony conviction or incarceration is counted as "prior" for coding under this item if it occurred prior to the most recent felony conviction for which the offender is sentenced. Thus, if the offender is sentenced on two felonies, with convictions occurring on separate dates, then the first of the two is counted as prior for scoring under this item. The one exception to the rule on prior felonies arises in the situation in which the offender receives a new conviction for escape or jailbreak. In this case, the original convicting felony is not counted as prior.

For each felony conviction or incarceration scored under this item, up to eight counts may be scored. Each such count is scored according to the following severity of offense scale, according to the sentence imposed (committed or not), and according to the amount of street time following conviction or incarceration (to the current reference date).

80 Murder
70 Attempted Murder
70 Rape
70 Kidnapping for Ransom
70 Aggravated Robbery
70 Aggravated Burglary
70 Arson of a Dwelling
70 Selling Narcotics to Minors
60 Voluntary Manslaughter
60 Attempted Rape
60 Sodomy
60 Kidnapping
60 Robbery
60 Larceny from a Person
60 Felony Assault
60 Terrorism
60 Arson
50 Involuntary Manslaughter
50 Attempted Robbery
50 Extortion
50 Going Armed with Intent
50 Escape
50 Jailbreak
40 Aggravated Assault
40 Attempted Arson
40 Conspiracy to Commit a Violent Felony
30 Burglary
30 Motor Vehicle Theft
30 Forgery
30 Selling Narcotics (opiates or cocaine)
20 Larceny
20 Stolen Property
20 Vandalism
20 Bad Checks/Fraud
20 Weapons Offense
20 Conspiracy to Commit a Non-Violent Felony (above)
10 All Other Offenses, e.g., lascivious acts, selling drugs, drunken driving

For each individual count, in addition to the severity of offense score S, a disposition multiplier D is assigned, as well as a street time score M. The disposition multiplier takes on the value 1.25 if the disposition of the offense involved commitment to a juvenile or adult institution, and 0.75 otherwise. The street time score M for the count is determined as the number of months of street time from the conviction or incarceration (the latter takes precedence) to the current reference date, where street time is calculated as time not incarcerated as the result of a felony conviction or incarceration. Alternately, this quantity may be calculated as the age of the conviction or incarceration in months, minus the total number of months incarcerated for the indicated offense and all subsequent prior felony convictions and incarcerations (no current incarceration time included). Note that the calculations here overlap those for the previous item (Street Time Score).

If S is the severity of offense score, D the disposition multiplier, and M the number of months of street time following conviction or incarceration, then the adjusted severity score S' for an individual count is calculated as follows:

$$S' = \frac{24 \times S \times D}{12 + M}$$

As with the adjusted severity score for prior violent felonies, S' takes on a maximum value of 2SD when M = 0, and decreases to 0 as M grows indefinitely. Note again that S' = SD when M = 12.

When up to eight counts each for all prior felony convictions and incarcerations are scored as above, the resulting values of S' are added to obtain a single measure C of the volume, seriousness, and recency of the offender's prior felony record.

$$C = \text{Sum}(S')$$

Since this measure of the offender's prior record is associated with the amount of street time available for acquiring such a record, a final adjustment is made to the value C to obtain a measure C' which is independent of street time. To this effect, C is divided by <u>one-tenth</u> the raw Street Time Score T calculated under the previous item.

$$C' = \frac{C}{T/10}$$

The offender's Criminal History Score C' is then collapsed as follows to obtain the risk assessment scoring for this item:

Criminal History Scoring

| G | V | Range of C' |
|---|---|---|
| 6 | 6 | 140+ |
| 3 | 5 | 41-139 |
| 1 | 1 | 16-40 |
| 0 | 0 | 0-15 |

The above scores are assigned according to the rounded value of C'. Thus, 14.6 is rounded to 15 and the values 1/1 assigned for risk assessment scoring. <u>Note</u> The same rounding convention applies to Prior Violence Scoring.

Current Escape Score

The Current Escape Score (G/V) assigns a score to the fact of the presence of a current arrest or conviction for escape (from prison), jailbreak, or flight (absconding prior to or following conviction or sentencing). A higher score is assigned if the offender was convicted as the result of the escape, etc, while a lower score is assigned if the offender was arrested or charged with escape, etc., but was not convicted of same. An escape should not be counted under this item if the incident was handled administratively without the recording of an arrest on the offender's record.

Substance Abuse Score

The Substance Abuse Score (G/V) is based on information concerning the offender's history of use (abuse) of drugs and alcohol. All types of drugs are considered in the scoring with the exception of cocaine and marijuana (not found to be predictive). All possible sources of information on substance abuse should be consulted in scoring this item, including historical records of treatment, known abuse, etc., self-reporting by the offender, and other documented indications of abuse.

The scoring for this item considers several types of substance abuse, including a history of opiate addiction, a history of problem use of drugs (amphetamines, barbiturates, tranquilizers, etc.), a history of an alcohol problem, a history of heavy use of hallucinogenic drugs (LSD, mescaline, etc.), any history of PCP use, a history of sniffing of glue or any other volatile substance (e.g., lighter fluid, gasoline, etc.), and a history of injecting non-opiate substances (e.g., cocaine, amphetamines, barbiturates, quinine, water, aftershave, etc.). In addition, a simple history of use or experimentation with opiates or hallucinogens is considered (although such receives less weight than other coded drug use). Opiates include heroin, morphine, opium, and other opium derivatives.

Use or abuse need not be current to score under this item. Likewise statements to the effect that the offender has "kicked the habit" with regard to a specific type of abuse should not be considered in scoring this item. The emphasis is again on any history of specific types of substance abuse.

Following the collection of information as described above on the offender's history of substance abuse, the offender's Substance Abuse Score (G/V) is assigned based on the highest applicable category of abuse (highest in order listed on form).

Serious Offender Classification

The Serious Offender Classification is a Yes/No indicator based on the presence or combined absence of any one of five easily identifiable factors of the types previously collected. If any such factor is present, then the offender is classified as a Serious Offender, which makes the assignment of a Poor or Very Poor Violence Risk Rating more likely. Offenders falling in the non-serious category show low rates of violence without regard to appearance of other high risk factors in the record.

The first "special" factor considered under the Serious Offender Classification is "Current Conviction for Violent Felony." This factor refers to the fact that the offender is currently convicted of a crime which is classified as a violent felony in the Prior Violence section of this document. If this instrument is being applied prior to the final adjudication of current charges, then this item is scored according to the nature of the charges still effective as of the date of coding.

The second special factor "Current Conviction for Escape/Jailbreak/Flight" is scored in an identical fashion to the Current Escape Score.

The third special factor "Prior Conviction for Felony Against Persons in Last Five Years of Street Time" is based on the type of information on prior felonies considered in the section on the Criminal History Score. If the offender has a prior conviction for a felony against persons, where the total amount of street time following conviction and up to the current reference date is less than or equal to five years, then this item is scored as yes. Felonies against persons include violent felonies, sex offenses such as lascivious acts and incest, and other crimes in which a person was either threatened or harmed in some way.

The fourth special factor "Prior Violence Score 35+" is based strictly on the size of the raw Prior Violence Score P. If the rounded value of that score is at least 35, then this item is scored as yes.

The fifth and last special factor "Substance Abuse Score 7" is based on the Substance Abuse Scoring section of the risk assessment. If the offender scores 7 under the violence column of the scoring form under the Substance Abuse section, the this item is scored as yes. This occurs if the offender has a history of PCP use, a history of sniffing of a volatile substance, or a history of injecting a non-opiate substance.

The X-Score

The X-Score is an intermediate assessment of risk based on the combination of the first three risk scores, the Current Offense Score (A), the Prior Violence Score (B), and the Street Time Score (C). The X-Score (G/V) is simply the sum A + B + C of these three component scores.

The Y-Score

In a similar fashion to the X-Score, the Y-Score is an intermediate assessment of risk based on the combination of the last three risk scores, the Criminal History Score (D), the Current Escape Score (E), and the Substance Abuse Score (F). The Y-Score (G/V) is, again, simply the sum D + E + F of these three component scores.

General Risk Assessment

The General Risk Assessment is the next to the last step in the risk assessment process, and entails the combination or matrixing of the X and Y-Scores to obtain a single measure of the overall threat to society posed by release of the offender in question. It is obtain by simply consulting the matrix indicated on the form to determine the General Risk Rating (E, G, P, or VP) corresponding to the calculated X and Y-Scores.

Violence Risk Assessment

The Violence Risk Assessment is the final step in the overall procedure, and entails the same process as the General Risk Assessment, only with a separate matrix of X and Y-Scores, and with the additional convention that if the offender is classified as a Serious Offender, then the Risk Rating to the right of the slash (where applicable) is coded. Risk Ratings to the left of the indicated slashes apply to Non-Serious Offenders.

# APPENDIX B

## NIJ Data Collection

1. CARD NO. 1

2. SUBJECT NO. __ __ __ __

3. NAME _____
*Last* *First* *Middle*

4. NUMBER OF ALIASES __ __

5. FIRST ALIAS _____
*Last* *First* *Middle*

6. COURT CASE NO. __ __ __ __ __ __

7. DOC NO. __ __ __ __ __ (Prison only)

8. DATE OF RELEASE __ __/__ __/8 2

*PRESENT OFFENSE INFORMATION*

9. DATE OF ARREST __ __/__ __/__ __

10. OFFENSE DATE __ __/__ __/__ __

11. MOST SERIOUS OFFENSE CHARGED: _____
*(Write in)*

12. STATUTE CODE __ __ __ __ __

13. FELONY CLASS (F) __

CURRENT OFFENSE SCORE: (TABLE B )

G V

14. ___ ___

15. PRESENT OFFENSE IS ESCAPE ___

1. No
2. Prison
3. Jail
4. Absconded prior to or following conviction/disposition

MOST SERIOUS OFFENSE AT CONVICTION: _____
*(Write in)*

16. STATUTE CODE __ __ __ __ __

17. FELONY CLASS (F) __

18. OFFENSE SEVERITY (TABLE C) __ __

(Score for Actual Offense)

19. BEHAVIOR SEVERITY (TABLE A) __ __

20. DATE OF CURRENT CONVICTION __ __ / __ __ / __ __
(Date plea or finding was accepted by court)

*PERSONAL INFORMATION*

21. DATE OF BIRTH __ __ / __ __ / __ __

22. ETHNICITY __

1. Anglo
2. Black
3. Hispanic
4. Other

23. MARITAL STATUS

1. Never Married
2. Married
3. Divorced/Separated
4. Common Law
5. Other

24. EDUCATIONAL LEVEL REPORTED IN PSI __ __ (Grade Completed)

25. TESTED EDUCATIONAL LEVEL REPORTED BY DOC __ __ (Grade Completed)

26. EMPLOYED MORE THAN 50% OF PAST TWO YEARS?

1. Yes
2. No

27. CARD NO. 2

28. SUBJECT NO. __ __ __ __

*CRIMINAL HISTORY*

29. FIRST RECORDED FELONY* ARREST DATE __ __ / __ __ / __ __

a. Is there evidence of an earlier felony arrest, but no date? __

1. Yes
2. No

30. DATE OF FIRST FELONY CONVICTION __ __ / __ __ / __ __

31. AMOUNT OF TIME INCARCERATED FOR PRIOR SENTENCED FELONIES SINCE AGE 14
(in months) __ __ __

*"Felony" includes juvenile offenses which would be a felony if the juvenile was an adult.

32. TOTAL NUMBER OF FELONY CONVICTIONS IN LAST 5 YEARS __
(Not counting current conviction)

0. None
1. One
2. Two or More

FISCHER'S CRIMINAL HISTORY SCORE - PRIOR FELONIES ONLY

| | Severity Score (Table C) | Disposition 1. Conviction 2. Incarceration | Date of Conviction (If the only date available is for arrest or sentencing, note it.) |
|---|---|---|---|
| 33. | 1. __ __ | __ | __ __ / __ __ / __ __ |
| 34. | 2. __ __ | __ | __ __ / __ __ / __ __ |
| 35. | 3. __ __ | __ | __ __ / __ __ / __ __ |
| 36. | 4. __ __ | __ | __ __ / __ __ / __ __ |
| 37. | 5. __ __ | __ | __ __ / __ __ / __ __ |

38. CARD NO. 3

39. SUBJECT NO. __ __ __ __

| | Severity Score (Table C) | Disposition 1. Conviction 2. Incarceration | Date of Conviction |
|---|---|---|---|
| 40. | 6. __ __ | __ | __ __ / __ __ / __ __ |
| 41. | 7. __ __ | __ | __ __ / __ __ / __ __ |
| 42. | 8. __ __ | __ | __ __ / __ __ / __ __ |

43. CRIMINAL HISTORY SCORE INFORMATION APPEARS COMPLETE __

1. Yes
2. No

44. DATE OF MOST RECENT PRIOR FELONY ARREST __ __ / __ __ / __ __

45. NUMBER OF FELONY PROBATIONS: ___ PAROLES: __ REVOCATIONS FOR NEW VIOLENT FELONY: __

0. None
1. One
2. Two or More

46. INFORMATION FOR ABOVE ITEMS APPEARS COMPLETE ___

1. Yes
2. No

FISCHER'S PRIOR VIOLENCE SCORE (All severity scores must be 40 and above)

| | Severity Score (Table C) | Date of Violent Felony Arrest |
|---|---|---|
| 47. | 1. __ __ | __ __ / __ __ / __ __ |
| 48. | 2. __ __ | __ __ / __ __ / __ __ |
| 49. | 3. __ __ | __ __ / __ __ / __ __ |

50. CARD NO. 4

51. SUBJECT NO. __ __ __ __

| | Severity Score (Table C) | Date of Violent Felony Arrest |
|---|---|---|
| 52. | 4. __ __ | __ __ / __ __ / __ __ |
| 53. | 5. __ __ | __ __ / __ __ / __ __ |
| 54. | 6. __ __ | __ __ / __ __ / __ __ |
| 55. | 7. __ __ | __ __ / __ __ / __ __ |
| 56. | 8. __ __ | __ __ / __ __ / __ __ |

57. PRIOR VIOLENCE SCORE INFORMATION APPEARS COMPLETE __

1. Yes
2. No

58. ANY PREVIOUS ARREST FOR OFFENSE SIMILAR TO PRESENT OFFENSE __

1. Yes
2. No

59. ANY PREVIOUS CONVICTION FOR OFFENSE SIMILAR TO PRESENT OFFENSE __

1. Yes
2. No

60. ANY PREVIOUS CONVICTION FOR: __

1. Burglary, theft, auto theft, robbery
2. Worthless checks or forgery
3. Both categories above

61. PRIOR CONVICTION FOR FELONY AGAINST PERSON IN LAST 5 YEARS __

1. Yes
2. No

62. ANY PRIOR CONVICTION FOR SEX OFFENSE, ASSAULT WITH WEAPON, FORCE, THREAT OF FORCE: __

1. Yes
2. No

*SUBSTANCE ABUSE*

SUBSTANCE ABUSE SCORE: IF YES

| | |
|---|---|
| 5/7 | History of PCP Use |
| 5/7 | History of Non-Opiate Injections |
| 5/7 | History of Sniffing Volatile Substances |
| 4/4 | History of Opiate Addiction |
| 3/4 | History of Heavy Hallucinogen Use |
| 2/1 | History of Drug Problem |
| 1/1 | History of Opiate or Hallucinogen Use |
| 1/1 | History of Alcohol Problem |
| 0/0 | No History as Above |

63. SUBSTANCE ABUSE SCORE: __/__

64. HEROIN USE WITHIN THE LAST TWO YEARS ___

1. Yes
2. No

65. BARBITUATE USE WITHIN THE LAST TWO YEARS ___

1. Yes
2. No

66. ALCOHOL USAGE PROBLEMS ___

0. No interference with functioning
1. Some disruption of functioning
2. Serious disruption; needs treatment

67. OTHER DRUG USAGE PROBLEMS ___

1. No use of illegal drugs
2. Occasional use
3. Frequent use

68. SUBSTANCE ABUSE INFORMATION APPEARS COMPLETE ___

1. Yes
2. No

*RECIDIVATING EVENT* ___

69. 0. None known / Misdemeanor, petty, traffic
    1. Technical violation only
    2. Nonviolent felony arrest
    3. Violent arrest

70. DATE OF RECIDIVATING EVENT __ __ / __ __ / __ __

71. OFFENSE SEVERITY (TABLE C) FOR RECIDIVATING EVENT __ __

*TERMINATING EVENT* ___

72. 0. None known
    1. Death
    2. Hospitalization
    3. Moved
    4. Absconded; warrant issued
    5. Completed time-at-risk period

73. DATE OF TERMINATING EVENT (if other than 5) __ __ / __ __ / __ __

# BIBLIOGRAPHY

BIBLIOGRAPHY


Baird, S.C., and Lerner D.
1986 A survey of the use of guidelines and risk assessments by state parole boards. San Francisco, CA: National Council on Crime and Delinquency. (November).

Berkson, J.
1947 Cost utility as a measure of efficiency of a test. Journal of the American Statistical Assocation. 42:246-255.

Clear, T.R., and O'Leary, V.
1984 Direction for Community Corrections in the 1990s. Washington, D.C.: National Institute of Corrections.

Fischer, D.R.
1983 The Impact of Objective Parole Criteria on Parole Release Rates and Public Protection. Des Moines, IA: The Iowa Statistical Analysis Center.

1984 The Prediction of Recidivism and Post-Release Violence: A Statistical Analysis. Des Moines, IA: The Iowa Statistical Analysis Center.

1985 Prediction and Incapacitation: Issues and Answers. Des Moines, IA: Iowa Statistical Analysis Center.

Gottfredson, M.R., and Gottfredson, D.M.
1984 Guidelines for incarceration decisions: a partisan review. University of Illinois Law Review.

Greenwood, P.W., with Abrahamse, A.
1982 Selective Incapacitation. Report to the National Institute of Justice. Santa Monica, CA: RAND Corp. (August).

Klein, S.P., and Caggiano, M.N.
1986 The Prevalence, Predictability, and Policy Implications of Recidivism. Santa Monica, CA: The RAND Corp.

Loeber, R., and Dishon, T.
1983 Early predictors of male delinquency: a review. Psychological Bulletin. 94(1):68-99.

Maltz, M.D.
1984 Recidivism. Orlando, FL: Academic Press.

BIBLIOGRAPHY

Monahan, J.
1981 Predicting Violent Behavior: An Assessment of Clinical Techniques. Beverly Hills, CA: Sage.

Morris, N., and Miller, M.
1986 Predictions of dangerousness: ethical concerns and proposed limits. Journal of Law, Ethics and Public Policy. 2(2):393-442.

Petersilia, J., and Turner, S.
1985 Guideline-Based Justice: The Implications for Racial Minorities. Santa Monica, CA: The RAND Corp.