RESEARCH BRIEF

THE STATISTICAL INFORMATION
ON RECIDIVISM SCALE

February 1989

no. B-01

=== RESEARCH BRIEF ===

THE STATISTICAL INFORMATION
ON RECIDIVISM SCALE

February 1989

no. B-01

THE STATISTICAL INFORMATION
ON RECIDIVISM SCALE:
A RESEARCH OVERVIEW

Prepared by:
Research Branch
Communications and Corporate
Development

FEBRUARY 1989

THE STATISTICAL INFORMATION ON RECIDIVISM SCALE

The Statistical Information for Recidivism Scale (SIR), also known as the Nuffield Scale and the Recidivism Prediction Scale, is a statistically-derived tool for predicting the recidivism of offenders released from Canadian institutions. The SIR was a product of research initiated by the National Parole Board in 1975, and conducted by the Research Division of the Ministry Secretariat of the Solicitor General of Canada. The scale combines measures of demographic characteristics and criminal history in a scoring system that yields estimates of the chances of recidivism for different groups of inmates.

The **SIR** has been endorsed by the National Parole Board of Canada as a component of the Pre-Release Decision Policies (National Parole Board, 1988). The SIR will become a part of the normal case management documentation prepared for individuals being considered for release. The information furnished by the **SIR** is intended to assist the National Parole Board in pre-release decision-making.

This brief report reviews the early research on which the design of the SIR was based, and provides an update on findings of more recent studies of the usefulness of this recidivism prediction device.

BACKGROUND

In Canada, interest in risk prediction instruments followed earlier developments in other countries. During the 1960's and 70's in the United States and Britain, experimentation with risk prediction emerged in response to challenges that there were no clear criteria established to guide parole decision-making, and that the resulting decisions lacked consistency and equity.

Similar concerns faced by the National Parole Board of Canada prompted a decision to undertake research aimed at identifying the major factors that determined release decisions. The findings of this study were used to construct a standardized instrument that could be used to inform National Parole Board decisions.

Nuffield (1982) has outlined the potential advantages associated with risk prediction devices. First of all, a number of experimental findings suggest that statistical devices more accurately forecast recidivism than professional judgment. Therefore, with risk prediction devices, there is potential for more effective decision-making regarding the release of inmates on parole. Secondly, decisions based on prediction tools ensure that all decisions are based on the same criteria. Hence, there is a promise of more consistent decisions. Finally, with such decision tools in place, parole policy becomes more visible to the public and offenders.

DEVELOPMENT OF THE STATISTICAL INFORMATION ON RECIDIVISM SCALE

Nuffield (1982) examined the post-release recidivism of 2475 male offenders released from

Canadian penitentiaries between the years of 1970 and 1972. The sample was drawn randomly and constituted approximately one-quarter of the population of male inmates released during that period. Recidivism was defined as re-arrest for an indictable offence during a post-release follow-up period of 3 years.

Extensive information on the criminal histories and demographic characteristics of the offenders was obtained and examined in relation to recidivism. Nuffield found fifteen offender variables that, when combined, predicted post-release recidivism. These included a set of criminal history factors as follows: offence type; aggregate sentence length; security classification and escape history; age at first adult conviction; record of previous incarceration and breaches of supervision; previous convictions for assault, violent sex offenses, break and enter; and time at risk since last offence. In addition, a number of social background factors contributed to prediction. These were age, marital status, number of dependents, and employment status at the time of the last offence.

It should be noted that similar criminal history and social background factors had been included in other risk prediction devices developed earlier in the United States (Barid, Heinz and Bemus, 1979; Hoffman and Beck, 1974).

A scoring system for quantifying the relevant offender characteristics was devised in such a fashion that an individual score on any one of the fifteen variables was associated with a particular probability of recidivism. For example, a score of + 1 assigned to "3 or 4 previous imprisonments" corresponded to an increase of 5% above the average recidivism rate. On the other hand, a score of -4 indicating "no previous imprisonments", represented a 20% decrease in the chances of recidivism for offenders with no records of earlier incarcerations. In turn, gradations of + 1 or -1 on each of the fifteen measures signalled increases or decreases of 5% in the chances of recidivism.

Total scores on the SIR were calculated by adding the scores for the 15 individual items. Five risk groupings, each containing from 16 to 25% of the sample, were defined. Figure 1 on the following page shows the total SIR scores used to arrive at the groupings and the approximate number of successes associated with each group. The figures show that 4 out of 5 (or 80%) of the offenders classified as "Very Good" risks were successful. In comparison, the success rate for "Poor" risk offenders is 1 out of 3 (or 33%). Although ideal prediction would involve 0% recidivism for the lowest risk group and 100% recidivism for the highest risk group, such predictive accuracy is rarely attained. However, the SIR scale did demonstrate an ability to differentiate between low risk and high risk inmates.

Nuffield also showed that decisions to grant parole were generally in agreement with SIR scores. In other words, cases identified as low risk by the SIR were more often paroled than cases identified as high risk. The correspondence between release decisions and risk of recidivism suggested that risk factors were being taken into account in National Parole Board decisions.

Although the overall agreement between parole decisions and SIR risk scores was favorable, there was an exception to this trend. Inmates from the lowest SIR risk group were being paroled at lower rates than offenders scoring at slightly higher risk levels. This finding implied that decisions favouring release for a larger proportion of the lowest risk group could have been made without the threat of an increase in unsuccessful outcomes.

VALIDATION STUDIES

Researchers acknowledge that in most instances, a tool works best with the group of cases on which its construction was based (Farrington and Tarling, 1985). We might expect, therefore, that the ability to break the population down according to risk would decline when the SIR was employed to predict recidivism in a different group of offenders. A number of studies have attempted to address this question.

A very recent study (Hann and Harman, 1988a) examined SIR scores and post-release recidivism in a sample of 534 inmates released from federal institutions in 1983 and 1984. In this study the follow-up period was six months shorter (2 1/2 years) than the

follow-up conducted by Nuffield. However, a very similar pattern of results was observed.

Figure 2 compares rates of successful outcomes by SIR risk level for the new sample of cases and the original Nuffield sample. Reflecting the shorter follow-up, recidivism was lower for all groups of offenders in the more recent sample. However, Figure 2 illustrates that relative success rates across the five SIR risk groups were remarkably similar in the two samples. The stability of the SIR is impressive when it is recalled that the new sample was selected eleven years after the original Nuffield study. Moreover, the new sample was considerably smaller.

Once again, decisions to grant parole closely corresponded to SIR risk level. The more recent data also indicated that inmates from the lowest risk group were less frequently granted parole than cases with slightly higher SIR scores, a discrepancy previously isolated in the Nuffield sample. Hann and Harman, the authors of the report, also bring attention to the fact that parole was granted to a significant number of offenders who belonged to the group classified as "poor" risks.

An interesting finding reported by Hann and Harman was that regardless of risk level, offenders released on parole had higher success rates than offenders who were denied parole. Two possible explanations for this finding were advanced. The first involves the notion of selection, whereby National Parole Board members' may have developed an ability to accurately identify those inmates who will be most successful. An alternative explanation is that something inherent in the granting of parole or release experience promotes more positive outcomes.

A third test of the SIR involved a national sample of 221 offenders who successfully completed community supervision or were revoked during 1985 (Motiuk and Porporino, 1988). In these analyses the researchers combined the two lowest and the two highest SIR risk groups to form three groups labeled low, medium, and high risk. As expected, a larger proportion of mandatory supervision cases received high SIR scores than parole cases. The SIR also predicted recidivism, with 38.5%, 44.2%, and 50% of the cases failing upon release in the low, medium, and high risk levels respectively.

The researchers also examined SIR scores and recidivism within the separate groups of offenders released on parole and mandatory supervision. They discovered that the SIR did not differentiate between

FIGURE 1

Approximate Recidivism Rates by SIR Risk Groups

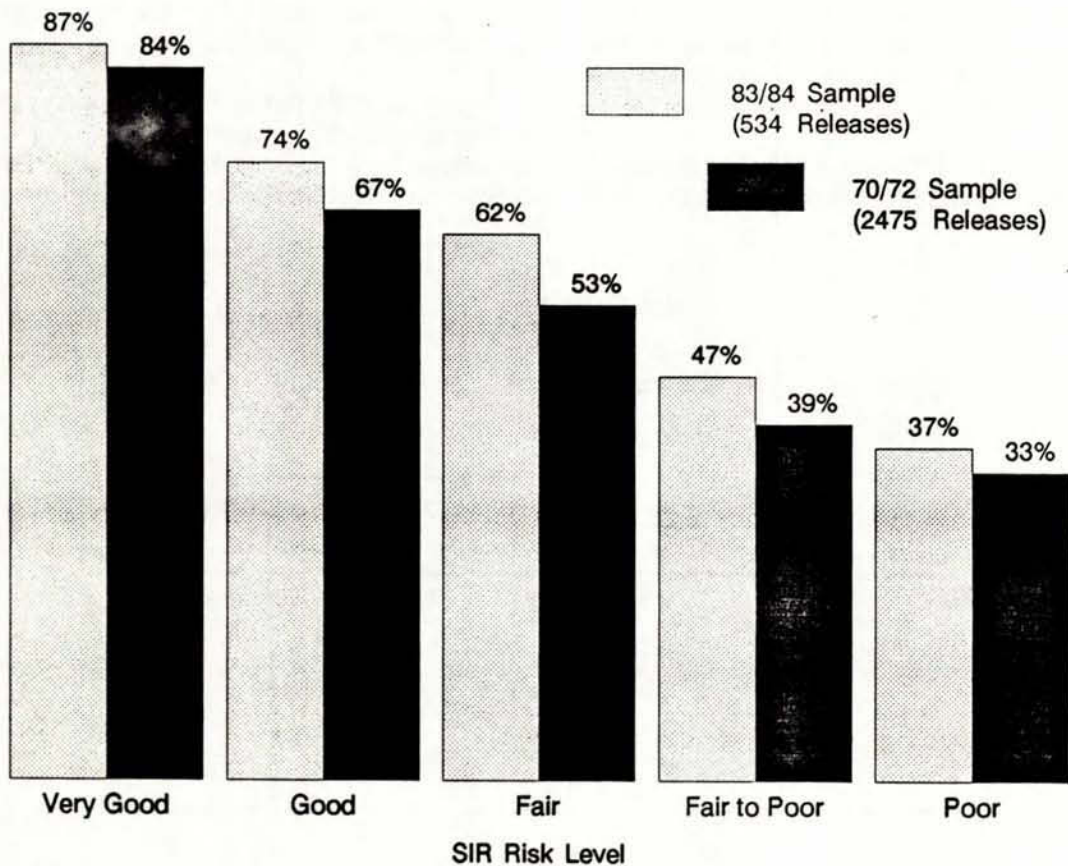| Risk Group	Scores	Approximate Number of Successes
Very Good	- 6 - - 27	4 out of 5 offenders
Good	- 1 - - 5	2 out of 3
Fair	0 - +4	1 out of 2
Fair to Poor	+5 - +8	2 out of 5
Poor	+9 - +30	1 out of 3

recidivists and non-recidivists in the mandatory supervision group. While the paroled offenders with low **SIR** scores were more successful than the medium and high risk parole cases, the mandatory supervision cases defined as "good risks" by the **SIR** actually had slightly higher recidivism than their medium and high risk counterparts. Although the sample that was studied was relatively small, the evidence was not convincing regarding the ability of the **SIR** to differentiate high and low risk cases released on mandatory supervision.

The **SIR** was also scored for a random sample of 203 male offenders released from federal institutions in the Prairie region (Wormith and Goldstone, 1984). The scores of paroled offenders were substantially higher than inmates who were either denied parole or given a deferral. In this study, National Parole Board members had access to the **SIR** scores of inmates. The authors replicated their findings using a second random sample of 172 male offenders released in the Prairie region. Parole Board members did not have access to **SIR** scores in the second sample.

FIGURE 2

Post-Release Success Rates by SIR Risk Level

One year follow-up data for this second sample revealed that unsuccessful offenders who were reimprisoned exhibited higher SIR scores than offenders successfully completing their community supervision. Recidivism rates across the five SIR risk groups resembled the figures observed in the larger national samples. The SIR appeared to be somewhat more discriminating for "very good" risk cases in the Prairie region, with only 9% recidivating.

The researchers also examined release decisions in relation to community supervision outcomes and reported that the National Parole Board made correct decisions for 59% of the sample. The authors noted that it may have been possible to increase correct decisions to 65% if parole had been granted only to inmates in the SIR categories of "very good", "good" and "fair" risk.

The performance of the SIR was also tested in a sample of 77 male offenders released after incarceration in the Ontario region between 1980 and 1982 (Porporino, Zamble, and Higgonbottom, 1989). The average follow-up period for offenders who remained offence free was 28 months after release. Four other risk prediction devices developed in the United States were employed and compared with the SIR. To make the comparisons fair, cut-off scores were adjusted so that each instrument would assign the same number of cases to the low and high risk categories. When actual recidivism was examined it was discovered that the accuracy of predictions of the Canadian-designed SIR was at least marginally superior to the alternative predictive devices. The accuracy of predictions for the five instruments ranged from a low of 68.8% to a high of 74.1% for the SIR.

National Parole Board decisions were also compared with SIR predictions. For the sake of comparison it was assumed that a decision to deny parole represented a prediction that an inmate would be unsuccessful upon release to community supervision. Since only 21% of the offenders in this small sample were denied parole, the SIR categories were adjusted so that 21% of the cases were placed in the high risk category. The results of the comparative analyses revealed a 68.8% accuracy of prediction rate for the SIR and 63.6% when parole board decisions were employed as predictions.

A frequent objection to the use of tools for classifying offenders is that different scorers will arrive at different classifications for the same offender. The reliability of the SIR in this respect was investigated in the first sample of 202 Prairie inmates reported by Wormith and Goldstone (1984). The researchers compared their SIR scoring with scores completed by office staff that were already on file. There was an agreement rate of 85% between the SIR classifications reached by the researchers and parole office staff. This rate of agreement is judged to be very good considering that many instances of disagreement did not involve classifications at the extremes of the risk scale.

STUDIES OF NATIVE AND FEMALE OFFENDERS

An important question is whether or not statistically-based devices provide accurate predictions of the recidivism of special groups of offenders. In Canada, females and Natives represent small sub-samples of the offender population. Therefore, it was important to examine the performance of the SIR in predicting the recidivism of these special groups.

In a second study using data from the 1983-84 national sample (Hann and Harman, 1988b), the SIR scores of Non-native (485) and Native (49) male inmates were compared. While higher SIR scores were recorded for the Native group, in both samples higher scores were associated with higher chances of recidivism during follow-up. However, the correspondence between National Parole Board decisions and SIR risk level observed for Non-native offenders was not apparent in the Native sample. The authors described the pattern of relationship between SIR scores and parole board decisions for Native offenders as "random". Natives were also less likely to be granted full parole (12%) than Non-natives (47%). Further analyses suggested that if the SIR was used in parole board decisions, more Native offenders might be released on parole without an increase in recidivism.

The SIR scores for Non-native males (485) and a sub-sample of Non-native females (65) were also examined by Hann and Harman (1988b). The

relationship between **SIR** scores and post-release recidivism that was evident for male offenders was considerably weaker and less uniform in the female sub-sample. Furthermore, less correspondence between National Parole Board decisions and **SIR** scores for female inmates was reported. There was a propensity for females at the highest risk levels to receive parole less often than females at the lowest risk level. However, at the middle risk levels there was no pattern of association between parole board decisions and **SIR** Risk scores.

SUMMARY

The studies reviewed in this research brief provide generally favorable evidence regarding the potential utility of the **SIR**. The device has demonstrated an ability to forecast the post-release recidivism of federal inmates, the primary task for which it was designed. The stability of the **SIR** over time and with different samples of offenders also appears to be established.

Research aimed at improving on the methods of predicting recidivism is currently being conducted by the Secretariat of the Ministry of the Solicitor General of Canada in cooperation with the National Parole Board and by the Research Branch of the Correctional Service of Canada. One focus is on the improvement of predictions for Natives and females. A second promising avenue of research involves an attempt to broaden the range of factors used in forecasting recidivism. Criminal history and demographic variables are the principle factors involved in predicting recidivism with the **SIR**. However, other more dynamic factors relating to the social functioning of inmates also contribute to release outcomes. This class of dynamic risk factors, often referred to as offender "needs", is the focus of current studies aimed at increasing the precision of our predictions of the future behaviour of inmates.

REFERENCES

Baird, S. C., Heinz, R. C., & Bemus, B. J. (1979). The Wisconsin Case classification and Staff Development Project: A Two Year Follow-up Report. Wisconsin: Division of Corrections.

Farrington, D. & Tarling, R. (Eds.) (1985). Prediction in Criminology. New York: SUNY Press.

Hann, R. G. & Harman, W. G. (1988a). Release Risk Prediction: A Test of the Nuffield Scoring System. A Report of the Parole Decision-Making and Release Risk Assessment Project. Ottawa: Ministry of the Solicitor General of Canada.

Hann, R. G. & Harman, W. G. (1988b). Release Risk Prediction: Testing the Nuffield Scoring System for Native and Female Inmates. Ottawa: Ministry of the Solicitor General of Canada.

Hoffman, R. B. & Beck, J. L. (1974). Parole decision-making: A salient factor score. Journal of Criminal Justice, 2, 195-206.

Motiuk, L. L., & Porporino, F. J. (1988). Offender Risk/Needs Assessment: A Study of Conditional Releases Ottawa: Correctional Service of Canada.

National Parole Board of Canada (1988). National Parole Board Pre-Release Decision Policies Ottawa: National Parole Board of Canada.

Nuffield, J. (1982). Parole decision-Making in Canada: Research Towards Decision Guidelines Ottawa: Solicitor General of Canada.

Porporino, F. J., Zamble, E., & Higgonbottom, S. (in press). Assessing models of predicting risk of criminal recidivism. Journal of Criminal Justice.

Wormith, J. S., & Goldstone, C. S. (1984). The clinical and statistical prediction of recidivism. Criminal Justice and Behaviour, 11, 3-34.

DATE DUE