

- a high percentage of offenders serving long sentences (over 10 years = 46%; life imprisonment = 8.5%) and thus the requirement for any study to be longitudinal in order to track individual's behaviour post-release; and
- the fact that roughly one third of the total prison population are unsentenced prisoners who, on average, spent two to three months in custody, and frequently much longer. They are excluded from all rehabilitative services, yet in excess of 250 000 people move through the awaiting trial system annually after being exposed to the negative effects of imprisonment.

The most basic challenge faced in South Africa to re-offending is establishing the true identity of the offender and ascertaining whether the offender has previously been imprisoned or not. This is the minimum non-negotiable starting point for measuring re-offending.

Recommendations

Two types of studies should be conducted:

1. **A large-scale quantitative study** to determine offending trends, pre-conditions for re-offending and variables related to re-offending.
2. **A pilot qualitative study** on recidivism, using small sample of offenders who fit the criteria, to inform a more detailed later study. It is likely that this will provide a much better understanding of the questions at hand, because of the restrictions mentioned above.

7 Conceptualising recidivism for prediction and risk

Brian Francis, Professor of Social Statistics, Department of Mathematics and Statistics, Lancaster University

Background

This talk highlights the work carried out in developing two risk assessment tools and conceptualising recidivism:¹⁴

- **OGRS3** for the England and Wales Home Office (now the responsibility of the new Ministry of Justice);¹⁵
- **Northern Ireland Reconviction Score** for the Northern Ireland Office.¹⁶

Data

The need for a national database of criminal histories

Ideally a national computer database of criminal offending, containing past criminal histories as well as current offending, exists. It is most useful to have information on dates of offending and arrest as well as information on dates of conviction or disposal. This might come from:

- Court records compiled and aggregated into criminal histories.
- Police records with information on offending, arrest and charge. Police records may additionally contain data on outcome – that is, whether the case proceeded to trial, the verdict, and the sentence disposal.

¹⁴ Work by Brian Francis and Keith Soothill, Emeritus Professor of Social Statistics, Centre for Applied Statistics, Lancaster University.

¹⁵ Francis, B, Soothill, K & Humphreys, L. 2007. *Development of a reoffending measure using the Police National Computer database*. www.maths.lancs.ac.uk/~asabjf/reoffendingreport.pdf, accessed 7 December 2010; Howard, P, Francis, B, Soothill, K & Humphreys, L. 2007. *OGRS 3: The revised Offender Group Reconviction Scale*. (Research Summary 7/09.) London: Ministry of Justice. www.justice.gov.uk/oasys-research-summary-07-09-ii.pdf, accessed 7 December 2010.

¹⁶ Francis, B, Harman, J & Humphreys, L. 2005. Predicting reconviction rates in Northern Ireland. *Northern Ireland Office Research and Statistical Bulletin*, 7/2005. www.nio.gov.uk/predicting_reconviction_rates_in_northern_ireland_7-2005.pdf, accessed 7 December 2010.

- Probation records where past criminal history might be obtained from several places – perhaps partly from police records and partly from the offenders themselves. But it is important to note the unreliability of self-reported data. Offenders may overstate or understate the situation, and recall becomes vaguer with the passing of time.

What if there is no national database?

Local databases might exist in some locations. For example, in Brazil, information on criminal histories is collected by the state police in Rio de Janeiro. Analyses could then be carried out on separate localities and results compared. It might be necessary to match two databases together – perhaps records of prison releases with police data to obtain the necessary variables. If records are not computerised, but manually recorded, then criminal histories can be entered by hand for a particular locality. The difficulty with localised studies is that offenders can move to another part of the country.

Measuring recidivism

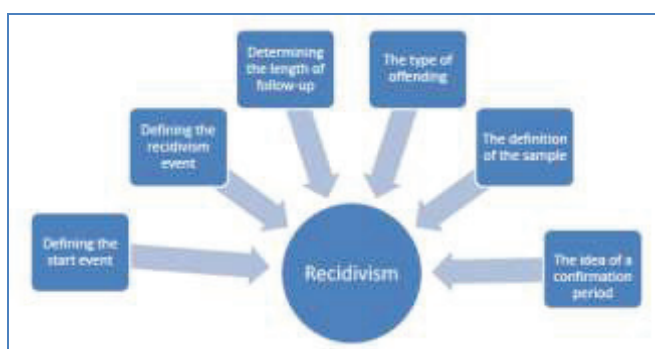


Figure 4: A model for predicting recidivism

Assume a sample of offenders who have been sanctioned in some way for one or more offences (target offence/s) by the criminal justice system and following them over time.

Defining the start event

For those receiving a non-custodial sentence, the start date is usually taken to be the date of sanction. For those receiving custodial sentences, the decision is more problematic. Normally, the date of release is taken, but this assumes that the date of release can be obtained – can prison records be linked to police records, for example? Taking the date of release as the start event also ignores possible offending which may occur before release – whether in prison or during the time a prisoner is participating in a day or weekend release scheme.

Defining the recidivism event

Some ways of defining the recidivism event are:

- Date of **re-offence** – the date at which the first reoffence was committed (this would of course only apply to known reoffending);
- Date of **re-arrest** – the date of first arrest after the target offence;
- Date of **re-charge** – the date of first charge after the target offence;
- Date of **reconviction** – the date at which the offender is reconvicted in a court;
- Date of **re-sanction** – the date at which the offender is reconvicted, or admits guilt by accepting a caution, warning, or reprimand for an offence.

Some issues with defining the recidivism event are:

- The issue of guilt. Can we be sure that a re-arrest or a new charge is actually committed by the person suspected? It is sometimes easy for police to go after the ‘usual suspects’ and to

arrest those who have committed similar offences in the past. So using re-arrest or re-charge data without proof of guilt is not ideal.

- Taking the date of reconviction or date of re-sanction (including police sanctions such as cautions, fixed penalty notices etc.) is not ideal as the interest of this kind of study is in reoffending. Another issue that must be dealt with is pseudo-reconvictions – convictions which relate to offences committed before the target offence, but for which the person was convicted later.

We think the ideal measure is ‘proved reoffending’ – using offence data where guilt is proved or accepted in some way.

Defining the length of follow-up time

An essential component of a reconviction study is the need to have a fixed follow-up time for all participants in the study. Short-term recidivism studies will use a follow-up period of 12 months, 18 months or two years. Long-term recidivism studies might use five or ten years. A fixed follow-up time is necessary as any statement of recidivism rates needs to include the length of follow-up. To say that a group of offenders had a recidivism rate of 40% is meaningless without saying that the follow-up period of the study was, e.g. 12 months.

The type of offending

Are researchers interested in all types of recidivism, or in a subset of offences? Should the offences include minor offences such as being drunk and disorderly, motoring offences such as speeding, and fixed-penalty offences such as littering or parking offences? Would recidivism involve a court sentence, or would a police caution or breach of an order also define a re-offence? For most studies, a line will need to be drawn between offences which can be thought of as those which are too minor for consideration, and those which are more serious.

The definition of the offender sample

Another characteristic of recidivism studies is to define the sample. For example, the sample might be restricted to males, or to those released from prison, or those who committed a violent offence as (one of) their index offences. Does the sample exclude those who received fines, or cautions, or fixed penalty notices? Is it restricted to those who offended in a particular locality? What year? Only those released from prisons, or those who’ve committed a violent offence? Should fines be excluded?

The confirmation period

This allows for delays in placing information on the database, and also allows for the criminal justice system to have time to convict an offender who reoffended within the follow-up period. By choosing a confirmation period of say three months, it is not assumed that all offences in the follow-up period will be confirmed. Indeed, some offences will take a long time to come to trial and for a verdict to be reached. Usually cases not confirmed would be removed, but alternative adjustment methods can be used.

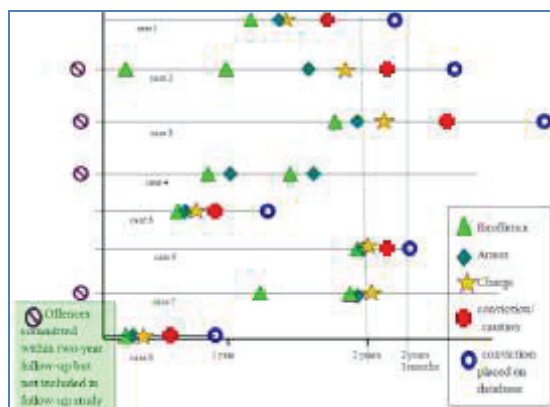


Figure 5: Example of the effect of a confirmation period

In the example of a two-year study (figure 5), case 3 would be excluded because a three-month confirmation period was applied.

An example of bad practice

One example of bad practice was a recent study that took a sample of serious offenders who entered the sample at different times, but the study applied a fixed end-date.¹⁷ This meant that some offenders were only followed up for very short periods of time (the shortest was 6 days), others were followed up for three years. The researchers then proceeded to determine a risk score without taking into account the varying follow-up times. A fixed follow up time is necessary unless you use statistical techniques such as survival analysis which can take account of this.

Development of a recidivism risk score for England and Wales

The recidivism risk score in England and Wales is called OGRS. This originally stood for the Offenders Group Reconviction Score. When the definition of recidivism changed, the meaning of the acronym changed to Offenders Group *Reoffending* Score.

Definition

The formal definition of recidivism in the OGRS is:

An offender who has committed a recordable offence within the follow-up period and who has had the offence 'proved' within the follow-up period and a confirmation period of three months, either by the offender accepting a caution, warning or reprimand, or by pleading guilty or being found guilty in a court of law. Follow-up is a fixed period of either one year or two years.

The aim was to estimate the probability of reconviction in a two-year period following release or conviction, given background information on previous convictions, age, nature of conviction etc. OGRS1 was developed in 1993.¹⁸ A revised version – OGRS2 – was developed in 1998 together with a special score for serious and violent recidivism.¹⁹ These two instruments used court data. A third measure – OGRS3 – using proved reoffending rather than reconviction, was developed in 2006.²⁰

¹⁷ Yang, M, Liu, Y & Coid, J. 2010. *Applying neural networks and other statistical models to the classification of serious offenders and the prediction of recidivism*. Ministry of Justice Research series 6/10. London: Ministry of Justice: London. <http://library.npia.police.uk/docs/moj/neural-networks-research.pdf>, accessed 7 December 2010.

¹⁸ Copas, J & Marshall, P. 1998. The Offender Group Reconviction Scale: The statistical reconviction score for use by probation officers. *Journal of the Royal Statistical Society, Series C*, 47: 159–171.

¹⁹ Taylor, R. 1999. *Predicting reconvictions for sexual and violent offences using the revised offender group reconviction scale*. Home Office Research Findings, 104. <http://rds.homeoffice.gov.uk/rds/pdfs/r104.pdf>, accessed 7 December 2010.

²⁰ Francis, B, Soothill, K & Humphreys, L. 2007. *Development of a reoffending measure using the Police National Computer database*. www.maths.lancs.ac.uk/~asabif/reoffendingreport.pdf, accessed 7 December 2010; Howard, P. 2009. *Improving the prediction of*

Controversy at first

The OGRS was highly controversial at the time because the Probation Service felt threatened by this work ('probation officers know best'), and because journalists have aggressive anti-quantitative views. A 1995 *Daily Mail* article said:

dismayed probation officers argue they don't need A-level statistics and a calculator to work out that a young criminal put in custody with a list of previous convictions will probably offend again.

The leader of the Probation Officers' Association was quoted in the article as follows:

Any rookie probation officer will tell you a stable relationship, a stable address and training or work is the best way of turning people around'.

An *Independent* leader in 1995 stated:

It's a fiendishly complicated sum. Those who try to use the equation will certainly find it more difficult than filling in a Cosmopolitan questionnaire on "Is your man a psychopath?"... The "Offender Group Reconviction Scale" could eventually be turned into a Christmas board game, renamed Go to Jail! Yet close examination of the proposal reveals that the Home Office's new method is about as discriminating as a policeman's truncheon at a football riot.

What predictor variables can be used?

We now turn our attention to the set of predictor variables. OGRS3 contains five distinct components (static or actuarial variables):

- The **log of prior offending rate** (the 'Copas rate'). This is an adjusted offending rate which takes the following form:
log (number of sanction occasions / (10 + years between first and current sanction)).
- The **type of the last sanction** (whether it was a caution, 2nd caution, 1st conviction or other conviction).
- The **age** and **gender** of the offender. Age is divided into 11 categories.
- The **type of the principal target offence** (whether the most serious target offence was theft, domestic burglary, handling stolen goods etc. – 20 categories in all).

More recent work has been done on incorporating dynamic variables into prediction from offender assessment reports.²¹

Statistical analysis

To build a recidivism risk score, statistical analysis is needed. The most common method for building reoffending risk scores is **logistic regression**. However, other methods can be used.

Francis et al. used **ordinal regression**, as this allows a score to be built with only a change of a constant factor to give predictions for a range of follow-up times (one year, two years etc).²²

Wang et al. used **neural networks** and **regression tree** methods.²³ Regression tree methods show promise, although this study was flawed (see above). Neural networks suffer from the problem of

reoffending using the Offender Assessment System. Research summary 2/09. London: Ministry of Justice. www.justice.gov.uk/oasys-research-summary-02-09.pdf, accessed 7 December 2010.

²¹ Howard, P. 2009. *Improving the prediction of reoffending using the Offender Assessment System*. Research summary 2/09. London: Ministry of Justice. www.justice.gov.uk/oasys-research-summary-02-09.pdf, accessed 7 December 2010.

²² Francis, B, Soothill, K & Humphreys, L. 2007. *Development of a reoffending measure using the Police National Computer database*. www.maths.lancs.ac.uk/~asabif/reoffendingreport.pdf, accessed 7 December 2010.

²³ Yang, M, Liu, Y & Coid, J. 2010. *Applying neural networks and other statistical models to the classification of serious offenders and the prediction of recidivism*. Ministry of Justice Research series 6/10. London: Ministry of Justice: London. <http://library.npia.police.uk/docs/moj/neural-networks-research.pdf>, accessed 7 December 2010.

being a 'black box' so the predictions from neural nets might be hard to sell to other criminal justice professionals. The question of how the prediction was obtained cannot be answered.

Some issues to think about

- **Database weeding rules.** Are minor convictions removed from the database? If so, what effect will that have?
- **Locality issues.** Does a national recidivism rate reflect local circumstances? Is a national recidivism rate of 70% relevant for a specific region of the country?
- **Lack of historical information.** How long has the database been going? Is there back record conversion – are old convictions placed on the database from paper records?

8 Questions and comments

Probability of conviction

- The South African Law Reform Commission puts the conviction rate at less than 4%. Many people think that crime pays because the risk of going to prison is so low.

Brian Francis: There is a lot we do not know about crime. When it comes to estimating the likelihood of offenders coming to the attention of the criminal justice system, the usual approach is to ask the general public about offending rates, although the reliability of that kind of survey is in question. Simply looking at those people who have been caught does not tell us much about crime in a more general sense.

Are recidivism studies useful?

- We cannot rely only on recidivism research, we must do evaluative research on people who reoffend, e.g. the social environment they live in.

Chandre Gould: I am not throwing out the idea that we need to understand as much as we can, using reoffending as a measure of the effectiveness of rehabilitation. Programmes need to be matched to offenders, but matching is based on what the criminal justice system knows about the offender, which may not be much. People who commit serious offences in South Africa get very long prison sentences, and it may not be clear whether they do not reoffend because rehabilitation programmes are effective, or because, when they are finally released, they are simply past the age when they are most likely to reoffend.

Brian Francis: Our recidivism research focuses on *predictors*, not *drivers*, of crime. The concept 'drivers' implies causality and is a much wider concept than predictors.

- Is recidivism an indicator of criminal justice performance in the UK?

Brian Francis: In Northern Ireland, there was a commitment to reduce reconviction rates by 4% within five years. We took the existing score and applied that to new cohorts of offenders to see how the existing system worked and compare actual reconviction rates to what was predicted by the score. It is not clear whether improvements are due to the system working more effectively, or because more effective policies are in place. Under the new coalition government, there are no targets, but government is still monitoring recidivism.