KAINOS COMMUNITY REOFFENDING EVALUATION: 3rd EVALUATION – 1 AUGUST 2012

Tom Ellis

In the context of current commissioning opportunities, this updated report has been produced for Kainos Community to provide a summary of the best available research on the effectiveness of 'Challenge to Change' in reducing reoffending.

Summary of most recent evaluation

After a long period of negotiation with MoJ, we have a full set of results, although there is still work to be done in reducing the attrition rate of the cases supplied and a further run of the analyses if we are successful in achieving this. Overall, the results are very encouraging and can be described as a qualified success.

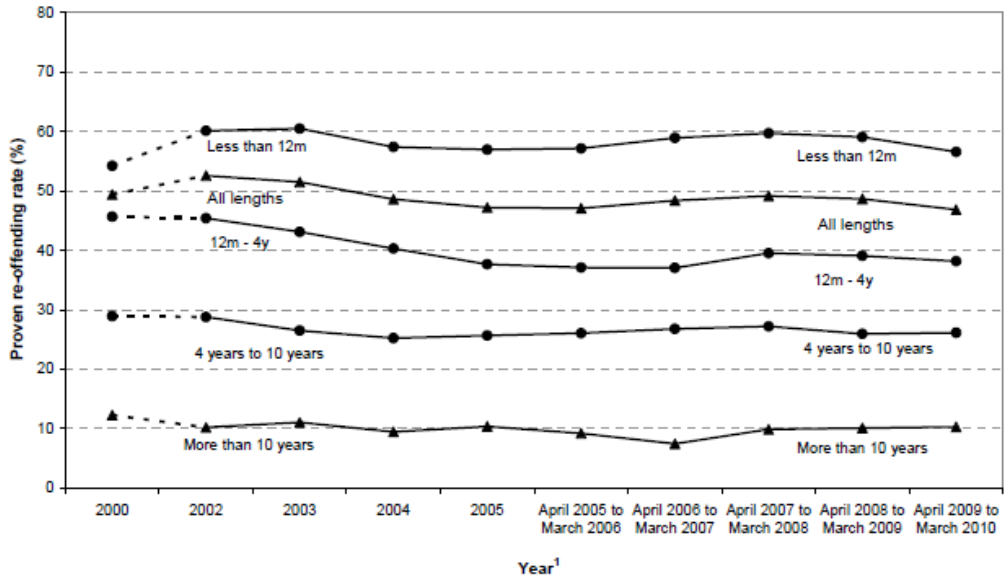
- **The frequency of proven offending after 1 year for Kainos graduates (0.54) was significantly lower than for the comparison group (0.83).**
- **The frequency of court convictions and cautions after 1 year for Kainos graduates (0.29) was significantly lower than for the comparison group (0.45).**
- The 1-year **re-offending rate for the Kainos group was 18.5%** compared with the re-offending rate for the matched comparison non-**Kainos group of 23.5% (**The comparable national rate for released prisoners is approximately 26%)
- This shows that the Kainos group achieved a **5 percentage points lower proven re-offending rate than the comparison group**
- Whilst a 5% point reduction is very impressive compared with that for other interventions, from a purely 'statistical' perspective it would be regarded as of '**marginal significance'** at p = 0.079. This is partly because of different recording practices for release dates between the MoJ data base and the Kainos MIS
- Although Kainos sent a list of 866 valid cases to MoJ, they were only able to find matching records for 340 of these (38%) resulting in a smaller and less representative sample

Background

The first of the current series of evaluations was carried out by Ellis and Shalev (2008) with very positive and significant result: In the period 1999-2003, the Kainos Challenge-to Change Programme (CtC) achieved a 2-year reconviction rate of 35%, which was **significantly lower than a predicted rate of reconviction** of 50.1%. **A reduction of 15 percentage points**. However, this analysis, and a much older previous evaluation (Rose, 2002) using OASys data, was carried out with a level of scientific rigour that is now not considered high enough by MOJ (i.e., predicted vs actual offending, rather than making use of comparison or control groups).

Early reconvictions studies of Kainos CtC were based on 2 year reconvictions analyses (Rose, 2002, Ellis & Shalev, 2008) using OASys and the Offenders Index. These studies will therefore cite higher reconvictions rates, for both study and control groups, than the later reoffending study outlined here, which is based on 1 year 'proven reoffending rates. The most recent published figures for proven reoffending for adults leaving prison is outlined in the Ministry of Justice (2010b) statistical bulletin, as shown in Figure E5 extracted below.

Figure E5: Proportion of adult proven offenders who commit a proven re-offence, by index disposal custodial sentence length, 2000, 2002 – 12 months ending March 2010



1 Quarterly data only available from April 2005 onwards

Given the Kainos CtC selection criteria for medium to high risk prisoners, it is probably most appropriate to compare our results with those of the 4-10 year sentence prisoners, approximately 26%.

A second 1-year proven reoffending evaluation was therefore carried out in May 2011 on 149 Kainos participants. Only 79 offenders could be matched to a control group consisting of offenders in the re-offending cohorts between 2000 and 2008. Not surprisingly, given the small numbers, the Kainos treatment was associated with a **non-statistically significant reduction in re-offending of 6 percentage points** (24% compared with 30% in the control group, with a p-value of 0.42).

We had originally asked MoJ to carry out Propensity Score Matching (PSM) in order to make sure that our evaluation had an effective control group. This may have resulted in a lower attrition rate from the 894 cases we compiled. However, it appears that PSM requires a lot of staff time and resources and MoJ saw it as more achievable to carry out analysis based on 'matched variables' to create a comparison group. MoJ have confirmed that: '*(as long as other aspects of the evaluation are sound), a matched design is quite acceptable [to the accreditation panel]. There are no other accredited programmes that have stronger evaluation designs at the moment apart from ETS'.'* See Appendix 1 for a summary of 'matched sampling' and PSM (MoJ, 2010).

Given the high attrition rate, as much data as possible on all Kainos graduates to date was collated (November 2011), resulting in a much higher number of offenders. The new dataset of 894 Kainos graduates was cleaned and sent to MoJ in November 2012. A small number of duplicated records were identified reducing the number offenders to 866. However, there were a series of issues that resulted in an eventual attrition rate of 61%, leaving only 340 (39%) offenders from 866 that could be matched. 112 (13% of the full submitted dataset) of those offenders who were not fully matched were rejected from the analysis only because of uncertainty about their release dates – see Appendix 2. For a full account of the matching process and reasons for attrition, see Appendix 3.

This evaluation has been subject to similar delays as previous ones due to resource constraints and conflicting priorities for MoJ analysts. Deadlines for January 2012 eventually produced a partial mid-February report from MoJ that, had it been fully completed would have met most of Kainos'

requirements. Whilst it is understood that data processing by MoJ is really prioritised for internal work and for projects that are producing a minimum of 800 released offenders per annum, the inability to access the complete data makes it impossible to meet the high standards required by MoJ for the Kainos results to be fully valued for the success they achieve. In its current format, Kainos will not be able to compete for prioritisation with larger projects such as Peterborough and Doncaster prisons, which are also less selective in the type of offenders included (i.e., all risk levels). Demands for good quality evaluation from other quarters are also increasing. We have now received the full analysis from MoJ on 1 August 2012. In contrast to previous requests for the analysis to be completed, the introduction of a new analyst and their immediate superior led to very rapid delivery of the information required for this evaluation.

Given the current urgency, I have prepared this report to summarise the headline findings on the reoffending impact of Kainos CtC and to make explicit the remaining requirements. This puts Kainos CtC in a strong position, but other factors are still a problem.

First, the box below summarises the key outcomes of this current evaluation of Kainos CtC., which is the largest to date,

Re-offending rates

- **The frequency of proven offending after 1 year for Kainos graduates (0.54) was significantly lower than for the comparison group (0.83). (**t (N=340)= -2.2026, df=339, **p=0.028**)
- **The frequency of court convictions and cautions after 1 year for Kainos graduates (0.29) was significantly lower than for the comparison group (0.45). (**t (N=340)= -2.8962, df=339, **p=0.004**)
- The 1 year re-offending rate for the **non-Kainos** matched comparison group was 23.5% This compares with a National average of 26% for proven reoffending for adult prisoners released from 4-10 year sentences for the year to March 2010. (Ministry of Justice, 2010b)
- The equivalent **re-offending rate for the Kainos group was 18.5%**
- This shows that the Kainos group achieved a **5% lower conviction rate than the comparison group**. However, the extreme limitations on the sample submitted resulted in a drastically reduced number for analysis (only 340 out of 894, or only 38%, were matched for analysis).
- With this small and potentially unrepresentative sample, the 5% reduction is only of 'marginal significance' χ^2 (1, N =340)=3.084, p=0.079 (McNemar's test, paired proportions with continuity corrections).
- As ever, the filtering process for matching offenders was complex. Disappointingly, 112 'near misses' were not included in the final MoJ sample data run, mainly due to release details not matching between the Kainos database and the MoJ database.
- While these 'low re-offending' parolees would have to be matched with a similar group as a comparison, the fact that they have a re-offending rate of only 8% indicates that there is **every likelihood that inclusion of these offenders (which when added would still only account for 52% of the valid original 866 cases submitted) would bring the comparison to a level where there would be a significant difference between Kainos graduates and the comparison group.**

  As it stands, there is a less than 8% (p = 0.079) chance that these differences for 'any offending' could occur by chance. The minimum acceptable level is usually set at 5% (p=0.05). However, with the 122 additional cases, the reoffending rate for Kainos graduates is only 15.93%, a further reduction in reoffending of 2.57%, or a 7.57% difference from the existing control group.
- The sample was considered too small by MoJ for Measures of changes in the level of seriousness of proven re-offending to be meaningfully calculated.

The current position

MOJ are the only body with access to the database needed for this analysis. We therefore rely on them entirely. It took from November 2011 to August 2012 to finalise the analysis with MoJ. Intensive discussions and exchanges with MoJ indicate there is a willingness amongst individuals to complete the analysis and a date of the end of May has been promised. However, the lack of priority put on this work within the overall MoJ programme continues to threaten delivery of timely analyses and reports. As noted, the current MoJ contacts have been extremely efficient and helpful, but given the rate of MoJ staff turnover since November in relation to this project, this cannot be presumed in any further evaluations.

Although this report formally represents the end of my current research contract with Kainos, I will carry on chasing for better matching on release dates and reanalysis, in particular, matching the Kainos MIS release date recording with the MoJ use of the NOMIS database. Obviously, there is an urgent need to enable a better matching system, possibly by manually comparing Kainos MIS data with MoJ databases. This is not unwarranted in the sense that the Peterborough project will be able to pursue these types of issues.

The analysis has been refined so that the MoJ/NOMS lead aspiration – to provide not just 'binary reduction in re-offending', but also 'number [frequency] of offences' and 'severity [of re-offending] as far as possible is clearly considered.

Significant results have been achieved and MoJ/NOMS are on record as wanting 'to protect smaller providers' in order to 'ensure a diverse supply chain'. This is consistent with PBR requirements, should Kainos pursue this line, and if not, is consistent with current MoJ/NOMs demands.

Immediate considerations

Now that we have the MoJ analysis results of 3 key measures of impact, it is clear that Kainos CtC has had an impact in significantly lowering the frequency of proven re-offending. However, the outcome measure for whether Kainos graduates commit any further offences or not can only show a marginally significant impact. It is therefore important that the reasons for the high attrition rate from 866 in the Kainos sample, down to only 340 in the MoJ sample are investigated with a view to including more of the Kainos sample in the analysis.

The case for pursuing this is lent weight by the recommendations from MoJ report:

'The records not matched could impact on the results. It is recommended that further investigation needs to take place into the reasons for the low match rate. A higher match rate may impact on the findings of the analysis. 41% of Kainos offenders are not identified in the matching process to the re-offending cohorts and it is highly recommended to look into the reasons for this further to increase the match rate. We suspect this could be due to match on release date. We have run the analysis to include finding the closest match within the year of discharge and this makes a very slight difference in the match rate (approximately 1%).'

APPENDIX 1: Matched variables vs PSM

Matching by variable where each offender within each sentencing outcome group is perfectly matched to an offender in the other group using some of their offender characteristics. This method has the advantage that the match is perfect on the selected offender characteristics and it is relatively easy to understand by a non-technical audience. However, this approach is restrictive, **lowering the number of offenders in the possible final matched group** and also lowering the number of characteristics used in the matching.

Propensity Score Matching (PSM) where each offender within each sentencing outcome is matched to an offender in the other group using a statistical model based on offender characteristics. The advantage of this method is that all observed offender characteristics can be used to match the two groups, given that the most similar match will be selected. This ensures that most offenders in a group will have a corresponding matched offender in the comparison group. However, this statistical matching methodology relies heavily on the model specification and robustness, which can lead to inferior matching quality.

Limitations Both approaches have the same potential drawback that they rely mainly on static variables and do not include dynamic variables such as: aggravating or mitigating factors, employment or accommodation status, geographical location, etc. However, evidence suggests that adding dynamic variables has only relatively moderate effects in predicting reoffending when added to static characteristics. (see Ministry of Justice, 2010)

APPENDIX 2: MoJ (edited) response regarding mismatched release dates

The offenders in the Kainos dataset have been recorded as discharged from Verne (a Category C[1] prison) and Swaleside (a Category B[2] prison). However, JSAS re-offending cohorts have recorded these prisoners as being discharged from a range of prisons, including Verne and Swaleside. There are 2 key potential reasons for this:

- Verne and Swaleside may be the prisons in which offenders have been in for at least some of their stay in prison. However, it is known that prisoners do move across prisons, particularly before release, and so the discharging prison may be another one.

- The JSAS records or Kainos records could be subject to recording errors.

[1] Prisoner categories are based on a combination of the type of crime committed, the length of sentence, the likelihood of escape, and the danger to the public if they did escape. Category C prisoners are those who cannot be trusted in open conditions but who are unlikely to try to escape.

[2] Category B prisoners are those who do not require maximum security, but for whom escape needs to be made very difficult.

APPENDIX 3: MoJ (edited) outline of reasons for attrition

1. Kainos offenders were matched to the Police National Computer in order to identify the offender's PNCID (unique identifier) and criminal history

2. PNCIDs were used to match Kainos offenders to the re-offending cohorts to collate each offender's index offence and re-offending statistics

3. Kainos offenders were then matched to a comparison group based on certain offender characteristics to look at the difference in re-offending rates.

Matching Kainos data to the Police National Computer

The Kainos data supplied was matched to PNC data to find the offenders in the database and extract PNCIDs. Of the 894 records provided, 877 of these were matched to the PNC. There were a few duplicates included in the dataset – either duplicated records, or an offender occurring more than once with different prison release dates (index date). In the latter case, the record with the earliest index date was selected. This reduced the number of records to 866.

2001 and 2010 data also needed to be removed from the analysis. Records from 2001 cannot be used due to data quality issues and 2010 re-offending cohorts have not been finalised (the earliest this can be done is August 2012 to allow for sufficient time for offenders to re-offend and be sentenced). This reduces the number of records from 866 to 761 to be matched to the records in the re-offending cohorts. These figures have been summarised below:

Number of records provided by Kainos		**894**
Number of records which were matched to the PNC (to extract a PNCID)		877 *
Number of duplicate records	21	
Number of records with duplicates removed(ie, unique people matched to the PNC)		866
Records which could not be used in the analysis	135	
2010 records	37	
2001 records	68	
Number of offenders available to match to the reoffending cohorts		**761**

* Duplicates consist of repeats of the same record or if an offender has more than one prison spell. If an offender has more than one prison spell, then the earliest interaction wih Kainos has been used as the offenders index date.

Matching Kainos offenders to JSAS re-offending cohorts

Next, offenders were matched to their correct record in the re-offending cohorts generated by JSAS. In order to do this, and ensure the correct record was being picked, the following conditions had to be met:

- The disposal for the index offence has to be a prison sentence

- The record used in the re-offending data with the discharge date closest to the Kainos discharge date has been used

Using the above listed criteria, 452 of the 761 records (59% of records) were identified in the re-offending cohorts. It is recommended that further investigation needs to take place into the reasons for the low match rate. A higher match rate may impact the findings of the analysis.

Comparison group created to match Kainos records using 'variable-by-variable' matching

A comparison group was created based on the characteristics of the offenders on the Kainos programme. The key characteristics of the comparison group are:

- Male offenders;
- Over the age of 20 at the time of sentence;
- Sentenced to a prison disposal for their index offence;
- Offenders in the comparison group have to be discharged from one of the prisons as recorded for the Kainos group;
- Offenders had to be discharged from prison between 2000 and 2009;
- Offenders in the comparison group cannot be included in the Kainos group.

Note: the distribution of discharging prisons between the matched treatment and comparison groups varies and there may be an impact of individual prison re-offending rates upon the results (see Annex A).

A summary of the key findings of the matched Kainos and comparison groups are as follows:

	Number of offenders	Number of re-offenders	Re-offending rate (1yr)	Number of court conviction events and caution events (proven re-offences) in 1 year	Number of re-offences committed receiving a court conviction or a cautions in 1 year	Average age	Average previous offences
Kainos (matched)	340	63	18.5%	0.29	0.54	35.3	26.6
Comparison (matched)	340	80	23.5%	0.45	0.83	35.3	25.1
Kainos (not matched)	112	9	8.0%	0.13	0.21	44.1	13.6

Annex A: Distribution of discharging prisons from the Kainos and comparison variable-by-variable matched groups

Intervention matched		Comparison matched	
Prison Name	**Number of matches**	**Prison Name**	**Number of matches**
Verne (The)	***96***	Liverpool	13
Stocken	24	Sudbury	12
Leyhill	21	Latchmere House	12
Ford	19	Grendon/Spring Hill	11
Latchmere House	18	Sheppey Cluster (Elmley)	11
Blantyre House	14	Stafford	10
Sheppey Cluster (Standford Hill)	11	Altcourse	10
Sheppey Cluster (Swaleside)	***11***	Highpoint	9
Sheppey Cluster (Elmley)	6	Leyhill	9
Grendon/Spring Hill	6	***Verne (The)***	***9***
Erlestoke	5	Wellingborough	9
Weare	5	Wormwood Scrubs	9
Wellingborough	4	Ranby	9
Bristol	4	Lindholme	9
Camp Hill	4	Ford	8
Littlehey	4	Erlestoke	8
Lewes	3	Dartmoor	7
Guys Marsh	3	Hewell Grange	7
High Down	3	Mount (The)	7
Highpoint	3	Wealstun	7
Blundeston	3	Stocken	7
Coldingley	3	Wayland	6
Dorchester	3	North Sea Camp	6
Winchester	3	Preston	6
Wandsworth	3	Holme House	6
North Sea Camp	3	Bullingdon	6
Nottingham	3	Camp Hill	6
Onley	2	Ashwell	5
Norwich	2	Birmingham	5
Wayland	2	Blantyre House	5
Wealstun	2	Featherstone	5
Mount (The)	2	Usk/Prescoed	5
Woodhill	2	Weare	4
Whatton	2	Woodhill	4
Sudbury	2	Brixton	4
Dartmoor	2	Lincoln	4
Channings Wood	2	Kirklevington Grange	4
Brixton	2	Guys Marsh	4
Bullingdon	2	High Down	3
Hollesley Bay	2	Blundeston	3
Hewell Grange	2	Channings Wood	3
Birmingham	2	Coldingley	3
Leicester	2	Winchester	3
Liverpool	1	***Sheppey Cluster (Swaleside)***	***3***
Maidstone	1	Wandsworth	3
Moorland Closed	1	Parc	3
Moorland Open	1	Pentonville	3
Glen Parva	1	Norwich	3
Gloucester	1	Nottingham	3
Hull	1	Littlehey	3
Altcourse	1	Onley	2
Ashwell	1	Moorland Closed	2
Exeter	1	Moorland Open	2
Featherstone	1	Sheppey Cluster (Standford Hill)	2
Dovegate	1	Exeter	2
Durham	1	Durham	2
Edmunds Hill	1	Edmunds Hill	2
Usk/Prescoed	1	Lewes	2
Wormwood Scrubs	1	Hull	2
Stafford	1	Leicester	1
Lincoln	1	Hollesley Bay	1
Lindholme	1	Gloucester	1
Parc	1	Dorchester	1
Pentonville	1	Dovegate	1
Ranby	1	Bristol	1
Rye Hill	1	Lowdham Grange	1
		Maidstone	1
TOTAL	**340**	**TOTAL**	**340**

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