

Summary report on Kainos CtC updated reconvictions analysis July 2011: Tom Ellis, Portsmouth University

Key results

Re-offending rates

- The re-offending rate for the non-Kainos matched comparison group was 30.4%
- The equivalent re-offending rate for the Kainos group was 24.1%
- This shows that the Kainos group achieved a 6.3% lower conviction rate than the comparison group

However, with such a small sample, this difference is not statistically significant at $p = 0.42$ (McNemar Chi-Squared test (paired proportions) with continuity corrections = 0.64, $df = 1$)

Frequency of reconvictions

- The frequency of re-offending was 0.86 for the non-Kainos matched comparison group
- The frequency of re-offending for the Kainos group was 0.53 offences
- This shows that the Kainos group achieved a 0.34 lower level of frequency of re-offending, or put another way, a 38% lower level of frequency

Again, the small numbers involved have limited the significance of this result ($p = 0.15$)

Frequency of cautions & court convictions (CCC)

- The frequency of CCC for the non-Kainos matched comparison group was 0.58 offences
- The frequency of CCC for the Kainos group was 0.24 offence,
- This shows that the Kainos group achieved a 0.34 lower level of frequency of CCC, or put another way, a 59% lower level of frequency.

Again, the small numbers involved have limited the significance of this result, which at $p = 0.07$ (paired t-test, where $t = -1.8$, $df = 78$), is only marginally significant, falling just short of the required $p = 0.05$

Seriousness: Another key measure of effectiveness is the seriousness of any re-offending. Indeed, this was used in the previous evaluation (Ellis & Shalev, 2008). However, for this analysis, there was little value in producing and comparing the seriousness rate. The national rate is very low (around 400 out of 50,000) which means that for the size of the eventual Kainos sample, we might get only 1 or 2 serious offences. Results like this would not be meaningful, let alone be statistically significant.

Background

A two-year reconviction study for Kainos CtC was carried out by Dr Gerry Rose from Cambridge University, in July 2002 and this was updated by Ellis and Shalev in 2008. The headline figure in the latter report was a 15% reduction in the actual reconviction rate compared to the actuarially calculated reconviction rate. While this was very encouraging and was accepted by the accreditation panel, there were 2 inter-related difficulties to be overcome.

First, the actuarial algorithm used (OGRS3) is no longer considered an 'evaluation' tool, but rather, a relatively simple supervision /risk calculator. This approach was also limited to producing a Level 2 evaluation in on the MoJ's own 5 level scale. Second, because of the complex sampling method used by OGRS3, it is not possible to use traditional tests of significance to 'prove' that an intervention works.

It was therefore agreed, following the 2009 Kainos autumn conference, that Tom Ellis would investigate the possibility of reorganising the data used by Ellis & Shalev (2008) so that it could be reanalysed using the newly established MoJ 'Propensity Score Matching' (PSM) method which would allow a very specific tailored comparison/control group to be compared with the Kainos graduate group and establish the extent to which this difference was statistically significant.

The timetable was difficult to establish since it was dependent on MoJ cooperation which is notoriously variable in relation to Kainos reconvictions analysis. The project commenced in June 2010 and was completed a year later in June 2011.

Sampling & and Levels of Analysis

We were dependent on the MoJ Justice Statistics Analytical Services (MoJ) to run the analysis using the Police National Computer (PNC) and using Propensity Score Matching (PSM) to generate and compare results from intervention groups (Kainos CtC in this case) and a high grade comparison group. It is this feature of the work that takes up most of the time and effort (more of which in the (next) Future Work section. This ensures that the Kainos analysis is now consistent with the evaluation standard required by MoJ for accreditation, etc.

That said, the method appears to have clear drawbacks in limiting the size of sample that can be used. We started with the original 151 offender records that we had used with the MoJ for the 2008 (Ellis & Shalev) report which showed significant results for Kainos in reducing re-offending and frequency of re-offending.

While this report was seen as appropriate as evidence of high quality evaluation for The CSAP accreditation panel, it was criticised as only a level 2 analysis, ie, predicted Kainos graduate re-offending rates compared against actual rates. At the 2009 Kainos conference, Ian Poree (NOMS Director) attended and agreed that the MoJ

had seemingly made it difficult for organisations such as Kainos to produce their own higher level evaluations, because it required restricted access to MoJ staff who are cleared to use PNC data. As he put it at the time: *'We are asking you to go through a gate, but we have made that gate very small and difficult to get through.'* He promised to support this analysis, and he did indeed smooth the path and ensure that we were taken seriously so that MOJ agreed to process our data. This was delayed mainly through a restructuring of the PNC data into pre-formed annual cohorts. MoJ completed this in May 2011 and we were able to get the data processed by chasing them soon after this in June 2011.

We worked to ensure that we produced a new dataset on the original 151 Kainos graduates in the Ellis & Shalev (2008) report which conformed to the requirements of PSM specifications from MoJ. Despite this, the number of graduates that could be found in PNC was only 79, which produced an **overall attrition rate of 48%**.

The attrition was explained as follows:

151: 2 of the original Ellis & Shalev (2008) Kainos graduates could not be found on PNC leaving -

149: a further 6 could not be properly verified on PNC, leaving -

143: these were then searched for in the new pre-formed annual cohorts now used for national statistics and the following occurred -

8 were discharged in 1999 and we have no formed cohorts before 2000, leaving –

135: 9 were not found in the 2000 cohort, leaving-

126: 29 were discharged in 2001 and there are apparently no formed cohorts in 2001 due to a data error, leaving –

97: 3 were not found in the 2002 cohort, leaving

94: 2 were not found in the 2003 cohort, leaving –

92: 1 was not found in the 2005 cohort, leaving –

91: 1 was discharged in 2010 there was not yet a formed cohort for 2010, leaving

90: these surviving cases were then used to find a comparable group using the following criteria:

- exact match on age (in years)
- exact home office offence type
- exact ethnic code as recorded on the PNC
- number of previous convictions within 5%
- prison discharge date within 6 months

Using these 'relaxed' criteria (to increase the number of matches) still left a further 11 who could not be matched, leaving

79: According to MoJ, the 'matching by variable method' (ie, from the stage at which there were 90 left above) usually matches only around 50% of the offenders, so an 88% match in this light is relatively positive.

That said from an evaluation perspective, this does seem relatively poor. We need to keep in mind the overall attrition rate from the number of graduates we originally submitted. Nearly half of these have not been able to be included in the MoJ analysis, and this has severely limited the significance of what are essentially encouraging results. It is fairly clear that with larger numbers that the Kainos graduates would have shown significant reductions on all 3 measures used.

Tom Ellis

28 July 2011

References

- Ellis, T. and Shalev, K. (2008) An Evaluation of the Effectiveness of the Kainos Community 'Challenge-to-Change' programme in English prisons. Runcorn: Kainos Community.
- <http://www.port.ac.uk/departments/academic/icjs/staff/documentation/filetodownload,105218,en.pdf>