New Zealand Court-Referred Restorative Justice Pilot: Two year follow-up of reoffending

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Executive Summary

One of the main objectives of the New Zealand court-referred restorative justice pilot was to reduce the rate of reoffending by offenders referred to restorative justice conferences, compared to similar offenders dealt with through the conventional court process. In May 2005 the Ministry of Justice published the main evaluation findings of the court-referred restorative justice pilot which included a preliminary reconviction analysis.

The main focus of the current report is reoffending by offenders who attended a conference (the conferenced group). Reoffending, as measured by the reconviction rate, was assessed throughout the two year follow-up period (using survival analysis) and at the end of the one year and two year follow-up periods. The seriousness of reoffending and the subsequent imprisonment rate were also examined. The results for the conferenced group were compared with their predicted reconviction rates, which were derived from a logistic regression model. The results for the conferenced group were also compared with the results for ten matched comparison groups, selected from eligible offenders who were not referred to the pilot.

The main finding was that there appeared to be a small overall decrease in the reconviction rate of the conferenced group compared to matched comparison groups. The decrease was around four percent in absolute terms, for both the one year and two year follow-up periods, compared to both the predicted reconviction rate and the average reconviction rate for the matched comparison groups. While these differences were not statistically significant, the slight decrease in reoffending does appear to be real, based on the finding that the conferenced group had a lower reconviction rate than all ten matched comparison groups throughout the two year period.

The specific findings were:

- The actual two year reconviction rate for the conferenced group was 41%, compared to their predicted rate of 45%. The predicted rate was estimated from a range of variables, such as criminal history, demographics and offence type, using a logistic regression model. The actual two year reconviction rate for the ten matched comparison groups ranged from 42% to 49%, with an average of 45%. The comparison groups were matched as closely as possible to the conferenced group by their predicted reconviction rate, gender, age, offence group, first offender status, and ethnicity.

- The survival curve (the proportion of the group who had not yet reoffended over time) for the conferenced group was above that for all ten comparison groups throughout the two year period, but not significantly so.

- The subsequent imprisonment rate was 10% for the conferenced group, which was not significantly different to the average of 12% for the comparison groups. The imprisonment rate for the ten comparison groups ranged from 8% to 16%.

- The distribution of the seriousness of reoffending did not differ significantly between the conferenced and comparison groups.

The conferenced group was also compared to offenders who were referred to the pilot, but who did not attend a conference (non-conferenced group) and to a more general group of all offenders potentially eligible for referral (other eligible group). The main findings were:

- Certain types of offenders were more likely than others to be referred to the restorative justice pilot and to participate in a conference. In particular, conferenced offenders were more likely to have fewer and less serious previous convictions and were more likely to be traffic offenders than both non-conferenced offenders and other offenders potentially eligible for referral.

- These characteristics meant that the conferenced group had a significantly lower actual and predicted two year reconviction rate compared to both the non-conferenced group (60%) and the group of other eligible offenders (62%). The survival curves of both groups were also significantly different from that of the conferenced group.

- The seriousness of subsequent offending and the subsequent imprisonment rate were also significantly lower for the conferenced group than both the non-conferenced group and the other eligible group.

Two year reconviction rates were also calculated for sub-groups within the conferenced group, to examine whether some types of offenders showed a larger reduction in reoffending than others. As the sample sizes of sub-groups were small, this analysis is presented only as a possible indication of differences that could be followed up with further research. The groups which showed most indication of a reduction in reoffending in this sample of offenders were males, offenders who had their first ever proved case at age 19 or over, and offenders who had committed grievous assault, theft or a traffic offence (driving causing injury or death). Offender groups which showed no indication of a reduction in reoffending included offenders aged under 20, offenders who had their first ever proved case at age 18 or under, Maori offenders, and offenders who had committed burglary, fraud or serious assault.

Conference outcomes could not be shown to significantly affect reoffending rates.

1 Introduction

The experience at a court-referred restorative justice conference was positive for many offenders and these levels of satisfaction remained relatively high over time.[1] Arguably, if offenders accept responsibility for their offending, feel involved in the decision about how to deal with that offending, feel that they are treated fairly and with respect, apologise and make amends to their victim and take part in a programme designed to deal with the reasons underlying their offending, then we can at least hypothesise that they will be less likely to offend again in the future. Indeed, one of the main objectives of the court-referred restorative justice pilot was to reduce the rate of reoffending by offenders referred to restorative justice conferences, compared to similar offenders dealt with through the conventional court process.

A one year follow-up of reoffending has already been published.[1] The current report presents information from a two year follow-up of reoffending (reconvictions) after a restorative justice conference. The rate of reconviction within one and two years, the time between the conference and the next offence (survival analysis), the seriousness of reconvictions, and subsequent imprisonment rates were all examined (Chapter 3). Each measure of reoffending was calculated for offenders who participated in a restorative justice conference and compared to the results for ten matched comparison groups. Comparisons were also made with other offenders referred to the pilot who did not attend a conference and offenders who were not referred to the pilot, but who were potentially eligible for referral.

The question of whether some types of offenders showed a larger reduction in reconviction rates than others is examined in Chapter 4. Comparisons were made between conferenced offenders by demographic groups, offence type committed, criminal history, court, and conference outcomes. All of the comparisons made in this chapter were based on relatively small sample sizes and hence provided only an indication of possible differences for further research.

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[1] *New Zealand Court-Referred Restorative Justice Pilot: Evaluation*, Ministry of Justice, 2005.

2 Methodology and limitations

The aim of this study was to determine whether offenders referred to restorative justice conferences had a reduced rate of reoffending, relative to both their own expected rate of reoffending and relative to matched comparison groups dealt with through the conventional court process. The following methodology summary describes the selection of the required samples (referred and comparison offenders), the method used to estimate expected reoffending rates, the definition of reoffending, and the limitations of the analysis.

Full details of the methodology are provided in Appendix A. Profiles of the various groups are presented in Appendix B.

2.1 Overview of the sample selection

The main group of interest was offenders who had participated in a court-referred restorative justice conference ('conferenced group', n=206). These offenders were identified from the court-referred restorative justice database, for all referrals made between 4 February 2002 and 3 February 2003. Information from this database was also retained for offenders who were referred, but who did not have a conference ('non-conferenced group', n=365).

The main focus of the study was a comparison of the reconviction rates of conferenced offenders with reconviction rates for matched comparison offenders who had not been referred to the court-referred restorative justice scheme, but who had similar characteristics to conferenced offenders. Ten comparison groups were selected, in order to assess the range of variation between the comparison groups, as well as the variation between the comparison and conferenced groups.

The comparison groups were selected from all criminal court cases that would, in theory, have been eligible for the restorative justice scheme, using the Ministry of Justice case database. Cases considered potentially eligible were those cases processed by a District Court, involving a guilty plea and an offence that was eligible for referral to the restorative justice pilot. These cases were selected from all cases finalised between 2001 and 2003, with a final hearing date before 30 April 2003 (that is, one year prior to the extraction of the initial criminal history data). This dataset (n=45,610) provided a large sample from which to select multiple comparison groups. The eligible cases represented 16% of all the cases prosecuted within the same time period.

Each conferenced offender was matched to ten comparison offenders. The selection method used for the two year analysis was similar to the method used for the one year follow-up (*New Zealand Court-Referred Restorative Justice Pilot: Evaluation*, Ministry of Justice, 2005), but with some additional improvements. A new set of comparison groups was selected for the two year follow-up, to get the best possible matches based on the predictors of the two year

reconviction rate. The comparison offenders were matched as closely as possible by gender, age, first offender status (whether the defendant was a first offender or not), offence group, and ethnic group. The best matches for each conferenced offender were then selected by choosing comparison offenders with the most similar *predicted* reconviction rates. Predicted reconviction rates were derived from a logistic regression model of the probability of reconviction (as detailed in Appendix A).

In summary, four groups were identified:

- conferenced group: offenders referred to the restorative justice pilot who participated in a restorative justice conference;
- comparison groups: a total of ten matched comparison groups;
- non-conferenced group: offenders referred to the pilot but who did not participate in a restorative justice conference;
- other potentially eligible offenders group: all offenders from throughout New Zealand who would in theory have been eligible for referral.

The conferenced group and comparison groups had very similar profiles, especially in terms of key demographic and criminal history variables, as shown in Appendix B. The offence for which the conferenced group was referred was slightly more likely to be a serious type of violence compared to the comparison sample, and this was reflected in the slightly higher average seriousness score for the conferenced offenders. Conferenced offenders had a larger average number of charges in their referred case than did comparison offenders.

In contrast, the conferenced group was very different from both the non-conferenced group and the group of other eligible offenders. In particular, offenders with an extensive or serious criminal history were less likely to be referred to the restorative justice pilot and, once referred, were less likely to participate in a conference. Also, the conferenced group had a higher proportion of offenders whose referred offence was a traffic offence, grievous assault or burglary compared to other eligible offenders, giving the conferenced group an average seriousness score (for the referred/eligible offence) almost twice as high as for other eligible offenders.

2.2 Definition of reoffending

Criminal records, including traffic offence records, were extracted from the Ministry of Justice Data Warehouse for all referred and eligible offenders. The criminal records database contains all proved charges, including all convictions and all charges resulting in a proved outcome, such as a discharge without conviction, or a proved outcome in the Youth Court. Throughout this report, 'previous convictions' and 'reconvictions' refer to charges or cases with a proved outcome.

Information on proved reoffending within one and two years of the critical date was required as the basis of the reconviction study. The restorative justice conference date was chosen as the critical date from which to measure reoffending as this is the date from which any behavioural change resulting from the restorative justice conference could have occurred. No

equivalent date was available for other groups, so the case finalisation date was used. An adjustment was made for offenders who received a prison sentence, taking the release date as the critical date, unless an offence occurred while the offender was in prison.

Proved reoffending within two years (hereafter called 'the two year reconviction rate') was defined as a proved charge resulting from an offence where the offence date occurred within two years of the critical date. To be recorded as reoffending, the reoffence also had to have been proved in court within the study timeframe (i.e. recorded in the criminal history database as at 30 April 2005). Offenders were excluded from the following analysis if they did not have a full 730 days in which to reoffend because they were in prison. For the conferenced group, this reduced the sample size from 206 to 193 offenders.

2.3   Statistical testing

One of the common limitations of pilot studies is that the sample size is too small to detect whether an apparent reduction in reconviction rates is statistically significant in comparison to a control group, especially as the reduction in reconviction rates may not be large. The approach used in this study was to select multiple comparison groups, so that variation between comparison groups could be assessed and compared with variation between the conferenced group and comparison groups.

In the one year follow-up study (*New Zealand Court-Referred Restorative Justice Pilot: Evaluation*, Ministry of Justice, 2005), the reconviction rate for the conferenced group was compared with rates for the ten comparison groups using a t-test. This approach was not ideal, as the matched control design violated one of the assumptions of the t-test. At the time, no alternative method was known that could incorporate the power of multiple comparison groups. The current two year follow-up study used an improved method (an extension of McNemar's test for multiple matched controls)[2], resulting in differences in statistical significance relative to previously published results.

The difference between the actual rate of reoffending and the predicted rate of reoffending for the conferenced group was also tested using the logistic regression model, with dummy variables to test for the treatment (conference) effect both overall and across a variety of sub-groups.

Note that these two approaches were not independent, as the comparison groups were matched to the conferenced group using their predicted reoffending rates from the logistic model. Thus, the predicted rates of the conferenced and comparison groups were, by definition, very close.

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[2]   Pike, M.C. and Morrow, R.H. (1970) *Statistical analysis of patient-control studies in epidemiology: factor under investigation an all-or-none variable.* British Journal Prev. Soc. Med. 24: 42-44. My thanks to Alistair Gray and David Harte, of Statistical Research Associates, for bringing this paper to my attention.

2.4   Limitations

All estimates and comparisons of reoffending rates are subject to a number of limitations. General limitations, which apply to most such studies, include the following:

- Reconvictions (proved cases) must be used as a proxy for actual reoffending, although it is known that only a fraction of offences committed result in a proved court case.

- Selection of a comparison group to compare to pilot participants is limited by the difficulty of adequately matching offender characteristics. Even for a multivariate approach, as used here, the matching is limited to the available quantifiable factors. For example, the logistic model used here explained just over a third of the variation in reconviction rates. Other major factors, such as personal circumstances and motivation, were not measured. However, the selection of multiple comparison groups assisted in discriminating whether any reduction in reoffending was a real effect, by giving a range of reconviction rates for comparison groups.

- Offenders who are referred to and who agree to participate in the restorative justice conference may form a biased sample ('selection bias'). For example, it is possible that these offenders were more motivated to change than other offenders.

Other limitations include the following:

- With a sample size of 193 conferenced offenders who had at least two years in which to reoffend[3], a relatively large reduction in reconviction rates would be required to achieve a statistically significant difference.

- Serious reoffending may take considerable time to finalise, leading to an underestimate of reconvictions within the period. This may also result in a bias, if one group of offenders reoffends at a similar rate but commits less serious offences. However, one year reconviction rates (with a two year minimum follow-up period in which to be reconvicted) should be accurate.

- Reoffending was defined as offences committed within two years of the conference date for the conferenced group and within two years of the case finalisation date for other offenders. This could potentially cause a bias, if, for example, people who have not yet been sentenced are less likely to reoffend.

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[3]   Thirteen of the 206 offenders in the conferenced group were excluded from the analysis of two-year reconviction rates as they had less than two years 'at large' after their prison sentence in which to reoffend (although all had at least a year).

3 Reoffending comparisons between groups

3.1 Two year reconviction rates for the conferenced group and comparison groups

This section examines whether or not there was a significant reduction in the rate of reoffending by offenders who participated in a restorative justice conference (the conferenced group), compared to similar offenders dealt with through the conventional court process (the ten matched comparison groups). The actual reconviction rate for the conferenced group was also compared with their predicted reconviction rate, as estimated from the logistic regression model described in Appendix A. The predicted rate gives the expected reconviction rate based on the demographic, offence and prior offending characteristics of these offenders.

Table 3.1 shows that the actual two year reconviction rate for the conferenced group was 41%, whereas the predicted rate was 45%. That is, 80 of the 193 offenders in the conferenced group actually reoffended within two years (and were reconvicted within the study timeframe), compared to the predicted rate of 87 out of 193. This difference was not statistically significant.

Table 3.1:   Reconvictions within two years for the conferenced group and comparison groups: percentages

	Conferenced group (n = 193)	Comparison groups (n = 10 groups of 193)
Actual reconviction rate	41	45 (range: 42.0 to 48.7)
Predicted reconviction rate[1]	45	45 (range: 45.0 to 45.1)
Significance	ns[2]	ns[3]
Number of subsequent reconvictions:		
0	59	55
1	16	19
2–4	21	21
5+	4	5

Note: Excludes offenders who have had less than a year in which to reoffend.

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns=not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns=not significant).

The actual reconviction rates of the ten comparison groups ranged from 42% to 49%, with an overall average of 45%. Thus, the actual reconviction rate of the conferenced offenders was lower than the rate for all ten comparison groups, but the difference between the conferenced and comparison groups was not statistically significant.[4]

In summary, there was some indication that a real drop in reconviction rates has occurred for the conferenced group, as the rate for the conferenced group was lower than for all ten comparison groups, and the expected rate based on offender characteristics. However, this apparent drop in the reconviction rate for the conferenced group was small in absolute terms (approximately 4%) and not statistically significant.

Note that the conferenced and comparison groups had the same predicted reconviction rate (45%), indicating a good match between these groups in terms of factors predicting reoffending. The comparison group had an actual average reconviction rate identical to the predicted rate.

3.2   Two year reconviction rates for other groups

The conferenced group had a very significantly lower actual two year reconviction rate than both the non-conferenced group and the group of other potentially eligible offenders. The conferenced group also had fewer subsequent reconvictions on average in the follow-up year than these groups (Table 3.2).

Table 3.2:   Reconvictions within two years, by group: percentages

	Conferenced	Non-conferenced	Other eligible
	(n = 193)	*(n = 315)*	*(n = 22,491)*
Actual reconviction rate	41	60	62
Predicted reconviction rate[1]	45	57	62
Significance[2]		$p < 0.001$	$p < 0.001$
Number of subsequent reconvictions			
0	59	40	38
1	16	22	20
2–4	21	31	32
5+	4	6	9

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Z-test of the significance of the difference between the actual rate for the conference group and the actual rate for other groups.

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[4]   In the previous year's report (*New Zealand Court-Referred Restorative Justice Pilot: Evaluation*, Ministry of Justice, 2005), the findings were similar (a small but consistent decrease in reoffending), but the difference was said to be significant. The current analysis used a more appropriate statistical test, as discussed in section 2.3.

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The lower reconviction rate for the conferenced group compared to the non-conferenced group and 'other eligible' group was expected, given the different type of offenders in the conferenced group (see Appendix B). That is, the conferenced group had a larger proportion of offenders with characteristics associated with lower reconviction rates (such as more traffic offenders and offenders with a less extensive and less serious criminal history). This can be seen from the predicted reconviction rate statistics in Table 3.2, which were derived from the logistic regression model. For example, of offenders who in theory would have been eligible for the restorative justice pilot, 62% reoffended within two years, the same as the predicted rate based on factors such as age, gender, offence and prior criminal history. The comparison groups and non-conferenced group also reoffended at the expected rate.

3.3 One year reconviction rates revisited

One limitation of the one year follow-up study was the time available in which to record reconvictions, especially as some types of cases (where a defendant pleads not guilty) take a considerable period of time to be finalised by the courts. Using the current data, one year reconviction rates can now be more accurately measured. That is, the revised one year rates still count offences that occurred in the first year after the critical date (section 2.2), but an additional year was available in which to process cases through the criminal courts. The longer follow-up also allowed all 206 conferenced offenders to be included in the analysis, as all those conferenced offenders sentenced to imprisonment have now had at least a year 'at large' after release in which to reoffend.

As shown in Table 3.3, the longer follow-up period in the current analysis did have an effect on the one year reconviction rate for all groups. The conferenced group showed an absolute increase of 3.8% in the average actual one year reconviction rate, from the 31.6% in the previous report's analysis to 35.4% in the current analysis. This was due to the combination of having more time in which to have reoffending processed by the court (1.6% increase) and including all conferenced offenders who had served a prison term in the analysis (2.3% increase).[5]

Table 3.3:   One year actual reconviction rates, by group: percentages

	Conferenced	Comparison	Non-conferenced	Other eligible
2005 rate[1]	35	39	49	52
2004 rate[2]	32	35	46	50

[1] One year reconviction rate: reoffence committed within one year of the critical date; court case finalised by April 30 2005.

[2] One year reconviction rate: reoffence committed within one year of the critical date; court case finalised by April 30 2004, as reported in the previous report.

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[5]   The 13 conferenced offenders who were excluded from the initial one year analysis (and the two year analysis) were all sentenced to terms of imprisonment such that they did not have a full one or two years in which to reoffend. Despite not having a full follow-up period, this group did reoffend at a high rate (69% reoffended within two years or less), as expected, given the more serious nature of their referred offence and past offending that led to the prison term.

However, the relative differences between groups were unchanged. Thus, the absolute difference between the conferenced group and the comparison groups was 3.9% previously reported (with a minimum follow-up period of one year) and 3.7% in the current analysis (with a minimum follow-up period of two years).

3.4 Time to date of reoffending

Survival analysis provides another statistical approach to investigating reoffending. This technique makes use of and takes account of the different lengths of follow-up time available for each offender. Therefore, all offenders were included in this analysis, even if they did not have a full two years available in which to reoffend. Cox's Proportional Hazards Regression was used to test the significance of differences in the proportion of offenders who had not yet reoffended up to two years after their critical date (conference date or case finalisation date).

The survival curve for the conferenced group was consistently above the survival curve for other groups (including all ten comparison groups), suggesting a lower rate of reoffending throughout the first two years (Figure 3.1). However, there was no statistically significant difference between the curves of the conferenced group and the comparison groups. The conferenced group curve was significantly different from both the non-conferenced group (p<0.001) and the group of other potentially eligible offenders (p<0.001).

Figure 3.1: Percentage of offenders not yet reconvicted up to two years, by group
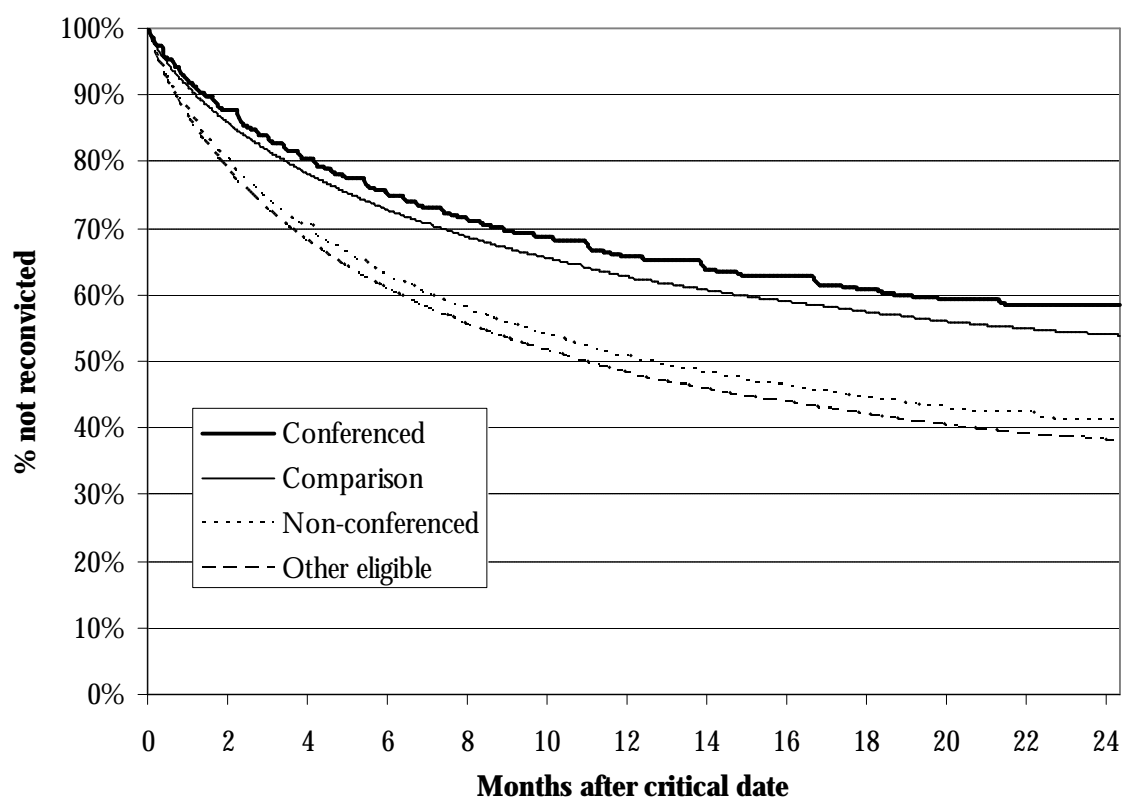
3.5   Seriousness of subsequent offending

The seriousness of offences committed within the two year follow-up period was measured by the Ministry of Justice 'Seriousness of Offence Scale'.[6] The distribution of seriousness scores was used as the main comparison point between the conferenced group and comparison groups, rather than the average seriousness, as the average is affected by the highly skewed distribution of seriousness scores. That is, the majority of reoffences were of low seriousness, but a few were of high seriousness (Figure 3.2).

The distribution of subsequent seriousness scores for the conferenced group did not differ significantly from the comparison group. Figure 3.2 shows the distribution of seriousness for those people who reoffended. The overall distribution is shown in Table 3.4.

Figure 3.2:   Distribution of the seriousness of offences committed by those who reoffended within the two year follow-up period, by group
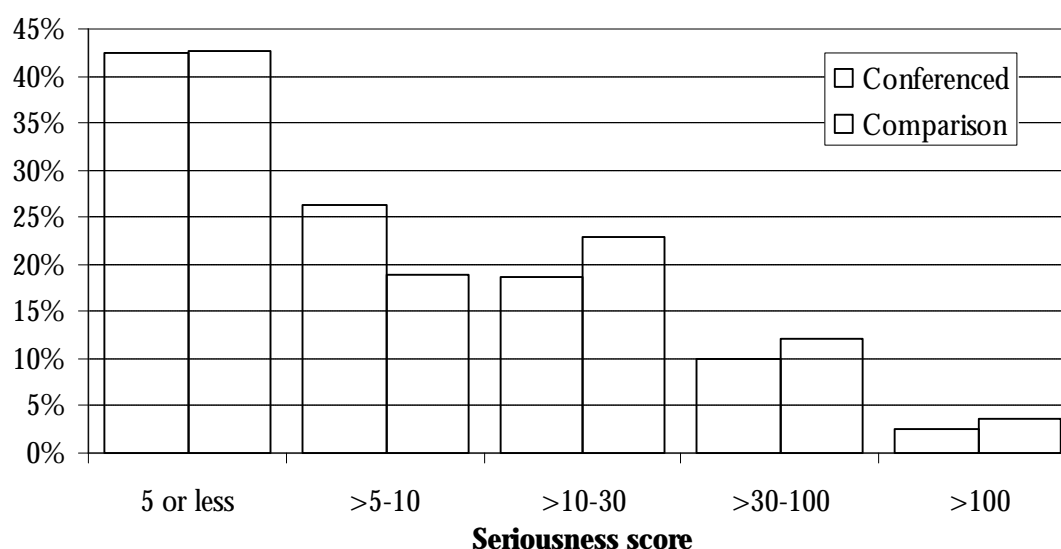
The distribution of subsequent seriousness scores for the conferenced group was significantly different to both the non-conferenced group and the other eligible group (Table 3.4). Much of this difference was due to the lower rate of reoffending by the conferenced group. The distribution of seriousness scores for people who did reoffend did not differ significantly between the conferenced and non-conferenced group, but did differ significantly between the conferenced and other eligible group.

The average seriousness of offending within the two year follow-up period was 6 for the conferenced group, 13 for the comparison groups, 13 for the non-conferenced group and 16 for the other eligible group (Table 3.4), with a range of 6 to 27 for the ten comparison groups. The average included all offenders, with the seriousness set to zero for those who did not reoffend.

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[6]   The seriousness score for each offence is the average number of days of imprisonment imposed for offences of that type, as calculated from all offenders convicted of the offence over a four-year period. The seriousness scale ranges from 0 to 6431.

Table 3.4: **Distribution of the seriousness of subsequent offending[1] and average seriousness, by group: percentages**

Seriousness score	Conferenced (n = 193)	Comparison (n = 1930)	Non-conferenced (n = 315)	Other eligible (n = 22,391)
No reoffence	59	55	40	38
Less than 5	18	19	22	23
>5–10	11	9	14	11
>10–30	8	10	10	16
>30–100	4	5	11	9
>100	1	2	2	3
Average	6	13	13	16

[1] Percentage of offenders whose average seriousness of all reoffences fell into each category (set to zero if no reoffending).

For all groups, the average seriousness of subsequent offending was less than the average seriousness of prior offending. The average seriousness of previous offences was 11 for the conferenced group, 17 for the comparison groups, 22 for the non-conferenced group and 26 for the other eligible group.

3.6 Subsequent imprisonment rate

Twenty of the 193 offenders (10%) in the conferenced group committed an offence within two years that resulted in a prison sentence (Table 3.5). The subsequent imprisonment rate for the conferenced group was not significantly lower than the average imprisonment rate for the comparison groups (12%). The imprisonment rate for the ten comparison groups ranged from 8% to 16%.

As expected, the two year imprisonment rate for the conferenced group was significantly lower than the imprisonment rate for both the non-conferenced group and the group of other potentially eligible offenders.

The subsequent two year imprisonment rate will be an underestimate, as some serious cases (where there is a not guilty plea) can take a considerable period of time to be finalised by the courts. That is, a subsequent offence may have occurred within two years, but has not yet resulted in a court conviction and prison sentence. Also, offenders excluded from the analysis because they had not had a full two year follow-up (due to being in prison) will have a higher rate of subsequent imprisonment than other offenders.

The extent of underestimation for one year imprisonment rates was indicated by the difference between the revised one year rate (with a two year minimum follow-up period for convictions) and the previous one year rate (with a one year minimum follow-up). The longer follow-up also allowed all 206 conferenced offenders to be included in the analysis, as all those conferenced offenders sentenced to imprisonment have now had at least a year after release in which to reoffend. The conferenced group showed an absolute increase of 1% in the one year imprisonment rate, from the 7% calculated in the previous report's analysis to 8% in the current analysis (Table 3.5).

Table 3.5:   One year and two year subsequent imprisonment rates, by group: percentages

Imprisonment rate	Conferenced	Comparison	Non-conferenced	Other eligible
Two year[1]	10	12	17*	21*
Revised one year[2]	8	10	14*	18*
Previous one year[3]	7	8	10	14*

* Significantly different from conferenced group, as tested by Z-test for the non-conferenced and other eligible groups and by McNemar's test for the ten matched comparison groups.

[1] Percentage imprisoned for a reoffence occurring within two years of the critical case date.

[2] Percentage imprisoned for a reoffence occurring within one year of the critical case date (minimum two year follow-up period for reoffence to be proved in court).

[3] Percentage imprisoned for a reoffence occurring within one year of the critical case date (minimum one year follow-up period for reoffence to be proved in court), as published in the one year follow-up report.

4 Reoffending patterns within the conferenced group

4.1   Data interpretation

The aim of this chapter is to explore whether certain types of offenders within the conferenced group showed a larger reduction in reoffending than other offenders. Therefore, actual two year reconviction rates were compared with predicted rates for sub-groups of the conferenced group. Comparisons were also made between the conferenced group and comparison groups for variables for which the two groups were closely matched. Reconviction rates were calculated by demographic group, offence type, criminal history, reoffending risk category, referral court, and conference outcome. Some of the interaction effects between these variables are explored in section 4.10.

The conferenced group comprised 193 offenders who had at least a two year follow-up period. This sample size was too small to allow more than a broad subdivision of the sample, to look for general indications of differences that could be followed up by further research. As the reconviction rate for the total conferenced group was not significantly different from either the predicted rate for the conferenced group or the rate for the comparison groups, statistically significant differences between sub-groups could only be achieved for very large differences between sub-groups.

In the following analyses, all apparently substantial differences have been highlighted, though few reached statistical significance as judged by the standard 95% significance level (i.e. probability value p<0.05). In each table, exact probability values are shown if the difference appeared substantial. Such differences must be interpreted with caution, as large differences can arise by chance in small samples. Also, it is important to keep in mind that large numbers of comparisons will usually generate some significant results by chance alone. For example, at the 95% significance level, one in twenty results are likely to be significant due to chance alone.

4.2   Reconviction rates by gender

Women had a lower reconviction rate than men for both the conferenced group and comparison groups (Table 4.1). However, this was consistent with their lower predicted reconviction rate. That is, the characteristics of the female offenders (such as a less extensive criminal history, on average) are associated with lower reconviction rates in general.

There was no evidence of a reduced reconviction rate for women who had attended a restorative justice conference. The actual reconviction rate of the women who attended a

conference was exactly the same as their predicted rate and similar to the reconviction rate of the matched comparison groups.

Table 4.1:   **Two year reconviction rates for the conferenced group and comparison groups, by gender: percentages**

	Females	**Males**
Conferenced group	*(n = 45)*	*(n = 148)*
Actual rate	31	45
Predicted rate[1]	31	49
Significance[2]	ns	ns (p = 0.14)
Comparison groups	*(n = 450)*	*(n = 1480)*
Actual rate	29	50
Predicted rate[1]	31	49
Significance[3]	ns	ns (p = 0.14)

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

In contrast, the actual reconviction rate for the men who attended a restorative justice conference (45%) appeared to be slightly lower than both their predicted rate (49%) and the average reconviction rate of the ten matched comparison groups (50%). However, in neither case was the difference statistically significant. Nine of the ten comparison groups had a higher reconviction rate than the conferenced group.

The results of the two year follow-up were similar to those of the one year follow-up. In both cases, females showed no difference between actual and predicted reconviction rates, while males showed a (non-significant) absolute reduction of 5% in both studies.

4.3   Reconviction rates by age group

A consistent finding in reconviction studies is that young people have higher reconviction rates than older people.[7] This general finding was also true for this evaluation. Over two-thirds of the 16 to 19 year old offenders who attended a conference reoffended within two years, compared to fewer than one in ten offenders aged 40 years or over (Table 4.2). This was consistent with the higher predicted reconviction rate for younger people.

The actual reconviction rate did not differ significantly from the predicted reconviction rate or the actual rate for the comparison groups for any age group of the conferenced group, based on the relatively small sample sizes available. All age groups, other than 16 to 19 year

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[7]   See, for example, Lloyd, C., Mair, G., and Hough, M. (1994) *Explaining reconviction rates: a critical analysis.* Research Findings No. 12, Home Office Research and Statistics Department, London: Home Office.

olds, showed some indication of a decrease, with the largest apparent decrease occurring for 25 to 29 year olds.

Table 4.2: Two year reconviction rates for the conferenced group and comparison groups, by age group: percentages

	Age group					
	16 to 19	**20 to 24**	**25 to 29**	**30 to 39**	**40 to 80**	**20+**
Conferenced	*(n = 55)*	*(n = 58)*	*(n = 25)*	*(n = 31)*	*(n = 24)*	*(n = 138)*
Actual rate	67	40	32	32	8	31
Predicted rate[1]	63	45	44	35	16	38
Significance[2]	ns	ns	ns	ns	ns	ns
Comparison	*(n = 570)*	*(n = 556)*	*(n = 253)*	*(n = 319)*	*(n = 232)*	*(n = 1427)*
Actual rate	67	46	41	36	16	38
Predicted rate[1]	61	50	43	35	14	40
Significance[3]	ns	ns	ns	ns	ns	ns (p = 0.07)

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

The difference between the actual reconviction rates of the conferenced and comparison groups was close to significance (p = 0.07) for the combined group of all offenders aged over twenty. For offenders aged over twenty, all ten comparison groups had a higher reconviction rate (range 35% to 40%) than the conferenced group (31%).

The results of the two year follow-up were similar to those of the one year follow-up. In both cases, 16 to 19 year old offenders showed no difference between actual and predicted reconviction rates, while offenders aged 20 or over (and especially 25 to 29 year olds) showed some indications of a reduction in both studies, although the differences were not significant.

4.4 Reconviction rates by ethnic group

For this analysis, the actual reconviction rate for the conferenced group was compared only with the predicted rate. Comparisons were not made between the conferenced group and the comparison groups because not all comparison offenders were matched by ethnicity.[8]

The actual and predicted reconviction rates for Maori were very similar, while the actual rates appeared slightly lower than the predicted rates for both the Pacific and NZ European/other

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[8] Also, ethnicity may be missing and may not always be accurately recorded in the Ministry of Justice case data (see pages 24-25 of *Conviction and Sentencing of Offenders in New Zealand,* by P. Spier. and B. Lash, Ministry of Justice 2004). Ethnicity for the conferenced group was taken from the restorative justice database.

ethnic groups (Table 4.3). However, none of the differences were at all close to statistical significance.

Table 4.3: **Two year reconviction rates for the conferenced group, by ethnic group: percentages**

	Maori	Pacific Peoples	NZ European/Other
	(n = 49)	*(n = 34)*	*(n = 110)*
Actual rate	55	35	38
Predicted rate[1]	55	42	42
Significance[2]	ns	ns	ns

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

The results of the two year follow-up were similar to those of the one year follow-up. In both cases, Maori offenders showed no difference between actual and predicted reconviction rates, while other ethnic groups showed some indications of a reduction, although the differences were not significant.

4.5 Reconviction rates by offence type

Reconviction rates vary greatly between offenders who have committed different types of offences. For example, 71% of offenders in the conferenced group who had been referred for a burglary offence were reconvicted within two years, compared to just 11% of offenders who had been referred for driving causing injury or death (the only eligible traffic offences), as shown in Figure 4.1. However, these differences were largely expected, in that the characteristics of offenders convicted of burglary in general tend to be associated with higher predicted reconviction rates than traffic offenders. For example, the average number of previous cases for conferenced offenders who had committed a burglary was 5.2 cases, compared to 2.5 cases for those who had committed a driving offence causing injury or death. Similarly, the average age of burglars was 21 years, compared to 31 years for traffic offenders.

The more important statistic for assessing the effect of the restorative justice pilot was the difference between the actual reconviction rate and the predicted rate for each offence group, as shown in Figure 4.1.

Three offence groups appeared to have a lower than predicted reconviction rate: serious violent offences (mainly grievous assault, but also robbery), traffic offences (driving causing injury or death), and the 'theft/other' offence group (mainly theft, but also receiving, conversion, property damage and arms offences). However, these findings were based on small sample sizes (n = 24, 37 and 34 respectively) and no individual group was close to statistical significance. The actual reconviction rate for offenders from these three groups combined was 28%, which was significantly lower than their combined predicted rate of 38% (p=0.02).

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Figure 4.1:   Two year reconviction rates for the conferenced group, by referred offence
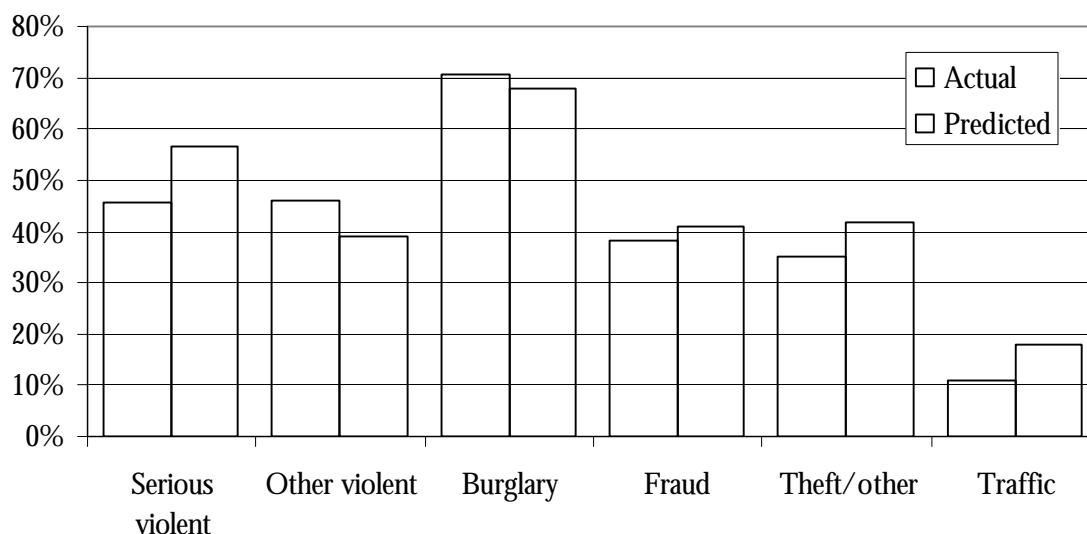
Comparions between the conferenced group and the matched comparison groups were made using the offence categories used in the matching (Table 4.4). These offence categories were selected on the basis of offences that made a difference to reoffending rates in the logistic regression model for all eligible offenders (Appendix A). The actual reconviction rate for the conferenced group did not differ significantly from the average reconviction rate for the ten comparison groups for any offence group.

Table 4.4:   Two year reconviction rates for the conferenced group and comparison groups, by offence type: percentages

| | Offence group[1] | | | | |
	Violence	**Burglary/RC**	**Fraud**	**Theft/Other**	**Traffic**
Conferenced	*(n = 50)*	*(n = 51)*	*(n = 21)*	*(n = 34)*	*(n = 37)*
Actual rate	46	65	38	35	11
Predicted rate[2]	48	66	41	42	18
Significance[3]	ns	ns	ns	ns	ns
Comparison	*(n = 500)*	*(n = 510)*	*(n = 210)*	*(n = 340)*	*(n = 370)*
Actual rate	46	70	40	43	18
Predicted rate[2]	48	66	41	42	18
Significance[4]	ns	ns	ns	ns	ns

[1] Violence includes serious and other violent offences (shown separately in the graph). Burglary/RC = burglary, receiving, conversion. Theft/other includes theft, property damage, arms offences. Traffic = driving causing injury or death.

[2] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[3] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[4] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

Only two offence groupings showed any indication of a difference: theft/other and traffic offences. The actual reconviction rate for conferenced offenders referred for theft/other offences was 35%, compared to 43% for the comparison groups, with all ten comparison groups having reconviction rates of 35% or more. The actual reconviction rate for conferenced offenders referred for traffic offences was 11%, compared to 18% for the comparison groups, with all but one of the ten comparison groups having reconviction rates of larger than 11%.

The results of the two year follow-up were generally similar to those of the one year follow-up. In both cases, offenders whose referred offence was burglary or fraud showed no difference between actual and predicted reconviction rates, while offenders whose referred offence was serious violence, theft/other or traffic showed some indications of a reduction, although the differences were not statistically significant. Overall, the violent offender group showed no indication of a difference in the two year follow-up, in contrast to the one year follow-up. This resulted from the 'other violent' group having a higher than predicted reconviction rate in the two year follow-up.

4.6   Reconviction rates by criminal history

Reconviction rates vary greatly between offenders with different criminal history profiles. For example, 61% of all offenders in the conferenced group who had three or more previous proved cases were reconvicted within two years, compared to 27% of first offenders (Table 4.5). These differences were largely as expected, in that repeat offenders had higher predicted reconviction rates than first offenders, based on the logistic model derived from all eligible offenders.

Table 4.5:   Two year reconviction rates for the conferenced group and comparison groups, by number of previous proved cases: percentages

	Number of previous proved cases		
	First offender	1-2 previous cases	3+ previous cases
Conferenced	(n = 88)	(n = 49)	(n = 56)
Actual rate	27	45	61
Predicted rate[1]	28	52	65
Significance[2]	ns	ns	ns
Comparison	(n = 855)	(n = 412)	(n = 663)
Actual rate	29	47	66
Predicted rate[1]	28	47	66
Significance[3]	ns	ns	ns

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

The difference between actual and predicted rates for the conferenced group was least for first offenders (people with no previous proved cases) and largest for offenders with one or two previous cases. However, the differences were not statistically significant for any group. Nor was there any significant difference between the actual rate for the conferenced group and the average actual rate for the comparison groups.

The results of the two year follow-up were generally similar to those of the one year follow-up. In both cases, first offenders showed no difference between actual and predicted reconviction rates. However, offenders who had one to two previous convictions showed a larger gap between actual and predicted rates after the one year follow-up (12%) than they did after the two year follow up (7%).

Although the offender's age at the date of their first ever proved case was not specifically a matching variable, the conferenced and comparison groups were well matched by this factor. Age at first proved case was strongly negatively associated with the probability of reoffending. That is, people who started offending at a younger age have high reoffending rates.

Examination of the relationship between reconviction rates and age at first proved case suggested that conferenced offenders who started offending later had lower actual than predicted reconviction rates. In particular, conferenced offenders who were aged 19 or over at their first proved case had an actual two year reconviction rate of 23%, compared to a predicted rate of 31% (Table 4.6). This difference was significant at the 90% significance level. The conferenced group also had a significantly lower actual reconviction rate than the comparison groups for offenders who were aged 19 or over at their first proved case (30%).

Table 4.6: Two year reconviction rates for the conferenced group and comparison groups, by age at first proved case: percentages

	Aged under 19 years	Aged 19 or over
Conferenced	*(n = 86)*	*(n = 107)*
Actual rate	64	23
Predicted rate[1]	62	31
Significance[2]	ns	ns (p = 0.10)
Comparison	*(n = 874)*	*(n = 1056)*
Actual rate	65	30
Predicted rate[1]	64	30
Significance[3]	ns	p < 0.05

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

4.7   Reconviction rates by reoffending risk category

For this analysis, offenders were classified into four reoffending risk groups, based on their predicted reconviction rate. Low risk offenders had a predicted reconviction rate of less than 25%, low–medium risk offenders had a predicted rate between 25% and 50%, medium–high risk offenders had a predicted rate between 50% and 75%, and high risk offenders had a predicted rate of 75% or more.

Three risk groups (low, low–medium and high) showed very little difference either between the actual and predicted reconviction rate for the conferenced group or between the actual rates for the conferenced and comparison groups (Table 4.7).

Table 4.7:   Two year reconviction rates for the conferenced group and comparison groups, by risk group: percentages

	Risk group[1]			
	Low	**Low–medium**	**Medium–high**	**High**
Conferenced	*(n = 54)*	*(n = 61)*	*(n = 41)*	*(n = 37)*
Actual rate	11	38	49	84
Predicted rate[2]	13	38	63	84
Significance[3]	ns	ns	ns (p = 0.05)	ns
Comparison	*(n = 538)*	*(n = 609)*	*(n = 408)*	*(n = 375)*
Actual rate	11	41	61	84
Predicted rate[2]	13	37	63	84
Significance[4]	ns	ns	ns	ns

[1] 'Low risk' was defined as those offenders with a predicted reconviction rate of less than 25%, 'low–medium risk' had a predicted reconviction rate of 25% up to 50%, medium–high had a predicted reconviction rate of 50% up to 75%, and 'high risk' was 75% or over.

[2] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[3] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[4] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

The actual reconviction rate for the medium–high risk group was significantly lower for the conferenced group (49%) than the predicted rate (63%). The actual rate for the conferenced group (49%) was not significantly lower than the average rate for the comparison group (61%), although all ten comparison groups had rates higher than that of the conferenced group (range 51% to 70%). Section 4.10 explores this finding further, in relation to the types of offender in each risk group.

The results of the two year follow-up were generally similar to those of the one year follow-up in that both suggested a larger difference between actual and predicted reconviction rates for higher risk offenders. The two year follow-up expanded on the earlier results by splitting

the original high-risk group in two, which indicated that very high risk offenders showed no effect.

4.8   Reconviction rates by court

Four courts were included in the court-referred restorative justice pilot: Auckland, Waitakere, Hamilton and Dunedin District Courts. After the one year follow-up, offenders referred to three of these courts (Waitakere, Hamilton and Dunedin District Courts) had an actual one year reconviction rate very similar to their predicted rate. In contrast, Auckland District Court had an actual reconviction rate (18%) that appeared substantially lower than the predicted rate (27%), although as the sample size was relatively small the difference was not statistically significant.

After the second year follow-up, the gap between the actual and predicted rate for Auckland has decreased, while the gap had increased for Hamilton and Dunedin (Figure 4.2). Thus, offenders from three of the four pilot courts now showed some indication of a reduced reoffending rate, although in all cases the apparent reduction was small and the differences were not at all close to statistically significant. Section 4.10 explores these findings further, in relation to the types of offender in each court.

Figure 4.2:   One year and two year reconviction rate for the conferenced group, by court
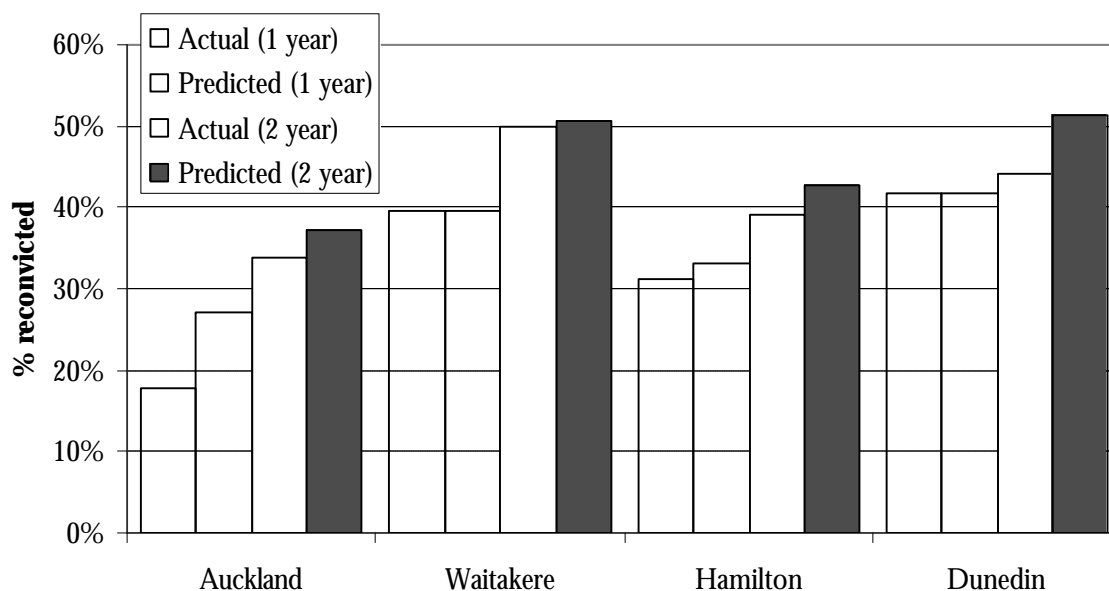
The relative changes between the first and second year follow-up were due to a higher proportion of reoffending occurring in the second year for Auckland conferenced offenders. Of those who did reoffend within two years, eight out of seventeen (47%) in Auckland

reoffended in the second year of follow-up, compared to four of 24 in Waitakere (17%), three of eighteen in Hamilton (17%), and one out of nineteen (5%) in Dunedin.[9]

The ten comparison groups were not directly comparable to the conferenced group as these comparison groups were not matched by court to the conferenced group. Therefore an additional comparison group was selected, which required the conferenced offenders to be matched by court, as well as other characteristics. The smaller pool of comparison offenders from which to select matches meant that this court-matched comparison group was not as well-matched overall on predictors of reoffending as the general comparison groups.

The reconviction rate for the conferenced group was slightly, but not significantly, lower than the rate for the comparison group for Auckland and Dunedin, but not for Waitakere and Hamilton (Table 4.8).

Table 4.8: **Two year reconviction rates for the conferenced group and the court-matched comparison group, by court: percentages**

	District court			
	Auckland	**Waitakere**	**Hamilton**	**Dunedin**
Conferenced	*(n = 56)*	*(n = 48)*	*(n = 46)*	*(n = 43)*
Actual rate	34	50	39	44
Predicted rate[1]	37	51	43	51
Significance[2]	ns	ns	ns	ns
Comparison	*(n = 56)*	*(n = 48)*	*(n = 46)*	*(n = 43)*
Actual rate	39	48	37	60
Predicted rate[1]	37	51	42	51
Significance[3]	ns	ns	ns	ns

[1] The predicted reconviction rate was derived from a logistic regression model, based on factors such as the age, gender, offence and prior criminal history of the offender.

[2] Significance of the conferenced group dummy variable within the logistic regression model (ns = not significant).

[3] McNemar's test of the significance of the difference between the actual rate for the conference group and the ten matched comparison groups (ns = not significant).

4.9 Reconviction rates by conference outcome

In this section, differences in actual reconviction rates were examined between conferenced offenders with different conference outcomes (e.g. between those who made an apology to the victim and those who did not). As for other analyses of sub-groups of the conferenced group, small sample sizes were a major limitation of this analysis.

A number of outcomes were recorded from the restorative justice conference. Many of the outcomes occurred in the vast majority of conferences and therefore could not be used to

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[9] These differences may have occurred purely by chance, given the small numbers, again reinforcing the need to interpret results with caution when sample sizes are small.

assess differences in reconviction rates. For example, of the 193 offenders who attended a conference and who had at least a two year follow-up period, only four did not make an apology. Other outcomes with too few offenders in one category included expressions of remorse by the offender, whether the apology was accepted by the victim, and whether education or a cultural programme was included in the conference plan.

No significant difference in reconviction rates was found for any of the other outcomes, including whether reparation was agreed[10], whether the victim agreed not to request reparation, whether the conference incorporated a cultural process, whether the victim expressed anger, whether there was a written apology, whether the plan included counselling for the offender, whether the victim was to be kept informed of the offender's progress, whether an indication was given that there would not be a prison sentence, whether the offender agreed to undertake work for the victim or the community, whether employment or training was included in the conference plan, and whether the outcomes would be monitored.

4.10 Interactions between key variables

The analyses so far have suggested that there was some indication of a reduction in rates of reoffending (although rarely a statistically significant decrease) for the following groups of conferenced offenders: males, offenders aged 20 or over, offenders who had their first ever conviction at age 19 or more, offenders who had committed grievous assault, theft or traffic offences, and offenders with a moderately high risk of reoffending. That is, for these groups, the difference between the actual and predicted reconviction rate was close to statistical significance and their actual reconviction rate was lower than at least nine of the ten matched comparison groups.

Conversely, several groups of conferenced offenders showed no indication of a reduction in reoffending: teenage offenders, first offenders, Maori offenders, offenders who had their first ever conviction at age 18 or under, offenders who had committed burglary, fraud or serious assault, and offenders referred to Waitakere District Court.

Many of these groups had characteristics that were inter-related. For example, burglars were, on average, younger, started offending earlier, had more previous convictions and a higher predicted rate of reconviction than other offenders, while the opposite was true for traffic offenders.

The following summary refers to 'apparent effects', meaning that the actual reconviction rate of that sub-group of the conferenced group appeared to be lower than the predicted rate. Extreme caution is needed in interpreting these results, as sample sizes of sub-groups were often very small. The main intention of this section is to highlight some of the relationships between variables and to examine whether any particular variables appeared to be more important in explaining apparent effects than others.

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[10] In the previous year's analysis, 'reparation agreed' and 'agreed not to request reparation' were said to be significantly related to the probability of reoffending. However, this finding was incorrect, due to an error in the merging of multiple files.

The findings, as outlined below, were that the major effects came from offence type and demographics (gender and ethnicity) and criminal history (the age at which offending first began).

Offences that had an apparent effect (mainly grievous assault, theft, and traffic offences) appeared to have an effect over all levels of previous offending history (first offenders, 1–2 previous cases, 3+ previous cases). The overall lack of effect for first offenders was because the offences with no apparent effect (mainly serious assault, burglary, and fraud) had higher than predicted rates of reconviction for this group, cancelling out the reduction for other offences.

Offences that had an apparent effect also appeared to have an effect within each age group and for both offenders who were first convicted at age 19 or over and offenders first convicted at age 18 or less. The overall lack of effect for young offenders was partly due to the larger proportion of no-effect offences in these age groups (especially burglary), but mainly because the rate of reconviction was much higher than expected for the no-effect offences at this age, cancelling out the reduction for offences with an apparent effect.

Age and criminal history had an interaction that was not fully taken account of in the model. That is, young first offenders (aged under 19) had a high reoffending rate, while older first offenders had a low rate. Thus, the overall lack of effect for first offenders (no apparent reduction in reconviction rates), was due to a much higher than predicted rate of reoffending for young first offenders, which cancelled out the reduction in reoffending for older first offenders. Offenders who were first convicted before age 19 did not have a reduced rate for any level of previous offending, whereas the opposite was true for offenders who were first convicted at age 19 or over.

Age at the time of the first proved case appeared to be more important than age at the time of the referred offence, as offenders who were first convicted at age 19 or over had reduced reconviction rate at all ages, while offenders who were first convicted before age 19 did not have a reduced rate at any age. For example, offenders currently aged in their 30s had a lower than predicted rate if their first ever conviction occurred at age 19 or over, but a higher than predicted rate if their first ever conviction occurred at age 18 or less.

Conferenced offenders with an early first conviction had a similar or higher than predicted rate of reconviction for both males and females, while conferenced offenders with a later first conviction had a lower than predicted rate for both males and females, with a larger effect for males in both categories.

The difference in effect between males and females occurred at all ages, except that 16 to 19 year olds of both sexes showed no effect.

One of the reasons for the lack of effect for Maori was that a larger proportion of Maori offenders had convictions at an early age. However, Maori offenders who started offending later also showed no reduction in reoffending. Maori offenders showed no evidence of an effect for any offence type.

The relationship between reduction in reconviction and reoffending risk appeared to be related to the composition of each risk group. The group with a predicted reconviction rate of less than 25% showed little apparent effect and was largely made up of first offenders and had more female offenders than other groups. The group with a predicted reconviction rate of between 25% and 50% showed little apparent effect and was largely made up of offenders who were either first offenders and/or who had committed offences which showed little effect (serious assault, burglary, fraud). The group with a predicted reconviction rate of between 50% and 75%, who showed an apparent effect, had the highest proportion of offenders who were not first offenders and who had committed offences which showed an effect. The group with a predicted reconviction rate of 75% or over showed little apparent effect and was largely made up of offenders who began offending early and had committed offences such as burglary.

Of the four District Courts in the pilot, only Waitakere showed no indication of an effect. The estimated effect was relatively small for Hamilton and Auckland and a little larger for Dunedin (although with small sample sizes). Age and offence distributions did not appear to explain differences between courts. However, the courts varied widely in ethnic proportions, with Dunedin having the lowest proportion of Maori offenders and Hamilton and Waitakere the highest. As Maori offenders had higher than predicted levels of reconviction in all courts (except Dunedin, where the Maori sample was too small to estimate rates) and non-Maori had lower than predicted levels of reconviction in all courts, the ethnic distribution of offenders at the courts appeared to explain (at least superficially) much of the variation between courts.

Appendix A: Methodology

Extracting court case data

The database of the court-referred restorative justice pilot study holds information on the person referred (including personal identifier or PRN) and the charges referred (including the unique identifier of each charge or CRN).   The CRN was used to identify detailed information on the relevant cases from information on finalised charges and cases held by the Ministry of Justice. Where the CRN was missing or incorrectly entered, the relevant case was identified using the PRN. All case matches were checked to ensure they matched the correct offender, were within the correct time frame and involved an eligible offence.

At the same time, information was extracted on all other potentially eligible cases finalised between 2001 and 2003, with a final hearing date before 30 April 2003 (that is, one year prior to the extraction of the initial criminal history data). This dataset (n = 45,610) provided a large sample from which to select multiple comparison groups.

Cases considered potentially eligible were those cases processed by a District Court and involving a guilty plea[11] and an offence that is eligible for referral to the restorative justice pilot. Some cases with a guilty plea nevertheless resulted in a 'not proved' outcome. These were included in the eligible case data if the case was withdrawn by a judge, as this was a not infrequent outcome for the conferenced group. Other 'not proved' cases were excluded, including those withdrawn by a registrar (the common outcome for offenders who have undergone Police Adult Diversion). The age range was limited to people aged between 16 and 80, the same age range as restorative justice referrals.

Eligible offences include all property offences where the maximum penalty was two years imprisonment or more, almost all other Crimes Act offences where the maximum penalty was between two and seven years imprisonment inclusive, common assault, driving causing injury or death, criminal harassment, and various Arms Act offences (e.g. possession and careless use of a weapon). Drug offences, offences against justice, and domestic violence were all ineligible.

The information extracted from the Ministry of Justice case database included the finalisation date of the case, the major offence[12], the offence date, the number of charges in the case, the final disposition (outcome) and any sentences or orders imposed, as well as demographic information on the offender.

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[11]   Cases with no plea recorded were also included if they resulted in a proved outcome, as these made up a significant minority of the cases referred to a conference.

[12]   The major offence in a case is defined as the offence resulting in the most serious sentence. In some cases this was not the same as the offence(s) referred to the restorative justice pilot.

Extracting and summarising of criminal offending records

Criminal records, including traffic offence records, were extracted for all referred and eligible offenders from the Justice Data Warehouse. The criminal records database contains all proved charges, including all convictions and all charges resulting in a proved outcome, such as a discharge without conviction, or a proved outcome in the Youth Court. Throughout this report, 'previous convictions' and 'reconvictions' refer to charges or cases with a proved outcome.

Two aspects of the criminal record were needed for this project. First, the number and nature of convictions (proved cases) finalised prior to the relevant eligible case were required. This information was used to select comparison groups with similar characteristics to the conferenced group. The summarised prior record included information on:

- the number, seriousness and type of previous proved charges and cases;
- the number of previous prison and community-based sentences;
- the time since the most recent previous proved case;
- the rate of offending (number of previous proved charges per year);
- the age at which the first proved case of any type occurred.

Second, information on proved reoffending within one and two years of the critical date was required as the basis of the reconviction study. The conference date was chosen as the critical date from which to measure reoffending as this is the date from which any behavioural change resulting from the restorative justice conference could have occurred. No equivalent date was available for other groups, so the case finalisation date was used. Proved reoffending within two years was defined as a proved charge resulting from an offence where the offence date occurred within two years of the critical date.

An adjustment was made for offenders who received a prison sentence, taking the release date from prison as the critical date unless an offence occurred while the offender was in prison. Some offenders sentenced to imprisonment did not have a full two years in which to reoffend. This group was excluded from the analysis of two year reconviction rates, but were included in the survival analysis.

The summarised reconviction record included information on:

- the number of proved charges and cases within one and two years;
- the number of reconvictions resulting in prison and community-based sentences;
- the summed seriousness and maximum seriousness of subsequent proved charges;
- the time between the critical date and the offence date of the first subsequent proved charge;
- the offence type of the first subsequent charge.

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Development of a model to predict reconviction rates

Offenders vary very widely in their likelihood of reoffending. In order to assess whether an intervention results in a decrease in reconviction rates (in the absence of a randomised control trial), the expected rate of reconviction for the offenders on the pilot must be estimated and/or these offenders must be matched to a comparison group with similar expected reconviction rates. Previous studies have shown that prior criminal history, offence and demographic factors are all key predictors of reconviction rates.

To achieve close matches that took account of the many predictors of reoffending, comparison offenders were selected using predicted reconviction rates derived from a logistic regression model of the probability of reconviction within two years. This model was developed using the approach outlined in Ratner (2003)[13] as outlined below.

The independent (predictor) variables tested for inclusion in the model were initially selected based on previous studies, particularly Bakker, O'Malley and Riley, 1999.[14] A variety of variables were tested in the model, including demographic variables (gender, age and ethnicity), eligible case variables (offence type of the major offence in the case, offence seriousness score[15] and number of charges in the case) and criminal history variables (see previous section). An initial univariate analysis of the relationship between each variable and the average reconviction rate was used to identify possible categorical and ordinal groups, dummy variables and any transformations required by continuous variables to meet linearity requirements.

A test model was fitted using data from approximately half the sample of eligible cases and validated and refined using the other half of the sample of eligible cases. The model's predicted values fitted well to the ideal line, both for the direct output of the test model and the output of the validation data as predicted by the test model. The best predictors were retained in the model, after testing of these variables and possible interaction effects. All predictors in the final model were highly significant (p<0.0001), as tested by their Wald Chi-Square statistics. The final model had an R-squared value of 0.36.

Higher rates of reconviction (odds ratios larger than one) were associated with offenders who had a high rate of prior offending, a recent previous conviction, or who were younger, Maori or male offenders (Table A1). Traffic, violent and fraud offenders were less likely to reoffend than other offenders. 'Other' offences were mainly property offences other than fraud, but also including other eligible offence types (mainly offences involving the possession of weapons). First offender status was required in the model to offset the effect of 'time since previous case' not being defined for first offenders. Overall, first offenders were less likely to reoffend than other offenders. Offenders from the Auckland District Court also had lower rates of reconviction.

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[13] Ratner, B. (2003) *Statistical modelling and analysis for database marketing: effective techniques for mining big data.* Chapman & Hall/CRC, Florida.

[14] Bakker, L., O'Malley, J., & Riley, D. (1999) *Risk of reconviction: statistical models predicting four types of reoffending.* Department of Corrections, Wellington.

[15] The major offence in a case is the one resulting in the most serious penalty. The seriousness of an offence was measured by the Ministry of Justice 'Seriousness of Offence Scale'. The seriousness score is the average number of days of imprisonment imposed for offences of that type, as calculated from all offenders convicted of the offence over a four-year period.

Table A1: Logistic regression model to predict reconviction rate: model coefficients

Parameter	Estimate	Std Error	Wald Chi-square	Significance	Odds ratio
Constant	2.767	0.095	856.6	<.0001	
Lifetime offending rate[1]	0.653	0.018	1401.1	<.0001	1.92
Time to previous case[2]	-0.244	0.014	323.3	<.0001	0.78
Age in years	-0.028	0.002	251.6	<.0001	0.97
Traffic offence	-1.020	0.081	160.3	<.0001	0.36
First offender	0.726	0.074	97.1	<.0001	2.07
Maori offender	0.258	0.032	65.2	<.0001	1.29
Fraud offence	-0.400	0.053	56.5	<.0001	0.67
Sex (male = 1)	0.266	0.038	50.1	<.0001	1.31
More than 11 charges	-0.598	0.091	42.8	<.0001	0.55
Violent offence	-0.240	0.040	36.9	<.0001	0.79
Auckland DC	-0.218	0.049	19.9	<.0001	0.80

[1] Lifetime offending rate = log of the lifetime rate of offending (number of proved charges per year since age 13)

[2] Time to previous case = log of the time since the most recent conviction

Appendix B: Group profiles

Four groups were compared:

- conferenced group: offenders who participated in a restorative justice conference;
- comparison groups: ten comparison groups matched to the conferenced group;
- non-conferenced group: offenders referred to the pilot but who did not participate in a restorative justice conference;
- other eligible offenders group: other offenders from throughout New Zealand who would in theory have been eligible for referral.

Demographic profile

The comparison group was matched to the conferenced group by gender in all cases and by age group in most cases.[16] Therefore, the conferenced and comparison groups had very similar gender and age profiles (Table A2). The gender and age profile of the conferenced group was also fairly similar to the non-conferenced group and the other eligible group.

Table A2:   **Demographic profile of groups, including significance[1] of difference from the conferenced group**

	Conferenced *(n= 206)*	Comparison *(n= 2060)*	Non-conferenced *(n= 365)*	Other eligible *(n= 24,328)*
Gender (%)		**ns**	**ns**	**ns**
Female	24	24	18	21
Male	76	76	82	79
Age (%)		**ns**	**ns**	**ns**
16-19	28	26	32	23
20-24	30	31	25	25
25-29	13	15	17	16
30-39	17	17	15	22
40-80	13	12	10	14
Ethnicity (%)[2]		-	**	-
Maori	26	27	40	46
Pacific	17	12	16	8
NZ Euro/Other	56	61	44	46

[1] Chi-square test of difference from conferenced group: ns = not significant, ** $p<0.01$

[2] Unknown ethnicities excluded. For referred offenders, ethnicity was taken from the restorative justice database. For other groups, ethnicity was taken from the Ministry of Justice case database. Ethnicity was unknown for only one referred offender, but for 3% of all eligible cases (mainly traffic offenders), so no significance test is shown for the case comparisons. Only one ethnic group is recorded in the case data for each offender and ethnicity may not always be self-identified.

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[16]   Age matching was actually done by choosing offenders of similar age, rather than from the same age group. For example, a 30 year old could be matched to a 29 year old.

The non-conferenced group had a significantly higher proportion of Maori offenders than the conferenced group. Ethnic comparisons with other groups need to be made with caution, as some of the comparison group and other eligible offenders were missing ethnicity codes. Where possible, the conferenced group and comparison groups were matched by ethnicity, resulting in a similar distribution (Table A2). The conferenced group had a much lower proportion of Maori than the group of other eligible offenders and this difference was much larger than could be accounted for by the small group who had missing ethnicity codes.

Criminal history profile

The comparison group was a close match to the conferenced group on a range of criminal history characteristics (Table A3).

Table A3: Profile of criminal history characteristics by group, including significance[1] of difference from the conferenced group

	Conferenced (n= 206)	Comparison (n= 2060)	Non-conferenced (n= 365)	Other eligible (n= 24,328)
Previous number of cases (%)		ns	**	**
None	44	43	28	19
1–3	31	28	33	27
4–6	9	12	11	15
7+	17	17	28	39
Previous prison sentences (%)		ns	**	**
None	86	86	76	66
1+	14	14	24	34
Average maximum seriousness[2]		ns	**	**
	123	127	193	205
Lifetime conviction rate (%)[3]		ns	**	**
0–0.1	16	16	7	7
>0.1–0.5	35	40	31	26
>0.5–1	22	16	17	17
>1	27	27	44	50
Days since most recent prior case (%)[4]		ns	ns	ns
<= 180	28	28	31	37
>180–360	20	19	18	20
>360	52	53	50	43

[1] Significance of differences in distribution tested by chi-square test; significance of differences in seriousness tested by Mann-Whitney U test. ns = no significant difference from conferenced group, ** p<0.01

[2] The maximum seriousness is the seriousness score of the most serious charge recorded, prior to and including the referred or eligible case.

[3] The lifetime conviction rate is the number of proved charges per year since age 13, prior to and including charges in the referred or eligible case.

[4] First offenders not included.

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The criminal history characteristics of referred offenders who did attend a restorative justice conference were significantly different from referred offenders who did not attend a conference. Offenders in the non-conferenced group were much less likely to be first offenders and much more likely to have a large number of previous cases, more serious cases and a previous prison sentence, compared to the conferenced group.

The differences were even more marked between the conferenced group and the group of other potentially eligible offenders. Only 19% of other potentially eligible offenders were first offenders, compared to 44% of the offenders who were referred to and attended a conference. Other eligible offenders were more than twice as likely to have had a past prison sentence. They also had a significantly higher maximum seriousness score for any past offence or the referred/eligible offence, and a higher rate of offending.

These findings indicate that offenders with an extensive or serious criminal history were less likely to be referred to the restorative justice pilot and, once referred, were less likely to participate in a conference.

Profile of the referred, matched or eligible case

The comparison group was matched to the conferenced group by the offence groups shown in Table A4 where possible and by broader offence categories (violence, fraud, burglary/receiving/conversion, traffic and other) in all cases. There was a tendency for more serious types of violence in the conferenced sample compared to the comparison sample, and this was reflected in the slightly higher average seriousness score for the conferenced offenders. Conferenced offenders had a larger average number of charges in their referred case than did comparison offenders.

The non-conferenced group had a much smaller proportion of traffic offenders than the conferenced group, but a higher proportion of violent offenders. The average seriousness of the major offence and the average number of charges in the referred case did not differ significantly between the non-conferenced group and conferenced group.

The conferenced group (and indeed all referrals to the restorative justice pilot) were by no means a random sample of all potentially eligible cases. The average seriousness score was almost twice as high for the conferenced group as for other eligible offenders. There was a much higher proportion of traffic offenders (i.e. driving causing injury or death) in the conferenced group than there were in eligible cases generally. The proportion of offenders who had committed a serious type of violent offence (robbery or grievous assault) or burglary was also higher than in eligible cases generally, whereas the proportion of conferenced offenders who had committed theft, receiving or conversion was lower.

Table A4: **Profile of selected case characteristics by group, including significance[1] of difference from the conferenced group**

	Conferenced _(n= 206)_	Comparison _(n= 2060)_	Non-conferenced _(n= 365)_	Other eligible _(n= 24,328)_
Offence type (%)[2]		ns	**	**
Serious violence	14	9	16	5
Other violent/person	13	17	19	13
Burglary	20	17	21	14
Receiving/conversion	5	8	11	14
Theft	13	15	15	34
Fraud	12	12	8	10
Traffic	20	20	7	4
Other offences	3	2	2	6
Average number of charges		*	ns	ns
	4.2	2.9	3.6	3.4
Average seriousness score		*	ns	**
(scale: 0 - 3650)	96	66	107	54

[1] Significance of offence distribution differences tested by chi-square test; significance of other differences tested by Mann-Whitney U test.. ns = no significant difference from conferenced group, * $p<0.05$, ** $p<0.01$

[2] Major offence in case. Note that for referrals, the referred offence(s) is not always the major offence. Serious violence is mainly grievous assault and robbery. Other violence is mainly non-grievous assaults and threats. Traffic offences are driving causing injury or death. Other offences are mainly property damage and possession of arms offences.