



Reoffending Analysis for Restorative Justice Cases: 2008 and 2009

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Executive Summary

Restorative justice is a process for resolving crime that focuses on redressing the harm done to victims, while holding offenders to account. In the New Zealand criminal justice system, restorative justice is primarily delivered through a meeting between the victim and the offender called a restorative justice conference. Currently, the Ministry of Justice provides funding for about 1,500 conferences per year.

The main objective of this study is to determine whether offenders who participated in restorative justice conferences in both 2008 and 2009 had a reduced rate of reoffending compared with a similar group of offenders who did not take part in restorative justice conferences.

Measures of reoffending

The primary measure of reoffending used in this report is whether an offender reoffended in the 12 months and 24 months following the court process.¹ The effectiveness of restorative justice is assessed by using risk-adjusted reoffending rates. Risk-adjusted rates enable a fairer comparison to be made between offender groups by controlling for differences in the demographic and offending characteristics of offenders.

Three other measures are also used to assess the effectiveness of restorative justice: frequency of reoffending; seriousness of reoffending; and consequences (imprisonment rates) of reoffending.

Reoffending rates

The principal finding of this report is that those who had been through a restorative justice conference had a 20 percent lower reoffending rate than comparable offenders who did not receive a restorative justice conference (33.2% and 41.3% respectively). This result, from the 2009 cohort, is a statistically significant², risk-adjusted reoffending rate over the 12 months following the finalisation of cases. There was insufficient follow-up time to be able to track reoffending over 24 months for the 2009 cohort.

The differences in risk-adjusted reoffending rates for the 2008 cohort are not as large, with the conferenced group of offenders having a 5.7 percent lower rate over 12 months (43.9 percent versus 46.6 percent), and a 3.7 percent lower rate over 24 months (53.7 percent versus 55.7 percent) compared with similar offenders. However, this result was impacted by the coverage³ of restorative justice for the 2008 cohort, which was unequal across the court clusters analysed. If these differences are adjusted so that it is as if every cluster had the same proportion of conferences, then the conferenced group is estimated to have an 11 percent lower rate over 12

¹ Based on the conference date for conferenced offenders, or the final court hearing date for all other offenders.

² In this report, significant means that the result is statistically significant. This measures the probability (p) that a sample result has occurred by pure chance. The lower the value of p, the more confidence there is that the same results are real. Generally, a result of $p < 0.05$ is desirable to conclude the result is significant.

³ Coverage is defined as the total number of offenders receiving a restorative justice conference in a court cluster, divided by the total number of eligible offenders in that cluster.

months, and 6.1 percent lower rate over 24 months compared with a similar group of offenders. In contrast, using the same approach for the 2009 cohort does not alter the results to any degree.

In addition, the much larger sample size in 2009, covering a wider range restorative justice providers, means more weight should be placed on the results from 2009.

The reduction in reoffending for those who participated in restorative justice for both 2008 and 2009 is generally consistent with analysis from a comparable study by the Ministry of Justice in 2005⁴, which showed that those who received restorative justice had an 11 percent lower rate of reoffending over the following 12 months, and a 9 percent lower rate over the following two years. The congruence with the results from this study provides further weight to the finding that restorative justice reduces reoffending.

Frequency of reoffending and subsequent imprisonment rates

There were even larger differences between conferenced and comparable offenders in both the frequency of reoffending and the proportion of offenders who were imprisoned as a consequence of their reoffending.

In the 2009 cohort, those who participated in restorative justice reoffended 23 percent less frequently over the following 12 months relative to the matched comparison group of offenders (66 versus 85 new offences per 100 offenders).⁵ It was also found that offenders who went through a restorative justice conference in 2009 were 33 percent less likely than comparable offenders to be imprisoned for reoffending that occurred over the following 12 months (5.2 percent compared to 7.8 percent).

The results for the 2008 cohort are similar, with an estimated 28 percent reduction in the frequency of reoffending over the following 12 months, based on a comparison with similar offenders (76 versus 106 new offences per 100 offenders). The frequency of reoffending was 23 percent lower over the following 24 months for conferenced offenders compared with comparable offenders (135 versus 177 new offences per 100 offenders).

The conferenced group for 2008 also had an 18 percent lower imprisonment rate for reoffending over the following 12 months than comparable offenders (8.7 percent and 10.6 percent respectively), and a 29 percent lower imprisonment rate for reoffending over the following 24 months (11.1 percent compared to 15.6 percent).

The reductions in the number of offenders subsequently imprisoned are broadly consistent with results from the 2005 study. Analysis of changes in the frequency of reoffending was not presented in the 2005 study.

Seriousness of reoffending

The impact of restorative justice conferences on seriousness of reoffending is less clear than that for the other three measures of reoffending. For the 2009 cohort, restorative justice conferences did not appear to reduce the likelihood of committing a more serious crime⁶ for those that went

⁴ New Zealand Court-Referred Restorative Justice Pilot: Two-Year Follow-Up of Reoffending, Ministry of Justice, 2005.

⁵ There is no risk-adjusted measure currently available to compare the frequency of reoffending, so there was no means of testing whether differences in the frequency of reoffending over both years were statistically significant.

⁶ Serious crime means offences with seriousness scores over 30. This score is based on the average prison sentence for the offence type, not the particulars of any given case. Because of this, seriousness results do not necessarily correspond to subsequent imprisonment rates.

on to reoffend. For the 2008 cohort, conferenced offenders were 23 percent and 26 percent less likely to commit a more serious crime over the following 12 and 24 months respectively than a comparable offender, however, neither difference is statistically significant.

Effectiveness for Māori

There is evidence that restorative justice has been as effective for Māori as it has been for non-Māori, in reducing both the numbers of people reoffending and their frequency of reoffending.

1. Introduction

The main objective of this study is to determine whether offenders who participated in restorative justice conferences in both 2008 and 2009 had a reduced rate of reoffending compared with a similar group of offenders who did not take part in restorative justice conferences. The analysis follows the methodology in the report 'New Zealand Court-Referred Restorative Justice Pilot: Two year follow-up of reoffending (Ministry of Justice, 2005)', but for the first time aims to measure the impact of restorative justice both for cases before a judge (pre-sentence) and those referred through the Police Adult Diversion Scheme.

2. Overview of Restorative Justice

Restorative justice is a process for resolving crime that focuses on redressing the harm done to victims, while holding offenders to account and engaging the community in the resolution of conflict. It does this primarily through a meeting between the victim and the offender called a restorative justice conference.

At a conference, victims and offenders can tell their stories, the harm caused can be acknowledged by all present, and the offender can accept responsibility and give an apology. Finally, a discussion may be had about how to work towards putting things right. While there is no standardised process, often an agreement will result from the conference. This agreement includes certain actions or activities to be completed by the offender as part of taking responsibility for the offending or responding to some of the underlying causes.

Restorative justice conferencing has been a feature of New Zealand's adult criminal justice system since the early 1990s. Currently, the Ministry of Justice manages a budget of \$2.052 million for restorative justice, and contracts the delivery of approximately 1,500 conferences (2010/11 year) through 24 provider groups that each deliver between 20 and 150 conferences (across 31 courts) per year. Restorative justice conferences are provided for approximately 5 percent of the cases potentially eligible for restorative justice conferencing in the pre-sentence environment.

The provider groups are community-based agencies, and each delivers its restorative justice processes in slightly different ways. Many restorative justice conferences involve a meeting between the victim and offender, and are generally run by one or two facilitators. Supporters of the victim and offender may also be in attendance. Another process is a conference with community representatives, which will generally have one facilitator and two or three community representatives in attendance in addition to the victim, the offender, and their supporters.

Some providers deliver services for cases that have been referred through the Police Adult Diversion Scheme, whereas others only accept referrals from the court. There are also differences between providers in the level of monitoring, with some providers monitoring plans that emerge from the conference while others simply report the outcome of the conference to the court.

Restorative justice is considered both an efficient and effective complement to the conventional criminal justice process. There is a growing body of evidence in New Zealand, and internationally, showing that restorative justice:

- reduces reoffending;
- increases victim satisfaction and holds offenders to account;
- involves the victim in the way a crime is resolved and provides them with an opportunity for direct participation in the criminal justice process; and
- responds to crime in a timely manner.

Restorative justice has the dual goals of increasing victim engagement, support, and satisfaction; and reducing reoffending by offenders who have been through a restorative justice conference. The intended outcomes of restorative justice processes align closely with two priority pieces of work led by the Ministry of Justice – the *Review of Victims' Rights* and *Addressing the Drivers of Crime*. This report, however, is solely concerned with determining whether restorative justice has been an effective process in reducing reoffending in New Zealand.

3. Previous Studies

A number of international studies have shown that restorative justice can be effective in reducing reoffending and no studies have found that restorative justice increases reoffending. Other studies, however, have found that the impact of restorative justice on overall crime levels has been minimal.

Shapland *et al* (2008) found that offenders who participated in restorative justice programmes had significantly lower reconviction rates in the subsequent two years than the control group.

In a systematic review of international research on restorative justice, Sherman and Strang (2007) found that in many studies reoffending rates for offenders who received restorative justice services were lower than for offenders who had not.

In New Zealand, there have been four previous studies that have measured whether restorative justice was effective in reducing reoffending. Maxwell *et al* (1999) examined the Project Turnaround restorative justice scheme in Timaru and Te Whānau Awhina in Auckland. Their analysis showed that there was a significantly lower reconviction rate (37 percent lower) among 85 participating offenders compared with a control group of offenders. The reconviction rate for 90 offenders from Te Whānau Awhina was 15 percent lower than that for comparable offenders, but this difference was not statistically significant.⁷

Two studies from 2005 looked at community-managed restorative justice programmes in Wanganui (Paulin *et al*, 2005a) and Rotorua (Paulin *et al*, 2005b) respectively. The evaluation findings from both studies showed that the one-year reconviction rate among programme participants was statistically no different from the rates among similar offenders dealt with by conventional court processes.

The most recent study (Ministry of Justice, 2005) indicated that offenders who received restorative justice had an 11 percent lower reoffending rate over the following 12 months compared with offenders with comparable risk profiles. In the two-year follow-up period, the analysis showed that those who received restorative justice had a 9 percent lower reoffending rate. However, due to the small number of offenders who received restorative justice, neither of these differences was statistically significant. The 2005 study only looked at restorative justice processes that used a victim and offender meeting approach to conferences. In addition, the pilot included four full-time restorative justice co-ordinators, employed by Courts to manage the interface between the court and the restorative justice providers.

⁷ Initial results reported significantly lower reconviction rates for participants from both programmes. However, no adjustment was made for cases which were still active. The results quoted here have been adjusted, and assume that two-thirds of all active cases resulted in a conviction.

4. Method

4.1. Data Selection

Conferenced and Non-conferenced Groups

The principal group of interest was offenders who had participated in a court-referred restorative justice conference or a conference referred through the Police Adult Diversion Scheme. Restorative justice data were collected from restorative justice providers via spreadsheets and entered onto the Ministry of Justice's restorative justice database. Due to incomplete data for earlier time periods, only data on conferences held between 1 January 2008 and 31 December 2009 have been used.

The quality and completeness of the restorative justice data vary from provider to provider. The recording of the numbers which uniquely identify a particular criminal charge (CRNs), was particularly variable between providers. Therefore, only data from restorative justice providers for which accurate matches were able to be made between the restorative justice database and the Courts case management system (CMS), containing data on all criminal charges were used. All restorative justice cases where no conference date was provided were excluded.⁸

In all, seven providers met the criteria in both 2008 and 2009, with a further five providers meeting the criteria for 2009. Offenders who were referred to these providers and received a restorative justice conference are referred to as 'Conferenced' offenders throughout this report. Data on offenders who were referred, but who did not have a conference as the victim declined or the case was otherwise considered unsuitable, were also used from the same providers in each year. This group is referred to as 'Non-conferenced' offenders.

For both groups, offenders who received a custodial sentence were excluded as they did not have the full 12/24 months to reoffend compared with those offenders who did not receive a custodial sentence. Those offenders who received a custodial sentence comprised five percent of all people conferenced in 2008 and three percent of those conferenced in 2009.

This report makes no differentiation between the approaches used by providers in restorative justice conferencing.

Other Eligible Group

As noted previously, the main objective of this study was to compare reoffending for those who have been through a restorative justice conference with all other offenders who have not been conferenced but would have been eligible to be referred to a restorative justice conference. This included everyone charged with an imprisonable offence involving a victim⁹, and:

- with a final court hearing date occurring between 1 January 2008 and 31 December 2009;
- was aged 17 or above;
- pleaded guilty;
- did not receive a custodial sentence; and,

⁸ Only providers with at least 80 percent matches in a year, and where the differences between both the conference and first court hearing date, and final court hearing and conference date were less than six months were included in the analysis. All cases where the time difference was greater than six months were excluded as it is most likely that either the conference date or charge number had been entered incorrectly for these cases.

⁹ Defined as all offences in Australian Standard Offence Classification (ASOC) groups '01'-'09' or '12'.

- was charged in a district court from which referrals were primarily received by the seven restorative justice providers used in the study for 2008, and the 12 providers used for 2009.¹⁰

Offenders in this sample are referred to as the ‘Other eligible’ group.

Matched Comparison Group

As a more rigorous comparison, each conferenced offender was matched to up to three ‘controls’, that is, offenders with very similar demographic and offending profiles to each offender in the conferenced group, who were eligible for a restorative justice conference, but were not referred.¹¹ This group is referred to as the ‘Matched comparison’ group, or alternatively, as ‘comparable’ or ‘similar’ offenders when compared with conferenced offenders.

In summary, the characteristics of each the four groups of offenders analysed in this study are detailed below:

- Conferenced group – offenders referred to one of the seven restorative justice providers used in the study for 2008, or one of the 12 providers used for 2009, and who received a restorative justice conference.
- Matched comparison group – offenders who were eligible for restorative justice but were not referred, and were matched to a conferenced offender on the basis of predicted probabilities of reoffending from logistic regression models. These offenders were charged in a district court from which referrals were primarily received by the seven restorative justice providers used in the study for 2008, and the 12 providers used for 2009.
- Non-conferenced group – offenders referred to one of the seven restorative justice providers used in the study for 2008, or one of the 12 providers used for 2009, but who did not receive a restorative justice conference as the victim declined or the case was otherwise considered unsuitable.
- Other eligible group – all other offenders who were eligible for restorative justice but were not referred. These offenders were charged in a district court from which referrals were primarily received by the seven restorative justice providers used in the study for 2008, and the 12 providers used for 2009.

Appendix C shows both the demographic and current offending characteristics for each of these four offender groups.

4.2. Measures of Reoffending

Four measures of reoffending are used in this report to determine the effectiveness of restorative justice. Reductions in any of the measures will result in cost savings for the justice sector and less victimisation.

The primary measure of reoffending used in this report is whether an offender who has been through a restorative justice conference, or would have been eligible for a restorative justice conference, reoffends over the 12-month period following the conference date for conferenced

¹⁰ Includes: Rotorua, Tauranga, Napier, Hastings, Wanganui, Taihape, Marton, Nelson, Greymouth, Westport, Whataroa, and Timaru District Courts for 2008; plus Hamilton, Thames, Tokoroa, Taupo, New Plymouth, and Oamaru District Courts for 2009.

¹¹ They have been matched by predicted probabilities of reoffending from logistic regression models (see subsection 4.3 for a full description). In a small number of cases a conferenced offender was only able to be matched to one or two controls.

offenders, or the final court hearing date for the other three groups of offenders.¹² There was insufficient follow-up time to be able to track reoffending over 24 months for the 2009 cohort. For the 2008 offender cohort, however, reoffending was able to be tracked over the following 24 months. The effectiveness of restorative justice was assessed by using risk-adjusted reoffending rates.

Reoffending for this measure is defined as a charge with a proved outcome and is based on the time when the offence occurred, and is counted only if it was finalised up to:

- 18 months after the final court hearing date/conference date for 12-month reoffending rates; and,
- 2 years and 6 months after the final court hearing date/conference date for 24-month reoffending rates.

Three other measures of reoffending are also used to determine the effectiveness of restorative justice, namely:

1. The frequency of reoffending – the actual number of new offences committed by each group over the follow-up period per 100 offenders. This is the measure used by the UK Government in Public Service Agreement 23 to monitor reoffending in England and Wales. For this analysis, any changes in the total number of offences committed per 100 offenders can provide information on whether or not restorative justice has been equally effective across all types of re-offenders.¹³
2. The seriousness of reoffending - the risk-adjusted percentage of offenders convicted of high-level offences committed by each group over the follow-up period. High-level offences are defined as all convictions where the Ministry of Justice's seriousness score¹⁴ exceeded 30. Based on this definition, high-level offences comprised 17 percent of all convictions from 2008 to 2010, 58 percent of all convictions that resulted in a custodial sentence, and 85 percent of all custodial sentence lengths imposed over the corresponding period. This measure helps to monitor whether restorative justice has been effective at reducing the most serious crimes which are likely to lead to imprisonment.
3. Imprisonment rates for reoffending - the risk-adjusted percentage of offenders imprisoned for new offences committed by each group over the follow-up period. This measure also helps determine whether restorative justice has reduced the incidence of serious crimes and/or multiple repeat offending which is very likely to lead to imprisonment. Reductions in imprisonment rates will lead to the biggest savings for the justice sector.¹⁵

¹² Using data for all offenders who would have hypothetically been eligible for a restorative justice conference in 2000, it is estimated that of those who do reoffend, 42 percent do so within 12 months and 61 percent will do so within 24 months.

¹³ There is no risk-adjusted measure currently available to compare the frequency of reoffending, therefore, actual rates only have been used.

¹⁴ For each offence, this is calculated as the average number of days of imprisonment imposed on every offender convicted of that offence between 2004 and 2008, where the average is taken over both imprisoned and non-imprisoned offenders.

¹⁵ Unlike the 2005 report, this report does not consider whether offenders who had a restorative justice conference were less likely to be imprisoned for the offence associated with the restorative justice conference.

4.3. Statistical Modelling

Differences in actual reoffending rates between those who have received a restorative justice conference and those who have not may be due, in part or completely, to differences in the characteristics of offenders rather than the restorative justice process. For instance, the conferenced group may contain a greater proportion of offenders whose demographic and offending profile mean that they are less likely to reoffend than those who have not received a restorative justice conference (e.g. first time or low-level offenders).

The most important factors in determining how likely someone is to reoffend are:

- age;
- ethnicity;
- gender;
- current offending profile; and
- criminal history.

These five factors must be controlled for to enable a more valid comparison of reoffending rates between the conference group and all other eligible offenders. This is achieved by adjusting the groups' actual reoffending results based on their predicted reoffending rates (see below) at the time of being conferenced, or at the final court hearing date for those who have not received a restorative justice conference.

Comparing risk-adjusted rates enables a fairer comparison to be made between offender groups, thus helping determine whether participation in restorative justice conferences has actually reduced reoffending rates. Because there was not a perfect match between the conferenced and comparison group, in that the conferenced and comparison groups had slightly different expected rates of reoffending, using risk-adjusted rates corrects for these slight differences.

There are a number of other factors that are likely to affect each individual's risk of reoffending that cannot be accounted for in the model. The impact of these is considered in Appendix A as possible limitations of the study.

Predicted reoffending rates were first developed and calculated for the New Zealand justice sector by Bakker *et al* (1999). In particular, they developed the ROC-ROI measure to predict for everyone who is released from prison their risk of being reconvicted (ROC), and if a reconviction did occur, their risk of imprisonment (ROI). The previous study on the effectiveness of restorative justice in reducing reoffending in New Zealand (Ministry of Justice, 2005) used a model strongly based on that of Bakker *et al*.

Following the approach of Bakker *et al* to determine the most important predictors of reoffending, logistic regression models were calculated over 12 months for both cohorts (2008 and 2009) and over 24 months for the 2008 cohort (giving three models in total). Logistic regression is a statistical technique that predicts the probability of an event happening – in this case the probability of an individual reoffending over the 12/24-month period – based on a number of predictive factors.

As shown in Appendix D, the four factors which most strongly predicted whether an offender reoffended over the follow-up period, for all three models were:

- offender was aged 17; or
- offender was aged 18;
- whether the offender was convicted for the cohort case; and

- variable indicating that the individual has offended frequently over their criminal career (this variable is usually referred to as the Copas rate¹⁶) – this is the strongest predictor.

In summary, the more of the above characteristics each individual has, the higher the likelihood of reoffending.

The expected reoffending rate for each offender group is calculated by aggregating the predicted probabilities of reoffending (from the logistic regression model) for each offender, by offender group, and dividing by the total number of offenders in that group.

The expected rate for each offender group is the percentage of offenders who are predicted to reoffend during the follow-up period, based on the demographic and offending characteristics of each offender.

The risk-adjusted reoffending rate can then be calculated for each offender group by dividing the actual reoffending rate by the expected rate, then multiplying by the overall reoffending rate for all cases.

Logistic regression models were also used to determine the factors that best predicted the probability of an individual being convicted¹⁷, for reoffending that occurred over the 12 and 24-month follow-up periods, and:

1. being convicted at a high-level of seriousness; and
2. being imprisoned.

Actual and expected serious reoffending rates and imprisonment rates for reoffending can be compared, and risk-adjusted rates calculated using the same approach as that employed for proven reoffending.

¹⁶ This measure was devised by Copas, J. and Marshall, P. (1999) The offender group reoffending scale: A statistical reoffending score for use by probation officers. *Applied Statistics*, 47(1), pp 159-171.

¹⁷ Results for the conviction model are not presented in this report as they were almost identical to that using proven offences.

5. Results and Discussion

5.1. Reoffending Rates

The primary measure of reoffending considered by this report, as discussed in sub-section 4.2, is the percentage of people in each group that were convicted of an offence that occurred in the 12 months following the finalisation of their case (from the conference date for conference cases, or the final court date if they did not have a restorative justice conference).

The principal finding was that, for the 2009 cohort, those who had been through a restorative justice conference had a 20 percent lower reoffending rate than matched comparison group of offenders.

Table 1 shows that 112 out of 468 offenders (23.9 percent) who received a restorative justice conference in 2009 reoffended within 12 months after the conference date. After this actual reoffending rate was adjusted using the offender group's risk of reoffending (to find the risk-adjusted reoffending rate), 33.2 percent of conferenced offenders reoffended. As displayed in Figure 1, this is markedly lower than the risk-adjusted rates for the other three offender groups, and 22% lower than the overall rate for all eligible offenders in 2009, and 20% lower than the rate for the matched comparison group - both of these differences are significant. As the conferenced and matched comparison groups have almost identical expected reoffending rates, there is a clear indication that restorative justice has had an impact on reducing the number of people reoffending within 12 months.

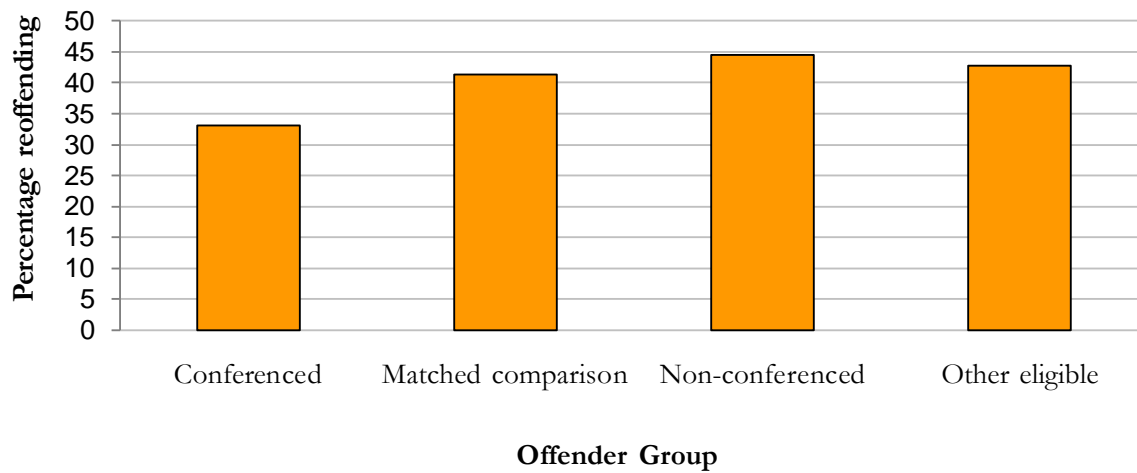
Table 1: Actual, expected and risk-adjusted reoffending rates (percent), within 12 months, by offender group: 2009 cohort

Offender group	Number reoffending	Number of offenders	Reoffending rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	112	468	23.9	30.5	33.2
Matched comparison	419	1,388	30.2	30.9	41.3
Non-conferenced	143	338	42.3	40.2	44.5
Other eligible	3,714	8,175	45.4	45.0	42.7
Total	4,388	10,369	42.3	42.3	42.3
% Difference (Conferenced/ Matched comparison)			-21	-1.1	-20

Notes

1. The conferenced rate is significantly lower than the overall rate for all eligible offenders in 2009 (calculated using a t-test, $p < 0.005$).
2. The conferenced rate is significantly lower than the risk-adjusted rate for the matched comparison group in 2009 (calculated using ten McNemars tests of differences between conferenced and matched comparison cases, using bootstrapping to generate ten comparison groups: 9/10 tests $p < 0.05$; other test $p = 0.051$).

Figure 1: Risk-adjusted reoffending rates (percent), within 12 months, by offender group: 2009 cohort



The results for the 2008 cohort are presented in Tables 2 and 3. The one-year reoffending rate for the conferenced group was 32.7 percent, considerably higher than that for the 2009 conferenced group, though some of this difference was expected due to the 2009 cohort having a lower expected rate of reoffending than that for 2008. After risk-adjustment, Table 2 shows that only 5.7 percent fewer individuals who were conferenced reoffended in the one-year follow-up period compared to the matched comparison group, and this difference was not significant.

Table 2: Actual, expected and risk-adjusted reoffending rates (percent), within 12 months, by offender group: 2008 cohort

Offender group	Number reoffending	Number of offenders	Reoffending rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	82	251	32.7	34.1	43.9
Matched comparison	261	743	35.1	34.6	46.6
Non-conferenced	53	129	41.1	39.5	47.7
Other eligible	2,371	4,912	48.3	48.3	45.8
Total	2,767	6,035	45.8	45.8	45.8
% Difference (Conferenced/ Matched comparison)			-7.0	-1.3	-5.7

Table 3 shows that after 24 months, 41.4 percent of people who had been conferenced had reoffended, a 27 percent increase on the number of people who had reoffended within 12 months. In comparison with the matched comparison cases, the results indicate that restorative justice has been less effective at reducing reoffending after 24 months than after 12 months, with only an apparent 3.7 percent (not significant) lower risk-adjusted reoffending rate than the matched comparison group.

Table 3: Actual, expected and risk-adjusted reoffending rates (percent), within 24 months, by offender group: 2008 cohort

Offender group	Number reoffending	Number of offenders	Reoffending rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	104	251	41.4	42.3	53.7
Matched comparison	319	743	42.9	42.2	55.7
Non-conferenced	61	129	47.3	48.2	53.8
Other eligible	2,822	4,912	57.5	57.5	54.7
Total	3,306	6,035	54.8	54.8	54.8
% Difference (Conferenced/ Matched comparison)			-3.5	0.2	-3.7

There are a number of reasons why the risk-adjusted reoffending rates for conferenced offenders could differ so markedly in 2008 and 2009. One reason is that the restorative justice sample for 2008 was about half the size of that used in 2009, so the variability of the reoffending rate estimates is almost 40 percent higher in the 2008 cohort. This together with the fact that the 2008 cohort contains cases from only seven restorative justice providers and 12 district courts, while the 2009 cohort contains cases from 12 restorative justice providers and 18 district courts, means there is much less confidence in the estimates for 2008.

Secondly, some of this difference could be due to differences in restorative justice coverage rates¹⁸ between court clusters, because of the differences in the effectiveness of restorative justice between providers in reducing reoffending. A comparison of restorative justice coverage rates shows that there are noticeable differences in restorative justice provision between court clusters¹⁹.

If the restorative justice coverage rates were adjusted (standardised)²⁰ for the 2008 cohort, that is to make them equal across all court clusters, then the difference in 12-month risk-adjusted reoffending rates between the conferenced and matched comparison groups would increase to 11 percent (41.3 percent compared to 46.4 percent), while the reduction in reoffending attributable to restorative justice over 24 months would be estimated at 6.1 percent (52.0 percent compared to 55.2 percent).

In contrast, using the same approach for the 2009 cohort does not alter the results to any degree – the reduction in the percentage of people reoffending after restorative justice is estimated at 18 percent, only slightly lower than the unadjusted rate. This reinforces that results from the 2008 cohort should be given less weight than those for 2009.

For both cohorts, the non-conferenced group has a higher risk-adjusted offending rate over a 12 Month follow-up period than the conferenced group, with the difference for the 2009 cohort being significant. For the 24 month follow-up period, however, this apparent difference has disappeared. The small number of cases in this cohort who were referred to a restorative justice

¹⁸ The coverage rate in this instance is defined as the total number of offenders receiving a restorative justice conference in a court cluster, divided by the total number of eligible offenders in that cluster.

¹⁹ This analysis is not shown in this report.

²⁰ The standardised rate for the conferenced group is calculated by multiplying the risk-adjusted reoffending rates for conferenced offenders in each court cluster by the corresponding number of eligible offenders in each court cluster, then dividing by the total number of eligible offenders used for the 2008 cohort.

conference, but were not conferenced, makes detecting any statistically significant difference very difficult.

5.2. Frequency of Reoffending

Table 4 shows that both the 2008 and 2009 conferenced groups of offenders committed considerably fewer offences per 100 offenders over the following 12 months than the matched comparison group of offenders (28 percent and 23 percent fewer respectively). As illustrated in Tables 1 and 2, some of this reduction is due to a smaller proportion of people reoffending after having gone through a restorative justice conference. However, there is clear evidence over both years that of those who have reoffended, people who have been through a restorative justice conference reoffend at a lower frequency than comparable offenders.²¹

There is also evidence that those who have been conferenced reoffend at a lower frequency than the matched group of offenders over a two-year follow-up, with 23 percent less offences committed per 100 offenders. As noted previously, due to smaller sample size and the unequal provision of restorative justice across court clusters, less weight should be attached to the results from 2008. Nevertheless, there is a consistent pattern of a much lower frequency of reoffending for those who have been through a restorative justice conference compared to those who have not.

Table 4: Frequency of reoffending (rate of new offences per 100 offenders), within one/two years, by offender group and cohort

Offender group	Number of offenders		Frequency (rate per 100 offenders and follow-up period)		
	2008	2009	2008 (one year)	2009 (one year)	2008 (two years)
Conferenced	251	468	76	66	135
Matched comparison	743	1,388	106	85	177
Non-conferenced	129	338	128	138	188
Other eligible	4,912	8,175	167	150	272
Total	6,035	10,369	155	137	253
% Difference (Conferenced/ Matched comparison)			-28	-23	-23

5.3. Seriousness of Reoffending

Seriousness of reoffending in this report is measured by comparing risk-adjusted reoffending rates for subsequent convictions for offences with a seriousness score of over 30. Table 5 shows that 22 conferenced offenders (4.7 percent) committed a high-level offence over the following 12 months. After risk-adjustment this is 8.1 percent lower than the rate for the matched comparison group of offenders, although the difference is not significant. Figure 2 also shows that a lower proportion of conferenced offenders committed more serious crimes than any of the other groups. It is important to note, that of those who did reoffend, conferenced

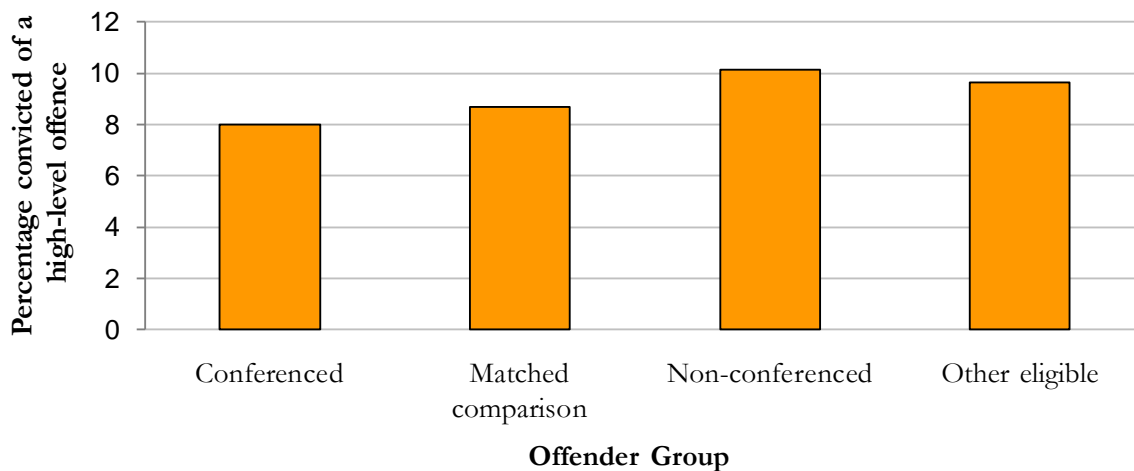
²¹ There is no risk-adjusted measure currently available to compare the frequency of reoffending, so there was no means of testing whether differences in the frequency of reoffending over both years were statistically significant.

reoffenders were as likely to commit serious offences as reoffenders from the matched comparison group in 2009. However, because conferenced offenders were less likely to reoffend overall, they were also less likely to reoffend with a serious offence.

Table 5: Actual, expected and risk-adjusted high-level reoffending rates (%), within 12 months, by offender group: 2009 cohort

Offender group	Number convicted of a high-level offence		High-level reoffending rates (%)		
	Number of offenders		Actual	Expected	Risk-adjusted
Conferenced	22	468	4.7	5.6	8.0
Matched comparison	74	1,388	5.3	5.8	8.7
Non-conferenced	30	338	8.9	8.3	10.1
Other eligible	862	8,175	10.5	10.4	9.7
Total	988	10,369	9.5	9.5	9.5
% Difference (Conferenced/ Matched comparison)			-12	-4.1	-8.1

Figure 2: Risk-adjusted high-level reoffending rates (%), within 12 months, by offender group: 2009 cohort



The results for the 2008 cohort are provided in Tables 6 and 7. Fifteen out of 251 (6.0 percent) conferenced offenders from 2008 were convicted of a high-level offence within a 12-month follow-up period, while 21 offenders (8.4 percent) who had been conferenced were convicted of a high-level offence within 24 months. After risk-adjustment, conferenced offenders were 23 percent and 26 percent less likely to commit a more serious crime over the following 12 and 24 months respectively, than a comparable offender, though, neither of these differences is significant.²²

²² The small number of people convicted for a high-level offence means that variability around the estimates is large.

Table 6: Actual, expected and risk-adjusted high-level reoffending rates (%), within 12 months, by offender group: 2008 cohort

Offender group	Number convicted of a high-level offence		High-level reoffending rates (%)		
	Number of offenders		Actual	Expected	Risk-adjusted
Conferenced	15	251	6.0	8.1	8.6
Matched comparison	57	743	7.7	8.0	11.2
Non-conferenced	12	129	9.3	8.3	13.1
Other eligible	621	4,912	12.6	12.5	11.8
Total	705	6,035	11.7	11.7	11.7
% Difference (Conferenced/ Matched comparison)			-22	0.9	-23

Table 7: Actual, expected and risk-adjusted high-level reoffending rates (%), within 24 months, by offender group: 2008 cohort

Offender group	Number convicted of a high-level offence		High-level reoffending rates (%)		
	Number of offenders		Actual	Expected	Risk-adjusted
Conferenced	21	251	8.4	11.1	12.5
Matched comparison	88	743	11.8	11.6	17.0
Non-conferenced	18	129	14.0	11.6	20.0
Other eligible	875	4,912	17.8	17.8	16.6
Total	1,002	6,035	16.6	16.6	16.6
% Difference (Conferenced/ Matched comparison)			-29	-4.1	-26

5.4. Imprisonment Rates for Reoffending

Table 8 shows that 13 out of 468 offenders (2.8 percent) who received a restorative justice conference in 2009 were convicted and imprisoned for offences committed within 12 months of the conference. After adjusting for both their risk of being convicted in the follow-up period, and if a conviction did occur, their risk of imprisonment, 5.2 percent of conferenced offenders were imprisoned as a consequence of their reoffending. Although the difference is not significant²³, offenders who have been through a restorative justice conference were 33 percent less likely to be imprisoned than comparable offenders from 2009.²⁴ Figure 3 also reveals that the risk-adjusted imprisonment rate for reoffending of the conferenced group was considerably lower than the rates for both non-conferenced and other eligible offenders.

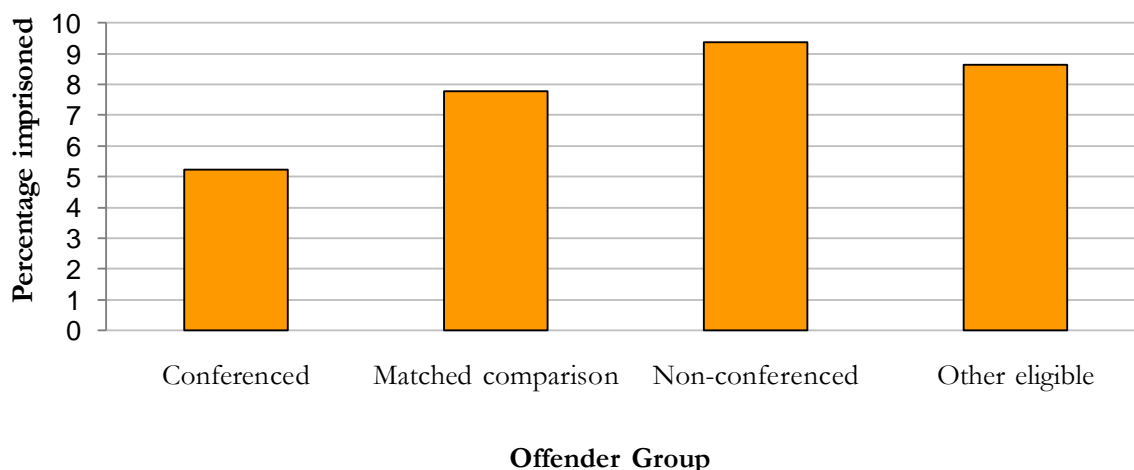
²³ The small number of people imprisoned here means that variability around the estimates is large.

²⁴ Conferenced offenders were 21 percent less likely to be convicted, and if convicted, 15 percent less likely to be imprisoned than matched comparison offenders. Note the higher expected rate of being imprisoned, once convicted, for the matched comparison group, as they were matched only on the probability of reoffending.

Table 8: Actual, expected and risk-adjusted imprisonment rates for reoffending (percent), within 12 months, by offender group: 2009 cohort

Offender group	Number imprisoned	Number of offenders	Imprisonment rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	13	468	2.8	4.5	5.2
Matched comparison	59	1,388	4.3	4.6	7.8
Non-conferenced	26	338	7.7	7.0	9.4
Other eligible	782	8,175	9.6	9.4	8.6
Total	880	10,369	8.5	8.5	8.5
% Difference (Conferenced/ Matched comparison)			-35	-2.9	-33

Figure 3: Risk-adjusted imprisonment rates for reoffending (%), within 12 months, by offender group: 2009 cohort



As noted in the previous study on restorative justice and reoffending (Ministry of Justice, 2005), the overall 12 month imprisonment rate for the 2009 cohort presented here will be an underestimate, as will the 24 month rate for the 2008 cohort, most likely in the range of 10 to 20 percent, as some more serious crimes will not have been finalised in the follow-up time available. However, this underestimate falls across the conferenced and comparison groups and there is no way to determine its impact without following up at a later point.

Table 9 shows that 12 out of 251 (4.8 percent) conferenced offenders from 2008 were imprisoned for offences committed within 12 months of the conference. After risk-adjustment, the imprisonment rate for reoffending of conferenced offenders was 18 percent lower than that for the matched comparison, although this is not significant.²⁵

²⁵ Conferenced offenders were 4.7 percent less likely to be convicted, and if convicted, 14 percent less likely to be imprisoned than matched comparison offenders.

Table 9: Actual, expected and risk-adjusted imprisonment rates for reoffending (percent), within 12 months, by offender group: 2008 cohort

Offender group	Number imprisoned	Number of offenders	Imprisonment rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	12	251	4.8	6.0	8.7
Matched comparison	52	743	7.0	7.2	10.6
Non-conferenced	10	129	7.8	6.9	12.3
Other eligible	583	4,912	11.9	11.8	10.9
Total	657	6,035	10.9	10.9	10.9
% Difference (Conferenced/ Matched comparison)			-32	-16	-18

Table 10 shows that 16 conferenced offenders (6.4 percent) from 2008 were imprisoned for offences committed within a two-year follow-up period. After risk-adjustment, the imprisonment rate for reoffending of conferenced offenders was an estimated 29 percent lower than that for the matched comparison group, but again this is not significant.²⁶

Table 10: Actual, expected and risk-adjusted imprisonment rates for reoffending (percent), within 24 months, by offender group: 2008 cohort

Offender group	Number imprisoned	Number of offenders	Imprisonment rates (%)		
			Actual	Expected	Risk-adjusted
Conferenced	16	251	6.4	8.2	11.1
Matched comparison	78	743	10.5	9.6	15.6
Non-conferenced	12	129	9.3	9.0	14.7
Other eligible	756	4,912	15.4	15.4	14.2
Total	862	6,035	14.3	14.3	14.3
% Difference (Conferenced/ Matched comparison)			-39	-15	-29

Although there are no significant differences in comparing imprisonment rates for reoffending for conferenced and comparison offenders, due in some degree to small numbers, the results are reasonably consistent across both cohorts, and follow-up periods, with findings of between 18 to 33 percent lower imprisonment rates for reoffending for conferenced offenders. The reductions in the percentage of offenders subsequently imprisoned is consistent with results from the 2005 study, which showed differences in imprisonment rates, as a consequence of reoffending, of between 15 and 20 percent.²⁷

The differences observed between the 2008 and 2009 cohorts in the 12 month risk-adjusted imprisonment rates are principally due to there being only small differences between the risk-adjusted conviction rates for the conferenced and comparison groups for the 2008 cohort, with the risk-adjusted conditional imprisonment rates being very similar. And as detailed in sub-

²⁶ Conferenced offenders were 2.1 percent less like to be convicted, and if convicted, 27 percent less likely to be imprisoned than matched comparison offenders.

²⁷ See Table 3.5 in, 'Ministry of Justice (2005) New Zealand Court-Referred Restorative Justice Pilot: Two year follow-up of reoffending. Ministry of Justice, Wellington'.

section 5.1, there are noticeable differences in restorative justice coverage rates between court clusters for the 2008 sample. If these differences were artificially removed, then the differences in the 12 month risk-adjusted conviction rates between the conferenced and matched comparison groups would be larger, with a flow-on effect for imprisonment rates for reoffending.

5.5. Effectiveness for Māori

This section looks at whether restorative justice was effective for Māori in terms of both numbers of people and frequency of reoffending. To assess this, risk-adjusted reoffending rates for Māori conferenced offenders were compared with non-Māori conferenced offenders. This enables the relative effectiveness of restorative justice for Māori to be quantified.

Due to very large differences in the expected reoffending rates between Māori and non-Māori, the frequency of reoffending of Māori and non-Māori conferenced offenders could not be directly compared. Instead, a comparison of the risk ratios of offences committed per 100 offenders, of the conferenced against matched comparison groups, for each of Māori and non-Māori, is required.

Table 11 shows evidence that restorative justice has been more effective for Māori than for non-Māori in 2009. The risk-adjusted reoffending rate for Māori who had been conferenced in 2009 was 30.0 percent compared with 36.5 percent of non-Māori who had been conferenced, a difference of 18 percent, though this difference is not significant. For those conferenced in 2008, however, 47.9% of Māori reoffended within 12 months, and 55.7% with 2 years, after risk adjustment. These rates are 18 and 7.2 percent higher than the reoffending rates for non-Māori who were conferenced in 2008, though neither difference is significant.

Table 11: Risk-adjusted reoffending rates (%) for conferenced cases, within one/two years, by ethnic group

Ethnic group	Risk-adjusted reoffending rates (%)		
	2009 (one year)	2008 (one year)	2008 (two years)
Māori	30.0	47.9	55.7
non-Māori	36.5	40.4	52.0
% Difference (Māori/non-Māori)	-18	18	7.2

Māori who were conferenced in 2009 committed 37 percent fewer subsequent offences per 100 offenders than Māori from the matched comparison group of offenders (72 versus 114 new offences per 100 offenders). In comparison, non-Māori conferenced offenders committed 7.4 percent fewer offences per 100 offenders than similar non-Māori offenders (62 versus 67 new offences per 100 offenders). As shown in Table 12, this indicates that restorative justice has been 32 percent more effective for Māori than non-Māori in 2009.

For those conferenced in 2008, as with the comparison of risk-adjusted reoffending rates, restorative justice appears to have been less effective for Māori compared to non-Māori. The difference, though, is small when comparing frequency of reoffending over a 24 month period.

Table 12: Risk-ratios of frequency of reoffending (rate of new offences per 100 offenders) for conferenced and matched comparison cases, within 12/24 months, by ethnic group

Ethnic group	Risk ratio (Conferenced/Matched comparison)*		
	2009 (12 months)	2008 (12 months)	2008 (24 months)
Māori	62.9	82.5	76.6
non-Māori	92.6	55.2	73.1
% Difference (Māori/non-Māori)	-32	49	4.1

* Calculated as the rate of offences per 100 conferenced offenders divided by the rate of offences per 100 comparison offenders, multiplied by 100.

Although there is variation in the results for those conferenced in 2008 and 2009, for the reasons listed in sub-section 5.1, more weight should be attached to the results for 2009. In addition, it should be noted that the 2009 cohort contained 2.2 times as many Māori as did the 2008 cohort. Further, the 2008 cohort only contained records from one Māori provider, compared with the three Māori providers used for the 2009 analysis. All these factors would suggest that restorative justice has been at least as effective for Māori as it has been for non-Māori.

6. Conclusions

The key finding of this study, based on results from offenders who were either conferenced or had their cases finalised in 2009, is that offenders who received a restorative justice conference had a 20 percent lower reoffending rate over the following 12 months than similar types of offenders who did not receive a restorative justice conference, with this difference being significant. The study also found, in comparison with similar offenders, that those who received a restorative justice conference in 2009 had a 23 percent lower frequency of reoffending, a 33 percent lower imprisonment rate for their reoffending, and were 8.1 percent less likely to reoffend for more serious offences.

In terms of the proportion of offenders reoffending, the results for the 2008 cohort are not as conclusive as those for 2009, with an 11 percent lower reoffending rate over the following 12 months, and a 6.1 percent lower rate over the following 24 months, after adjusting for differences in restorative justice coverage between clusters.

More weight should be placed on the results for the 2009 cohort as they were based on a larger sample size than the 2008 cohort, and were from a wider range of providers. However, the reductions in reoffending observed in the 2008 cohort are generally consistent with the results from a previous study carried out in 2005, while the reductions in the frequency of reoffending, percentage imprisoned for their reoffending, and proportions reoffending for more serious offences, are broadly comparable with results for the 2009 cohort.

The reductions in reoffending shown in this study indicate that the use of restorative justice leads to reductions of future victimisation, and to justice sector cost savings from both fewer offenders returning to court, and reduced imprisonment rates.

The study also found that restorative justice has been at least as effective for Māori as it has been for non-Māori, and therefore, offers a promising approach to reducing reoffending by Māori.

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Appendices

Appendix A: Possible Limitations of the Analysis

The results presented in this report are subject to a number of possible limitations, most of which are associated with measuring reoffending. These are detailed below. An attempt has been made, where possible, to determine the expected impact of each possible limitation.

Selection bias of restorative justice cases

Offenders who participate in a restorative justice conference do so of their own accord. It may be that these offenders are different from other offenders with comparable risk profiles on average, in that they were more motivated to change their offending behaviour, and would be less likely to reoffend irrespective of whether they attended a restorative justice conference.

This effect can be measured through comparing the group of offenders who wanted to have a restorative justice conference but did not as the victim either declined or was unsuitable. This group is referred to as non-conferenced (no victims). For the 2009 cohort, this group comprised 134 offenders or 64 percent of the total non-conferenced group where a reason for not having a conference was provided.²⁸

After adjusting for offenders' risk of reoffending, 41.9 percent of non-conferenced (no victims) offenders reoffended. This is only a marginally lower rate than that for all other eligible offenders, and 8.9 percent lower than the rate for all other non-conferenced offenders, but is 26 percent higher than the reoffending rate for the conferenced group of offenders. The non-conferenced (no victims) offenders also committed 54 percent more offences per 100 offenders over the following 12 months than the conferenced group of offenders. Although not conclusive, or providing any significant difference, due principally to the small sample size, these results suggest that it is participation in the restorative justice conference that reduces reoffending rather than the motivation of the conferenced offenders.

Matching of restorative justice cases

As noted in sub-section 4.1, the quality and completeness of criminal charge numbers was particularly variable between restorative justice providers. Every care has been taken in this report to ensure the source data is as accurate as possible. This includes using only data from providers where there was at least an 80 percent match with CMS. In addition, this data is compared only with cases which would have been eligible for restorative justice from the same courts (those from which the restorative justice providers receive their referrals), to ensure they are as directly comparable as possible. However, there will be some cases that have been conferenced, but not matched with CMS, so will falsely be included in one of the other offender groups. Given the size of this group, accounting for less than 10 percent of all cases who had a restorative justice conference from one of the selected providers, it is very likely that this impact will be minimal.

Time to track reoffending

CMS data for 2010 and January-February 2011 was extracted from the CMS on 19 February 2011. This implies that almost all reoffending which had occurred within 12 months will be

²⁸ Note that for 127 out (38 percent) of 338 non-conferenced offenders there was no reason provided as to why the offender was not conferenced.

captured in this analysis for the 2008 cohort of offenders. However, some reoffending that occurred within one to two years for the same cohort, and some reoffending that occurred within 12 months for the 2009 cohort (approx. 3-5 percent) will not be included in this analysis as they will not be finalised until after 19 February 2011 (this applies equally to the conferenced group and the other three groups).

Proved outcomes used as proxy for reoffending

Reoffending in this report has been measured by proved court outcomes. By definition, this is an undercount of the real extent of reoffending. Firstly, not all crime which occurs is reported to the Police, with fewer still being recorded. The New Zealand Crime and Safety Survey 2009 (Ministry of Justice, 2010) estimates that only 41% of all crime was reported to the Police in 2009, with only 32% of reported crime being recorded.

The gap widens with each step further along the criminal justice process. Less than 50 percent of recorded crime was resolved in 2009, with fewer still ending up in court and being proved. However, there is no reason why this effect should bias the results towards those who have received a restorative justice conference.

Matching of offenders' criminal histories

There are difficulties in matching offender criminal records as recorded in the Law Enforcement System (LES), (pre-2004), with those in CMS (2004 and beyond). This has no impact on tracking reoffending over the follow-up periods for each of the cohorts, but will underestimate the criminal offending history of some offenders who were charged prior to 2004, thus underestimating their predicted probabilities of reoffending. There is, however, no reason why those who have received a restorative justice conference would be unduly favoured over all other eligible offenders.

Calculation of predicted probabilities of reoffending/risk adjustment

Using risk-adjusted rates of reoffending/imprisonment, by calculating predicted probabilities of subsequent offending/imprisonment for each individual, provides a good means of comparing reoffending rates using available demographic, current offending profile, and criminal history data on each individual. However, there are many other factors which are likely to affect each individual's risk of reoffending that cannot be accounted for in the model. These include each individual's socio-economic status, family circumstances, employment status, housing situation, and psychological profile, among others. If the profile of those offenders who been through a restorative justice conference differs with respect to these factors than those offenders who have not been conferenced, making them less likely to reoffend, then this would account for some of the difference in risk-adjusted reoffending rates between conferenced and other eligible offenders. However, given the available information, there is no way to determine if this is true.

Selection of matched comparison group

As noted in sub-section 4.1, each offender who has been conferenced has been matched with up to three other offenders ('controls') on the basis of having the same predicted probabilities of reoffending over a one-year follow-up period, calculated from the logistic regression model. However, because the matching was focused on predicted probability of reoffending, it was difficult to also exactly match offenders' demographic and criminal profile characteristics for each conferenced offender.

As can be seen in Appendix B, there are differences in the age, gender, ethnic and offending profile distributions between the conferenced and matched comparison groups. In particular, the biggest differences are in the age and cohort offence distributions between the conferenced and matched comparison groups. The conferenced group has a greater proportion of young

people than the matched comparison group. For the 2009 cohort, 31.2 percent of conferenced offenders were aged 20 or under compared with 21.0 percent of the comparison group, while 23.5 percent of the conferenced group were aged 40 and above compared with 31.6 percent of the comparison group. The 2008 cohort has even greater disparities in the age distribution, with 39.4% of conferenced offenders aged 20 or under compared with 24.2% of matched comparison cases.

To test if the differences in age distributions had biased the results, two different approaches were employed. The first approach involved solely comparing risk-adjusted reoffending rates for those aged 20 and below for the conferenced and matched comparison groups from the 2009 cohort. The net result was a 19 percent lower risk-adjusted reoffending rate for the conferenced group, marginally lower than that over all ages. The same approach was repeated for those aged 40 and over, resulting in a 36% lower risk-adjusted reoffending rate for the conferenced group.

The second approach was to match conferenced offenders with ‘controls’ on the basis of the same age and predicted probabilities of reoffending for the 2009 cohort. The problem with this approach is because of difficulties of matching conferenced offenders by both age and probability of reoffending, the matched group was reduced to 1,059 individuals, and the expected reoffending rate increased to 33.3 percent. This is 10 percent higher than the conferenced group, hence technically no longer a true comparison group. Similar to the first approach, the risk-adjusted reoffending rate was 20 percent lower for the conferenced group. Applying the same methods to the 2008 cohort also resulted in only negligible changes from the results found over all ages. Therefore, differences in the age make-up between groups has not biased the comparison.

As shown in Tables C7 and C14 the lead offence for over half (54.1 percent) of the conferenced offenders in 2009 was assault, compared with only 38.2 percent of the matched comparison group. In 2008, the relative disparity is similar, with 48.2 percent of conferenced offenders lead offence being assault, compared with 30.3 percent of matched comparison offenders. Using the first approach employed above for age, that is, comparing risk-adjusted reoffending rates for those whose lead offence was assault from the 2009 cohort, resulted in an 11 percent lower risk-adjusted reoffending rate for the conferenced group, which was not significant. For all other offences, in contrast, the risk-adjusted reoffending rate for the conferenced group was 28 percent lower – a significant difference. This perhaps indicates that restorative justice has been less effective at reducing reoffending for those who have committed assault. Given the much larger proportion of assault cases amongst the conferenced group, the overall difference in risk-adjusted reoffending rates between conferenced and comparison offenders is not overestimated – if anything it will be an underestimate.

No risk-adjusted measures for the frequency of reoffending

Risk-adjustment has not been used to compare the frequency of reoffending, as there is no such measure currently available.²⁹ Therefore, actual rates have been used to compare the conferenced and comparison groups for frequency of reoffending. However, if the characteristics for predicting the frequency of reoffending are substantially different to that for predicting whether someone reoffends or not, then the comparison with the matched group of offenders may no longer be comparing like with like.

For the 2009 cohort, the conferenced and matched comparison groups have almost identical expected imprisonment rates for reoffending, while the 2008 conferenced group has 14 and 12 percent lower expected imprisonment rates for reoffending over the next 12 and 24 months respectively. If the assumption is made that the expected frequency of reoffending for the

²⁹ This risk-adjusted measure will be developed by the Ministry of Justice.

comparison group relative to the conferenced group is somewhere in between the ratios for individuals reoffending and imprisonment rates for reoffending, then this would imply that risk-adjustment would make very little difference to the results for the 2009 cohort. However, using this approach for the 2008 cohort, risk-adjustment would reduce the differences between the conferenced and comparison group, in terms of frequency of reoffending, by approximately six to seven percent.

Sample size of conferenced group

The number of conferenced offenders is relatively small compared with the group of all other eligible offenders. This makes determining whether differences are statistically significant very difficult, especially so for the 2008 cohort where there are only 251 conferenced offenders. When the number of events being measured is also low, for example, the number of offenders subsequently imprisoned, this problem is exacerbated.

However, the relative uniformity of results over the two cohorts, and the concordance with results from the previous analysis of restorative justice and reoffending (Ministry of Justice, 2005) would suggest that restorative justice does reduce reoffending, though, the actual extent of the reduction can only be estimated using figures from this report.

General applicability of results to all New Zealand

As noted in section 2, the Ministry of Justice contracts the delivery of 1,477 restorative justice conferences in 2010/11, through 24 providers. However, during 2008 and 2009, there were 26 providers, with two having since been disestablished - Tuwharetoa Social Services (Taupo RJ), and Te Ao Marama Trust (Tokoroa RJ). These services are spread throughout New Zealand, but coverage is disproportionately low in some regions, particularly the metropolitan areas. In all, 705 contracted cases (48%) for 2010/11 are from the 14 providers not included in the 2009 cohort.³⁰

The characteristics of offenders who have gone through the restorative justice providers used in this report may be different to those in other restorative justice providers who were not analysed, therefore, the estimated reductions in reoffending from this report may not be applicable to offenders from other providers. However, three of the four providers analysed in the 2005 study (Ministry of Justice, 2005) were not included in this analysis. This should provide a degree of confidence that the results provided in this report will be fairly applicable to providers throughout the rest of the country.

Use of conference date rather than final court hearing date

Reoffending is defined as offences occurring within 12 or 24 months after the restorative justice conference date for conferenced cases, and within the same follow-up periods after the final court hearing (sentence) date for all other eligible offenders. This means that reoffending for some conferenced offenders will be tracked up to six months before their final court hearing date. This could potentially bias the comparison if offenders who have not yet been sentenced are more or less likely to reoffend.

To test if using the conference date as the resolution date for conferenced cases has biased the results, reoffending for conferenced cases was measured from the time of their final court hearing date. For the 2009 final court hearing date cohort³¹, the risk-adjusted reoffending rate

³⁰ Based on 2008/09 and 2009/10 figures, only 85 percent of these conferences are expected to be delivered.

³¹ This consists of 521 individuals who received a restorative justice during either 2008 or 2009, and had a final court hearing date during 2009.

for the conferenced group was 18 percent lower than the rate for the matched comparison group, only slightly lower than the difference shown in Table 1, and still significant.³²

For the 2008 final court hearing date cohort³³, the differences in both the one and two-year risk-adjusted reoffending rates between the conferenced and matched comparison groups were larger than those calculated measuring reoffending from the conference date. The one-year reoffending rate for the conferenced group was 12 percent lower, while the two-year reoffending rate was 10 percent lower. Neither of these results was significant.³⁴

In terms of frequency of reoffending, there were 13 percent fewer offences per 100 offenders committed by the 2009 cohort of conferenced offenders, over the following 12 months, compared with the matched comparison group of offenders, half the difference from that shown in Table 4. However, there were 49 percent and 38 percent fewer offences per 100 individuals for the 2008 conferenced group compared with the comparison group, considerably higher than the differences shown in Table 4.

Finally, the risk-adjusted imprisonment rate for reoffending of conferenced offenders, with a final court hearing date in 2009, was 14% lower than that of the comparison group, a considerably smaller difference than that using the conference date for measuring subsequent imprisonment for conferenced offenders. However, as with risk-adjusted reoffending rates and frequency of reoffending, the difference in the one-year risk-adjusted subsequent imprisonment rates between the conferenced and matched comparison groups of offenders for 2008 has increased markedly to 40 percent, while the gap between the two-year imprisonment rates for reoffending has remained relatively unchanged.

In conclusion, all the figures provided above indicate that using the conference date rather than the final court hearing date for conferenced offenders has not biased comparisons with similar offenders. Differences for the 2009 cohort based on final court hearing date are lower than those based on the conference date, while the opposite is true for the 2008 cohort. Some of this difference will be due to differences in the composition of both the conferenced and matched comparison groups when using final court hearing date as the resolution date.

³² Calculated using ten McNemars tests of differences between conferenced and matched comparison cases, using bootstrapping to generate ten comparison groups: 9/10 tests $p < 0.05$; other test $p = 0.056$.

³³ This consists of 198 individuals who received a restorative justice during 2008, and had a final court hearing date during 2008.

³⁴ It should be noted that as both the 2008 and 2009 cohorts of conferenced offenders are different to the conferenced groups based on year of conference date, so too, by definition, are the matched comparison groups.

Appendix B: List of Restorative Justice Providers

Table B1: Number of cases receiving a restorative justice, and numbers which have been matched to CMS, by restorative justice provider and year conferenced: 2008-2009

Court cluster	Restorative justice provider	Number of cases				Percent		Included in analysis of reoffending	
		Matched with CMS		Total conferences		Matched with CMS		2008	2009
		2008	2009	2008	2009	2008	2009		
Whangarei	Ngatihine Health Trust Board	1	3	1	4	100	75		
Auckland	Hoani Waititi Marae Trust	1	8	1	8	100	100		
	Nga Whare Waatea Trust	14	26	18	26	78	100		
	Te Whanau O Waipareira Trust			0	0	—	—		
	Waitakere Restorative Justice Community Group Trust	21	20	23	22	91	91		
Hamilton	Waikato Hauraki District Restorative Justice Co-operative Trust	3	38	3	39	100	97		YES
	Te Ano Marama Whetu Trust	3	58	4	75	75	77		YES
Tauranga	Tauranga Moana Restorative Justice Trust	33	29	35	32	94	91	YES	YES
Rotorua	Mana Social Services	52	117	62	122	84	96	YES	YES
Taupo	Tuwharetoa Social Services	2	56	2	57	100	98		YES
Gisborne	Te Runanga O Ngati Porou	7	4	7	7	100	57		
Napier	Hawkes Bay Restorative Justice Te Puna Wai Ora Incorporated	15	19	17	23	88	83	YES	YES
New Plymouth	Taranaki Restorative Justice Trust	15	19	27	21	56	90		YES
Wanganui	Wanganui Restorative Justice Trust	58	83	60	88	97	94	YES	YES
Palmerston North	Manawatu Community Justice Trust	4	6	4	6	100	100		
Wellington	Restorative Justice Services Wellington Trust	20	26	22	30	91	87		
Nelson	Marlborough District Council			0	0	—	—		
	Nelson Restorative Justice Trust	76	85	81	88	94	97	YES	YES
Chch/Westlnd	Ashburton Safer Community Council	7	22	24	42	29	52		

Table B1: Number of cases receiving a restorative justice, and numbers which have been matched to CMS, by restorative justice provider and year conferenced: 2008-2009

Court cluster	Restorative justice provider	Number of cases				Percent		Included in analysis of reoffending	
		Matched with CMS		Total conferences		Matched with CMS		2008	2009
		2008	2009	2008	2009	2008	2009		
	Restorative Justice Services Otautahi Christchurch	2	18	8	27	25	67		
	Waimakariri District Council	63	53	104	99	61	54		
	Grey District Council	15	31	18	32	83	97	YES	YES
Timaru	Timaru District Council	57	47	62	49	92	96	YES	YES
Dunedin	Anglican Family Care Centre Incorporated		9	0	9	–	100		
	Waitaki Safer Community Trust	47	54	74	66	64	82		YES
Southland	Nga Kete Matauranga Pounamu Charitable Trust			0	0	–	–		
Total		516	831	657	972	79	85		
All Providers to be Analysed in Reoffending Analysis		306	636	335	692	91	92	7	12

Note: All figures includes cases that received a custodial sentence and cases where the differences between both the conference and first court hearing date, and final court hearing and conference date were greater than six months – these were excluded from the final data set. All restorative justice cases where no conference date was provided were excluded.

Appendix C: Demographic and Offending Profile of Offender Groups

Table C1: Number of offenders prosecuted, by gender and offender group: 2008

Gender	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Female	60	198	30	1,121	1,409	23.9	26.6	23.3	22.8
Male	191	545	99	3,791	4,626	76.1	73.4	76.7	77.2
Total	251	743	129	4,912	6,035	100	100	100	100

Table C2: Number of offenders prosecuted, by ethnic group and offender group: 2008

Ethnic group	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Māori	87	239	45	2,304	2,675	34.7	32.2	34.9	46.9
Pacific peoples	4	22	3	139	168	1.6	3.0	2.3	2.8
Other	3	14	2	66	85	1.2	1.9	1.6	1.3
European	113	358	71	1,993	2,535	45.0	48.2	55.0	40.6
Unknown	44	110	8	410	572	17.5	14.8	6.2	8.3
Total	251	743	129	4,912	6,035	100	100	100	100

Table C3: Number of offenders prosecuted, by age group and offender group: 2008

Age group	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
17 to 18	64	100	27	866	1,057	25.5	13.5	20.9	17.6
19 to 20	35	80	18	672	805	13.9	10.8	14.0	13.7
21 to 24	30	102	16	866	1,014	12.0	13.7	12.4	17.6
25 to 29	29	91	12	719	851	11.6	12.2	9.3	14.6
30 to 34	17	71	11	535	634	6.8	9.6	8.5	10.9
35 to 39	17	65	16	501	599	6.8	8.7	12.4	10.2
40 to 49	37	160	21	538	756	14.7	21.5	16.3	11.0
50 plus	22	74	8	215	319	8.8	10.0	6.2	4.4
Total	251	743	129	4,912	6,035	100	100	100	100

Table C4: Number of offenders prosecuted, by number of previous custodial sentences and offender group: 2008

Previous custodial sentences	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
0	239	622	118	3,760	4,739	95.2	83.7	91.5	76.5
1	7	56	4	444	511	2.8	7.5	3.1	9.0
2	1	20	3	212	236	0.4	2.7	2.3	4.3
3	2	9	1	144	156	0.8	1.2	0.8	2.9
4		8	1	87	96	0.0	1.1	0.8	1.8
5 plus	2	28	2	265	297	0.8	3.8	1.6	5.4
Total	251	743	129	4,912	6,035	100	100	100	100

Table C5: Number of offenders prosecuted, by seriousness score and offender group: 2008

Seriousness score	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
5 or less	98	421	36	2,522	3,077	39.0	56.7	27.9	51.3
>5-10	1	21	6	229	257	0.4	2.8	4.7	4.7
>10-30	93	182	56	1,294	1,625	37.1	24.5	43.4	26.3
>30-100	30	61	20	529	640	12.0	8.2	15.5	10.8
Over 100	29	58	11	338	436	11.6	7.8	8.5	6.9
Total	251	743	129	4,912	6,035	100	100	100	100

Table C6: Number of offenders prosecuted, by sentence and offender group: 2008

Sentence	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Home Detention	7	32	3	204	246	2.8	4.3	2.3	4.2
Community Detention	6	15	4	122	147	2.4	2.0	3.1	2.5
Intensive Supervision	3	12	1	109	125	1.2	1.6	0.8	2.2
Community	45	252	50	2,172	2,519	17.9	33.9	38.8	44.2
Fines	21	217	34	1,419	1,691	8.4	29.2	26.4	28.9
Other Deferment	44	66	20	371	501	17.5	8.9	15.5	7.6
Other conviction	10	10		66	86	4.0	1.3	0.0	1.3
Conviction & discharge	31	19	2	120	172	12.4	2.6	1.6	2.4
Youth Court Proved		1		3	4	0.0	0.1	0.0	0.1
Discharged without conviction	40	51	11	129	231	15.9	6.9	8.5	2.6
Not proved	44	68	4	197	313	17.5	9.2	3.1	4.0
Total	251	743	129	4,912	6,035	100	100	100	100

Table C7: Number of offenders prosecuted, by lead offence and offender group: 2008

Lead offence	Number					Percent of Total				
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible	
Burglary	26	41	10	262	339	10.4	5.5	7.8	5.3	
Grievous Bodily Harm	7	15	11	156	189	2.8	2.0	8.5	3.2	
Robbery	2	5		25	32	0.8	0.7	0.0	0.5	
Class A&B drugs – selling/supply				1	1	0.0	0.0	0.0	0.0	
Assault	121	225	60	1,427	1,833	48.2	30.3	46.5	29.1	
Disqualified Driving		5	1	73	79	0.0	0.7	0.8	1.5	
Class C drugs – selling/supply		1	1	28	30	0.0	0.1	0.8	0.6	
Drink Driving		7	1	93	101	0.0	0.9	0.8	1.9	
Theft/Receiving	19	153	19	1,125	1,316	7.6	20.6	14.7	22.9	
Deception	12	37	6	220	275	4.8	5.0	4.7	4.5	
Other Sexual Offences				12	12	0.0	0.0	0.0	0.2	
Indecent Assault	1	5		17	23	0.4	0.7	0.0	0.3	
Manslaughter	1				1	0.4	0.0	0.0	0.0	
Arson		2		12	14	0.0	0.3	0.0	0.2	
Kidnapping/Abduction		1		3	4	0.0	0.1	0.0	0.1	
Conversion (car)	4	6	2	66	78	1.6	0.8	1.6	1.3	
Against Justice				3	3	0.0	0.0	0.0	0.1	
Breach of Community Sentences		3	2	28	33	0.0	0.4	1.6	0.6	
Possession of Offensive Weapon	6	2	1	37	46	2.4	0.3	0.8	0.8	
Other Violence		2		3	5	0.0	0.3	0.0	0.1	
Driving Causing Death/Injury	24	53	4	78	159	9.6	7.1	3.1	1.6	
Other Property Damage	18	101	5	573	697	7.2	13.6	3.9	11.7	
Other Drug Offences	1			17	18	0.4	0.0	0.0	0.3	
Other Breaches	3	7	3	80	93	1.2	0.9	2.3	1.6	
Other Disorder Offences	3	6		38	47	1.2	0.8	0.0	0.8	
Other Traffic Offences	3	63		485	551	1.2	8.5	0.0	9.9	
Other Non-Serious Violence		1	2	10	13	0.0	0.1	1.6	0.2	
Other Offences		2	1	40	43	0.0	0.3	0.8	0.8	
Total	251	743	129	4,912	6,035	100	100	100	100	

Table C8: Number of offenders prosecuted, by gender and offender group: 2009

Gender	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Female	134	369	99	1,924	2,526	28.6	26.6	29.3	23.5
Male	334	1,019	239	6,251	7,843	71.4	73.4	70.7	76.5
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C9: Number of offenders prosecuted, by ethnic group and offender group: 2009

Ethnic group	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Māori	193	546	184	3,924	4,847	41.2	39.3	54.4	48.0
Pacific peoples	19	62	11	266	358	4.1	4.5	3.3	3.3
Other	11	22	6	111	150	2.4	1.6	1.8	1.4
European	225	671	123	3,450	4,469	48.1	48.3	36.4	42.2
Unknown	20	87	14	424	545	4.3	6.3	4.1	5.2
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C10: Number of offenders prosecuted, by age group and offender group: 2009

Age group	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
17 to 18	89	142	69	1,373	1,673	19.0	10.2	20.4	16.8
19 to 20	57	150	47	1,167	1,421	12.2	10.8	13.9	14.3
21 to 24	58	235	61	1,601	1,955	12.4	16.9	18.0	19.6
25 to 29	53	155	33	1,125	1,366	11.3	11.2	9.8	13.8
30 to 34	57	119	31	871	1,078	12.2	8.6	9.2	10.7
35 to 39	44	149	35	772	1,000	9.4	10.7	10.4	9.4
40 to 49	75	266	38	911	1,290	16.0	19.2	11.2	11.1
50 plus	35	172	24	355	586	7.5	12.4	7.1	4.3
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C11: Number of offenders prosecuted, by number of previous custodial sentences and offender group: 2009

Previous custodial sentences	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
0	424	1,131	283	6,149	7,987	90.6	81.5	83.7	75.2
1	21	119	23	776	939	4.5	8.6	6.8	9.5
2	9	36	8	362	415	1.9	2.6	2.4	4.4
3	4	29	7	234	274	0.9	2.1	2.1	2.9
4	3	13	7	169	192	0.6	0.9	2.1	2.1
5 plus	7	60	10	485	562	1.5	4.3	3.0	5.9
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C12: Number of offenders prosecuted, by seriousness score and offender group: 2009

Seriousness score	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
5 or less	152	705	76	4,149	5,082	32.5	50.8	22.5	50.8
>5-10	5	40	4	365	414	1.1	2.9	1.2	4.5
>10-30	209	426	134	2,139	2,908	44.7	30.7	39.6	26.2
>30-100	50	112	54	843	1,059	10.7	8.1	16.0	10.3
Over 100	52	105	70	679	906	11.1	7.6	20.7	8.3
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C13: Number of offenders prosecuted, by sentence and offender group: 2009

Sentence	Number					Percent of Total			
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible
Home Detention	19	40	22	340	421	4.1	2.9	6.5	4.2
Community Detention	9	34	12	274	329	1.9	2.4	3.6	3.4
Intensive Supervision	9	42	17	249	317	1.9	3.0	5.0	3.0
Community	101	529	151	3,763	4,544	21.6	38.1	44.7	46.0
Fines	36	357	51	2,026	2,470	7.7	25.7	15.1	24.8
Other Deferment	89	114	40	594	837	19.0	8.2	11.8	7.3
Other conviction	14	19	2	90	125	3.0	1.4	0.6	1.1
Conviction & discharge	39	42	10	235	326	8.3	3.0	3.0	2.9
Youth Court Proved				3	3	0.0	0.0	0.0	0.0
Discharged without conviction	91	76	23	182	372	19.4	5.5	6.8	2.2
Not proved	60	133	10	416	619	12.8	9.6	3.0	5.1
Other non-conviction	1	2		3	6	0.2	0.1	0.0	0.0
Total	468	1,388	338	8,175	10,369	100	100	100	100

Table C14: Number of offenders prosecuted, by lead offence and offender group: 2009

Lead offence	Number					Percent of Total				
	Conferenced	Matched comparison	Non-conferenced	Other eligible	Total	Conferenced	Matched comparison	Non-conferenced	Other eligible	
Sexual Violation				7	7	0.0	0.0	0.0	0.1	
Burglary	29	59	32	430	550	6.2	4.3	9.5	5.3	
Grievous Bodily Harm	26	46	42	295	409	5.6	3.3	12.4	3.6	
Robbery	3	5	2	30	40	0.6	0.4	0.6	0.4	
Class A&B drugs – selling/supply				3	3	0.0	0.0	0.0	0.0	
Assault	253	530	174	2,419	3,376	54.1	38.2	51.5	29.6	
Disqualified Driving	1	6	1	102	110	0.2	0.4	0.3	1.2	
Class C drugs – selling/supply	2	3		41	46	0.4	0.2	0.0	0.5	
Drink Driving	2	16	1	175	194	0.4	1.2	0.3	2.1	
Theft/Receiving	21	267	22	1,783	2,093	4.5	19.2	6.5	21.8	
Deception	14	62	8	389	473	3.0	4.5	2.4	4.8	
Other Sexual Offences	1	2	1	18	22	0.2	0.1	0.3	0.2	
Indecent Assault		6	3	33	42	0.0	0.4	0.9	0.4	
Arson	7	4	1	28	40	1.5	0.3	0.3	0.3	
Kidnapping/Abduction		1		8	9	0.0	0.1	0.0	0.1	
Conversion (car)	8	7	5	118	138	1.7	0.5	1.5	1.4	
Against Justice	1			9	10	0.2	0.0	0.0	0.1	
Breach of Community Sentences		2		57	59	0.0	0.1	0.0	0.7	
Possession of Offensive Weapon	11	15	3	99	128	2.4	1.1	0.9	1.2	
Other Violence		1	1	8	10	0.0	0.1	0.3	0.1	
Driving Causing Death/Injury	34	49	19	129	231	7.3	3.5	5.6	1.6	
Other Property Damage	22	124	13	906	1,065	4.7	8.9	3.8	11.1	
Other Drug Offences		1		31	32	0.0	0.1	0.0	0.4	
Other Breaches	3	23	6	137	169	0.6	1.7	1.8	1.7	
Other Disorder Offences	18	13	3	77	111	3.8	0.9	0.9	0.9	
Other Traffic Offences	8	135	1	777	921	1.7	9.7	0.3	9.5	
Other Non-Serious Violence		2		14	16	0.0	0.1	0.0	0.2	
Other Offences	4	9		52	65	0.9	0.6	0.0	0.6	
Total	468	1,388	338	8,175	10,369	100	100	100	100	

Appendix D: Variables Used in Logistic Regression Models

The following predictor variables, relating to each individual, were included as candidates for selection for predicting reoffending. All of these factors chosen are known to be related to reoffending, and are based upon those used by the United Kingdom Ministry of Justice in England and Wales.³⁵

- Age at time of cohort case³⁶ – (17 years; 18 years; 19-20 years; 25-29 years; 30-34 years; 35-39 years; 40-49 years; 50 years plus: reference category = 21-24 years).
- Gender (female compared to reference of male).
- Ethnicity – (Māori; Pacific; Other; Unknown: reference category = European).
- Cohort lead offence – this represents the lead offence from the cohort case. This is split into 30 categories.
- Cohort proved outcome – yes/no variable indicating whether the offender was proved to have offended for the cohort case.
- Cohort convicted – yes/no variable indicating whether the offender was convicted for the cohort case.
- Cohort total number of charges – total number of charges in the cohort case.
- Cohort total number of charges (proved) – total number of charges in the cohort case that resulted in a proved outcome.
- Cohort total number of charges (convicted) – total number of charges in the cohort case that resulted in a conviction.
- Total number of previous charges – total number of charges in cases prior to the cohort case.
- Total number of previous charges (proved) – total number of charges in cases prior to the cohort case that resulted in a proved outcome.
- Total number of previous charges (convicted) – total number of charges in cases prior to the cohort case that resulted in a conviction.
- Total number of previous cases – total number of cases prior to the cohort case, in both linear and quadratic forms.

³⁵ United Kingdom Ministry of Justice (2008). *Reoffending of adults: new measures of reoffending 2000-2005*.

³⁶ The cohort case is the case containing all charges for which each offender was initially charged with. For conferenced cases, this represents the case involving the charge (or charges) for which a restorative justice conference was held. For all other offenders, this represents their first case in each year involving a restorative justice-eligible charge (or charges). Further, for the purposes of this analysis, a case is defined as all charges resolved on the same day (final court hearing date) for the same person. Note that this differs from how a case is defined on CMS (from 2004 on), but enables a more accurate comparison of the number of cases on CMS with criminal charge data prior to CMS (2003 and earlier).

- Total number of previous proved cases – total number of cases, prior to the cohort case, that resulted in a proved outcome, in both linear and quadratic forms.
- Total number of previous convictions – total number of cases, prior to the cohort case, that resulted in a conviction, in both linear and quadratic forms.
- Total number of previous custodial sentences – total number of cases, prior to the cohort case, that resulted in a custodial sentence, in both linear and quadratic forms.
- Total number of previous community sentences – total number of cases, prior to the cohort case, that resulted in a community sentence.
- Criminal career – length of offender’s criminal career (in years), in both linear and quadratic forms.³⁷
- Copas rate = $\log_c((\text{Number of previous cases} + 1) / (\text{length of criminal career} + 10))$.³⁸
- Copasp rate = $\log_c((\text{Number of previous custodial sentences} + 1) / (\text{length of criminal career} + 10))$.³⁹
- Time in prison = $\log_c(\text{estimated time that each offender has spent in prison over their criminal career})$.⁴⁰
- Female-age – interaction of whether offender was female and age group variables.

So as to maximise the predictive ability of each model, a stepwise model selection procedure was used. All the factors are entered in to the model to determine which factors are the most important (in terms of statistical significance) for predicting the probability of an individual reoffending within the specified timeframe. Only those factors which were found to be significant at the $p < 0.01$ level have been included in the model so as to only identify factors that are most strongly related to the probability of reoffending.

Tables D1 and D2 show the variables which were used in each of the logistic regression models for predicting the probability of reoffending, being convicted of a high-level offence, or imprisonment for reoffending, for each year. For each variable that is significant an odds ratio estimate is presented.

³⁷ Set at a maximum of 28 years as can only track criminal histories back to 1980.

³⁸ The Copas rate controls for the rate at which an individual has been prosecuted during their criminal career; a high value for the Copas rate indicates that the individual has offended frequently over their criminal career. This measure was devised by Copas and Marshall (1999).

³⁹ The Copasp rate controls for the rate at which an individual has built up convictions resulting in a custodial sentence during their criminal career; a high value for the Copasp rate indicates that the individual has incurred prison sentences frequently over their criminal career.

⁴⁰ Assumes that offenders sentenced to terms of 2 years or less serve 50 percent of their sentence in prison, and those sentenced to terms of more than 2 years serve 65 percent of their sentence in prison.

Odds ratios, as used in logistic regression, are a method of comparing whether the probability of a certain event, in this case reoffending, being convicted of a high-level offence, or imprisonment for reoffending, is the same for two groups, after adjusting for all the other factors in the model. For example, for age in the reoffending model over one year in 2008, each age-group is being compared to individuals aged 21 to 24 at the time of the first offence in 2008. An odds ratio above one in the model implies that an individual is significantly more likely than someone in the reference sub-group to reoffend over the following 12 months, after adjusting for all other factors in the model. An odds ratio below one implies that an individual is significantly less likely than someone in the reference sub-group to reoffend over the following 12 months, after adjusting for all other factors in the model. For example, the odds of an offender aged 17 in 2008 reoffending over the next 12 months was 4.14 times greater than an offender aged 21-24.

All variables shown with odds ratios are significant at $p < 0.01$, and are sorted in descending order of importance (as measured by Chi-square statistics) for predicting reoffending in the one-year follow-up period for each cohort.

Table D1: Variables Used in Logistic Regression Models and Odds Ratio Estimates: 2008

Variable	Odds Ratios					
	Reoffending		High-level reoffending		Imprisonment	
	One year	Two years	One year	Two years	One year	Two years
Copas rate (Measure for frequency of offending)	2.969	3.223	2.114	2.155	3.480	3.455
Offender was aged 17	4.142	4.575	2.210	2.498	1.686	1.990
Offender was aged 18	2.992	2.848		1.568		
Offender was convicted for the lead offence	2.478	2.586				
Offender was aged 19 to 20	1.912	1.977				
Offender was Māori	1.411	1.376	1.311	1.444		
Length of criminal career	0.969	0.962	0.977			
Offender was unknown ethnicity	0.507	0.473				
Offender previously had a proved other breach charge	1.131	1.123				
Lead offence was driving causing death or injury	0.321	0.331				
Offender was aged 40 to 49	0.633	0.578				
Lead offence was other traffic offences	0.677	0.721				
Offender was aged 50 and over	0.550	0.436				
Lead offence was other disorder offences	2.954					
Number of charges resulting in a proved outcome in the cohort case	1.043					
Offender previously had a proved drink driving charge	0.934					
Offender was female aged 18	0.527	0.492				
Offender was aged 25 to 29			0.623			
Offender was aged 30 to 34			0.571			
Lead offence was assault				0.760		
Lead offence was burglary		1.660			1.681	
Copasp rate (Measure for frequency of receiving custodial sentences)				1.616	1.760	1.906
Offender was female			0.622	0.602	0.592	0.536
Number of charges resulting in a conviction in the cohort case					1.072	1.086
Number of previous prosecutions that resulted in a conviction				0.960		0.956
Offender previously charged with other traffic offence				1.171		

Note: All variables shown with odds ratios are significant at $p < 0.01$, and are sorted in descending order of importance (as measured by Chi-square statistics) for predicting reoffending in the one-year follow-up period.

Table D2: Variables Used in Logistic Regression Models and Odd Ratio Estimates: 2009

Variable	Odds Ratios		
	Reoffending	High-level reoffending	Imprisonment
Copas rate (Measure for frequency of offending)	2.401	1.962	3.295
Offender was aged 17	4.911	2.345	1.808
Offender was aged 18	2.720	1.448	1.946
Offender was convicted for the lead offence	2.488		
Offender was aged 50 and over	0.248		
Length of criminal career (squared)	0.997		
Offender was aged 19 to 20	1.709		
Offender was aged 40 to 49	0.491		
Lead offence was other traffic offences	0.618	0.663	0.582
Offender was Māori	1.310	1.310	
Number of previous prosecutions (squared)	1.000		
Lead offence was driving causing death or injury	0.438		
Offender previously charged with other breaches	1.064		
Offender was female aged 17	0.511		
Offender previously had a proved other breach charge	1.046		
Lead offence was assault	0.867	0.733	
Offender previously had a proved breach of community sentence	1.048		1.078
Offender was aged 30 to 34	0.816		
Copasp rate (Measure for frequency of receiving custodial sentences)		1.466	2.152
Lead offence was deception		0.447	
Offender was female		0.627	
Number of previous prosecutions resulting in a conviction		0.917	0.929
Offender previously charged with disqualified driving		1.062	
Offender previously had a proved other disorder charge		1.113	1.095
Offender previously charged with other traffic offence		1.156	
Offender previously charged with other drug offence		1.123	

Note: All variables shown with odds ratios are significant at $p < 0.01$, and are sorted in descending order of importance (as measured by Chi-square statistics) for predicting reoffending in the one-year follow-up period.