# Reoffending Following Sentencing in the Magistrates' Court of Victoria

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# Acknowledgements

# Glossary

## Legal terms

**Adjourned undertaking**
A sanction that involves the adjournment of a criminal matter and the release of an offender, with or without conviction, for a specified period provided the offender gives an undertaking with attached conditions.

**Case**
In this report, a collection of multiple charges against a person that are sentenced at the one hearing.

**Charge**
In this report, a single proven count of an offence.

**Conviction and discharge**
A sentence type that involves the conviction of an offender and discharge without conditions.

**Community-based order**
A now abolished sanction that involved the release of an offender, with or without conviction, for a period of up to two years on an order with attached mandatory and program conditions.

**Community correction order**
A sanction that involves the release of an offender, with or without conviction, for a period of up to the length of the maximum term of imprisonment for the sentenced offence on an order with attached mandatory and program conditions.

**Co-sentenced offence**
An offence sentenced in the same case as the offence of interest.

**Criminal Justice Diversion Program**
A program that allows the court to adjourn proceedings against a person for a period of up to 12 months under a diversion plan with attached conditions. Although this disposition is not a sentencing order and operates prior to any finding of guilt and/or sentence, it is treated in this report as a 'sentence type' because it is a disposition available for particular offenders as an alternative to the imposition of a sentencing order.

**Dismissal**
A sanction that involves the dismissal of the charge without conviction of an offender and without conditions.

**Diversion**
In this report, an order made under the Criminal Justice Diversion Program.

**Immediate custodial order**
In this report, a sentence that requires an offender to serve time immediately in a custodial facility. This includes sentences of imprisonment and partially suspended sentences of imprisonment.

**Imprisonment**
In this report, a sentence of imprisonment that is served immediately, as distinct from a sentence of imprisonment that is partially or wholly suspended.

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| **Intensive correction order** | A now abolished sanction that involved a sentence of imprisonment of not more than 12 months being served by way of release and the intensive correction of an offender for a period of not more than 12 months on an order with attached mandatory and program conditions. |
| **Fine** | A sanction that involves a court-ordered monetary penalty requiring an offender to pay a sum of money to the state. |
| **Low-end order** | A category of sentence types that includes adjourned undertakings, conviction and discharge and dismissal. |
| **Minimum imprisonment term** | The length of the non-parole period for imprisonment sentences that have a non-parole period, or the length of the total effective sentence for imprisonment sentences that do not have a non-parole period. |
| **Minimum immediate custodial term** | For partially suspended sentences, the non-suspended portion of the total effective sentence length. For youth justice centre orders, no minimum is set. For imprisonment sentences, see 'minimum imprisonment term'. |
| **Non-parole period** | The minimum term set by a court that an offender must serve in prison before becoming eligible to be released on parole. |
| **Partially suspended sentence of imprisonment** | A sentence of imprisonment that involves an offender serving a specified part of the sentence immediately and a specified part of the sentence by way of release on limited conditions. |
| **Principal offence** | The offence attached to the charge that received the most severe sentence in a case. Where offences have an equal sentence, the offence with the lowest ranking on the National Offence Index is the principal offence. |
| **Recidivism** | The commission by a person of at least one criminal act after the imposition of a sentence. |
| **Reoffending** | The extent to which an adult person, having been sentenced in any Victorian court, returns to court and is sentenced for a subsequent offence or subsequent offences. |
| **Sentencing episode** | A date on which an offender is sentenced. |
| **Total effective sentence** | In a case involving a single charge, the sentence imposed for that charge, and in a case involving multiple charges, the final sentence resulting from orders of cumulation or concurrency for each of the sentencing orders for each charge in the case. |
| **Wholly suspended sentence of imprisonment** | A sentence of imprisonment that involves an offender serving the whole of the sentence by way of release with limited conditions. |

# Statistical terms

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| **Covariate** | A variable that may be associated with a particular outcome. For example, the covariate 'age' may be predictive of reoffending. |
| **Cox regression** | A statistical technique that assesses the effects of covariates on the chances of survival. |
| **Hazard ratio** | A number that represents the odds of a particular event occurring. In Cox regression, hazard ratios represent the odds of survival given a change in a covariate. |
| **Index sentence** | The sentence from which subsequent sentencing events are measured. In this report, the index sentence is the most severe sentence imposed in the (chronologically) first sentencing episode (the 'index sentencing episode') for each offender sentenced in a particular period (the 'index year'). |
| **Index sentencing episode** | Chronologically the first sentencing episode for each offender sentenced in a particular period (the 'index year'). |
| **Index year** | The period in which the index sentencing episode is selected to identify the index sentence from which subsequent sentencing events are measured. In this report, the index year is 1 July 2007 to 30 June 2008. |
| **Logistic regression** | A statistical technique that measures the independent influence of multiple predictors on a binary outcome measure. |
| **Multivariate analysis** | A statistical technique that measures the effects of multiple variables on an outcome. |
| **Propensity score matching** | A statistical technique that attempts to estimate the effect of an intervention (in this report, a specific sentencing outcome) while taking account of the factors that predict receiving the intervention in the first instance. |
| **Survival analysis** | A family of statistical techniques concerned with the time it takes for a particular event to happen from a starting point. |
| **Statistical significance** | The likelihood that a statistical relationship between two variables has not occurred by chance (conventionally measured by whether the probability that the relationship occurred by chance is less than 5%). |

# Executive summary

## Introduction

An important aspect of the Sentencing Advisory Council's work is examining the effects of sentencing on an offender's subsequent behaviour. This is one element of the more general question of whether, and to what extent, sentencing can achieve its various purposes. Information about the effects of sentencing should inform decision-making in relation to sentencing policy and practice.

In order to provide this information, the Council has developed a database to examine the nature and extent of reoffending following sentencing in Victoria.

This report uses statistical techniques to estimate the effect of each of a number of variables on the likelihood of reoffending. The variables include the type of sentence imposed for the initial offence as well as factors such as the offender's age, gender and criminal history. These techniques enable an examination of whether sentencing has an effect on reoffending in Victoria and if it does:

- how the effect of sentencing compares with the effects of other factors; and
- the extent to which this varies according to the type of sentence imposed.

## Relevance of reoffending to sentencing purposes

Sentences in Victoria may only be imposed for a specified number of purposes. The type of sentence imposed will not be a direct response to any single factor in the case, such as the nature and gravity of the offence, or any single purpose of sentencing, such as rehabilitation. When a sentence is imposed to achieve a purpose of just deserts, the sentence is an end in itself. When a sentence is imposed to achieve a utilitarian purpose, such as deterrence or incapacitation, the sentence is a means to an end – a reduction in future offending. The extent to which a sentence achieves such a purpose can be assessed by estimating its effect on reoffending.

## Research on reoffending

Previous research on reoffending has been conducted internationally and elsewhere in Australia, particularly in New South Wales. A consistent finding of this research is that the characteristics of the offender – in particular, the offender's prior criminal history – are the strongest predictors of an offender's likelihood of reoffending.

The literature is less clear about the effect of sentence type on the likelihood of reoffending. Some studies have found that, once other variables are controlled for, any differences in reoffending following different types of sentence could simply have occurred by chance – in other words, sentence type has no statistically significant effect on reoffending. Other studies have found that, while the effect of sentence type is modest compared with the effects of offender characteristics such as prior offending, sentence type nonetheless does have a statistically significant effect on reoffending.

Prior to the development of the Council's reoffending database, there had been a lack of appropriate data, which meant that there had been very little original research on reoffending in Victoria. In particular, it has been unclear whether sentencing has any effect on reoffending in Victoria and, if so, whether the effect varies by the type of sentence imposed.

The research presented in this report aims to contribute to an understanding of the effect on reoffending of sentencing in Victoria.

## Measuring reoffending

This report focuses on reoffending following sentences imposed on adult offenders in the Magistrates' Court of Victoria, where the vast majority of criminal sentences in Victoria are imposed. It examines the sentences imposed in the Magistrates' Court and tracks offenders from their sentence to their subsequent sentencing episodes across all adult courts in Victoria: the Magistrates' Court, the County Court and the Supreme Court.

The reoffending database developed by the Council draws on data collected by all sentencing courts in Victoria and includes people who have been sentenced for a criminal offence between July 2004 and June 2011. The database provides an opportunity to follow offenders as they appear and reappear for sentencing in Victorian courts.

The goal of the Council's research is to isolate the effect of each relevant variable – such as age, gender, type of offence and sentence type – on whether the person reoffends and, if so, how quickly.

In order to assess the independent effects of each variable, a statistical technique known as Cox regression survival analysis was employed. This technique assesses the likelihood of an event, such as reoffending, occurring as well as the time it takes for the event to occur. Importantly, it allows the effects of a number of variables to be assessed and controlled for simultaneously.

The data on which the statistical technique has been conducted take two forms, each of which has different benefits and limitations.

- The 'full sample' approach does not exclude any offenders from the sample; however, it is limited in that it compares offenders who received different sentencing orders and who may have fundamentally different characteristics. It may be that it is these characteristics that influence the chances of reoffending rather than *the sentence itself*.

- As the Council's analysis aims to examine the effect of the sentence itself on reoffending, the second approach – using matched subsamples – has been employed to overcome this limitation. This approach involved selecting subsamples of offenders across different sentence types who could be matched with similar offenders on a number of key variables.

## Summary of findings

The statistical model used by the Council shows the following:

- People who have been sentenced for a previous offence are more likely to reoffend than people who have not been sentenced before. Having more previous sentences increases the chance of reoffending, as does having previously been sentenced to prison.

- People who are sentenced for multiple charges at once are more likely to reoffend than people who are sentenced for a single offence.

- Young people who are under the age of 25 are more likely to reoffend than people older than 25, while men are more likely to reoffend than women.

- There is a strong association between property offending and reoffending:

  – People who are sentenced for committing a property crime are more likely to reoffend than those sentenced for other types of crime.

  – People who have previously been sentenced for a property offence are more likely to reoffend than people who have been sentenced for drug offences, traffic offences or violent offences.

- Offenders who are sentenced to imprisonment are more likely to reoffend than offenders who receive a fine. There is no difference in the likelihood of reoffending between people who receive a term of imprisonment and those who are sentenced to an intensive correction order. However, people who are imprisoned are more likely to reoffend than people who receive a wholly suspended sentence.

- Compared with people who receive a fine, offenders are less likely to reoffend if they have received a wholly suspended sentence or one of the low-end orders, such as an adjourned undertaking, or if they have been diverted to the Criminal Justice Diversion Program. The matched sample analysis confirmed these results, showing that, compared with a fine, the risk of reoffending was higher following a community-based order but lower following a low-end order and participation in the Criminal Justice Diversion Program.

- People who receive a Criminal Justice Diversion Program disposition are least likely to reoffend and will refrain from offending the longest, while those sentenced to a term of imprisonment are most likely to reoffend following their release from prison and will return to offending most quickly.

# Implications

Compared with the influences of factors relating to recent prior sentencing, the effects of sentence type on the likelihood of reoffending are small. While the effects are statistically significant and therefore cannot be dismissed, they do not exert nearly as strong an influence as the offence and offender characteristics in the model.

Nonetheless, to the extent that sentencing does have some influence on the likelihood of reoffending, it is clear that different sentence types exert their influence in different ways.

Participation in the Criminal Justice Diversion Program has the strongest effect of all the sentence types, decreasing the likelihood of reoffending. This may seem unsurprising, given that the program is predominantly aimed at offenders who present a lower risk of reoffending than those who receive other types of sentence. However, it must be borne in mind that the statistical model adjusts for the differences between offenders who receive different orders, so the finding is not simply a reflection of those differences.

Of those sanctions that increase the likelihood of reoffending, the strongest effect is found for immediate custodial sentences. This finding has implications for the sentencing purpose of specific deterrence. Deterrence aims to reduce reoffending by imposing a sentence that is intended to dissuade an offender from committing further criminal offences. A key assumption of the theory of deterrence is that sentencing an offender to a more severe sentence will be more effective as a deterrent than a less severe sentence.

The results show that immediate custodial sentences have the strongest association with a higher likelihood of reoffending. For recidivist offenders, those sentenced to an immediate custodial sentence are most likely to reoffend and return to offending most quickly. This suggests that being sentenced to an immediate custodial sentence rather than some other type of sentence does not achieve the reduction in reoffending that might be expected if such sentences operated as a deterrent.

The association of immediate custodial sentences of imprisonment with a higher likelihood of reoffending might suggest that imposing such sentences to achieve community protection has little effect in reducing reoffending beyond the immediate incapacitative effect. However, the conclusions that can be drawn from this finding are limited by the short periods of imprisonment imposed in the Magistrates' Court. Further consideration of the sentencing purpose of community protection is planned as part of future analysis of the Council's reoffending database.

# Introduction

Do some sentences have a greater effect on reoffending than others? This question has been examined in many jurisdictions, but findings are mixed. Some studies report that sentencing has no effect on subsequent offending while others suggest that sentencing does play a role. In Victoria, there has been very little empirical research into the effect of sentencing on reoffending. The purpose of this report is to examine empirically whether sentencing influences subsequent reoffending.

Two of the Sentencing Advisory Council's statutory functions are to provide statistical information on sentencing to members of the judiciary and other interested persons and to conduct research and disseminate information on sentencing matters. An important aspect of achieving these functions and contributing to a broad understanding of sentencing is examining the effect of sentencing and the extent to which sentencing can achieve its various purposes.

In order to provide this information, the Council has developed a database to examine reoffending following sentencing in Victoria.

This report uses a number of statistical techniques to estimate the effect of each of a number of variables on the likelihood of reoffending. The variables include the type of sentence imposed for the initial offence as well as factors such as the offender's age, gender and criminal history. These techniques enable an examination of whether sentencing has an effect on reoffending in Victoria and if it does:

- how the effect of sentencing compares with the effects of other factors; and
- the extent to which this varies according to the type of sentence imposed.

# Relevance of reoffending to sentencing purposes

Sentences in Victoria may only be imposed for one or more of the following purposes:

- to punish the offender;
- to denounce the offender's conduct;
- to facilitate the offender's rehabilitation;
- to protect the community by reducing the offender's capacity to commit further offences; and
- to deter the offender or other people from committing the same or similar offences.

In seeking to achieve any of these purposes, a court must ordinarily[1] apply sentencing principles such as totality (if an offender is facing multiple sentences, the total sentence imposed must reflect the overall criminality of the offending behaviour), proportionality (the sentence must be proportionate to the seriousness of the offending behaviour) and parsimony (the court must use the least severe sentencing option that will achieve the purpose or purposes of sentencing in each particular case).

The type of sentence imposed will therefore not be a direct response to any single factor, such as the nature and gravity of the offence, or any single purpose, such as rehabilitation. Rather, a judge or magistrate will decide on the sentence ultimately imposed after balancing all of the complex factors that may be present in the circumstances of a case, following the process of instinctive synthesis that applies in Australia.

These purposes have been described as follows:

> In the first group, punishment and denunciation can be seen as direct responses to the criminal behaviour. Punishment is a form of redress against the moral imbalance caused by crime – inflicting upon an offender a sanction that is in proportion to the harm he or she has caused. Denunciation is a statement to the offender (and to the community at large) that such criminal behaviour will not be tolerated.

> In the second group, rehabilitation, community protection and deterrence act as more than simply responses to the criminal behaviour and are intended to achieve the outcome of a reduction in the future commission of crime. (Ritchie, 2011, p. 2.)

When a sentence is imposed for one of the two 'just deserts' purposes (punishment and denunciation), the sentence is an end in itself. The extent to which a sentence achieves such purposes is a value judgment. When a sentence is imposed for one of the three utilitarian purposes (rehabilitation, community protection and deterrence), the sentence is a means to an end – a reduction in future offending. Each of the utilitarian sentencing purposes seeks to reduce or prevent reoffending in different ways; however, the extent to which a sentence achieves these purposes can be assessed by estimating its effect on reoffending.

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[1] There are exceptions to these principles in the indefinite sentencing regime and the frameworks for sentencing continuing criminal enterprise offenders and 'serious' offenders in the *Sentencing Act 1991* (Vic).

# Research on reoffending

Previous research on reoffending has been conducted internationally and elsewhere in Australia, particularly in New South Wales. A consistent finding in this literature is that the characteristics of the offender – in particular, the offender's prior criminal history – are the strongest predictors of an offender's likelihood of reoffending.

The literature is less clear about the effect of sentence type on the likelihood of reoffending. Some studies have found that, once other variables are controlled for, any differences in reoffending following different types of sentence could simply have occurred by chance – in other words, sentence type has no statistically significant effect on reoffending. Other studies have found that, while the effect of sentence type is modest compared with the effects of offender characteristics such as prior offending, sentence type nonetheless does have a statistically significant effect on reoffending.

A large number of studies have specifically examined the effect of sentencing in achieving rehabilitation. A consistent conclusion of such research is that:

> without some form of human intervention or services there is unlikely to be a significant effect on recidivism from punishment alone. While evidence from a large body of research demonstrates that treatment is more effective in reducing recidivism than punishment alone, not all treatment programs are equally effective. (Latessa and Lowenkamp, 2006, p. 521.)

Although there is substantial variation in the effectiveness of different types of treatment programs, there are particular interventions that have nonetheless been found to have a positive effect on reoffending for particular groups of offenders. The most effective interventions are those that adopt a risk–need–responsivity approach to rehabilitation, use cognitive-behavioural programs and provide appropriate treatment for drug dependence. In general, the effectiveness of rehabilitative interventions is greater for juvenile offenders than for adults, for violent and sexual crimes than for acquisitive crimes, and for more persistent offenders (Debidin and Lovbakke, 2005, p. 47). Rehabilitative programs delivered in the community, on average, produce better outcomes than those delivered within formal institutions (Howells and Day, 1999, p. 4; McGuire, 2002, p. 21).

Research into the effect of sentencing on achieving the purpose of community protection is summarised in a research paper published by the Council (Ritchie, 2012). The research examined in that paper does not conclusively demonstrate whether a sentence designed to achieve the purpose of community protection, such as a lengthy sentence of imprisonment, is successful in producing overall reductions in reoffending. The paper highlights the fact that there is little information available on the patterns of reoffending for particular offenders that may assist in identifying those offenders who are at high risk of reoffending, and that policies seeking to use imprisonment as an incapacitative measure also raise difficult questions in balancing predictions of the risk of reoffending for particular offenders with the likely criminogenic effect of imprisonment.

Research on the deterrent effect of imprisonment is summarised in a separate paper published by the Council (Ritchie, 2011). Research in this area has shown that increases in the severity of punishment, such as increasing the use of imprisonment or increasing the length of imprisonment, do not produce a corresponding increase in the general deterrent effect (on the broad population). On the other hand, increases in the certainty of apprehension and punishment have consistently demonstrated a significant increase in deterrent effects for some populations. However, there is little evidence to support the specific deterrent effect of imprisonment on sentenced offenders. Rather:

> The research shows that imprisonment has, at best, no effect on the rate of reoffending and is often criminogenic, resulting in a greater rate of recidivism by imprisoned offenders compared with offenders who received a different sentencing outcome. (Ritchie, 2011, p. 23.)

# The focus of this report

Prior to the development of the Council's reoffending database, there had been a lack of appropriate data, which means that there has been very little original research on reoffending in Victoria. In particular, it has been unclear whether sentencing has any effect on reoffending in Victoria and, if so, whether the effect varies by the type of sentence imposed.

The analysis in this report is of greatest relevance to the sentencing purpose of specific deterrence, in other words, deterrence of the specific offender rather than deterrence of other people.

A finding that offenders who receive more severe sentences have a lower likelihood of reoffending than those who receive less severe sentences (after controlling for relevant variables) would be consistent with the hypothesis that more severe sentences have a greater specific deterrent effect than less severe sentences. Conversely, a finding that there is no meaningful difference between the two in the likelihood of reoffending would indicate that more severe sentences do not have a greater specific deterrent effect.

This report focuses on reoffending following sentences imposed on adult offenders in the Magistrates' Court of Victoria,[2] where the vast majority of criminal sentences in Victoria are imposed (approximately 97% of adult offenders sentenced in Victoria are sentenced in the Magistrates' Court). It examines the sentences imposed in the Magistrates' Court and tracks offenders from their sentence to their subsequent sentencing episodes across all adult courts: the Magistrates' Court, the County Court and the Supreme Court.

The report does not include an examination of reoffending following sentences initially imposed in the County Court or in the Supreme Court (the higher courts). This is because of the significant differences between the courts in both the type of offences sentenced and the subsequent patterns of sentencing in the Magistrates' Court and in the higher courts: the Magistrates' Court hears cases involving less serious offences while the higher courts hear cases involving more serious offences. In addition, a jurisdictional limit applies to the length of imprisonment that may be imposed in the Magistrates' Court: two years for an individual sentence of imprisonment and five years in cases of aggregate sentences of imprisonment.[3]

For these reasons, the vast majority of Magistrates' Court sentences are non-imprisonment sentences or short imprisonment sentences (under one year). This is unlike in the higher courts, where imprisonment sentences are more prevalent and can be substantially longer than those imposed in the lower courts. In studying reoffending, it is important to incorporate any follow-up period that allows offenders time in the community after serving their prison sentences. As the maximum follow-up period for offenders in the current study is four years, this necessarily excludes long imprisonment sentences, which are more often imposed in the higher courts than in the Magistrates' Court.

This report is the first product of analysis of the Council's reoffending database. It provides an overview that seeks to compare the broad range of sentencing dispositions available to the courts. It does not include detailed analysis of the features of particular sentencing orders, such as those that have primarily rehabilitative aims. Rather, it aims to provide an overview of the effect on reoffending of variables including the type of sentence imposed by the Magistrates' Court of Victoria.

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[2]    This excludes any offender under 18 years of age sentenced in any Victorian court.

[3]    *Sentencing Act 1991* (Vic) ss 112A–113A.

# Measuring reoffending

This section presents the technical details of the Council's methodology for this research. It begins with a discussion of the reoffending database and then describes the statistical techniques used to measure reoffending.

## The Council's reoffending database

The reoffending database developed by the Council draws on data collected by all sentencing courts in Victoria and includes people who have been sentenced for a criminal offence between July 2004 and June 2011. It combines data from three separate datasets:

- the first dataset uses data from the higher courts (the County Court and the Supreme Court);
- the second dataset uses data from the Magistrates' Court; and
- the third dataset uses Children's Court data.

The database is novel in that it provides an opportunity to follow offenders as they appear and reappear for sentencing in Victorian courts. The database has therefore allowed the Council to examine an individual's multiple sentencing episodes over time.

The final reoffending database contains information about all sentencing dates, or sentencing episodes, for which full identification information was available for each person sentenced between July 2004 and June 2011.

### Identifying individuals within the reoffending database

In order to identify when an individual has appeared within the database on more than one occasion (and has therefore been sentenced on more than one occasion), the first step is to identify those records where the same name and date of birth appear multiple times in the database. In order to do this, the data have been matched on full name and date of birth. To address problems with alternative spellings of names and errors in dates of birth, a series of rules has been used to allow matching despite the presence of common mistakes and common alternative spellings for sounds.[4] This method (known as Soundex) was developed by the New South Wales Bureau of Crime Statistics and Research (BOCSAR) for its own recidivism database (Hua and Fitzgerald, 2006).

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4    Three versions of each name have been employed, each using the first letter in the name with subsequent letters recoded into alternative digits based on their common sounds. For dates of birth, alternative versions were created based on a small number of common mistakes. These included transposing the month and day digits (for example, 07/08/1985 and 08/07/1985) and transposing the 10 and one digits in the year value (for example, 1976 and 1967).

## Limitations of the reoffending database

As with any database that is derived from data collected for administrative rather than research purposes, there are limitations in the reoffending database. While these limitations do not significantly affect the validity of the findings of this research, they must nonetheless be noted.

First, the database does not include data for those cases where either the name or the date of birth was missing from the source datasets. This does not affect a large proportion of the cases: of approximately 600,000 cases sentenced between July 2004 and June 2011, just over 10% were missing the offender's date of birth. Most of these cases were sentenced in the Magistrates' Court and had a principal offence relating to parking. Only a very small proportion of cases with missing dates of birth were sentenced in the Supreme Court. Attempting to match cases on the basis of last name and first name alone would have led to false matches, thus reducing the accuracy of the database.

Second, some degree of over-matching and under-matching of cases to the one individual is inevitable in this sort of database. Over-matching can occur in the rare situation where more than one person has the same name and date of birth. Under-matching can occur when a person has multiple names in the data that are more than simply minor misspellings or alternate spellings that can be overcome with Soundex rules. The use of an alias or a legitimate change of name by deed poll can lead to this kind of problem. While it is methodologically difficult to provide a precise figure for the size of these problems, analyses by BOCSAR have shown that the Soundex methodology is highly reliable (Hua and Fitzgerald, 2006).

# Choice of statistical technique

Measuring reoffending is a difficult task. The factors that might possibly be connected to reoffending are complex and may interact in complicated ways. Given the potential interconnectedness of these factors, a simple examination of the rates of reoffending for individual factors – such as sentence type, age or gender – can present a misleading picture of their effect on reoffending.

It is therefore important to use a technique that can take into account, or 'control for', other characteristics that may have an influence on sentence outcomes. Without this approach, the interrelations between sentencing and other factors could confound the relationship between sentencing and reoffending.

Two approaches have been taken in the current study. Both involve the creation of Cox regression survival models, in which both the likelihood of reoffending and the time to reoffending are 'predicted' using a number of variables relevant to reoffending, such as characteristics of the offence and the offender and the type of sentence that the offender received.

The key difference in the two approaches is the way samples are selected. The first approach is a 'full sample' approach, in which the entire sample of data is selected for survival analysis. The second approach is a 'matched samples' approach, which involves choosing a pair of sentences (such as a fine and a community-based order) and selecting subsamples of offenders from each sentence type who have been matched on their propensity to receive one or other of the sentences, based on their relevant characteristics. Survival analysis is then conducted on each pair of sentence types.

The advantage of the full sample approach is that it does not exclude any subjects from the analysis. The disadvantage of this approach is that it does not control for varying propensities of subjects to receive a given sentence type. The matched samples approach addresses this limitation.

## Limitations on measurement of time to reoffending

Details of the methodology are set out in the technical appendix; however, there are two key points to note regarding the measurement of time to reoffending.

The first key point relates to the start of the period to be measured in imprisonment cases. While for each other category of sentence the time to reoffending is measured from the time that the sentence is imposed, for imprisonment the time to reoffending is measured from an estimated 'free date', being the date on which the offender is assumed to have been released from prison. This approach is common in reoffending studies and is necessary for reasons set out in the technical appendix. An important consequence of this approach is that it is not possible to assess directly the incapacitative effect of imprisonment.

The second key point relates to the way in which time to reoffending is measured. Although this study examines time to 'reoffending', limitations with the data (in particular, the absence of complete information about offence dates) mean that this is measured indirectly by using the date that the subsequent sentence was imposed, rather than the date on which the subsequent offence was committed.

There is always a delay between the commission of an offence and sentencing for the offence. The amount of delay varies depending on factors such as how long it took for police to become aware of the offence, how long police took to investigate the offence and proceed to court, and whether the new offence was heard in the Magistrates' Court or in a higher court.

The Council undertook further analysis of this issue and found that the median time between offence and sentence in the Magistrates' Court is six months while in the higher courts it is 19 months. This delay needs to be borne in mind when considering the findings on time to reoffending.

# The likelihood of reoffending: selecting factors for analysis

A key part of the study is determining which information from the Council's database should be selected and included in the reoffending model. In this study, factors have been selected for inclusion according to whether they are:

- identified in previous research as factors that are linked to reoffending; and
- identifiable as factors that are relevant to sentencing in Victorian law.

A consistent finding in the literature on reoffending is that factors associated with the offender, such as characteristics and circumstances, are the strongest predictors of whether an offender is likely to reoffend. For example, a review of studies from the United States examining the effect of imprisonment on reoffending has identified five key factors that should be included and controlled for in an analysis of reoffending: prior offending record, offence type, age, race and sex (Nagin et al., 2009). All these factors, except race, are contained in the Council's database and have been included in this research.

The literature is less clear about the extent to which sentencing factors influence the likelihood of reoffending. In considering the effect of sentence type on reoffending, some studies have found there to be no statistically significant difference in reoffending outcomes, once other factors (such as those linked to the offender) are controlled for. However, other studies have found that sentence type does have a modest but statistically significant effect on reoffending.

In sentencing an offender, a court is required to take into account a number of factors that are linked to the offender's characteristics and circumstances. Some of these are specified in legislation,[5] while others operate at common law.[6]

In selecting factors for inclusion, the Council was limited to the information contained in the reoffending database. As the database is derived from sentencing data, it contains information about the cases sentenced such as the sentence imposed and the offence(s) involved. This includes information about the sentence from which reoffending is measured, as well as prior sentencing episodes in the period covered, referred to as 'recent prior sentences'. The database also contains information about the offender, such as age and gender. The sentencing data do not contain measures of other factors shown in the literature to contribute to reoffending, such as poverty, unemployment and substance use (Weatherburn, 2001). However, other research suggests that the effect of such factors is minor compared with factors such as prior offending. For example, research conducted in the United Kingdom (May, 1999) has showed that, while social factors (such as problems with drugs, employment and finances ) are statistically significantly related to the chance of reconviction, their effect in improving prediction is only small, as the relationship between reconviction and criminal history factors is so strong.

The factors included in the analysis for this study are therefore likely to be good predictors of reoffending.

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[5]   *Sentencing Act 1991* (Vic) s 5(2).

[6]   See, for example, *R v Mills* [1998] 4 VR 235 (youth of an offender) and *R v Verdins; R v Buckley; R v Vo* (2007) 16 VR 269 (the presence of mental impairment).

## Sentence type

### Previous research

Studies have examined the effect of sentencing on reoffending, with inconsistent results. Two examples are provided below.

Lloyd, Mair and Hough (1994) examined two-year reconviction statistics for 18,000 offenders in the United Kingdom who were either sentenced to a community penalty or released from prison in 1987. Of these offenders, 55% had at least one reconviction over the two years. Analysis of the effect of different sentences on reoffending rates has shown that, when existing aspects of criminal history are taken into account, there is no difference between the four main types of sentence used by the criminal courts in the United Kingdom for more serious offences: imprisonment, community service orders, probation orders and probation with additional requirements. This method was replicated by McGuire using Home Office data and showed similar results (McGuire, 1998: cited in Day, Howells and Rickwood, 2003, p. 32).

More recent research conducted on New South Wales court data (Tait, 2001), however, has suggested that sentence type does have an effect on reoffending, although this is often small compared with other factors. In one of the few Australian studies to consider the effect of sentence on reoffending, Tait (2001) used data on 62,000 people convicted in New South Wales local (lower) courts between 1992 and 1997 and measured rates of reconviction following various sentences for up to four years. The samples were divided into groups based on offence type and prior offending, and the analysis included regression models that could examine the impact of one factor on reoffending while holding others constant. Tait found that sentence type did have an effect on reoffending, but that this was small and context specific, varying by offence and offender type. For repeat offenders sentenced for more serious offences and low-level offenders, sentence type had an effect on reoffending, while for offenders in the middle group of offence severity, there was little variation in the effect of different sanctions.

### Index sentence

The measure used to examine the effect of sentencing on reoffending is the index sentence, being the first time that the offender was sentenced in the Magistrates' Court between July 2007 and June 2008. This year was chosen to allow the Council the most flexibility in its analyses of the seven years of data in the reoffending database. By choosing the middle year as the index year, the Council could examine at least three years of data (from July 2004 to June 2007) to identify recent prior offending histories, and at least three years of data (from July 2008 to June 2011) to identify subsequent reoffending. Given that the dataset begins in July 2004, it has not been possible to include a measure of the entirety of a person's offending history.

The index sentence is the most severe sentence imposed in the index sentencing episode. Where multiple sentence types have been imposed, such as a wholly suspended sentence of imprisonment and a community-based order, the most severe sentence is the one ranked highest in the formal sentencing hierarchy used in Victoria.

### Sentence type in the index sentence

The key factor measured is the type of sentence imposed in the index sentence. At the time of data collection, there were 13 different types of sentencing orders available under the *Sentencing Act 1991* (Vic), as well as diversion and a number of Commonwealth sentencing orders. Of these, the following sentence types have been included in the analysis and are categorised in one of the seven following groups:

- immediate custodial order (immediate imprisonment and partially suspended sentence of imprisonment);
- intensive correction order;[7]
- wholly suspended sentence of imprisonment;[8]
- community-based order;
- fine;
- low-end order (adjourned undertaking, conviction and discharge and dismissal); and
- diversion under the Criminal Justice Diversion Program (CJDP).[9]

A number of orders have been excluded from the analysis as there were too few of them in the data for reliable analysis. These are youth justice centre orders, drug treatment orders, combined custody and treatment orders, hospital security orders and Commonwealth orders relating to conditional release.

### Changes to sentencing orders since data collection

Since the collection of data used in this report, a number of changes have been made to the sentencing orders available in Victoria. On 16 January 2012, a new community correction order became available as a sentencing order. It is 'a community based sentence that may be used for a wide range of offending behaviours while having regard to and addressing the circumstances of the offender'.[10] It is a flexible order that is served in the community, but it may be imposed with a sentence of imprisonment of up to three months or a fine. Similar to the orders it replaces, it has a number of mandatory conditions and must include at least one other condition. In the Magistrates' Court, the length of a community correction order must not exceed two years.[11]

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[7] Now abolished, the intensive correction order was technically a sentence of imprisonment but was more akin to supervised release, combining the treatment features of the community-based order with an additional level of supervision. An intensive correction order shared similar characteristics to the community-based order, seeking to balance punitive and community-protection aims with rehabilitation.

[8] Suspended sentences are also technically sentences of imprisonment; however, they are examined separately in this report. A magistrate may impose a suspended sentence only in respect of a sentence of imprisonment of up to two years. The operational period may be the length of the imprisonment term or a period of up to two years, whichever is the longer. In 2007–08, the reference period for this analysis, a suspended sentence could only be imposed for particular offences, defined as 'serious', if the court was satisfied that such an order was appropriate because of the existence of exceptional circumstances and was in the interests of justice (see Sentencing Advisory Council, 2010, pp. 13–15, 17).

[9] *Criminal Procedure Act 2009* (Vic) s 59. Although not a sentencing order, diversion under the CJDP has been included in the analysis as it is a disposition available for particular offenders as an alternative to sentencing. The CJDP is aimed at first-time offenders. It is designed to allow the courts to give people charged with relatively minor criminal offences an opportunity to avoid a conviction and sentence by undertaking specific conditions as part of a criminal justice diversion plan. The predecessor provision for the CJDP was section 128 of the *Magistrates' Court Act 1989* (Vic).

[10] *Sentencing Act 1991* (Vic) s 36. See further sections 37–48Q for the community correction order scheme.

[11] See sections 36–48Q of the *Sentencing Act 1991* (Vic) for the community correction order provisions.

The community-based order, the combined custody and treatment order and the intensive correction order have all been abolished.[12] In addition, a series of changes has also been made limiting the use of suspended sentences, as part of broader reforms to abolish this order.[13]

As this report examines sentencing data in the period prior to these changes, it includes three sentencing orders that can no longer be imposed in Victoria. Nonetheless, the findings in this report are clearly relevant to the majority of orders that remain unchanged. The research also remains relevant to those orders that have changed, because of the similarities between the orders that have been abolished or limited and the new community correction order.

## Offence factors

Another measure that has been taken from the index sentencing episode is information about the offences sentenced. This measure has been used to select and include three offence-related factors, based on previous research and their relevance to sentencing as follows:

- offence type in the index sentencing episode;
- number of co-sentenced charges in the index sentencing episode; and
- number of offence dates in the index sentencing episode.

### Previous research

The association between offence type and the likelihood of reoffending has been demonstrated in previous research. For example, Canadian researchers undertook a retrospective examination of 57,000 offenders aged between 18 and 25 who had been convicted in 1999–2000 to identify patterns in prior conviction history. Six in 10 convicted offenders had at least one prior conviction. Of those recidivists, 72% had multiple prior convictions, most commonly theft offences, with recidivist property offenders having the highest proportion of prior convictions of the same type (Thomas, Hurley and Grimes, 2002, p. 4).

The prominence of property offenders among recidivists has been found in other studies as well. Ulmer (2001), for example, found that people convicted of property crimes were 2.8 times more likely to be rearrested than offenders convicted of other crimes, with a probability of rearrest of 74%. Those convicted of traffic offences were twice as likely to be rearrested, with a probability of rearrest of 67% (Ulmer, 2001, p. 176).

In an Australian study, Broadhurst and Loh (1995) also reported significant variations in the probabilities of rearrest based on offence type for non-Indigenous offenders. Offenders involved in good order offences (0.65), property damage (0.62) and theft (0.59) had a greater likelihood of rearrest than those originally arrested for drug offences (0.53) or offences against the person (0.49). The lowest rearrest rates were found for people originally arrested for driving and traffic offences (0.42) (Broadhurst and Loh, 1995, p. 301).

Australian research has also demonstrated that the odds of reconviction are higher for offenders with more concurrent offences convicted at the same time as their index offence (Smith and Jones, 2008, pp. 5–7). Thus two additional factors – the number of co-sentenced charges and the number of offence dates – have also been included.

[12] *Sentencing Amendment (Community Correction Reform) Act 2011* (Vic) ss 5(1)–(3), 21. The abolition of the orders is subject to transitional provisions in Schedule 3 of the *Sentencing Act 1991* (Vic).

[13] Suspended sentences are no longer available for offences defined in section 3 of the *Sentencing Act 1991* (Vic) as 'serious' or 'significant' and committed on or after 11 May 2011: *Sentencing Act 1991* (Vic) s 27(2B).

## Relevance to sentencing

Offence type is a relevant factor in sentencing. A court is required to have regard to both the nature (type) and the gravity (seriousness) of the particular offence.[14]

Other offence-related factors are also relevant to the court when sentencing an offender. In assessing the nature and gravity of the offence, a court may have regard to whether other offences were committed in conjunction with the principal proven offence in the case. The number of co-sentenced charges and the number of offence dates could also be relevant in the court's assessment of the overall criminality of the offender, to ensure that the total sentence imposed appropriately reflects the seriousness of the offending behaviour as a whole.[15] Depending on the circumstances of the case, the number of co-sentenced charges and the number of offence dates may also form part of the circumstances that could be taken into account as aggravating or mitigating factors in sentencing.[16]

## Offence type in the index sentencing episode

A key factor that was taken from the index sentencing episode was the type of offence sentenced in the index sentence.

The index offence type has been taken from the offence deemed to be the principal proven offence in the index sentencing episode. Where a sentencing episode has only one offence type, that offence has been selected as the principal proven offence. Where a sentencing episode contains more than one offence type, the offence with the charge receiving the most severe sentence (including both sentence type and duration or amount of the sentence) has been selected as the principal proven offence. Where multiple offences have the same severity ranking after this process, the offence with the lowest ranking on the National Offence Index (Australian Bureau of Statistics, 2009) has been selected as the principal proven offence.

The offence type was initially categorised into broad categories based on the Australian and New Zealand Standard Offence Classification (ANZSOC) (Australian Bureau of Statistics, 2011). For the purposes of the regression analysis and due to the strong links shown in the research literature between property offending and reoffending, offences have been further classified into two categories: a property offence and a non-property offence.

This analysis is somewhat limited in that offences can only be analysed according to broad offence type rather than individual offences, which can include a broad range of offending behaviour of varying levels of seriousness. Offences sentenced in the Magistrates' Court of Victoria are summary offences and indictable offences of a lower level of seriousness that may be tried summarily. Thus offences sentenced in this lower court will generally have a lower level of seriousness compared with offences sentenced in the higher courts. The category of property offences includes theft, burglary, deception and property damage. Having regard to this and the jurisdictional limits in the Magistrates' Court, it is likely that these offences are generally at the lower end of the seriousness spectrum for such offences.

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[14]  *Sentencing Act 1991* (Vic) ss 5(2)(c)–(d). For a detailed discussion of offence seriousness and the hierarchy of offence seriousness in the Victorian sentencing framework, see Sentencing Advisory Council, 2012.

[15]  This is required by the common law sentencing principles of proportionality and totality.

[16]  *Sentencing Act 1991* (Vic) s 5(2)(g).

## Number of co-sentenced charges in the index sentencing episode

This factor measures the number of charges sentenced in the index sentencing episode alongside the charge captured as the principal proven offence. The number of co-sentenced charges is important to include when examining reoffending because, as with other factors such as prior offending and the type of index offence, it could be an indication of an offender's level of criminality. It also enriches the information available for the index sentencing episode beyond simply the principal offence type, which might be a rather crude representation of a sentencing episode, particularly one that contains a large number of offences.

For the purposes of analysis, the number of co-sentenced charges has been grouped into three categories: zero, one and two or more.

## Number of offence dates in the index sentencing episode

This factor measures the number of dates on which offences in the index sentencing episode occurred. As with co-sentenced charges, this is relevant to reoffending as it could indicate an offender's level of criminality.

The offence date variable contained a small amount of missing data. Just over 4,000 sentencing episodes, representing 6.8% of all sentencing episodes, had a missing offence date for their principal offence. The sentencing episodes most affected had a principal offence relating to traffic or dangerous driving. Over 95% of sentencing episodes where the principal offence had a missing offence date had a principal offence in the traffic or dangerous/negligent acts category of ANZSOC.

In counting the number of offence dates in a case, missing dates have been dealt with according to the proportion of dates missing in an episode. In a sentencing episode that has missing offence dates against all charges, all charges are assumed to have the same offence date. In a sentencing episode where some charges have offence dates and others do not, those without offence dates have been treated as having the same offence date as one another but a different offence date from charges that already have offence dates.

For the purposes of the analysis, the final number of offence dates per sentencing episode has been grouped into three categories: one, two to four and five or more.

## Recent prior sentences

Previous research

One of the most consistent findings to come from the large body of literature on reoffending is the substantial effect of prior convictions on the likelihood of reoffending.[17] This literature indicates that the strongest predictor of future offending is prior offending: repeat offenders are far more likely to commit a further offence than first-time offenders. The notion that past behaviour predicts future behaviour has been accepted as a well-documented fact in a wide variety of fields (Kurlychek, Brame and Bushway, 2006, p. 486).

Smith and Jones (2008) examined changes in rates of reconviction within two years among adult and juvenile offenders in New South Wales. Using logistic regression to compare predicted and observed rates of reconviction, the authors found that the best predictor of reconviction, for both adults and juveniles, is having a higher number of previous convictions in the previous eight years. That is, the odds of reconviction for an adult with four or more prior convictions are almost five times greater than for an offender with no priors. For juveniles, the odds are more than three times higher for those with a long history of previous convictions. For both adults and juveniles, the odds of reconviction also increased for men, offenders of Indigenous status, younger offenders and those with more concurrent offences convicted at the same time as their index offence (Smith and Jones, 2008, pp. 5–7).

In his analysis of 96 matched pairs of offenders convicted of burglary and 406 matched pairs of offenders convicted of non-aggravated assault in New South Wales, Weatherburn (2010) found a number of factors to be significant predictors of reconviction. For non-aggravated assault, after controlling for other factors, prior violent offences, prior breach, Indigenous status, age and sentence type were all found to be statistically significant predictors of reconviction. Other factors such as plea and gender were not significant. For burglary, no factors in the model had a statistically significant effect on reconviction. For this particular group, neither prior offending nor age – both consistently strong predictors of reoffending in the research literature – had any significant impact (Weatherburn, 2010, pp. 8–9).

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[17] Although much of the research in this field has been undertaken in the United States and the United Kingdom, similar results have been found in countries with quite different social and cultural contexts. The Republic of Malta, for example, has particularly strong community, family and religious institutions, and enjoys low crime rates (Baumer, 1997, p. 602). Nonetheless, predictors of recidivism in Malta have been found to be identical to those in the highly industrialised western nations in which recidivism research is typically undertaken. That is, young, male property offenders with a large number of prior convictions are most likely to be reconvicted and reimprisoned. A study of 1,230 people released from Malta's prisons between 1976 and 1994 shows that each additional prior conviction increased the risk of reconviction by 23%, while the risk of reconviction decreased by 5% with each additional year of age (Baumer, 1997, p. 616). This study illustrates the consistency of the predictors of recidivism, even across different cultural contexts.

Relevance to sentencing

As well as their association with reoffending, prior convictions have a 'powerful influence in sentencing' (Fox and Freiberg, 1999, p. 267). They form an important part of the sentencing framework in Victoria. The 'offender's previous character'[18] is one of the many factors specified in the *Sentencing Act 1991* (Vic) to which a court must have regard in sentencing an offender. In determining this, the court may consider 'the number, seriousness, date, relevance and nature of any previous findings of guilt or convictions of the offender'.[19]

Prior convictions play a key role in the statutory framework providing for increased sentencing powers for 'serious offenders'[20] and the continuing criminal enterprise provisions.[21] A further common statutory consequence of having a conviction for prior offending is an increase in penalty for a second or subsequent offence of the same type.[22]

In the absence of these statutory provisions, however, there is 'no principle of sentencing that demands increasingly more severe sanctions be administered to persons who persist in their criminality' (Fox and Freiberg, 1999, p. 269). Thus the prior convictions of an offender may not be used to justify the imposition of a sentence that is disproportionate to the offence being sentenced.[23] Despite this, under the theory of 'progressive loss of mitigation' (von Hirsch and Ashworth, 2005, p. 149), an offender who comes before the court time and time again will gradually lose the benefit of mitigation afforded in the absence of prior convictions. Thus prior convictions may also form part of the circumstances relevant to 'any aggravating or mitigating factor concerning the offender',[24] another statutory factor that must be taken into account in sentencing.

Prior convictions function both as an indicator of how an offender has responded to previous sentences, by evidencing an unwillingness or inability to comply with the law, and as an indicator of how the offender may respond to future sentences, by shedding light on the offender's likely prospects of rehabilitation. Thus they are relevant to both the forward- and backward-looking purposes of sentencing and play a key role in the court's determination of the sentencing purpose, or combination of sentencing purposes, that may be required in a particular case.[25]

The relevance of prior convictions to sentencing has proven to have important practical implications for the criminal justice system. For example, Victorian research on the predictors of sentencing outcomes has shown that defendants with prior offending episodes, and especially prior terms of imprisonment, are far more likely to receive a custodial sentence than people without prior convictions (Sentencing Advisory Council, 2011). A court is required by law to take into account prior convictions under the statutory factor 'the offender's previous character'.[26]

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[18]  *Sentencing Act 1991* (Vic) s 5(2)(f).

[19]  *Sentencing Act 1991* (Vic) s 6(a). Other factors include the general reputation of the offender and any significant contributions made by the offender to the community. Offences committed as a child and sentenced in the Children's Court are accorded less weight than those committed as an adult: see, for example, *R v Piercey* [1971] VR 647, 648.

[20]  *Sentencing Act 1991* (Vic) ss 6A–6F. These provisions apply to offenders who have been convicted of specific offences, such as arson or sexual, drug or violent offences.

[21]  *Sentencing Act 1991* (Vic) ss 6G–6J. These provisions apply to cases where multiple convictions in one or more trials for particular offences render offenders liable to higher maximum penalties than the specified statutory maxima for those offences.

[22]  An example of this was the now abolished mandatory penalty of imprisonment for not less than one month and not more than two years for a subsequent offence of driving while disqualified or suspended contained in section 30 of the *Road Safety Act 1986* (Vic).

[23]  *Veen v The Queen (No 2)* (1988) 164 CLR 465, 477.

[24]  *Sentencing Act 1991* (Vic) s 5(2)(g).

[25]  *Veen v The Queen (No 2)* (1988) 164 CLR 465, 477.

[26]  *Sentencing Act 1991* (Vic) s 5(2)(f).

### Number of recent prior sentences

A key factor included in the analysis is thus the number of recent prior sentences. The full sentencing history of each offender was not available as the dataset only stretched back to July 2004. Therefore, recent prior sentencing has been defined as any sentence imposed between July 2004 and the sentence date of the index sentencing episode. Thus the prior sentencing period spans three to four years, depending on when in the 2007–08 period an offender's index sentencing episode falls.

Although index sentencing episodes are restricted to cases sentenced in the Magistrates' Court, prior sentencing episodes in any court, including the Children's Court, are included.

For the purposes of the Cox regression model, recent prior sentencing has been divided into three categories based on the number of recent prior sentences: none, one and two or more.

### Imprisonment in recent prior sentences

The purpose of the recent prior imprisonment factor is to allow a more specific measure of recent prior sentencing to be included in the analysis. In addition, the research literature on both reoffending and the impact of imprisonment suggest that prior imprisonment might play a role in subsequent reoffending.[27]

If an offender was sentenced to imprisonment in the period from July 2004 to their index sentence date, they are deemed to have a recent prior imprisonment.

### Property offences in recent prior sentences

This factor has been included on the basis of research literature on reoffending showing that people sentenced for property offences are the most likely to reoffend (see, for example, Thomas, Hurley and Grimes, 2002; Ulmer, 2001; Broadhurst and Loh, 1995). The consistency of the findings on this issue suggests that the presence of a property offence is an important factor in understanding reoffending.

Before finalising the measure to be used in this study, a number of alternative approaches were tested that used more nuanced measures of offence type, primarily by including more categories in the proposed measure. These alternatives produced broadly similar findings but also made interpretation more difficult.

The measure of offence type used in this study – property offence versus other offence – is thus based on both consistent findings in the literature and preliminary exploratory testing.

If an offender was sentenced for a property offence in any of their recent prior sentencing episodes, they have been classified as having a recent prior property offence.

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[27]    For an overview of research on the effect of imprisonment, see Ritchie, 2011 and Ritchie, 2012.

# Offender's age and gender

## Previous research

Demographic factors are generally important in the study of criminal behaviour, and both age and gender have been found to be related to reoffending.

An early study to predict recidivism in Australia, undertaken by Broadhurst and Loh (1995), found links between age and gender and reoffending. Using a survival analysis technique, the researchers examined the probability of rearrest for almost 150,000 people who were first arrested by the police between 1984 and 1993 in Western Australia. The average follow-up period for the sample as a whole was just under five years (Broadhurst and Loh, 1995, p. 291).

Examining the influence of both race and gender, the survival analysis highlighted dramatic differences in the probabilities of different groups being rearrested. Non-Indigenous men had a lower probability of being rearrested at some point within the reference period (0.52) compared with Indigenous men (0.88). A similar pattern was observed for women, with a lower rearrest probability for non-Indigenous women (0.36) compared with Indigenous women (0.85) (Broadhurst and Loh, 1995, p. 295). Clearly, then, both race and gender had a substantial effect on reoffending in that study: men were more likely than women to be rearrested, and Indigenous people were more likely than non-Indigenous people to be rearrested.

Similar results were found for the effect of age, with younger people (those aged under 18 years) having the highest rearrest rate (0.78 for non-Indigenous youth and 0.95 for Indigenous youth) and those aged over 40 years having the highest rearrest rate (0.31 for non-Indigenous offenders and 0.48 for Indigenous offenders). The youngest offenders also had the shortest time to failure, with a median time to rearrest of 14 months for a non-Indigenous youth and just 8 months for an Indigenous youth. For older offenders, the median time to rearrest was 46 months (almost four years) for non-Indigenous offenders and 20 months for Indigenous offenders (Broadhurst and Loh, 1995, p. 296).

The association between youth and an increased likelihood of reoffending has also been shown in other Australian studies, such as those conducted by Smith and Jones (2008) and Weatherburn (2010).

## Relevance to sentencing

Age is one of the factors relevant to sentence, both within the common law and in the statutory factors listed in section 5(2) of the *Sentencing Act 1991* (Vic). The personal circumstances of the offender are relevant to sentencing: legislation requires a court to have regard to 'the presence of any aggravating or mitigating factor concerning the offender or of any other relevant circumstances',[28] which includes the age of the offender.

It is a well-established principle that the youthfulness of an offender is a valid ground for extending leniency in sentencing.[29] However, the significance of youth as a mitigating factor may be outweighed by other factors in some cases, such as the seriousness of the offence, the prior convictions of the offender or the offender's moral culpability for the offence.[30]

Generally, in cases involving a young adult offender, particularly where the offender has a minor or no criminal record, courts will focus on rehabilitation in determining sentence[31] rather than other sentencing purposes, such as punishment (which may lead to further offending), deterrence or community protection. Therefore, a court may be more likely to impose a sentence that may be served in the community with some form of supervision and treatment, rather than an immediate custodial sentence.

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[28]   *Sentencing Act 1991* (Vic) s 5(2)(g).

[29]   *R v Mills* [1998] 4 VR 235.

[30]   See for example, *Neubecker v The Queen* [2012] VSCA 58 (4 April 2012); *R v Nichols* (1991) 57 A Crim R 391; *R v Gordon* (1994) 71 A Crim R 459.

[31]   *R v Mills* [1998] 4 VR 235.

Depending on the circumstances of the case, the advanced age of an offender is also a consideration in sentencing, relevant to the assessment of the burden that a particular sentencing order, such as imprisonment, may have on the offender.[32] However, it is clear that the advanced age of an offender alone does not mean that he or she can expect to escape punishment; nor does it justify lenient treatment by a court or the imposition of a sentence that would otherwise be inappropriate.[33]

While gender is not specified as a factor relevant to sentencing under Victorian law, the Council's previous research has shown that there are differences in sentencing outcomes for men and women. In the Magistrates' Court, women are less likely to receive a sentence of imprisonment across a range of offence categories and for most offence types. When women are sentenced to a term in prison, they tend to receive a shorter term. This does not reflect any systematic bias in favour of women offenders. Rather, different outcomes are manifestations of the increased likelihood of women who appear before the courts having a constellation of factors that makes them more likely to be kept out of detention, including mental illness, a history of physical and sexual abuse and drug dependency (Gelb, 2010).

## Age and gender in the reoffending database

The age of the offender has been calculated using the difference between the date of the index sentencing episode and the offender's date of birth. It therefore refers to the age of the offender at the time of the index sentence. The offender's gender is directly recorded into the original source data.

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[32]  *R v DD (No 2)* [2008] VSCA 15 (18 February 2008).

[33]  *R v Belbruno* (2000) 117 A Crim R 150; *R v Gregory* [2000] VSCA 212 (10 November 2000).

# Results: the effect of sentencing on reoffending

This section presents the results of the Council's statistical analysis of the effect of sentencing on reoffending. There are three main components to the analysis:

1. an overview of the characteristics of the sample of offenders in the reoffending database's index year;
2. an analysis of the extent to which different factors, including sentence type and offender characteristics, have an effect on the likelihood of reoffending; and
3. a focused analysis of the effect of sentence type on the time to reoffending.

## Offender characteristics

Table 1 (page 20) presents a summary of the characteristics of offenders who were sentenced in the Magistrates' Court from 1 July 2007 to 30 June 2008.

### Index sentence type

The high prevalence of traffic offences explains the large number of fines as the index sentence for offenders sentenced in the Magistrates' Court in 2007–08. More than half of offenders (54.7%) received a fine as their index sentence. Apart from fines, offenders were more commonly sentenced to orders at the lower end of the sentencing hierarchy, including low-end orders (15.0%) and diversion under the Criminal Justice Diversion Program (9.0%).

Consistent with the lower level of seriousness of offences sentenced in the Magistrates' Court, only a small proportion of offenders were sentenced to an immediate custodial order (4.8%).

Slightly higher numbers of offenders received an order in the middle of the sentencing hierarchy, including community-based orders (6.3%) and wholly suspended sentences (7.8%), although only 2.3% of offenders had an intensive correction order as their index sentence. The distribution of wholly suspended sentences imposed in the Magistrates' Court is also linked to the prevalence of offenders sentenced for traffic offences. This is likely to be the result of the (now abolished) mandatory sentence of one month's imprisonment for a second or subsequent offence of driving while disqualified or suspended (Sentencing Advisory Council, 2009).[34]

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[34] *Road Safety Act 1986* (Vic) s 30. This was abolished by section 28 of the *Sentencing Amendment Act 2010* (Vic), which came into effect 1 May 2011.

Table 1: Distribution of offender characteristics, Magistrates' Court, 2007–08

| Factor | Categories | Number | Percentage |
|---|---|---|---|
| Gender | Male | 47,101 | 81.3 |
| | Female | 10,803 | 18.7 |
| Age group | < 25 | 18,285 | 31.6 |
| | 25+ | 39,619 | 68.4 |
| Index sentence | Immediate custodial order | 2,800 | 4.8 |
| | Intensive correction order | 1,342 | 2.3 |
| | Wholly suspended sentence | 4,501 | 7.8 |
| | Community-based order | 3,670 | 6.3 |
| | Fine | 31,673 | 54.7 |
| | Low-end order | 8,680 | 15.0 |
| | Diversion (CJDP) | 5,238 | 9.0 |
| Index offence type | Property | 11,680 | 20.2 |
| | Other | 46,224 | 79.8 |
| Number of co-sentenced charges | 0 | 25,900 | 44.7 |
| | 1 | 13,907 | 24.0 |
| | 2–4 | 12,799 | 22.1 |
| | 5+ | 5,298 | 9.1 |
| Number of offence dates | 1 | 44,971 | 77.7 |
| | 2 | 7,020 | 12.1 |
| | 3+ | 5,913 | 10.2 |
| Number of recent prior sentences | No priors | 37,899 | 65.5 |
| | 1 prior | 10,557 | 18.2 |
| | 2 or more priors | 9,448 | 16.3 |
| Recent prior imprisonment | Imprisonment | 2,457 | 4.2 |
| | Other | 55,447 | 95.8 |
| Recent prior offence type | Property | 7,098 | 12.3 |
| | Other | 50,806 | 87.7 |
| Subsequent sentencing episode | Yes | 18,956 | 32.7 |
| | No | 38,948 | 67.2 |
| Total | | 57,904 | 100.0 |

## Offence factors

A relatively low proportion of offenders were property offenders. Around one-fifth (20.2%) were sentenced for a property offence as the principal proven offence in their index sentence. This can be compared with traffic offences (not shown in Table 1), the principal proven offence for 38.2% of offenders' index sentences.

More than half (55.3%) of offenders had multiple charges sentenced in their index sentencing episode, with many of these offenders having two or more co-sentenced charges. One quarter of offenders (24.0%) had only one co-sentenced charge, but 22.1% had two to four co-sentenced charges and 9.1% had five or more, totalling 31.2% overall having two or more co-sentenced charges.

Only 22.3% of offenders had more than one offence date in their index sentencing episode, however, with a similar proportion having two (12.1%) or three or more (10.2%) offence dates. The vast majority of offenders (77.7%) thus committed the offences for which they were sentenced in the index sentencing episode on the same date.

## Recent prior sentences

The majority of offenders had no recent prior sentences (65.5%). However, this leaves one-third of offenders (34.5%) sentenced in 2007–08 in the Magistrates' Court having had one or more recent prior sentences. A slightly larger proportion of offenders had only one prior (18.2%), compared with those who had two or more (16.3%).[35]

A smaller proportion of offenders had a property offence for their recent prior sentence, compared with those who were sentenced for a non-property offence as their principal proven offence. One in 10 offenders (12.3%) had a recent prior sentence for a property offence as their principal proven offence, while the remaining 87.7% were sentenced for a non-property principal proven offence in their recent prior sentence.

Consistent with the patterns discussed above for the group of offenders sentenced in the Magistrates' Court, only a very small proportion of offenders had an imprisonment sentence as a recent prior sentence (4.2%). The vast majority of offenders had a non-custodial sentence imposed as a recent prior sentence.

## Age and gender

Nearly one-third of offenders (31.6%) were aged under 25, while the vast majority (81.3%) were male.

## Subsequent sentencing episode

Overall, one-third of offenders (32.7%) were sentenced for a subsequent offence during the period to June 2011. For offenders who reoffended, the median time to reoffend (that is, the time between the estimated free date and the sentence date for the first subsequent offence) was 17 months.

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[35]   This includes recent prior sentences imposed in the Children's Court of Victoria.

# The effect of sentence type and offender characteristics on the likelihood of reoffending

The detailed results of the Cox regression analysis are presented in the technical appendix to this report. For clarity of presentation, only the key results from the analysis are presented in this discussion.

The key results from the Cox regression are the hazard ratios from the regression model. The hazard ratio is based on the estimated values for the likelihood of reoffending for the different categories of a variable, creating a ratio of the likelihood for one category compared with the likelihood for the other category. For example, a hazard ratio can show that the likelihood of reoffending is higher for males than for females. Given that Cox regression is a multivariate technique, the values for each variable in the analysis represent the results for the relationship between that variable and reoffending, *controlling for* (or independent of) the relationships of all the other variables with reoffending. This means that a statistically significant result for a variable indicates a true relationship with reoffending, *over and above* the relationships between the other variables and reoffending.

As Cox regression provides *estimates* of the likelihood of reoffending based on the available sample of offenders, it is important to examine whether these estimates are likely to represent the true likelihoods that would be seen if the Council were to examine the entire population of offenders in Victoria. These data on statistical significance are provided by the 'p-values' in the Cox regression, and show that the estimates created by the Council's model are unlikely to have happened by chance. That is, the estimates of the likelihood of reoffending seen in the regression model are statistically significant and are therefore likely to be accurate for the offending population as a whole. The only exception to this is for intensive correction orders, which are not statistically significantly related to reoffending.

**Figure 1:** Cox regression analysis of likelihood of reoffending: effect of each variable
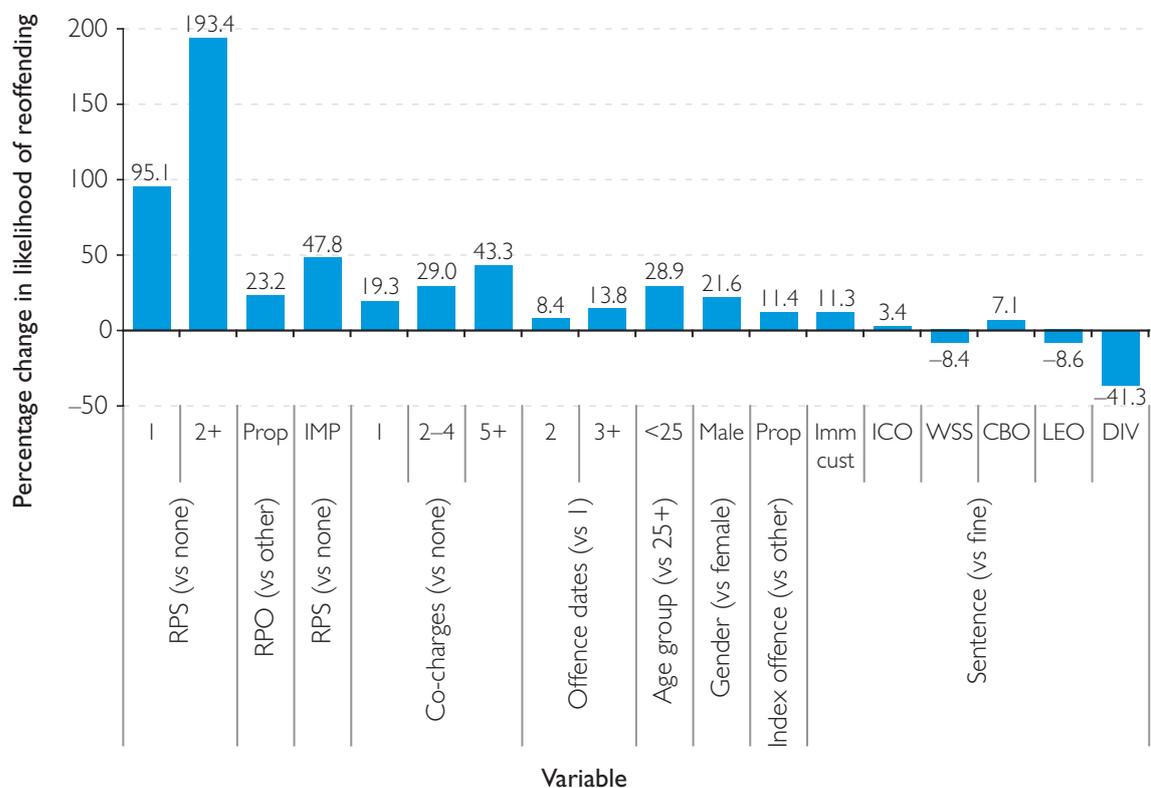


Note: RPS = recent prior sentence, Prop = property, RPO = recent prior offence, Imm cust = immediate custodial, ICO = intensive correction order, WSS = wholly suspended sentence, CBO = community-based order, LEO = low-end order, DIV = diversion (Criminal Justice Diversion Program).

Finally, the confidence intervals for the model are small, meaning that the margin of error for each of the model's estimates is also small.

For ease of interpretation, the hazard ratios from the detailed results in the technical appendix have been converted into percentages and are presented in Figure 1. The graph shows the percentage change in the likelihood of reoffending as a result of a one-unit increase (that is, for a change in category) in a particular variable. In other words, the graph shows the percentage change in the likelihood of reoffending when comparing one category in a variable with the reference category for that variable, holding constant (over and above) all the other variables.

A positive value in the graph indicates that the likelihood of reoffending is increased for that category of a variable, when compared with the reference category for that variable. For example, the value for the 'I' category of 'recent prior sentence' is 95.1. This means that, compared with the reference category of no recent prior sentence, the risk of reoffending for a person with one recent prior sentence is 95.1% higher than the risk of reoffending for a person with no recent prior sentence (or that a person with a recent prior sentence is 95.1% more likely to reoffend than someone without a recent prior sentence).

Similarly, a negative value indicates that the likelihood of reoffending is decreased.

## Effect of recent prior sentences

After controlling for the effects of other variables in the model, the variable with the strongest relationship with reoffending is recent prior sentence. In particular, having two or more recent prior sentences has the largest effect on the likelihood of reoffending: a hazard ratio percentage of 193.4 means that, compared with a person who has no recent prior sentences, someone with two or more recent prior sentences is 193.4% more likely to reoffend. Even with a single recent prior sentence, the chances of reoffending are increased by 95.1% compared with someone with no recent prior sentences.

Two other variables relating to offending history also have strong associations with reoffending. Having a recent prior imprisonment sentence increased the likelihood of reoffending by 47.8% compared with someone without a recent prior imprisonment, while having a recent prior property offence increased the likelihood of reoffending by 23.2% compared with someone with some other kind of recent prior offence.

## Effect of offence factors

After controlling for the effects of other variables in the model, having a property offence as the offence in the index sentence increased the likelihood of reoffending by a small but statistically significant amount (11.4%).

People with multiple charges and multiple offence dates are also more likely to reoffend than people with single charges and single offence dates. A general pattern has been found whereby there is an increasing likelihood of reoffending associated with an increasing number of charges and offence dates. In particular, those with five or more charges sentenced at the same time are 43.3% more likely to reoffend than those with no other charges sentenced at the same time (that is, people sentenced for a single charge), while people with three or more offence dates are 13.8% more likely to reoffend than people with only one offence date.

## Effect of age and gender

After controlling for the effects of other variables in the model, the likelihood of reoffending is also statistically significantly related to the demographic characteristics of the offender. Offenders aged under 25 had a 28.9% increased likelihood of reoffending compared with older offenders, while males had a 21.6% increased risk of reoffending compared with female offenders.

## Effect of sentence type

Overall, the effect of sentence type on the likelihood of reoffending is relatively small, after controlling for the effects of other variables in the model. Nonetheless, all but one of the sentence types did show a statistically significant relationship with reoffending, when compared with the reference category of a fine. Intensive correction orders did not have a statistically significant effect on reoffending when compared with fines.

With a fine as a reference category, the largest effect of any of the sentence types has been found for the Criminal Justice Diversion Program: this outcome is associated with a 41.3% decrease in the risk of reoffending when compared with a fine. Both wholly suspended sentences (-8.4%) and low-end orders (-8.6%) are associated with lower risks of reoffending compared with a fine.

Conversely, two of the sentence types are associated with an increase in the likelihood of reoffending when compared with a fine. Both immediate custodial sentences (11.3%) and community-based orders (7.1%) are associated with an increase in the likelihood of reoffending.

These direct comparisons, however, must be treated with some caution. People who receive more severe sentences, such as imprisonment or wholly suspended sentences, may well have committed more serious crimes or may be more serious repeat offenders than those who receive orders that are further down the sentencing hierarchy. These offence and offender characteristics mean that, despite the statistical controls applied via the regression analysis, it is unlikely that this first analysis has compared truly similar offenders.

In order to address this issue, a 'matched subsamples' analysis was also undertaken. This approach allows for closer matching of offence and offender characteristics than in the initial regression analysis.

### Matched subsamples analyses

In order to examine the effect of sentence type more closely, characteristics that lead to a given sentence type were controlled for in a more rigorous way. The approach taken involved selecting a pair of sentence types (such as fine and community-based order) and calculating a score that represented the propensity of an offender to receive a given sentence within the pair. Propensity scores were determined using a logistic regression model that predicted the likelihood of a given sentence outcome (for example, fine versus community-based order) based on a number of independent variables, including offender demographics, prior offending variables and current offending variables.

Once propensity scores were calculated for each pair of sentence types, subsamples were selected using a technique known as nearest neighbour propensity score matching without replacement. A calliper for matching was set at 0.10. This led to the creation of two subsamples for each sentence type pair, with each subsample having similar characteristics in terms of the likelihood of receiving a given sentence.

After matched subsamples were selected for each sentence type pair, Cox regression survival models were constructed, using a similar range of predictor variables to the overview model.

Sentence pairs chosen for analysis were selected based on proximity to each other on the sentencing hierarchy. In order to replicate and extend the full sample approach, the analysis also focused on fines. The following pairs were examined:

- immediate custodial sentence versus intensive correction order;
- immediate custodial sentence versus wholly suspended sentence;
- fine versus community-based order;
- fine versus low-end order; and
- fine versus diversion.

Figure 2 presents the effects on reoffending of five different sentence types from five separate Cox regression models (full results for these models are in the technical appendix). The effect is indicated in terms of the percentage change in the likelihood of reoffending after a given sentence type compared with another sentence type.

There were two models that compared the likelihood of reoffending following a term of imprisonment with reoffending following non-custodial terms. When comparing an immediate term of imprisonment with an intensive correction order, there was no statistically significant difference (p = 0.402) in the likelihood of reoffending, meaning that the small difference in the increased likelihood of further offending following imprisonment (5.2%) may have occurred by chance.

In contrast, there was a statistically significant difference (p < 0.001) in the likelihood of reoffending following an immediate term of imprisonment when compared with a wholly suspended sentence. The likelihood of reoffending following imprisonment was 24.6% higher than for wholly suspended sentences: after controlling for the effect of offender, offence and prior offending characteristics, imprisonment was associated with a higher risk of reoffending than a wholly suspended sentence.

Figure 2: Percentage change in the likelihood of reoffending by sentence comparison as determined by five separate Cox regression models on propensity score-matched subsamples
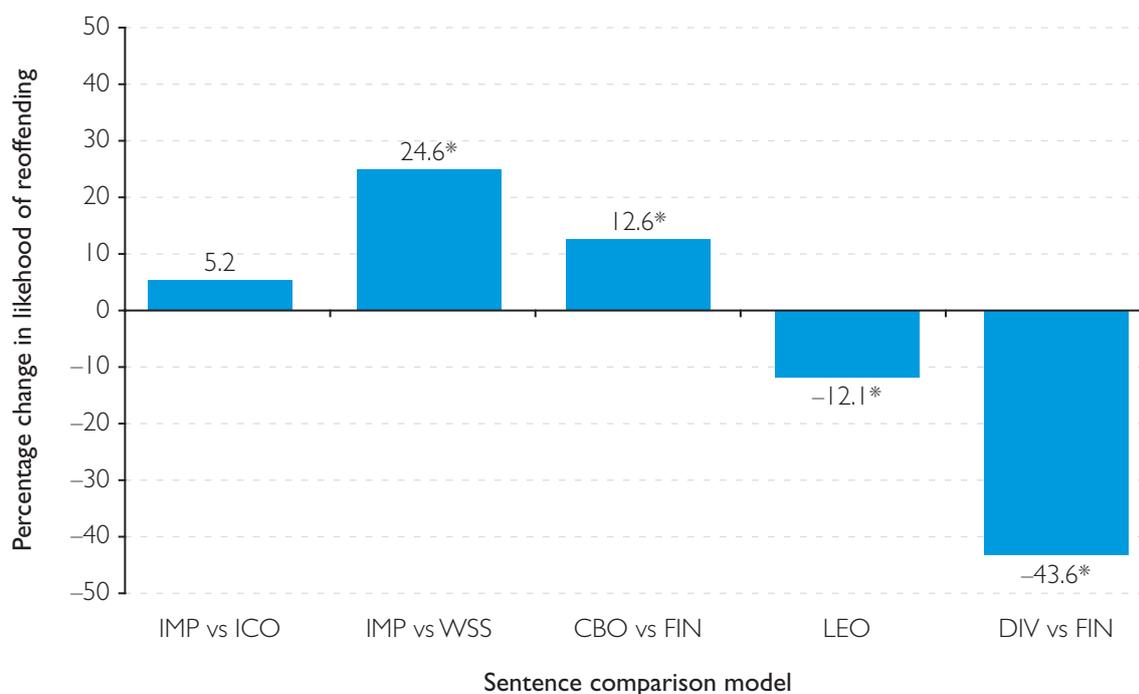


Note: IMP = imprisonment, ICO = intensive correction order, WSS = wholly suspended sentence, CBO = community-based order, FIN = fine, LEO = low-end order, DIV = diversion (Criminal Justice Diversion Program).

There are a number of potential explanations for this finding. One is the possible criminogenic effect of imprisonment, whereby an offender's experience in prison – associating with other offenders, being isolated from any pro-social activities and relationships in the community and loss of housing or employment – may actually increase the likelihood of reoffending following release.

Another possible explanation revolves around the characteristics of offenders who receive wholly suspended sentences versus those who receive terms of immediate imprisonment. One of the key considerations for a magistrate when suspending a sentence of imprisonment is the offender's risk of reoffending (part of which is the person's prospects of rehabilitation). The available data did not allow the Council to include such measures in the reoffending model. It is thus possible that the different reoffending rates found for imprisonment and wholly suspended sentences are actually a function of a number of unmeasured characteristics on which the offenders varied, rather than being a function of the sentence itself.

Nonetheless, based on the variables that were included in the reoffending model, the risk of reoffending following a term of immediate imprisonment was higher than the risk following a wholly suspended sentence.

Subsequent analyses compared fines with community-based orders, low-end orders and diversion. All effects on the likelihood of reoffending were statistically significant. Compared with a fine, the risk of reoffending was higher following a community-based order (12.6%) but lower following a low-end order (12.1%) and participation in the Criminal Justice Diversion Program (43.6%).

The findings of the matched sample Cox regression analyses were thus consistent with the findings of the Cox regression model run across the entire sample.

# Effect of sentence type on time to reoffending

The second part of the analysis focuses on the effect of sentence type on the time to reoffending. This second measure of reoffending has been used to provide a more complete picture of the effect of sentence type on reoffending after accounting for the effect of offender and offence characteristics. While the first part of the analysis, discussed above, uses a regression model to examine the change in the likelihood of reoffending for each variable in the model, this part of the analysis uses the same regression model to predict the reoffending rate for each sentence type at any point in time during the follow-up period. Importantly, it does this while holding constant at a given value other variables in the model, thus allowing a direct comparison of the effect of different sentence types over time.

The analysis used for this part of the research, however, does not measure the time to the event itself (that is, the time to reoffending). Instead, survival analysis reverses the reoffending measure, using the regression model to calculate the *non*-reoffending rate over time.

Overall, the nine variables (including sentence type) reliably predicted the time to reoffending (Chi-square (18) = 8811.658, p < 0.0005), explaining 14.1% of the variance in the measure of the time to reoffending. Thus the model is only modest in its success in explaining this measure of reoffending, suggesting that there are other, unmeasured factors that contribute to reoffending.[36] One of these other factors may be the time between the reoffending itself and the sentencing for that reoffending. The time lag between offending and sentencing can vary substantially, so this study has used the most reliable measure available in the data. Other relevant factors that have been linked in the research literature to the time to reoffending are likely to be ones that are not routinely collected in administrative datasets, such as levels of poverty, employment status and substance abuse.

Nonetheless, when placed in the model beside the available measures of offender characteristics, sentence type still has a statistically significant effect on reoffending, even after controlling for the other variables – the effect of sentence type on reoffending is unlikely to have happened by chance. This effect, however, is small: when the other variables measuring offence and offender characteristics are included in the model, sentence type on its own explains 0.5%[37] of the variance in the time to reoffending (Chi-square (6) = 284.191, p < 0.0005).

Figure 3 (page 28) shows the predicted cumulative non-reoffending rate over time for each sentence type when all the other variables in the model are held constant at their mean (average) value. That is, the graph shows the non-reoffending rate over time for a hypothetical person when all other factors are held at the average value, with only sentence type being varied. Means have been calculated using the numeric values assigned to categories of each variable. For example, for the variable gender, which has a value of '0' representing females and '1' for males, the mean is 0.813 (this indicates that the majority of the sample is male).

The horizontal axis shows the time element, measuring the number of days of non-reoffending (or the number of days of survival). The vertical axis shows the cumulative non-reoffending rate, which is the proportion of people who have not reoffended (with the highest value being 1.00, representing 100% of people). Each line on the graph represents one particular sentence type – the same sentence types that appear in Figure 1 above. Taken as a whole, the graph shows the proportion of people who have not reoffended as time passes, for each type of sentence.

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[36] Given the high levels of complexity and comorbidity with which people appear before the court, it is likely that some of these other unmeasured factors – such as drug and alcohol abuse – also play a role in the likelihood of reoffending.

[37] The amount of variance explained is derived from the Chi-square statistic using a formula applied by Allison to survival analysis (Allison, 1995: cited in Tabachnick and Fidell, 2007).

**Figure 3:** Predicted cumulative non-reoffending rate for each sentence type at the mean of the eight other variables
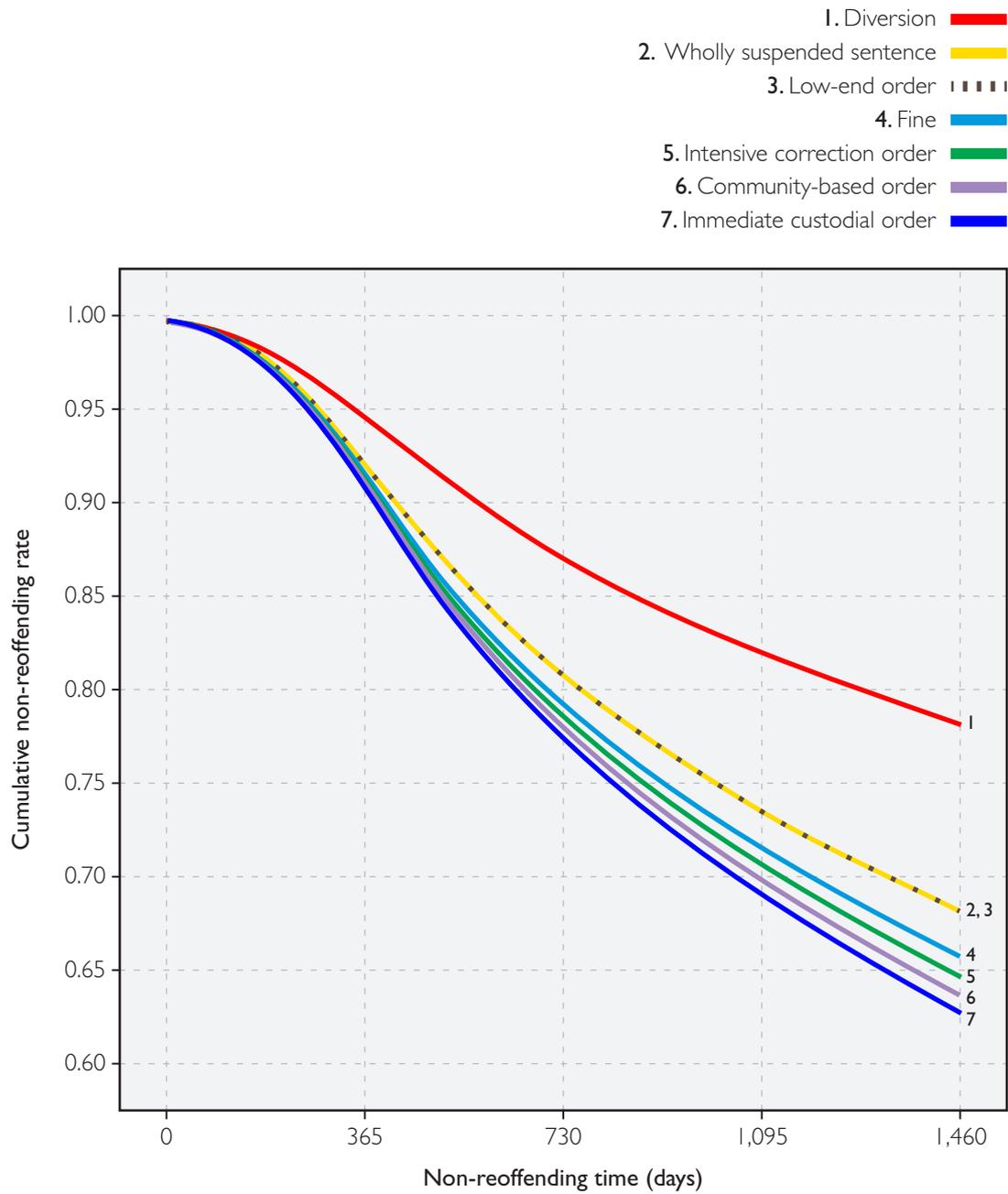
It is important to note that these estimates do not represent actual non-reoffending rates over time for each sentence type. Actual non-reoffending rates are not presented because they are potentially misleading as indicators of the differential effect of sentence type as they do not take into account the effects of other variables, such as recent prior sentences. Rather, these estimates represent non-reoffending rates over time predicted by a regression model that enables the effects of other variables to be controlled for.

The most important point to note from this graph is the similarity among the curves for the different sentence types, with most following the same basic shape: the predicted cumulative non-reoffending rate is very similar for most of the orders, with the exception of the Criminal Justice Diversion Program. Indeed, there is little to distinguish the curves for immediate custodial orders, community-based orders, intensive correction orders and fines in terms of their predicted non-reoffending rates.

After four years (the point on the horizontal axis at 1,460 days), the Criminal Justice Diversion Program has the highest predicted non-reoffending rate at approximately 78% (the point on the vertical axis at about 0.78). This means that, according to the regression model, if every offender were average on each variable except for sentence type, 78% of those who received this disposition would not reoffend, while 22% would reoffend. The lowest rate of predicted non-reoffending is for imprisonment, at approximately 63%. This means that the regression model predicted that 63% of average offenders who were sentenced to a term of imprisonment as their index sentence would not reoffend, while 37% would reoffend. The four-year predicted non-reoffending rates for imprisonment, community-based orders, intensive correction orders and fines are very similar, at between 63% and 66%, while wholly suspended sentences and low-end orders share the same four-year non-reoffending rate of 68%.

Complementing the results presented in Figure 1, these findings show that people who receive a Criminal Justice Diversion Program disposition are least likely to reoffend and will refrain from offending the longest, while those sentenced to a term of imprisonment are most likely to reoffend and will return to offending most quickly.

As in the analysis of the likelihood of reoffending following different sentence types, this part of the analysis should also be treated with caution, as differences in the characteristics of people who receive different sentence types may influence their time to reoffending. Nonetheless, the results of this part of the analysis are consistent with those found in the matched subsample analysis above, and show the differential effects of different sentence types on this second measure of reoffending outcomes.

# Discussion and implications

Taking as a whole the findings of the Cox regression analyses seen in Figures 1, 2 and 3, it is clear that, although in some cases sentence type does have an effect on reoffending, overall the effect size is small compared with the offence and offender factors included in the measurement of reoffending.

Recent prior sentencing has by far the strongest effect on reoffending of all the variables in the model: as the number of recent prior sentences increases, so does the likelihood of reoffending. Other variables, such as having a recent prior imprisonment and being sentenced for multiple charges, also substantially increase the likelihood of reoffending.

These findings accord with one of the most consistent findings to come from the large body of literature on recidivism and reoffending, that prior offending is a strong predictor of future offending. Further, the findings show that, consistent with the national and international literature, recidivist offenders sentenced in the Magistrates' Court in Victoria tend to be young men who have been sentenced for a property offence and who have a recent history of prior sentences, in particular, sentences of imprisonment.

Compared with the influences of recent prior sentencing factors, the effect of sentence type on the likelihood of reoffending is small. While its effects are statistically significant and therefore cannot be dismissed, they do not exert nearly as strong an influence as the offence and offender characteristics in the model.

The finding of a small but significant effect of sentence type on the likelihood of reoffending is consistent with recent research on the effect of sentence type, such as the work of Tait. Tait (2001) found that sentence type did have an effect on reoffending, but that this was small and context specific, varying by offence and offender type.

Nonetheless, to the extent that sentencing does have some influence on the likelihood of reoffending, it is clear that different sentence types exert their influence in different ways. The Criminal Justice Diversion Program has the strongest effect of all the sentence types, decreasing the likelihood of reoffending. Of those sanctions that increase the likelihood of reoffending, the strongest effect is found for immediate custodial sentences.

The results on the time taken for recidivist offenders to reoffend are consistent with the results of the effect of sentence type on the likelihood of reoffending. People who receive a Criminal Justice Diversion Program disposition are least likely to reoffend and most likely to refrain from offending the longest, while those sentenced to a term of imprisonment are most likely to reoffend and return to offending most quickly.

Although the methodological approach used in this paper is robust, our model has only been able to measure those factors that were available in the reoffending database. The lack of suitable measures of factors that are known to be important in predicting reoffending, such as substance abuse, mental health problems and unemployment, for example, means that the model does not include all of the factors that may influence both sentence outcomes and reoffending. Despite the statistical controls employed, therefore, it is possible that the offenders who received the less severe sentencing outcomes would have been less likely to reoffend (and to reoffend more slowly) than their more hardened counterparts, regardless of the sentences that they had received.

When considering the implications of these findings, it should be noted that most of the factors found to have a strong effect on the likelihood of reoffending are also factors that are taken into account in sentencing: recent prior sentences, offence seriousness and the age of offenders. The strong influence that recent prior sentences has on reoffending confirms that prior convictions play a key role in courts' intuitive assessments of an offender's prospects of rehabilitation, having regard to the offender's previous character as required by section 5(2)(f) of the *Sentencing Act 1991* (Vic).

Perhaps more importantly, the findings have implications for one of the three utilitarian sentencing purposes that form a fundamental part of the sentencing framework in Victoria – that of deterrence, in particular, specific deterrence.

Deterrence aims to reduce reoffending by imposing a sentence intended to dissuade an offender from committing further criminal offences. A key assumption of the theory of deterrence is that sentencing an offender to a more severe sentence will be more effective as a deterrent than a less severe sentence.

The results from both the initial regression analysis and the matched pairs analysis show that immediate custodial sentences have the strongest association with a higher likelihood of reoffending. For recidivist offenders, those sentenced to an immediate custodial sentence are most likely to reoffend and return to offending most quickly.

This suggests that being sentenced to an immediate custodial sentence rather than some other type of sentence does not achieve the reduction in reoffending that might be expected if such sentences operated as a deterrent. Not only does this research suggest that imprisonment fails to deter individuals from reoffending, but there is a substantial literature that argues that imprisonment may have a criminogenic effect, increasing the likelihood of future offending. Previous research on this issue has suggested that prison may provide a learning environment for crime, may reinforce a criminal identity or may disrupt conventional social ties, such as employment and stable housing.

While the specific mechanisms by which imprisonment may increase further offending have not been explored in this report, the findings suggest that, of the various purposes for which a term of imprisonment may be imposed, dissuading an offender from further offending via specific deterrence is unlikely to yield its intended result.

The implications for deterrence are qualified by the fact that this analysis has not included a comparison of the type of offences committed by recidivists with the type of offences that offenders go on to commit when they reoffend. More detailed analysis of offence patterns and specialisation in reoffending will be required to determine whether the offences being committed subsequent to immediate custodial sentences are of a similar character to those for which the person was initially sentenced.

There are also limits on the implications that can be drawn from the results for the other two utilitarian purposes of sentencing.

The matched pairs analysis shows that, compared with fines, community-based orders are associated with a 12.6% increase in the likelihood of reoffending. This raises a number of questions about the effect that such sentences have in achieving the rehabilitation of offenders. While these questions have not been addressed in this report, the next stages of work planned by the Council will examine the effect of community sentences on reoffending.

The association of immediate custodial sentences of imprisonment with a higher likelihood of reoffending might suggest that imposing such sentences to achieve community protection has little effect in reducing reoffending beyond the immediate incapacitative effect. However, the conclusions that can be drawn from this finding are limited by the short periods of imprisonment imposed in the Magistrates' Court. Further consideration of the sentencing purpose of community protection is planned as part of future analysis of the Council's reoffending database, including a separate examination of the effect of immediate custodial sentences on reoffending for offenders sentenced in the County Court and the Supreme Court.

# Technical appendix

## Methodology for the Cox regression survival analysis

Cox regression survival analysis measures the effect of each variable in a model on the risk of an event (in this case, reoffending) using hazard ratios. A hazard ratio represents the predicted change in the likelihood of an event for a one-unit increase (that is, a change in categories) in a particular variable, when other variables in the model are held constant.

Before constructing the Cox regression model, all the variables in the analysis were coded to numeric values (for example, the variable 'gender' was coded as 1 for male and 0 for female). In order to determine the independent effect of each variable on the likelihood of reoffending, one value in each variable has been chosen as a reference category – that is, a category against which all other categories are compared when assessing the effect on reoffending.

In order to ensure that each factor (or variable) is sufficiently important to include in a predictive model of reoffending, initially the variables were added to a Cox regression model one at a time in a technique known as stepwise entry. Apart from sentence type (which was entered last), the sequence of entry was determined by the strength of the relationship – between each single variable and reoffending – found in initial univariate (one variable at a time) Cox regression analyses: the strongest univariate relationship was entered first (recent prior sentence), then each variable was entered in turn based on the strength of its relationship with reoffending. Sentence type, which had one of the stronger univariate relationships with reoffending, was entered after the variable with the weakest relationship with reoffending (the index offence) in order to assess the effect of sentence type over and above other variables.

The nature of the data available to the Council presented some complexities in relation to measuring the time to reoffending. These challenges relate to (1) the starting event (the point in time from which reoffending is measured), (2) the subsequent event (the point in time at which reoffending is taken to have occurred), (3) the time between these events and (4) the length of the follow-up period (in other words, how long each offender was given to reoffend or not reoffend). Each of these is explained in more detail below.

## (1) Starting event: sentencing

The starting event is defined as the first sentence imposed on each offender sentenced in the Magistrates' Court within the period from July 2007 to June 2008, which is the index period for this research.

The date defining the starting event is the 'estimated free date' or the date on which the offender was likely to be living in the community, as opposed to in prison, following the imposition of their index sentence. For offenders who were imprisoned, this date has been chosen because, during the time an offender is imprisoned, their chances of reoffending are severely limited. One result of using the estimated free date is that it does not allow for an examination of the incapacitative effect of custodial sentences. Nonetheless, estimated free date had to be employed as other available measures, such as sentence date, would have violated one of the underlying assumptions of the Cox regression technique.[38] The use of an estimated free date for defining the starting event is common practice in studies of reoffending.

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[38]   Using 'sentence date' instead of 'estimated free date' would have violated the proportional hazards assumption that lies at the heart of Cox regression analysis.

For offenders who received a non-custodial sentence (such as a community-based order), the estimated free date is the date of the index sentence. For offenders who received a custodial sentence (that is, imprisonment or a partially suspended term of imprisonment), the estimated free date is the estimated release date based on the length of the minimum immediate custodial component of the sentence. For imprisonment sentences, this is the non-parole period or, where a non-parole period was not imposed, the total effective term. For partially suspended sentences this is the non-suspended component of the total effective term.

There are a number of limitations to the method used for calculating estimated release date, due to the lack of availability of some information in the original sentencing data. First, this method assumes that offenders are released immediately at the end of the non-parole period, which does not necessarily occur, as release is ultimately a decision for the Adult Parole Board. Second, it does not deduct time already served from the minimum prison term. If an offender has served time in custody prior to being sentenced, that time is deducted from the sentence imposed. Third, this method does not take into account the length of imprisonment sentences that an offender is already serving at the time of receiving the index sentence. If the new sentence is aggregated with the existing sentence, the actual release date is likely to be after the estimated release date.

Despite these limitations, the estimated free date is the best available measure of the date on which an offender is free and in the community. The measure still provides a reliable starting point for measuring whether, and when, an individual reoffends.

## (2) Event of interest: sentence date of subsequent offending

The event of interest in this research is the first offence committed following the estimated free date. In particular, the analysis includes both whether a further offence was committed and, if there was reoffending, when that reoffending took place.

Not all subsequent offending was able to be identified because some subsequent offending was not captured in the source datasets. This includes offences that did not receive a sentence either because they were not detected by police or because they did not result in a guilty finding in court. The measure of reoffending used in this research is thus restricted to offences that have actually been sentenced.

Information on the date of the subsequent offending was not available for all records in the database. To allow a measure of reoffending date without having to exclude reoffending episodes due to missing offence dates, the sentence date for the new offending episode has been used instead to define the date of the first subsequent offence.

This approach has some limitations. First, there is always some delay between the commission of an offence and sentencing for the offence, and this varies depending on a number of factors, including how long it took for police to become aware of the offence, how long police took to investigate the offence and proceed to court, and whether the new offence was heard in the Magistrates' Court or in a higher court. Separate analyses by the Council have found that the median time between offence and sentence in the Magistrates' Court is six months while in the higher courts it is 19 months. While using sentence date as a proxy for offence date clearly presents some difficulties, it is nonetheless less problematic to take this approach than to lose a large proportion of the data due to missing offence dates.

Although index sentencing episodes are restricted to cases sentenced in the Magistrates' Court, subsequent sentencing episodes in any court have been included in the analysis.[39]

One issue consistently facing reoffending studies that rely on sentencing data is where there are sentences that occur after the index sentence data, but they are for offences committed before the index sentence. In such instances the data need to be excluded from the reoffending analysis as they are not true instances of reoffending. In the current study, to determine whether an offence was committed before or after the index sentence date, the offence date for all subsequent sentencing episodes was compared with the index sentence date. Offences committed prior to the index sentence date were excluded from the study. Thus where the subsequent sentence was imposed for an offence committed before the index sentence, the data were excluded from the analysis.

The offence date was missing for all higher courts sentencing episodes and for a small proportion of Magistrates' Court records. In these cases, it was therefore not possible to use the offence date to determine whether the subsequent sentence related to an offence that was committed before the index sentence date or after. This issue could not simply be addressed by excluding those cases that did not have an offence date as this would have resulted in all higher court sentencing episodes being removed from the database, and an important part of the reoffending database would have been missing. To address this issue, rules were developed and applied for such cases. The rules were based on an assessment of the minimum time that could elapse between the estimated free date from the index sentencing episode and the sentence date of subsequent sentencing episodes.

As discussed above, there is always a period of time that elapses between the commission of an offence and the sentencing for that offence. The estimated free date is the date on which it is estimated that the offender is released from prison and from which reoffending is measured. If an offender commits an offence on the day that he or she is released from prison, there will be a delay between the offence date and the sentence date. The period of time that elapses between offence date and sentence date will vary depending on a range of factors, including how long police took to investigate the offence and proceed to court, and whether the new offence was heard in the Magistrates' Court or in a higher court. It was not possible to examine the precise period of delay between the estimated free date and the subsequent sentencing episodes for every case; therefore it was not possible to determine if sufficient time had elapsed for the offender to have committed an offence and to have been charged, tried and sentenced. Therefore, in order to measure time to reoffending indirectly, a rule has been developed to determine a cut-off point between estimated free date and subsequent sentence date based on the minimum time that ordinarily elapses in the majority of cases between offence date and sentence. This rule was designed to exclude those cases where insufficient time had elapsed between the date on which the offender was estimated to have been 'free' to commit subsequent offences (the estimated free date) and the date on which the offender was sentenced for subsequent offences.[40]

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[39] Subsequent sentencing episodes that contain a charge of breaching a previous sentencing order have only been included if they also contain a charge relating to a separate offence.

[40] If the lag between the estimated free date after the index sentencing episode and the subsequent sentence date was less than the 5th percentile of the time between offence and sentence for cases generally, the offence in the subsequent sentence was deemed to have occurred prior to the free date, and therefore its sentencing episode was excluded from representing reoffending following the index sentence. The 5th percentile from offence to sentence for higher courts cases is seven months and for the Magistrates' Court it is one month. Therefore, all cases sentenced in the Magistrates' Court where there was less than one month between the estimated free date and the subsequent sentence were excluded from the database. All cases sentenced in the higher courts where there was less than seven months between the estimated free date and the subsequent sentence were excluded from the database. This approach ensured that, where appropriate, the reoffending database captured as many cases where offending occurred subsequent to the index sentence, without including offences that could have been committed prior to the index sentence from which reoffending was measured.

## (3) Time between events

The time between events is the number of days between the estimated free date from the index sentencing episode and the date of sentence for the first offence following the index sentence. A more precise measure of time to reoffend is the time between the free date and the date of the first subsequent offence. However, approximately 10% of sentencing episodes do not have an offence date. For this reason, sentence date has been used as a proxy for offence date. That is, despite the time lag that typically exists between offence dates and sentence dates, using this proxy measure is considered the most appropriate approach to allow a reliable measure of offence date.

In cases involving immediate custodial sentences, the free date from which reoffending is measured is an estimate and therefore may not reflect the actual date that an offender was released from prison and was 'free' in the community to offend. The estimated free date is assumed to be incorrect for the small percentage (1.1%) of reoffenders in the sample whose offence date in their first subsequent episode falls prior to their index estimated free date. As a result, for these offenders, the value used for their estimated free date is the date of offence for the first subsequent sentencing episode (this means that they are assumed to have offended immediately on release and that the time between events is zero days).

## (4) Follow-up period

In a study of how long it takes for an event to occur, ideally every participant would have the same starting date and would then be observed for the same period of time following that date. This would ensure that differences in people's follow-up times would not bias the statistical relationships. In practice, however, it is difficult to design such a study. For example, participants may have different starting dates while others may drop out of the study before the study concludes.

For measuring reoffending in the current research, the database contains all sentences imposed in the period 1 July 2007 to 30 June 2011. The maximum follow-up period could therefore be four years (for an offender sentenced to a non-custodial order on 1 July 2007). While there is therefore some variability in follow-up periods for measuring reoffending, the survival analysis techniques used in this research are able to deal with these differences by statistically controlling for them.

# Limitations of the Cox regression survival analysis

Due to the limitations inherent in the Cox regression approach in comparing outcomes for people with similar characteristics, a matched subsamples approach was added to the initial regression analysis. This approach was used to address the problem of unmeasured variables that may influence both sentence outcomes and reoffending. While the matched subsamples approach improves the reliability of the findings, it does not necessarily eliminate the problem of omitted variable bias: the method can only provide adequate comparisons to the extent that those variables that are included in the model are correlated with unmeasured but important variables that are not included in the model. For example, the measure of prior offending may be a partial proxy for a measure of substance abuse (as substance abuse is known to be correlated with offending behaviour). Substance abuse may, in turn, be related to the type of sentence imposed. Without a direct measure of substance abuse, the impact of this factor on reoffending is potentially inadequately accounted for in the analysis.

Despite these limitations, the findings of the Council's analysis remain consistent with previous research in this area.

# Quantitative findings

Table A1 shows the regression coefficients (the column headed 'B'), degrees of freedom (the column headed 'df'), p-values (the column headed 'Significance'), hazard ratios and the lower and upper confidence intervals for each variable in the model. For each variable, the comparator value is shown in parentheses in the variable label.

The meaning and implications of these results are discussed in the main body of the report.

Table A1: Cox regression analysis of likelihood of reoffending – regression coefficients, degrees of freedom, significance, hazard ratios and confidence intervals for hazard ratios

| Variable (and reference category) | Category | B | df | Significance | Hazard ratio | 95.0% CI for hazard | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | | Lower | Upper |
| Recent prior sentence (vs no prior sentence) | 1 | 0.669 | 1 | 0.000 | 1.951 | 1.878 | 2.027 |
| | 2+ | 1.076 | 1 | 0.000 | 2.934 | 2.811 | 3.062 |
| Recent prior offence (vs other offence type) | Property | 0.208 | 1 | 0.000 | 1.232 | 1.181 | 1.285 |
| Recent prior sentence type (vs other type/none) | Imp | 0.391 | 1 | 0.000 | 1.478 | 1.397 | 1.565 |
| Co-charges (vs no co-charges) | 1 | 0.176 | 1 | 0.000 | 1.193 | 1.147 | 1.241 |
| | 2–4 | 0.255 | 1 | 0.000 | 1.290 | 1.237 | 1.346 |
| | 5+ | 0.360 | 1 | 0.000 | 1.433 | 1.339 | 1.533 |
| Offence dates (vs one date) | 2 | 0.080 | 1 | 0.001 | 1.084 | 1.036 | 1.134 |
| | 3+ | 0.130 | 1 | 0.000 | 1.138 | 1.070 | 1.210 |
| Age group (vs 25+) | < 25 | 0.254 | 1 | 0.000 | 1.289 | 1.251 | 1.329 |
| Gender (vs female) | Male | 0.196 | 1 | 0.000 | 1.216 | 1.167 | 1.267 |
| Index offence (vs other offence type) | Property | 0.108 | 1 | 0.000 | 1.114 | 1.074 | 1.155 |
| Sentence type (vs fine) | Imm cust | 0.107 | 1 | 0.001 | 1.113 | 1.046 | 1.185 |
| | ICO | 0.033 | 1 | 0.427 | 1.034 | 0.952 | 1.122 |
| | WSS | -0.088 | 1 | 0.001 | 0.916 | 0.870 | 0.964 |
| | CBO | 0.069 | 1 | 0.015 | 1.071 | 1.013 | 1.133 |
| | LEO | -0.090 | 1 | 0.000 | 0.914 | 0.873 | 0.956 |
| | DIV | -0.533 | 1 | 0.000 | 0.587 | 0.546 | 0.631 |

Note: Imm cust = immediate custodial, ICO = intensive correction order, WSS = wholly suspended sentence, CBO = community-based order, LEO = low-end order, DIV = diversion (Criminal Justice Diversion Program).

## Matched samples: community-based order versus fine

Table A2: Cox regression results of the effect of different variables on the likelihood of reoffending following a community-based order versus a fine

| Variable | B | df | Significance | Exp(B) | 95.0% CI for Exp(B) Lower | Upper |
|---|---|---|---|---|---|---|
| Gender | .245 | 1 | .000 | 1.278 | 1.161 | 1.406 |
| Age group | .198 | 1 | .000 | 1.219 | 1.131 | 1.315 |
| Recent prior sentence | .771 | 1 | .000 | 2.163 | 1.981 | 2.361 |
| Past property offence | .348 | 1 | .000 | 1.416 | 1.288 | 1.556 |
| Current property offence | -.016 | 1 | .685 | .984 | .908 | 1.065 |
| Current traffic offence | -.182 | 1 | .009 | .834 | .727 | .956 |
| Co-charges | .165 | 1 | .004 | 1.179 | 1.053 | 1.320 |
| Multiple offence dates | .167 | 1 | .000 | 1.182 | 1.084 | 1.287 |
| Community-based order vs fine | .119 | 1 | .001 | 1.126 | 1.047 | 1.211 |

Matched sample size: n = 7,172

## Matched samples: low-end order versus fine

Table A3: Cox regression results of the effect of different variables on the likelihood of reoffending following a low-end order versus a fine

| Variable | B | df | Significance | Exp(B) | 95.0% CI for Exp(B) Lower | Upper |
|---|---|---|---|---|---|---|
| Gender | .225 | 1 | .000 | 1.252 | 1.169 | 1.341 |
| Age group | .223 | 1 | .000 | 1.250 | 1.180 | 1.323 |
| Recent prior sentence | .941 | 1 | .000 | 2.562 | 2.398 | 2.738 |
| Past property offence | .302 | 1 | .000 | 1.353 | 1.244 | 1.471 |
| Current property offence | .093 | 1 | .004 | 1.098 | 1.030 | 1.170 |
| Current traffic offence | -.235 | 1 | .000 | .791 | .724 | .864 |
| Co-charges | .221 | 1 | .000 | 1.247 | 1.179 | 1.319 |
| Multiple offence dates | | 1 | | | | |
| Low-end order vs fine | -.129 | 1 | .000 | .879 | .832 | .930 |

Matched sample size: n = 17,066

## Matched samples: Criminal Justice Diversion Program versus fine

Table A4: Cox regression results of the effect of different variables on the likelihood of reoffending following diversion versus a fine

| Variable | B | df | Significance | Exp(B) | 95.0% CI for Exp(B) | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Gender | .370 | 1 | .000 | 1.448 | 1.288 | 1.628 |
| Age group | .447 | 1 | .000 | 1.563 | 1.429 | 1.710 |
| Recent prior sentence | .879 | 1 | .000 | 2.410 | 2.109 | 2.753 |
| Past property offence | .386 | 1 | .003 | 1.471 | 1.144 | 1.893 |
| Current property offence | .190 | 1 | .000 | 1.209 | 1.099 | 1.330 |
| Current traffic offence | -.085 | 1 | .346 | .919 | .771 | 1.096 |
| Co-charges | .198 | 1 | .000 | 1.219 | 1.110 | 1.339 |
| Multiple offence dates | .193 | 1 | .013 | 1.213 | 1.042 | 1.413 |
| Diversion vs fine | -.572 | 1 | .000 | .564 | .515 | .618 |

Matched sample size: n = 9,408

## Matched samples: imprisonment versus intensive correction order

Table A5: Cox regression results of the effect of different variables on the likelihood of reoffending following imprisonment versus intensive correction order

| Variable | B | df | Significance | Exp(B) | 95.0% CI for Exp(B) | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Gender | .176 | 1 | .077 | 1.193 | 0.981 | 1.450 |
| Age group | .100 | 1 | .165 | 1.105 | 0.960 | 1.273 |
| Recent prior sentence | .645 | 1 | .000 | 1.906 | 1.646 | 2.208 |
| Recent prior imprisonment | .459 | 1 | .000 | 1.582 | 1.353 | 1.850 |
| Past property offence | .297 | 1 | .000 | 1.345 | 1.148 | 1.576 |
| Current property offence | .134 | 1 | .066 | 1.144 | 0.991 | 1.320 |
| Co-charges | .138 | 1 | .160 | 1.147 | 0.947 | 1.390 |
| Multiple offence dates | .238 | 1 | .000 | 1.269 | 1.111 | 1.450 |
| Imprisonment vs intensive correction order | .051 | 1 | .402 | 1.052 | 0.935 | 1.184 |

Matched sample size: n = 2,470

# Matched samples: imprisonment versus wholly suspended sentence

Table A6: Cox regression results of the effect of different variables on the likelihood of reoffending following imprisonment versus wholly suspended sentence

| Variable | B | df | Significance | Exp(B) | 95.0% CI for Exp(B) | |
| --- | --- | --- | --- | --- | --- | --- |
| | | | | | Lower | Upper |
| Gender | .067 | 1 | .217 | 1.069 | .962 | 1.188 |
| Age group | .138 | 1 | .001 | 1.148 | 1.058 | 1.245 |
| Recent prior sentence | .760 | 1 | .000 | 2.138 | 1.940 | 2.356 |
| Recent prior imprisonment | .420 | 1 | .000 | 1.522 | 1.400 | 1.654 |
| Past property offence | .362 | 1 | .000 | 1.436 | 1.325 | 1.555 |
| Current property offence | -.001 | 1 | .976 | .999 | .920 | 1.084 |
| Current traffic offence | -.147 | 1 | .001 | .863 | .793 | .940 |
| Co-charges | .104 | 1 | .061 | 1.110 | .995 | 1.238 |
| Multiple offence dates | .251 | 1 | .000 | 1.286 | 1.187 | 1.393 |
| Imprisonment  vs intensive correction order | .220 | 1 | .000 | 1.246 | 1.160 | 1.339 |

Matched sample size: n = 7,303

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