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The Impact of Sentencing on Offenders' Future Labour Market Outcomes and Re-offending- Community Work Versus Fines

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The Impact of Sentencing on Adult Offenders' Future Employment and Re-offending - Community Work Versus Fines

Michele Morris and Charles Sullivan

New Zealand Treasury Working Paper 15/04

June 2015



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The impact of sentencing on offenders' future labour market
outcomes and re-offending- community work versus fines

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The results in this report are not official statistics – they have been created for research purposes from the Integrated Data Infrastructure (IDI) managed by Statistics New Zealand. On-going work within Statistics New Zealand to develop the IDI means it will not be possible to exactly reproduce the data presented here.

Access to the anonymised data used in this study was provided by Statistics New Zealand in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business or organisation. The results in this report have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from Statistics New Zealand.¹

The results are based in part on tax data supplied by Inland Revenue to Statistics New Zealand under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit-record data has certified that they have been shown, have read and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes and is not related to the data's ability to support Inland Revenue's core operational requirements.

¹ http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure/privacy-impact-assessment-for-the-idi.aspx

Abstract

This study provides evidence to help inform sentencing policy by assessing the differential impact of two types of sentences (community work and fines) on adult offenders' subsequent employment, benefit receipt and re-offending. This is the first study in New Zealand to examine post-sentencing employment outcomes and benefit receipt of such offenders.

We focus on offences where we observe variation in sentencing after controlling for observable differences and examine outcomes for up to three years following conviction. This analysis uses recently-linked anonymised administrative data from the tax, benefit and justice systems within Statistics New Zealand's Integrated Data Infrastructure, which provides detailed information on all convicted offenders and their offending. Impacts are estimated by comparing the changes in post-conviction outcomes of offenders who received a fine with changes in outcomes for matched comparison groups of offenders who received a community work sentence. Matching is done using the method of propensity score matching. Impacts are estimated separately for four types of offences and for a general model that pools several types of offences together.

People sentenced to community work are more likely to re-offend within two years of conviction compared to fined offenders. There is no difference in impact on employment during the follow-up period for the two types of sentences (except in one case where there is a short-term differential impact in the year following conviction). We find that people sentenced to community work are more likely to be on benefit following conviction compared to people who are fined. We regard our estimates as an upper bound of the true differential impact of community work compared to fines on offenders' subsequent outcomes. While our method controls for observed offender characteristics, it is still possible that there are significant uncontrolled differences between the offenders who were sentenced to community work and those who were fined (eg, the differences in being on benefit could be due to differences in the level of financial support from a partner).

JEL CLASSIFICATION

K14 Criminal Law
D04 Microeconomic Policy: Formulation, Implementation and Evaluation

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Impact evaluation; propensity score matching; criminal justice; sentencing policy

Executive Summary

Criminal activity impacts on the safety and well-being of individuals, families and communities and imposes significant social and economic costs on society. For this reason, there is considerable interest in the effectiveness of the justice system's response to crime. This study focuses on one aspect of the justice system response – the differential impact of two types of sentences on adult offenders' subsequent employment and re-offending.

There are a range of different sentences or orders that can be imposed on adult offenders. Towards the less serious end of the hierarchy are the sentences such as fines and community work, and at the more serious end are the more restrictive prison or home detention sentences.

There is little evidence from New Zealand to quantify the impact of different types of sentences on the subsequent outcomes of offenders. This study addresses the following question:

What is the impact of receiving a community work sentence compared to a fine on offenders' subsequent employment, benefit receipt and re-offending (for comparable offending and offenders)?

Data and Method

This study focuses on adult offenders (aged 17 and over) who were convicted for aggravated drink-driving (a third or subsequent conviction), drink-driving (first or second offence), shoplifting (estimated value under \$500) and common assault (manual) in 2008 and 2009. In those two years, convictions for these offences are responsible for about 32% of all community work and fine sentences in our reference period (where those are the most serious sentences in the case). We consider outcomes for up to three years following a conviction date. This is the first study in New Zealand to examine post-sentencing employment outcomes and benefit receipt of offenders.

Impacts are estimated by comparing the changes in subsequent outcomes of convicted offenders who received a fine with changes in outcomes of matched comparison groups of offenders who received a community work sentence. Changes in outcomes are measured from the conviction date. Impacts that affect both groups of offenders in the same way are not estimated in this study. Matching is done using the method of propensity score matching. Impacts are estimated separately for each type of offence in order to ensure that we are comparing similar offending and offenders. We also estimate impacts for a general model that pools several types of offences together.

The study uses recently-linked administrative data from the tax, benefit and justice systems within Statistics New Zealand's Integrated Data Infrastructure, which provides detailed but anonymised information on all convicted offenders. The rich data allow us to control for important variables, including offending related variables; criminal histories; District Court circuit; offender characteristics and prior employment and benefit histories.

Main Findings

We examined three re-offending related outcomes: new offending (ie, reconvictions excluding breach of sentence); reconvictions for breach of sentence and reconvictions resulting in prison or home detention sentences. We separate the breach reconvictions from new offending, because the latter is of greater concern.

We observe an impact on new offending within two years of the original conviction for all but one type of offence (common assault). Offenders sentenced to community work are 4 to 7 percentage points more likely to be reconvicted for new offending within two years following conviction, compared to offenders who were fined. (These correspond to relative impacts from 7% to 19%, depending on the type of offence). More analysis is required to determine whether the new offending is of a more serious nature. This is possible with our dataset however it is beyond the scope of this study.

We estimate a significant impact on re-offending involving breach convictions. Offenders who received community work are about 8 to 21 percentage points more likely to be reconvicted for breach of a community or custodial sentence than the fined group, within two years following conviction (corresponding to relative impacts of 27% to 70%). These results are consistent with prior expectations within the justice sector. People have observed the high rate of breaches of community work sentences for some time; our analysis provides an estimate of the quantitative impact on reconviction for breach (holding all other factors like prior offending and offender characteristics constant).

Not surprisingly, we find no difference in the reconviction rates resulting in prison or home detention sentences between offenders sentenced to community work compared to those who received fines.

We do not observe any differences in impact on employment following conviction between offenders sentenced to community work and those who received fines. Prior to this study, our expectation was that community work might interfere with employment in some way (eg, by making it harder to turn up for shift-work or casual employment). However, there is no differential impact on employment status from one to three years following conviction. We do see a short-term differential impact on employment for one offence type; drink-drivers who were fined are more likely to be employed in the first year following conviction compared to offenders on community work, however the differential impact does not persist.

People who received community work sentences are more likely to be on benefit following conviction, compared to people who are fined, by about 5 percentage points (corresponding to relative impacts of 5% to 22%, depending on offence). The differential impact persists for three years for most offences. This may be due to unobserved differences between people who were fined and those who received community work. If both groups lost their jobs at the same rate but people who were fined had higher levels of financial support (eg, a partner working or on benefit) then they would not be eligible or would have no need to go on benefit.

The reference period was chosen to follow the 2007 Sentencing Amendment Act, which introduced new types of community sentences. However, this also coincided with wider changes in the economy associated with the Global Financial Crisis. We tested the sensitivity of our impact estimates to our choice of reference period by redoing the analysis for convicted cases in 2003-4 (for one offence). The size and significance of the

impacts due to community work were similar for all but one outcome and the differences were consistent with changes in the sentencing mix over the time period.

We could find no conclusive differences in the impact estimates by age, ethnicity, or duration of community work sentence, although this may be partially due to the low numbers of cases in the sub-populations reducing the statistical certainty of the results. We observed that males were more likely to be reconvicted for new offending within two years as a result of receiving a community work sentence rather than a fine but for all other outcomes the differential impacts were the same for males and females.

Caveats

We regard our estimates as an upper bound of the true differential impact of community work compared to fines on offenders' subsequent outcomes. While our method is able to control for observed offender characteristics, it is still possible that there are significant uncontrolled differences between the offenders who were sentenced to community work and those who were fined. The judge may have some knowledge of factors such as remorse, participation in programmes to address re-offending, mental health issues (eg, addiction, poor anger management, etc.) and will have sentenced accordingly. These types of unobserved factors could bias our impact estimates because the people receiving community work may have had poor outcomes following conviction, regardless of the type of sentence received, and our impact estimates may just reflect this bias. We believe that we have mitigated this issue to some extent by controlling on prior criminal, employment and benefit histories. Presumably, if unobserved factors contribute to outcomes post conviction then they would also be contributing to the same outcomes for the three years before conviction.

Our analysis provides quantitative estimates of the difference in offenders' outcomes, depending on the type of sentence that was received. However, this methodology cannot tell us why these differences occur. We have suggested some plausible explanations for the observed differences in outcomes, but these need to be tested using other methodologies, including qualitative research.

Policy implications

Community work was imposed as the most serious sentence for around 19,000 offenders in 2013. In this study, we observe variation in sentencing between fines and community work after controlling for observed factors, which is partly explained by the court circuit (ie, largely variation between resident judges). We therefore hypothesise that some fraction of the 19,000 offenders in 2013 may have been on the margins of receiving a fine compared to a community work sentence. We provide some illustrative estimates of the numbers of people on benefit and the numbers of re-offenders that could be reduced if a convicted offender was sentenced to a fine rather than a community work sentence.

For every 1,000 out of 19,000 offenders with community sentences who could have received a fine instead (with all other factors held constant), we estimate the following:

- 150 to 240 fewer people would be on benefit over the three years following a conviction with associated cost savings in terms of benefit payments of \$1.5 million to \$2.4 million.

- 40 to 80 fewer people would be reconvicted for new offending (and 130 to 170 fewer people for breaches) within two years following the original conviction. Further work is required to estimate the cost savings associated with a reduced volume of offenders going through the courts and being managed by the Department of Corrections. The main cost savings would be in keeping offenders from being sentenced to longer community work periods or more serious sentences such as prison, rather than court costs.

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The Impact of Sentencing on Adult Offenders' Future Employment and Re-offending - Community Work Versus Fines

1 Motivation

Criminal activity impacts on the safety and well-being of individuals, families and communities and imposes significant social and economic costs on society. For this reason, there is considerable interest in the effectiveness of the justice system's response to crime. This study focuses on one aspect of the justice system response – the impact of sentences imposed by judges on adult offenders' future employment and re-offending.

There are a range of different sentence or orders that can be imposed on adult offenders. Towards the less serious end of the hierarchy are the sentences such as monetary fines and community work, and at the more serious end are the more restrictive prison or home detention sentences.

There is little evidence from New Zealand to quantify the impact of different types of sentences on the subsequent outcomes of offenders. Do different types of sentences for comparable offending result in unintended consequences, such as more serious re-offending, loss of employment and increased benefit receipt? This study examines the differential impact of two different types of sentences on the outcomes of offenders. It addresses the following question:

What is the impact of receiving a community work sentence compared to a fine on offenders' subsequent employment, benefit receipt and re-offending (for comparable offending and offenders)?

Previous studies in New Zealand have examined re-offending patterns following community-based sentences using justice sector data alone (eg, Nadesu, 2009). To our knowledge, this is the first study in New Zealand that attempts to infer a causal impact of one type of sentence compared to another on the subsequent outcomes of offenders and the only study to also examine post-sentencing employment outcomes and benefit receipt. The analysis is made possible by the recent linking of administrative justice and tax data.

The focus on community work and fines is motivated in part by the high volume of these types of sentences² and partly by a decrease in the proportion of fines imposed over the past decade (Department of Corrections, 2012; Sullivan and Morris, 2015). We are interested in the differential impact of the two types of sentences for comparable offending in order to better understand the wider consequences of the change in sentencing mix. One area of concern is that community work sentences may ‘fast-track’ offenders into more serious community or custodial sentences resulting in poor long-term outcomes (Triggs, 1999; Goodall and Durrant, 2013). This might occur if an offender is convicted for a breach of their community sentence (something that is relatively easy to do, eg, by bringing along a cell-phone to the community work centre or smoking without permission). Once convicted of a breach the offender would then be in line for a more serious sentence, including potentially imprisonment. If instead the offender received a fine (provided this was appropriate given the circumstances of the case), then escalation to longer community work or custodial sentences would not occur.

2 Background

2.1 Before sentencing

A criminal case for an adult offender (aged 17 years or over) begins when the police or some other prosecuting agency charge them with committing a crime. In all cases, the offender will first appear in a District Court, and if the offending is of a more serious nature the case may transfer to the High Court. If the offender denies the charge and enters a plea of not guilty, then the case will be adjourned to a later date. If he/she pleads guilty or the charge is proved then the judge may convict the offender and impose a sentence (in some cases there may be a delay between conviction and sentencing). Some criminal cases may be heard by a judge alone, more serious cases will be heard by judge and jury. A case may often involve more than one charge and a particular charge may involve more than one sentence.

The youth justice system differs significantly from the adult regime. It is focused on diverting young offenders away from the formal justice processes as far as possible. However, for more serious offending, a young person aged 14 or over but under 17 at the time of offending is liable for prosecution in the Youth Court and the most serious cases may be transferred to a District Court or a High Court³.

Once a person has been convicted a judge may request a pre-sentencing report, which will include more information about the offender and will help the judge decide what is the most appropriate sentence and what type of support might be required. The report will be compiled by a probation officer who gathers information from the offender and other relevant parties, including friends and family members, police and Corrections staff. If there are victims, there may also be reparation reports on how the offender can make amends.

² Statistics New Zealand’s website shows that in 2013, community work was the most serious sentence for 18,836 adults and a fine for 23,810. Those numbers represent 25% and 32% of all adults sentenced for that year, respectively.

³ Also all non - imprisonable traffic offences (even for under 17 year olds) are dealt with in the District Court unless the person has other charges arising from the same incident.

In some cases, a person may be held in custody while they wait for their trial or sentencing. This is called being remanded into custody. Any time spent on remand counts toward the completion of a prison term and should also be taken into account by a judge imposing any other sentence type.

2.2 Sentence types and trends

The general approach to sentencing in New Zealand is for legislation to set out maximum penalties (eg, prison sentences and fines) but to allow judges to exercise discretion in the length and type of sentence imposed (Ministry of Justice, 1997). Imposing sentences for offending is a complex task for judges as they must reflect a number of potentially conflicting considerations in their judgments, for example, the need to punish an offender proportionate to the severity of an offence whilst addressing restitution to the victims and community. Judges take into account a variety of factors, such as the seriousness of the offence, the interests of the victim, consistency with sentences imposed for similar offending and the personal circumstances of the offenders.

Table 1 describes some sentences that judges may impose on convicted adult offenders resulting in their being managed by the Department of Corrections. They are ordered from top to bottom by severity with the most restrictive sentences at the top of the table. The table does not include monetary sentences (fines and reparation payments), which are not managed by Corrections staff, or court orders⁴.

A recent Department of Corrections report (2012) describes the community sentence patterns and trends in New Zealand. It shows that there are relatively high volumes of offenders on community sentences in New Zealand, compared to other international jurisdictions, and that the rate of community sentences has been increasing at the expense of monetary penalties over the past 3 decades. This trend is due in part to legislative changes including the introduction and changes in community sentences brought about by the Criminal Justice Act (1985), 2002 Sentencing Act and 2007 Sentencing Amendment Act and the increased use of infringements and pre-sentencing disposals of minor offences.

Figure 1 illustrates the number of adult offenders convicted in court by sentence type from 2000 onwards. The underlying counts refer to the most serious charge and sentence imposed on the offender per year. Figure 2 shows the same underlying data but as a proportion of the total to illustrate the sentencing mix. The figures show that the most common types of sentences imposed on adult offenders are fines and community work. The new sentences of Community Detention and Intensive Supervision are evident after 2007, when they were introduced by the 2007 Sentencing Amendment Act.

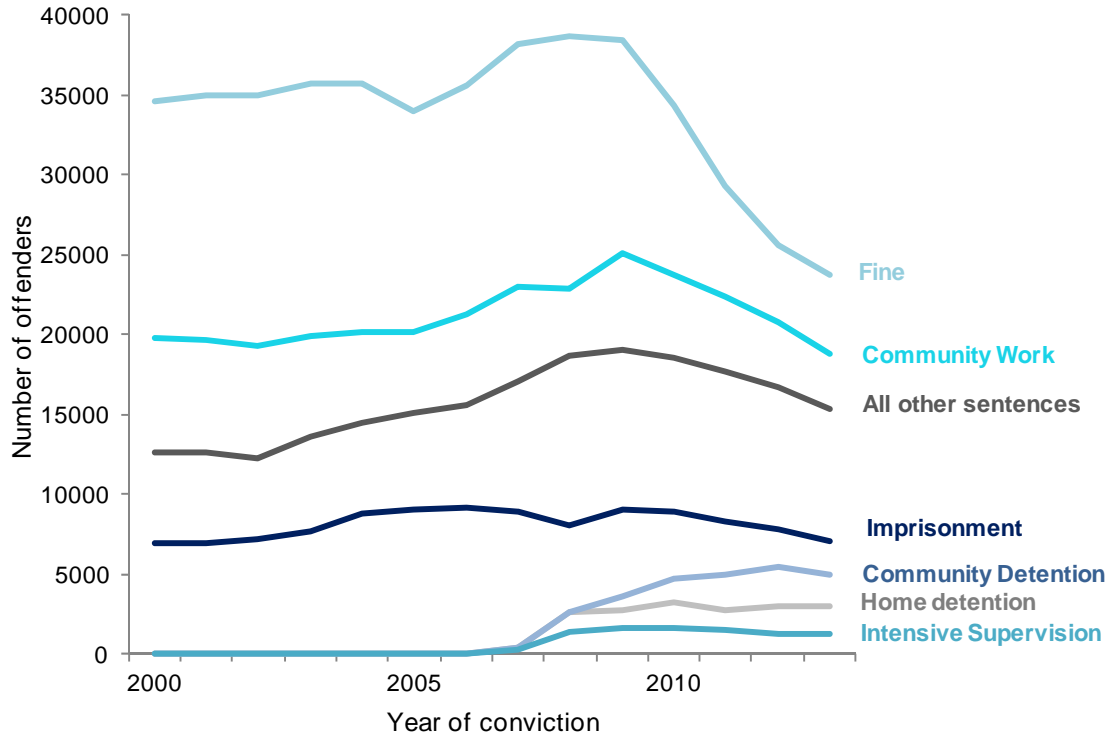
⁴ Court orders are specific conditions that an offender must follow after release back into the community.

Table 1 -Types of custodial and community-based sentences

Sentence type	Description	Duration
Prison	The most severe form of sentence.	
Home Detention	This sentence is an alternative to prison and is intended for offenders who would otherwise have had a short prison sentence (of 2 years or less). The offender is required to remain in a suitable and approved residence at all times and be electronically monitored 24 hours a day, seven days a week. Prisoners must also complete programmes to address the causes of offending. A person on home detention may be allowed to seek or maintain employment and complete a sentence of community work if imposed. They may also pay a fine or reparation to their victims.	14 days to a year
Community Detention	The offender's movements are restricted during their curfew and they must remain in an approved residence at certain specified times. They are subject to electronic monitoring and/or GPS at all times.	14 days to 6 months
Intensive Supervision	Intensive supervision is a community-based rehabilitation sentence and involves attending programmes to address issues that led to offending. It targets offenders who have a medium to high risk of re-offending, are convicted of serious offences and have complex rehabilitation needs.	6 months to 2 years
Community Work	Offenders do unpaid work in the community. This could involve cleaning beaches, parks or bush tracks; assisting in food banks, schools or marae; working with charities or local council on projects such as graffiti removal. Most offenders work in a team supervised by Corrections employees who will arrange and oversee work projects and transport the team to the worksite. Some offenders may work on an individual basis through a placement at an eligible agency. The type of work is determined by the probation officer who will take into account the offence the person has committed, their personal circumstances and their needs and skills. Offenders serving at least 80 hours can spend up to 20% of those hours in work and living skills training.	40 to 400 hours
Supervision	Supervision is a community-based rehabilitation sentence that requires offenders to address the causes of offending (similar to intensive supervision, except shorter). It targets offenders with relatively straightforward rehabilitation needs, less serious offending and low risk of re-offending. Offenders may also be required to pay a fine, pay reparation or do community work and/or be serving a community detention sentence.	6 months to 1 year

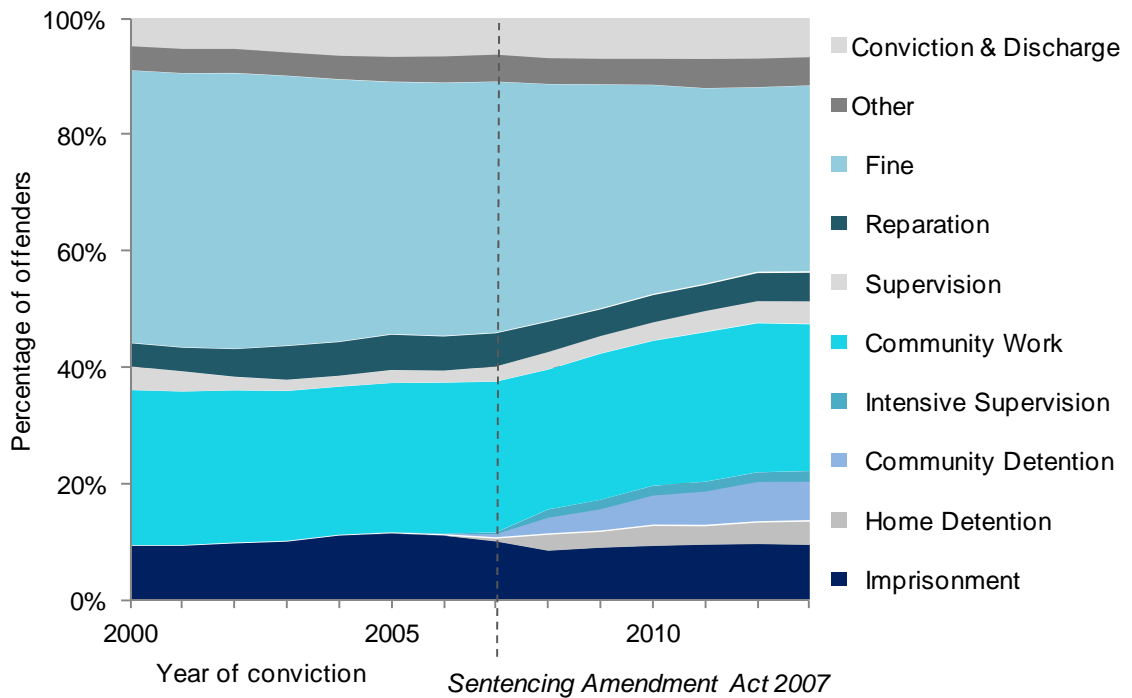
Source: Department of Corrections

Figure 1 - Sentencing numbers from 2000 to 2013 for adult offenders



Source: Statistics New Zealand. NZ.Stat: Adults convicted in court by sentence type - most serious offence

Figure 2 - Sentencing mix from 2000 to 2013 for adult offenders



Source: Statistics New Zealand. NZ.Stat: Adults convicted in court by sentence type - most serious offence

It is clear that the relative proportion of fines has declined from about 50% of most serious sentences in 2000 to about 30% in 2013. The proportion of community work sentences has remained roughly constant at about 30% over the period, but the proportion of people on any type of community-based sentence (combining all sentences from community detention to supervision) has increased slightly. Sullivan and Morris (2015) show that the trend away from monetary penalties is not driven purely by changes over time in the types of offences being prosecuted as it is also evident for single types of offences⁵. They discuss several potential causes, including legislative changes introducing new community sentences; changes in policing practice leading to less serious offending being dealt with outside of courts that would previously have resulted in a fine; changing economic conditions resulting in fewer people with the means to pay fines; and increases in unpaid fines being remitted to community work sentences⁶ that may have reduced judges' confidence in the use of fines. Picking up on the last point, the numbers of remittals of unpaid fines to community work sentences did increase significantly from 2007 onwards as a result of a Ministry of Justice initiative to claim unpaid fines. This may have resulted in a perception by judges that fines don't work and a reluctance to impose fines. A related trend over that period was an increase in enforcement of breaches of community work sentences- this may have affected use of community work sentences.

2.3 Literature review

2.3.1 Factors affecting sentencing decisions in New Zealand

Triggs (1999) undertook a comprehensive statistical study using multivariate analysis of administrative data to quantify the relative effect of different factors on sentencing decisions across a broad range of offences and sentences. Although, the research is 15 years old and the mix and types of sentences have changed, it still serves as a useful guide for understanding the different factors influencing sentencing decisions in New Zealand. As expected, she found that the type and seriousness of the major offence and the total number of charges in a case was strongly related to the sentence received, eg, the most serious offences with the highest number of charges were much more likely to receive prison sentences and less likely to be fined.

There was also some support for the fast-tracking hypothesis in that if the current offence was a breach of community sentence then the offender was more likely to receive a more serious community sentence or a prison sentence. Similarly, the prior criminal history of the offender was highly significant; higher numbers, rates and seriousness of previous convicted cases and shorter periods since last conviction increased the likelihood of receiving serious sentences, such as imprisonment, and decreased the likelihood of monetary penalties. Previous sentences were also important in determining the current sentence, eg, a prior community sentence increased the likelihood of another community sentence or imprisonment and decreased the chance of a lesser sentence, such as a monetary penalty.

⁵ Their analysis focuses on 29 offence codes that had at least 500 community work or fine sentences from 2008 onwards.

⁶ When court-imposed fines are not paid then a judge has the authority to sentence the offender to community work if other means of extracting the fine have been exhausted (the fine is remitted to community work).

In terms of offender characteristics, females were more likely to receive community-based sentences (excluding periodic detention⁷) and less likely to receive prison, periodic detention or monetary sentences. Māori and Pacific Islanders were also less likely to receive monetary penalties although some of these patterns may be explained by other differences, such as differences in earnings and employment rates, which were not included in the analysis. As noted in the report, the analysis is limited by the availability of information in the administrative data. A judge may have access to other important information regarding the personal circumstances of the offender or participation in treatment that will also influence the type of sentence an offender receives.

More recently, Goodall and Durrant (2013) examined the regional variation in sentencing of aggravated drink-driving in New Zealand. They applied multivariate analysis to a comprehensive justice dataset and focused on incarceration rather than community-based sentencing. They found regional variation in the use of incarceration sentences, although prior criminal history and offence seriousness had the biggest influence on whether an offender was sentenced to prison (or home detention). These results pointing to some variation in sentencing (albeit for incarceration rather than community sentences) gave us reason to believe that we could successfully apply propensity score methods for our own impact analysis. As discussed later in the Methods section, identifying impacts due to sentencing relies on the existence of some variation in sentences that is not completely explained by offender characteristics or past activities, such as criminal histories.

2.3.2 Studies on community sentences and re-offending

Repeat offenders place a significant burden on the criminal justice system and this has resulted in a focus on understanding the patterns and causes of recidivism and targets to reduce it. In New Zealand, a lot of attention has been focused on predicting the risk of future offending; forecasting and performance measures. For example, The Department for Corrections uses a statistical measure called the ROC*ROI (Risk of reconviction multiplied by the risk of imprisonment) to predict the likelihood that an offender will be reconvicted in future and sentenced to a term of imprisonment. They also publish annual statistics on recidivism and rehabilitation⁸ in their annual reports. These show that reconviction rates of offenders who receive community-based sentences are very high in New Zealand. For example, 33.8% of offenders who started a community work sentence in 2008/9 were reconvicted within 12 months of starting the sentence and that re-offending was most common for young offenders (Department of Corrections 2009/10 Annual Report).

Nadesu (2009) studied re-offending through a 5-year follow-up period. He found that 57% of offenders who received community work sentences in 2002/2003 were reconvicted for new offences (excluding breach of community offences and offences that received monetary penalties) in the following 5 years; 40% of those reconvicted received another community sentence and 17% were imprisoned. The highest rates of reconviction of this group over the five-year period occurred for people who were younger (73% of people under 20), male, had prior convictions (68% compared to 38% for first-timers), had gang affiliations and were younger (in their teenage years) at their first conviction.

⁷ In 2002, Community Work replaced sentences known as Periodic Detention and Community Service.

⁸ The Rehabilitation Quotient measures the impact on re-offending of a specific intervention by matching offenders in terms of age, gender, ethnicity, sentence length, risk score (ROC*ROI) and start or end dates.

More recent analysis by the Ministry of Justice has shown that convictions for breach of community sentences are also very high. The rate of people breaching a community sentence from 2008 to 2012 (defined as the number of people convicted for a breach of community sentence divided by the total number of community sentences in that year) ranged between 41-47% (Ministry of Justice internal report). Hence, there is concern that community work may be resulting in an increase in more serious sentences and the need to gain a better understanding of the wider impact of the community sentences.

2.3.3 International studies

The impact of custodial sentences on recidivism has received considerable attention in the international literature. One topic of frequent debate is whether tougher sentences such as imprisonment have a deterrent effect on re-offending, compared to alternative sanctions that try to achieve more of a balance between punishment and rehabilitation. However, recent reviews of the empirical literature have highlighted a concern that there are very few robust analyses on which to draw firm conclusions and that many studies suffer from serious methodological limitations and do not adequately address selection bias⁹ (Killias and Villetaz, 2008). Some natural experimental studies do exist (eg, Nagin and Snodgrass, 2013) as well as some robust quasi-experimental studies and on balance these studies find that imprisonment has null or a criminogenic effect on re-offending compared to non-custodial sentences (Killias and Villetaz, 2008).

Studies that examine the effectiveness of different types of non-custodial sentences are rare. A recent American study addresses this evidence gap by assessing the effectiveness of four different types of correctional sanctions on recidivism (Cochran et al, 2014). The four types of sanctions are probation, intensive probation, jail and prison, with probation as the closest counterpart to New Zealand community work sentences. They use propensity score matching and administrative data from Florida to compare the effectiveness of one sanction versus each of the three other types of sanctions. For example, probation is compared to intensive probation, jail and prison to produce three separate impact estimates. They find that people who receive the least severe probation sentences are less likely to re-offend compared to people in the matched comparison group who received more severe sanctions.

Another recent study from the United Kingdom (Bewley, 2012) considers the impact of a community order requirements on re-offending over two years following the start of the sanction. An offender can receive a selection from 12 types of requirements, such as supervision (ie, electronic monitoring), curfews, unpaid work, programme attendance, training, etc. Bewley uses propensity score matching and a rich dataset containing not only the usual demographic and criminal history variables, but also information from tax and benefit administrative data. Additionally, a subset of offenders (albeit those with more complex needs) were assessed by probation officers using the electronic Offender Assessment System and this provided detailed offender characteristics, eg, whether an offender recognises the impact of offending, is a perpetrator or victim of domestic violence, has literacy problems, has drug or alcohol problems etc. She found that for the combination of requirements studied, adding a punitive requirement (eg, curfew and unpaid work) to other requirements would not increase re-offending and in some cases it might reduce it.

⁹ Selection bias occurs when there are systematic differences in characteristics and behaviour between the group of interest (eg, people who were imprisoned) and a comparison group (eg, people receiving non custodial sentences).

The study also reports impact estimates for a reduced model that contained a limited range of variables available for all offenders (demographic and offending data). For some combinations of requirements, conclusions drawn about impacts were similar for the reduced model and full model. However in other cases, the results differed or were less apparent, eg, the positive impact of adding a supervision requirement to a punitive requirement was much less apparent with the reduced model than the full model. This has implications for other studies that do not contain such a rich dataset. It would have been interesting to see whether a less restricted model, ie, one that contained all the data except the additional assessment data, would have fared better in a comparison with the full model as this model would be much more similar to the one used in our analysis.

Another evidence gap is the paucity of studies that look at outcomes other than re-offending, such as employment (Killias and Villetaz, 2008). Our study aims to address this gap by examining impacts on offenders' employment, benefit receipt, and earnings as well as re-offending outcomes.

3 Empirical Strategy

3.1 Data

This study uses Statistics New Zealand's Integrated Data Infrastructure (IDI), which combines linked anonymised administrative data from the tax system with anonymised administrative and survey data from other sectors, including the justice, benefit, immigration and education sectors.

3.1.1 Tax data

The tax dataset provides longitudinal monthly information on individuals' employment, earnings and receipt of benefit over the period 1999–2012. We are unable to distinguish between full or part-time employment over the month. The earnings relate to wages and salaries, however they may also include one-off payments, such as bonuses. We exclude large outliers in the earnings data that may be due to large one-off payments or errors¹⁰. Income from self employment is available but only on an annual basis. Our main analysis excludes self-employed income because we want more detailed temporal information but we test the sensitivity of our impact estimates due to this restriction.

Benefit data is available in the tax dataset for all the main types of Ministry of Social Development benefits. Specifically, this includes all benefits that the Ministry of Social Development classifies as Tier 1. These are:

- Jobseeker Support, and related benefits (eg, Youth Payments, precursor Unemployment and Sickness Benefits)
- Supported Living Payments and related precursor benefits (eg, Invalid's Benefit)
- Sole Parent Support and related precursor benefits (eg, Domestic Purposes Benefit, Widow's Benefit)

¹⁰ Specifically, the median earnings are calculated for periods of employment for each offender. We exclude monthly records that are 10 orders of magnitude greater than the median for each offender.

- Emergency Benefit
- Unsupported Child Benefit, Orphan's Benefit

We do not include Tier 2 or 3 benefits in this analysis. These are payments related to accommodation supplements, disability allowances, child disability allowance, childcare subsidies and assorted payments.

3.1.2 Justice data

We use two sources of justice sector data: court data from Ministry of Justice and convicted offender management data from the Department of Corrections. The court data includes all cases from 1992 to 2012, not just those cases where a conviction was recorded. The Corrections data extends further back in time (early 1900s), although appreciable numbers of management periods only start to appear from the late 1970s onwards. The unit of analysis is a case for which a conviction is recorded. Each case can consist of multiple charges relating to different offences and multiple sentences for each charge. For each convicted case, we select the most serious offence and sentence. The most serious offence is the offence that is considered to be the worst offence of the case (based on the most serious penalty) and the most serious sentence is the corresponding sentence. Information on the other charges in the case (if there are multiple charges) is also included in our model. Strictly speaking, we do not have a case identifier as this is not recorded in the IDI. In line with standard justice sector practice, we identify a case using a unique combination of person identifier (de-identified and encrypted), court outcome date and the outcome court identifier.

There are some limitations to the administrative court data in the IDI:

- The first relates to the time span of the data. We are able to construct criminal histories for all offenders but these will not be complete for older offenders, who may have convictions before 1992.
- Another serious limitation is that the IDI does not include comprehensive data on youth offending (where people were younger than 17 at the time of the offence). The only information on youth offending in the IDI is related to serious offending that is liable for prosecution in the Youth Court. Our analysis focuses on adult offenders aged 17 and over. The full criminal history for all offenders is unavailable but the incomplete criminal history is most problematic for younger offenders, eg, those aged 17 - 20.
- The information relating to the payment history of past fines is not available in the IDI. This is an issue for predicting sentencing decisions because the debt status and payment history of an offender may influence a judge's decision to sentence someone to fines or community work, for comparable offending.
- The offender population poses some challenges for linking between justice sector data and other administrative data because substantial numbers of offenders use multiple aliases. The Ministry of Justice and Department of Corrections record and share this information with each other. The process of data linking by Statistics New Zealand may uncover additional aliases (eg, via linking of justice data to tax data). We choose a conservative approach and exclude records that Statistics NZ deems to have multiple justice sector person identifiers (about 1% of the offender population in any one year).

The justice data is a relatively new addition into the IDI. The matching rate between the justice data and the IDI spine (primarily tax records) is high, particularly for recent years. Overall, 82.8% of all individuals in Ministry of Justice and offender management records from Department of Corrections were successfully linked to the IDI. We have compared sentencing patterns and trends using IDI data with those calculated using the complete population in the stand-alone Ministry of Justice data and conclude that the IDI justice dataset is clearly representative of the complete Ministry of Justice dataset for the offences we are analysing (the matching rate is better for recent years and for the offence codes used in this study). Specifically, for the offence codes we analysed from 2000 to 2013, counts of cases with fines or community work as the most serious sentence successfully linked to Inland Revenue data in the IDI were only 2% lower than the complete counts in courts data (Sullivan & Morris, 2015).

3.2 Method

We estimate the impact of being fined compared to receiving a community work sentence on offenders' subsequent outcomes. Offenders who receive a fine are matched to a comparison group who receive community work using propensity score matching (Rosenbaum and Rubin, 1983). The matching is based on the propensity to be sentenced to a fine rather than community work. The matching step also attempts to ensure that the propensity to re-offend, be employed or on a benefit following sentencing, is the same for both groups of offenders. The relative impact of being fined is estimated as the difference between changes in subsequent observed outcomes for offenders who received a fine and changes in the estimated subsequent outcomes of the matched comparison group.

Before moving on to a detailed discussion about our chosen method, we also briefly mention a couple of other potential methods that might be used to address our research question. Imbens and Wooldridge (2009) review the different methods available for impact analysis. In the absence of randomly controlled trials, a researcher needs to take advantage of some other form of variation to simulate random assignment to the two different groups of interest (in our case, the two groups are offenders sentenced to community work or fines and the variation comes from sentencing decisions of judges). Propensity score matching is one of the most common methods used to solve this type of problem.

One potential alternative method is to use an instrumental variable technique. This would involve using a judge identifier to instrument for whether an offender received a community work sentence or a fine (controlling for other observable factors). However, there is no judge identifier in the IDI. We do have court circuit which identifies a group of resident judges. It is possible that this might be a useful instrument, for example, if all judges within a circuit aligned their sentencing practices more closely with each other than with judges in other circuits. We tested this and found that the court circuit was too weak an instrument to be useful.

Another potential method could be to exploit a policy change that produces an exogenous source of variation in sentencing. The legislative changes associated with 2007 Sentencing Amendment Act might appear to provide an opportunity to use this technique. For example, one might examine the difference in outcomes for people convicted just prior and post the 2007 changes in sentencing practice. However, the changes in the sentencing mix were most pronounced for the more serious sentences (eg, with the introduction of home detention, community detention) rather than at the boundary between the community work and fines so the technique is not feasible for this project.

3.2.1 Study population

The study population are offenders who were convicted in 2008 or 2009 and who received a fine or community work sentence. We estimate impacts for four different types of offences separately, and for a more general model that pools several types of offences together. The four types of offences¹¹ selected for the offence-specific models are:

- **Aggravated drink-driving** (3rd or subsequent offence)
- **Drink-driving** (1st or 2nd offence for people aged 20 and over)
- **Shoplifting** (estimated value under \$500), and
- **Common assault** (manual assault).

We choose these four detailed offence types because they represent a range in the nature and seriousness of offending; they have large numbers of convictions overall and relatively large proportions of people receiving community work and fines. The four offences combined represent about 32% of all cases convicted in 2008 and 2009 that received a community work sentence or a fine (and for individuals who were successfully linked to the IDI). The distinction between aggravated drink-driving and drink-driving is that an offender must have had at least two prior drink-driving offences to be charged for aggravated drink-driving. We impose a restriction on the drink-driving group to exclude 17 to 19 year olds in order that we have a criminal history record for three years prior to sentencing. (Ideally, we would do this for all groups but drink-driving is the only offence type with sufficient numbers to impose this restriction).

For the general model, we select offence groups for which an offender might be sentenced to either a community work sentence or a fine¹². We pool all cases for which both the share of community work sentences and fines make up at least 10% of the share of all sentences in 2008 and 2009. We have the most confidence in offence-specific models because they are more likely to ensure that we are comparing like with like. However, they are limited in terms of their general applicability so we also produce results for a general model. The general model accounts for the nature and seriousness of offending in an approximate way by controlling for broad offence class and seriousness ranges, rather than only including a specific offence code.

The reference period of 2008 and 2009 is chosen to follow the introduction of the Sentencing Amendment Act 2007, which introduced new types of non-custodial sentences. Offenders who might previously been given a community work sentence could potentially receive a more severe sentence, including intensive supervision or community detention from 2008 onwards. A reference period that spanned the sentencing policy change would complicate interpretation of our impact estimates¹³.

As discussed in the Data section, the unit of analysis is the convicted case. Offenders may have more than one convicted case that fit our criteria and we do not exclude the multiple cases if this occurs because it seems arbitrary to only select the first case. The extent of multiple cases varies by offence; 10% of offenders convicted of shoplifting had

¹¹ The corresponding New Zealand offence codes are aggravated drink-driving (primarily A330 and A530); drink-driving (A518,A323); shoplifting -estimated value under \$500 (4322) and common assault manually (1593,1653).

¹² The selected offences are listed in Appendix Table 10.

¹³ We test the sensitivity of our results to the reference period, given that it coincided with a Global Financial Crisis, by repeating our analysis for a reference period from 2003-4 for one offence type.

more than one subsequent fine or community work sentence in 2008 and 2009 compared to 1% to 3% for the other 3 offences.

We select the most serious charge on the day and the most serious sentence. People sentenced to community work might also receive other lesser sentences, including a fine, having to pay reparation or supervision (attend a programme to address causes of offending). The number and type of secondary sentences vary by offence class, offenders convicted of shoplifting and assault were also sentenced to pay reparation (32% and 21%, respectively) and offenders convicted of aggravated drink-driving and assault were also sentenced to supervision (33% and 20%, respectively). We will not attempt to distinguish the impact of community work from a package of community work with supervision, but this should be borne in mind when interpreting the results.

In an ideal world, we would select first-time offenders with no prior convictions for this study so that we could more confidently attribute any subsequent changes in outcomes following sentencing to the sentence of interest, rather than any prior sentences. Failing that, we might wish to select cases for first instances of a particular sentence. For example, we might accept cases where an offender had been fined previously but only include the first case with a community work sentence.

Similarly, when estimating the impact of sentencing on subsequent labour market outcomes it would be ideal to exclude cases where people were reconvicted during the follow-up period. These exclusions are not possible for most offence types as they would result in small numbers of cases, reducing the statistical certainty of any estimates and resulting in non representative estimates. We test the sensitivity of the labour market estimates for drink-driving cases by rerunning the analysis excluding anyone who was reconvicted in a follow-up two-year period.

3.2.2 Propensity score matching

The key question for our study is what would have happened to an offender who actually received a community work sentence if they had instead received a fine? We do not have a measure of the latter counterfactual situation but we can estimate it. We do this using propensity score matching (Rosenbaum and Rubin, 1983), which matches offenders who received a fine to a comparison group who received community work sentences. The matching is based on the propensity to be sentenced to a fine rather than community work. The matching step also attempts to ensure that the propensity to re-offend, be employed or on a benefit following sentencing, is the same for both groups of offenders. The *treatment effect* (also referred to as the *average treatment effect on the treated*) is the difference between the observed outcomes for offenders who received a fine (the treated group) and the estimated outcomes of the matched comparison group (the control group)¹⁴. We also combine this method with *difference in differencing* by only measuring changes from the time the offender received a sentence (in order to take into account any pre-existing differences in the two groups)¹⁵.

¹⁴ The terminology initially arose from the medical literature where a patient receives a treatment and a control group does not. This does not correspond precisely to our study as both groups of offenders are sentenced to a treatment (either a fine or community work) and we estimate the relative impact of the two treatments. However, to simplify discussion we refer to fined offenders as the treated group and offenders who receive community work as the control group.

¹⁵ In practice, we have balanced the prior outcomes of both groups so the difference in differencing is usually not required.

The first step is to select a pool of potential matches for all the people who were fined in 2008 and 2009 from cases that resulted in a community work sentence over the same time period. Cases are only matched to each other if the gender and ethnicity of the offenders are the same. In addition, the conviction dates must not be separated by more than 4 months¹⁶ for the offence-specific models and are within the same reference month for the general model. For the general model, all convicted cases within the reference period are pooled by high-level offence groups. The next step is to estimate a logistic regression model that predicts a probability (called a propensity score) of receiving a fine compared to a community work sentence using observed characteristics. The probability of treatment is modelled as a function of demographic characteristics; information about the current case and prior criminal, employment and benefit histories. The logistic regression results produce a propensity score for each case in the treated and control population that can be used to select a comparison group for each case that involved a fine.

The third step involves matching each case that resulted in a fine with the potential matches using the propensity score. There are several options available for the matching algorithm (Caliendo and Kopeinig, 2008). All use a weighted sum of the differences in outcomes between treated and control offenders, but differ in the number of control cases and the assigned weighting. The simplest method selects the nearest case to each treated case based on the most similar propensity score – the nearest neighbour method. Using this method, only one case will be matched to another in the comparison case. However, there is a risk of poor matching when the nearest neighbour is far away. Other matching algorithms are more suitable when there are a lot of potential comparisons because they take advantage of the extra information when there are multiple control cases.

Our preferred method is radius matching with replacement¹⁷. We select all cases within a specified distance (radius) to a treated case's propensity score. Each comparison case may be matched to more than one treated case. The individual treatment effect is the difference between changes in the treated offender's subsequent outcomes and a weighted sum of the matched changes in offenders' outcomes (with a weighting equal to the inverse number of control cases within the propensity score radius). The average treatment effect of the treated (ATT) is the average of all the individual treatment effects. Standard errors are calculated by bootstrapping across all stages of the estimation (the logistic matching model and the calculation of the treatment effect).

The variables that we use in our logistic regression model are described in Appendix Table 1. We are guided in our choice of offending and criminal history variables by past studies on sentencing decisions in New Zealand (Triggs, 1999 and Goodall and Durrant, 2013) discussed in Section 3.2.1. We also include prior values of outcome variables, eg, employment and benefit histories.

The choice of radius involves a trade-off between statistical precision and a high quality match. If the radius is too large, then we may be including comparison individuals who are not well matched to the treated group. On the other hand, if the radius is too small, we may have well matched comparison cases, but only a small number, so estimates will have low levels of statistical precision and a high share of cases will not be included in the analysis. This is discussed in more detail below.

¹⁶ The four month period represents a compromise as we had insufficient numbers of observations to match exactly on each reference month as we could for the general model that pooled all offences.

¹⁷ We use a modified version of code developed by R. Fabling and L. Sanderson: see 'Exporting and performance: Market entry, expansion and destination characteristics', Reserve Bank of New Zealand, Discussion Papers, DP2010/07.

Testing the quality of the match

This technique requires a rich dataset in order to include as many observable characteristics as possible in the matching model. The IDI is well suited to a study of this type. For example, we have a wide range of offending related data and prior employment and benefit histories to use in the matching. However, there may still be some systematic differences between the two groups due to unobserved characteristics, such as for example, an offender's willingness to reform their behaviour, family support networks, whether they are a victim or perpetrator of domestic violence, whether they have drug or alcohol problem, etc. We do not have direct measures of these variables and they are expected to influence both the sentence received and the outcomes of interest, eg, employment, benefit receipt and re-offending. For example, an offender who feels remorse and is committed to changing their behaviour would be less likely to re-offend. If the judge has information about this and assigns offenders to the lesser sentence of paying a fine, then there could be a systematic difference in the subsequent re-offending between people sentenced to fines or community work that we don't observe.

The key assumption is that after matching, there are no significant differences between the treated and matched group in terms of their likelihood to receive a particular type of sentence or their likelihood of re-offending, being employed or on benefit. This is known as the conditional independence assumption (Rosenbaum and Rubin, 1983) and we test this assumption by comparing the mean observed characteristics and prior outcomes of the two groups after matching. We regard the two groups as balanced if there are no significant differences in the covariate means between the treated and control groups ($p < 0.05$).

We are unable to test whether unobserved variables are balanced. However, if the omitted factors influence an offender's employment, benefit and re-offending outcomes following sentencing then they can also be expected to influence benefit, employment and offending patterns prior to sentencing. For this reason, we also visually examine prior histories of the treated and control groups for all our outcome variables to ensure they are well balanced between the control and treated groups over the 3 years prior to sentencing. If they are not balanced, we adjust the model eg, by adding in more detailed employment or benefit history variables in order to ensure balancing.

Common support

One issue in propensity score matching is that it is often not possible to match every treated case to a comparable case from the control population; some people who are fined may be too different to those who receive community work. Similarly, some people who receive community work will not be suitable matches for any person who received a fine. The area of overlap is called the area of common support. If this is large, then we can be reasonably sure that our impact estimates are representative of the entire treated population. Conversely, if the overlap is low then our estimates may not be extrapolated to the wider population. All the control cases that are matched at least once to a treatment case are considered to be in the area of common support and are referred to collectively as the matched comparison group¹⁸. We exclude fined cases where there are no comparators and community work cases that are outside the area of common support.

¹⁸ We use a loose definition of common support. Strictly speaking, the common support is the range of propensity scores over which there are both treated and control cases. In practice, our definition allows a treated case to be slightly outside the true common support but the deviation is minor (no larger than the propensity score radius).

Matching results

Table 2 shows the numbers of convicted cases used in the study by each offence class and for the pooled offences model. The number of convicted cases for drink-driving offenders is high with 25,056 cases of offenders sentenced to pay a fine and 6,420 sentenced to community work. For the three other offence types studied, community work sentences outweigh fines and there are fewer cases. Aggravated drink-driving is the next most common offence, followed by shoplifting and common assault.

We are able to find comparison cases for a high proportion of treated cases in the case of aggravated drink-driving and shop-lifting (90% and 86% respectively). However, we are only able to find a suitable comparison group for 32% of the drink-drivers and 43% of the common assault treated groups, respectively.

Table 2 - Study population and matching results

		Aggravated drink-driving	Drink- driving	Shoplifting (estimated value < \$500)	Common Assault	Pooled offences
Number of cases	Fine	1422	25056	1578	993	56,925
	CW	4437	6420	2364	2100	26,241
Proportion of matched cases	Fine	90%	32%	86%	43%	58%
	CW	77%	45%	78%	34%	52%
Propensity score radius		0.01	0.0005	0.02	0.005	0.01

Notes: CW =Community Work. The underlying counts for this table and all other tables in this report containing numbers or percentages using Statistics New Zealand Integrated Data Infrastructure have been randomly rounded to base 3 to protect confidentiality.

Source: Statistics New Zealand Integrated Data Infrastructure.

Common assault has the smallest numbers of cases overall, which makes finding potential matches more difficult. Also, in order to boost numbers we combine two types of common assault offence codes but we only match cases within the same offence class (and the same gender, ethnicity, reference month window), which reduces the number of potential comparison cases further. We have the opposite problem for the drink-drinking model; it is very difficult to achieve balancing because with such a large number of observations it is easy to find statistically significant differences between the covariate means of the fined and community work groups, even though the differences are not substantive¹⁹.

Table 2 also reports the final propensity score radius that results in balancing the average characteristics and prior outcomes of cases receiving fines and community work. More specifically, there are no significant differences in means of the individual covariates included in our offence-specific models between the treated and matched comparison groups, for all offences except drink-driving (covariates are listed in Appendix Tables 6 – 9). For drink-driving, about 75% of the 63 covariate means are balanced. For the general model that pools offences, we match 58% of all fined cases using a propensity score radius of 0.01. However, we could only balance about 65% of the covariate means.

¹⁹ Interestingly, the final impact estimates for drinking-driving are relatively insensitive to the choice of radius as we also produce estimates with a much larger propensity score radius that includes about 90% of the treated group and the impact estimates are very similar to those calculated from the smaller sample discussed in the main results section.

The imbalances for the drink-driving and the general model occur across a range of variables, primarily the court circuit variables and, most worryingly, the prior benefit and employment history variables. We do not attempt to achieve balancing by reducing the propensity score radius to exclude even more cases. Instead, we adopt the approach that allows for some imbalance in covariate means at the matching stage but controls for the imbalances at the impact estimation stage. We obtain the impact estimate from a regression of the outcome on an intercept, a treatment indicator and the covariates (the ATT is the coefficient on the treatment indicator) instead of a straight differencing of the changes in mean outcomes for the treated and matched comparison group (Imbens and Wooldridge, 2009). We shall see later that this eliminates some bias in the impact estimates due to the pre-conviction differences in prior employment and benefit histories.

3.2.3 Outcomes

In this evaluation, we estimate the impact of being fined compared to receiving community work on offenders' subsequent outcomes. We focus on outcomes for three years following sentencing because that is the extent of the data currently in the IDI. The outcomes of interest are:

- **Benefit receipt:** the mean proportion of people receiving a benefit over a year for the first, second and third years following conviction²⁰.
- **Employment:** the mean proportion employed over a year for the first, second and third years following conviction.
- **In custody:** the mean proportion of people in prison (including remand) or home detention in a year for the first, second and third years following conviction.
- **Inactive:** the mean proportion of people not employed, not on benefit and not in custody over a year for the first, second and third years following conviction.
- **Reconvicted for breach:** the proportion of people who were reconvicted for a breach of community or custodial sentence within 6 months, 1 year and 2 years following conviction.
- **Reconvicted (excluding breach):** the proportion of people who were reconvicted for a new offence (ie, excluding breach of sentence²¹) within 6 months, 1 year and 2 years following conviction.
- **Monthly Earnings:** the change in mean monthly earnings from wages and salary over the first, second and third years following conviction. The change is measured relative to the average monthly earnings over the year prior to conviction and earnings are only counted during periods of employment (ie, months without any employment are excluded).

²⁰ The mean proportions over a year are calculated by averaging 12 monthly binary indicators, where an indicator takes a value of one if an offender receives a benefit of any type (or is employed, in custody, inactive)

²¹ Ideally, we should have also excluded any convictions for offences committed *before* the date of sentencing that were prosecuted in a separate case but convicted *after* delivery of the sentence for the case analysed here. Such 'pseudo-reconvictions' will have the most impact on short-term reconviction measures. Having said that, we reran the pooled-offences model and excluded pseudo-reconvictions to test the sensitivity of the new offending impact estimates. The effect was minor as the revised new offending impact estimates only differed by at most 0.6 percentage points from the previous results.

These are not mutually exclusive states as offenders may be employed, receive a benefit and be in custody in the same month. We initially split different categories, eg, by grouping offenders receiving employment and benefit in the same months separately from employed and on benefit groups. However, the low numbers of people in the mixed category did not warrant the split and there was little impact on the results. Similarly, we have allowed people who are in custody within a month to be in the employed or on benefit groups, because there are low numbers of people in custody within any one month and then often only for short periods of time (eg, a few days).

4 Descriptive statistics

4.1 Demographic characteristics

Some summary descriptive characteristics of our study population are shown in Table 3. More detail can be found in Appendix Tables 2 to 5, including information on the convicted case, criminal histories, employment and benefit histories and Court Circuit. (We only present demographic characteristics for the four offence groups because these are more meaningful than the full study population which mixes quite different offender populations together).

Table 3 - Summary demographics: proportion of cases by offence and sentence

	Aggravated drink-driving		Drink-driving		Shoplifting		Common Assault	
	Fine	Community	Fine	Community	Fine	Community	Fine	Community
Female	7%	15%	27%	28%	41%	41%	19%	22%
European	57%	41%	47%	38%	43%	40%	49%	40%
Māori	27%	41%	22%	44%	47%	53%	34%	47%
Pacific	7%	12%	11%	11%	5%	5%	10%	10%
Other ethnicity	8%	6%	19%	7%	5%	2%	6%	3%
Aged 17-24 ²²	1%	8%	30%	42%	42%	45%	42%	54%
Aged 25 and over	98%	92%	70%	58%	57%	55%	58%	46%
First-time offenders ²³	N/A	N/A	52%	14%	19%	6%	26%	17%

We illustrate the characteristics of our study population in the following figures, which combine the community work and fined cases for each offence. The gender distribution for the study population is shown in Figure 3 – low proportions of females (13%) are convicted for aggravated drink-drink driving and slightly higher proportions for common assault (21%) and drink-driving (27%). On the other hand, relatively high proportions (41%) of females are convicted of shoplifting. The proportion of females receiving fines is similar to the proportion receiving community work for all but one offence; fewer females received fines than community work for aggravated drink-driving (Table 3).

²² This is the age at the time of offending. However, there are no offenders aged under 20 for the drink-driving offence (by definition)

²³ This related to first-time offending as observed in the Court charges data. Offending before 1992 and less serious offending committed by people under 17 is not observed.

Figures 4 and 5 show the ethnic and age distributions by offence type. There is little variation in the proportion of Europeans convicted by offence type (ranging from 41% to 45% of total cases). Māori show the highest degree of variation across offences, ranging from 27% of offenders convicted for drink-driving to half the group convicted for shoplifting. Table 3 shows that higher proportions of Europeans receive fines compared to community work sentences for all offences, and the opposite is true for Māori. The differences are most pronounced for aggravated drink-driving and least for shoplifting. The reasons for these differences may be unrelated to ethnicity, eg, if Europeans in the study population may have on average higher rates of employment and higher earnings.

There are quite pronounced differences in the age distribution for different offence classes. Young people (aged 17-24) are responsible for the highest number of shoplifting and common assault cases (44% and 50%, respectively) and the lowest number of aggravated drink-driving charges (6%). Of course, some of this pattern reflects the seriousness of the offence, eg, an offender must already have been convicted at least twice for drink-driving to be convicted of aggravated drink-driving, so an older age distribution is expected. Table 3 shows that young people are more likely to receive community work compared to fines for all four types of offences. As mentioned previously, this is likely to be related to the employment and earnings levels of offenders.

Figure 3 - Gender distribution by offence

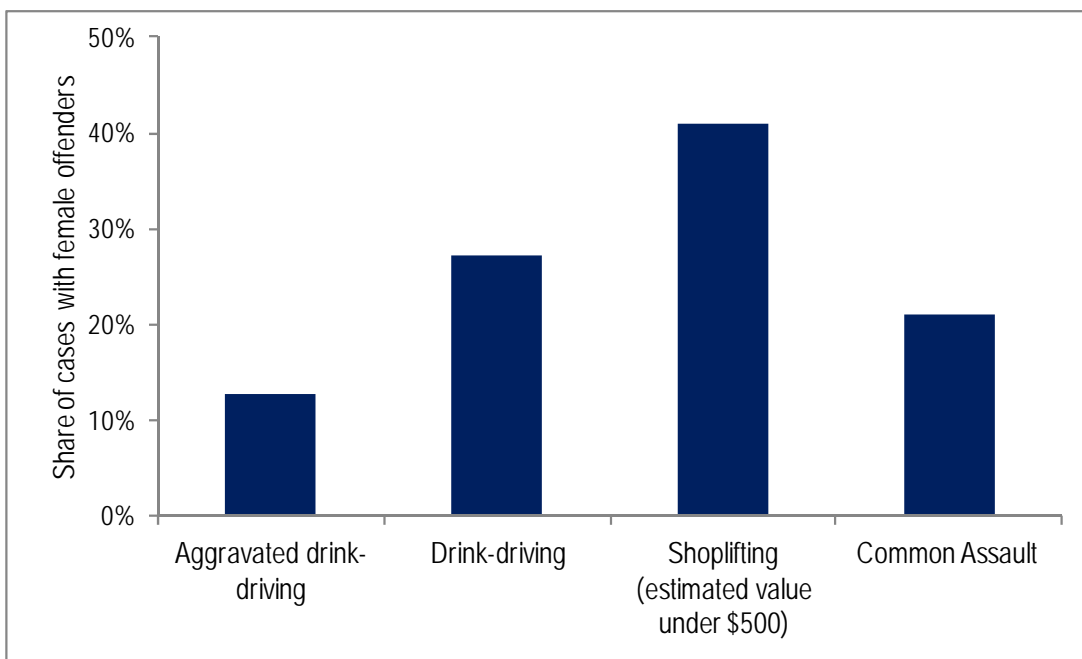


Figure 4 - Ethnic distribution by offence

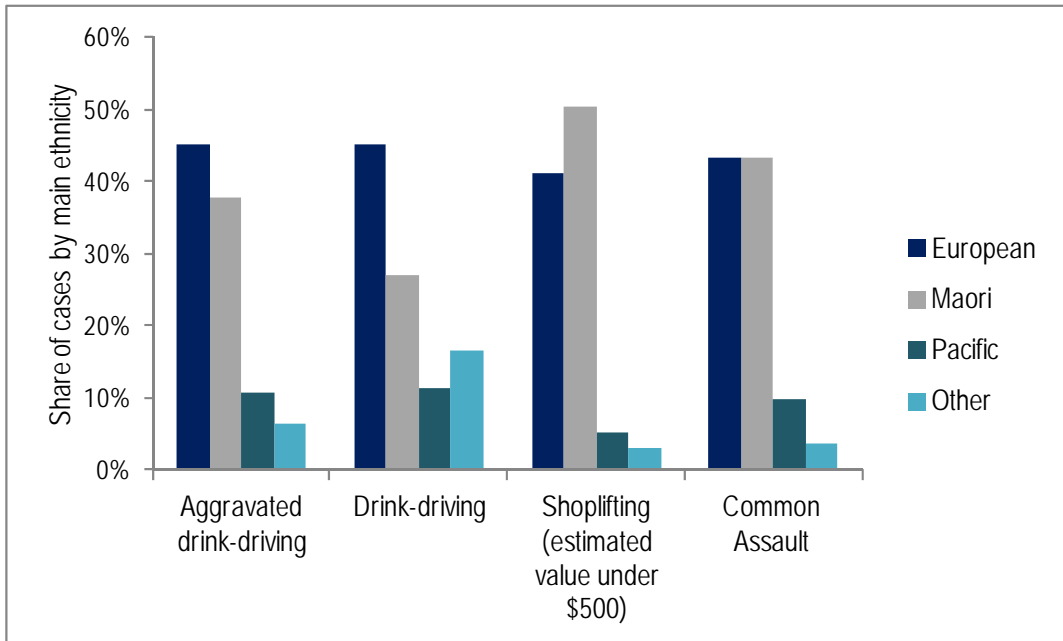
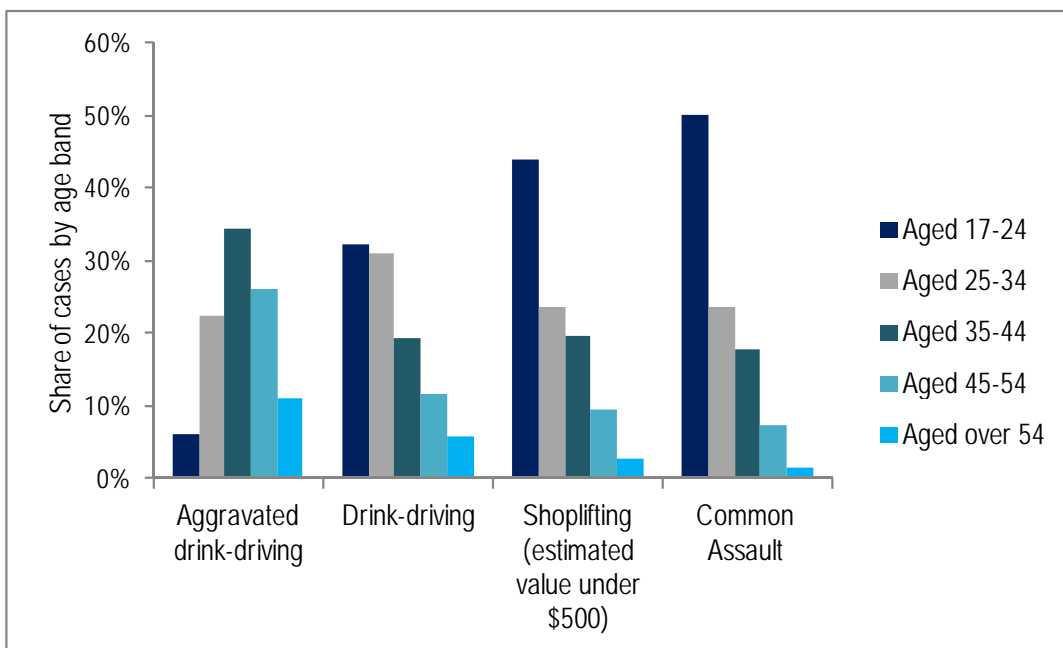


Figure 5 - Age distribution by offence



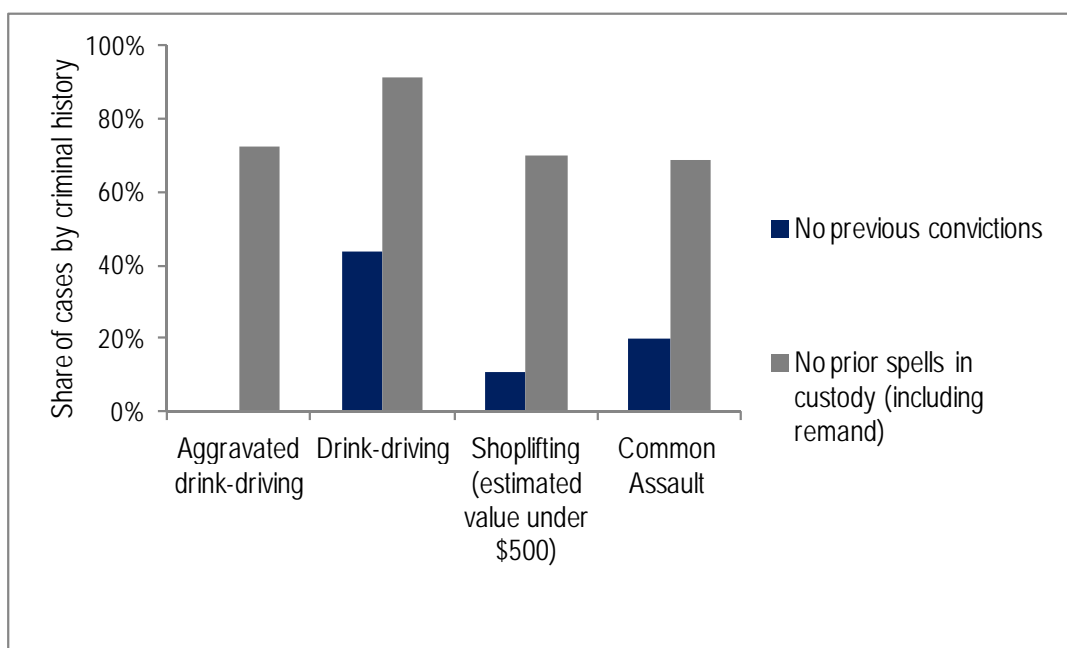
Prior criminal histories

In an ideal world, we would select first-time offenders with no prior convictions for this study so that we could more confidently attribute any subsequent changes in outcomes following sentencing to the sentence of interest, rather than any prior sentences. Failing that, we might wish to select cases for first instances of a particular sentence. For example, we might accept cases where an offender had been fined previously but only include the first case with a community work sentence. Similarly, when estimating the impact of sentencing on subsequent labour market outcomes it would be ideal to exclude cases where people were reconvicted during the follow-up period. These exclusions are not possible for most detailed offence types as they would result in small numbers of

cases to be studied reducing the statistical certainty of any estimates and resulting in non representative estimates.

This is illustrated in Figure 6, which shows a range of criminal history variables by offence type. There are no first-time offenders for aggravated drink-driving (by definition). Drink-driving cases are associated with the highest proportion of first-offenders (44%) and the proportions of first-time offenders are very low for shoplifting (6%) and common assault (11%). Thus, we would be hard pressed to exclude recidivists and retain sufficient statistical reliability for three of the four offence types. As discussed in the Data section, we also do not know the early criminal history of offenders (offending committed before offenders turned 17) so we do not have a true measure of first-time offending.

Figure 6 - Criminal history indicators by offence

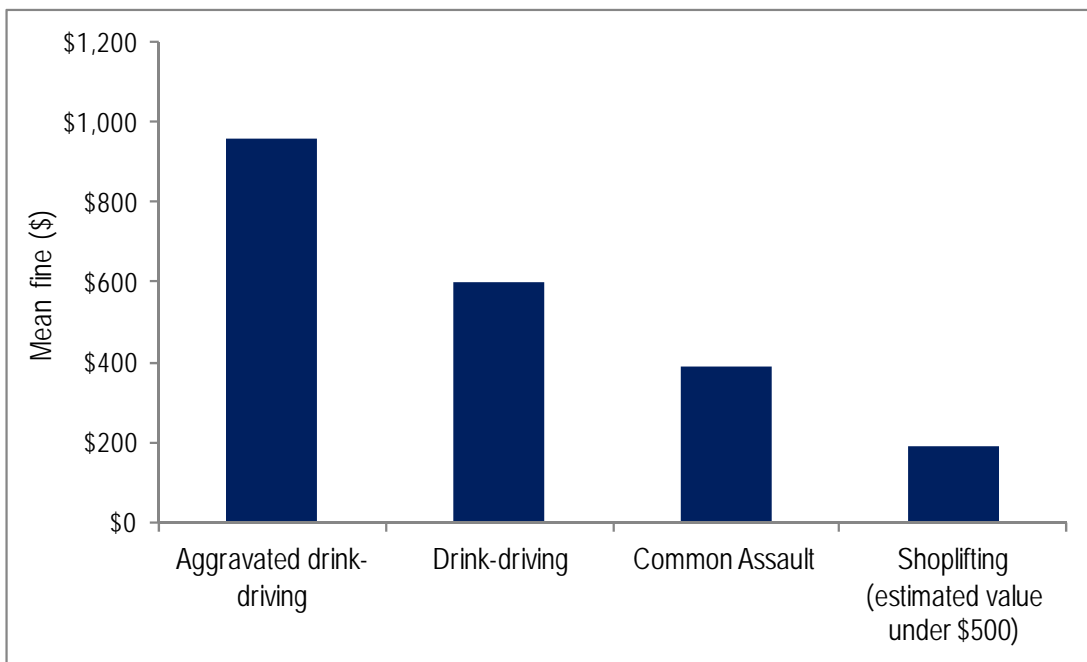
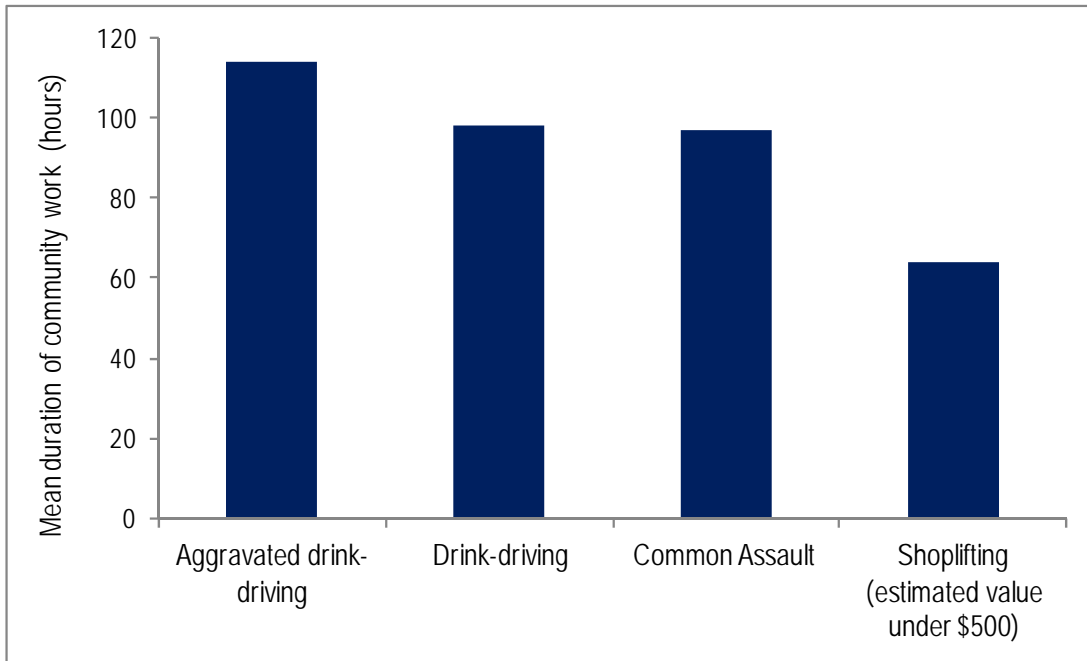


The proportions of cases with offenders who had no spells in custody prior to conviction were similar for aggravated drink-driving, shoplifting and common assault (70%). This may seem like a high number of offenders who had prior spells in custody but we also include remand stays in our definition. Drink-driving offenders are much less likely to have been in custody prior to conviction.

4.2 Mean Sentences

Figure 7 shows the mean duration of community work and the mean fine for each offence. It is important to realise that there is still variation in severity of cases within one type of offence (and we will control for these differences in our models). Aggravated drink-driving cases receive slightly longer community work sentences (over 100 hours) on average than drink-driving and common assault, while shoplifting cases receive the lightest sentences (about 60 hours). There is more differentiation between mean fines by offence class, but again aggravated drink-driving has the most severe fines, followed by drink-driving, common assault and shoplifting.

Figure 7 - Mean sentences for cases included in the study population by offence



5 Results

5.1 Factors influencing the sentencing decision

Table 4 summarises the factors that are most likely to influence whether a case is likely to result in a community work sentence or fine. The marginal effects associated with each logistic regression are reported in Appendix Tables 6 - 10²⁴. The relative size and significance of the marginal effects indicate the influence of the variable on the sentencing decision, while holding all the other covariates constant.

As expected, criminal histories and current case characteristics are important determinants of whether an offender is sentenced to community work or receives a fine. Higher numbers of prior convictions and sentences for community work and fines, and more recent prior offending all increase the likelihood of receiving a community work sentence compared to a fine. Similarly, offenders with more serious current cases (ie, higher numbers of total charges in the case) are more likely to receive community work sentences. This is true across all four types of offence and for the more approximate all-offences model.

Cases with conviction dates towards the end of 2009 are more likely to receive community work (holding all other factors constant) than those convicted early in 2008. This indicates the move away from fines over this period is not simply due to a change in the type of offending, at least for these four types of offences, as we have controlled for case characteristics in our models.

The influence of demographic characteristics is less clear-cut, except for age. Younger offenders are more likely to receive community work than fines. Note that different age bands are used in different models but the general pattern remains clear. Māori and Pacific Islanders and females are also more likely to receive community work, holding all other factors constant, although this is not true for all offences.

²⁴ We undertook a lot of exploratory analysis before we settled on the final model choices. We tested many different combinations of prior and current offending. This included varying the degree of aggregation across offence types (eg, combining all related offending into one variable or splitting by detailed offences and splitting the prior criminal history variables into separate time periods (eg, aggregating prior convictions for those within or before 10 years of the sentencing date). Our final models take a parsimonious approach to the offending and criminal history variables – we retained variables that had statistically significant coefficients and ensured that prior offending was balanced between the matched and treated group. The final impacts are relatively insensitive to choice of criminal history and offending variables. Similarly, we tried a number of different employment and benefit related variables and each model uses slightly different versions. Many coefficients are statistically insignificant, however we found that we needed to retain them in order to balance the prior employment and benefit outcomes of the treated and matched groups.

Table 4 - Summary table of factors influencing whether an offender receives a community work sentence instead of a fine

		More likely to receive community work then fine	Is a statistically significant relationship observed in logistic model results?				
			Aggravated drink-driving	Drink-driving	Shop-lifting	Common Assault	Pooled offences
Demographic	Female	yes			yes		yes
	Younger	yes		yes	yes	yes	yes
	Māori or Pacific Islander	yes			yes	yes	yes
Current case	Convicted towards the end of reference period (2009)	yes		yes	yes	yes	yes
	Higher total number of charges in case	yes		yes	yes	yes	yes
Criminal history	Higher number of prior convictions, particularly for related crimes	yes		yes	yes	yes	yes
	Higher number of prior community work sentences	yes		yes	yes	yes	yes
	Higher number of prior fines	yes		yes			
	Had a prior conviction within past 5 years	yes		yes	yes		yes
Employment and benefit status	Not employed in month prior to conviction	yes		yes	yes	yes	yes

5.1.1 Employment and benefit outcomes

Figures 8 - 12 illustrate the matching results for employment and benefit outcomes. Each figure shows the benefit rates (left panel) or employment rates (right panel) of offenders in each of the months before and after the conviction date. The figures show the mean employment and benefit rates for cases receiving a fine and community work separately. (Recall that these are not mutually exclusive states as an offender can be employed and on benefit in any month). The top panel shows the results prior to matching (ie, these are the mean proportions employed and on benefit for all cases in our study population). The bottom panel shows results after matching, ie, for all cases in the treated group that could be matched and the weighted mean proportions of cases in the matched comparison group.

Aggravated drink-driving

People convicted of aggravated drink-driving in 2008/2009 had relatively high employment rates (50% to 60%) over the three-year period prior to conviction (Figure 8, top right). Not surprisingly, people who received fines had higher employment rates than people who received community work because ability to pay is one factor that judges may take into account in choosing between sentences. There was a sharp drop in employment rates of about 10 percentage points over the conviction date period for both groups. Conversely, benefit rates increased by a similar amount over the same period (top left).

This may appear at first glance to suggest that employment rates drop and benefit rates increase as a result of conviction. One reason could be due to the disqualification of a drivers licence (people convicted of drink-driving lose their licence for at least 6 months), which may interfere with an offender's ability to work. This should affect the fined and

community work groups in a similar way unless there are significant differences in the length of licence disqualification²⁵. Alternatively, the community work sentence itself might be the cause of loss of employment. For example, employees might lose their jobs due to the stigma of community work or shift workers or part-time workers might find it hard to keep their employment if they need to be available to work at short notice or in the weekend. However, the reference period (2008/9) also coincides with wider changes in employment and benefit rates associated with the Global Financial Crisis and we may just be observing the impact of those wider changes.

We wish to tease out whether there is any differential impact of fines and community work following sentencing from the wider changes that affect both groups so we compare employment and benefit rates after matching (illustrated in the lower panel). The plots show that employment and benefit histories prior to conviction are the same for the fined and community work groups (as required). Following conviction, we observed a differential impact on rates of benefit receipt (bottom left) and no obvious differential impact on employment rates (bottom right). Offenders sentenced to community work appear to be, on average, 5 percentage points more likely to be on benefit following conviction (all other factors held constant) – the benefit rate for fined offenders is about 23%, compared to 28% for offenders who receive community work after one year, and this impact appears to persist but reduce in size over the following two years.

Drink-driving

The employment and benefit rates for people convicted of drink-driving are similar to convicted aggravated drink-drivers (Figure 9 top panel), although the differences between the fined and community work groups are more pronounced. We observe the same downward trend in employment and upward trend in benefit receipt over the conviction time period. Again, this could be due to a number of causes, including the impact of community work sentence, having a licence disqualified²⁶ or macro-economic changes.

The differential impact of community work compared to fines on the mean benefit receipt is again about 5 percentage points (bottom left). Following conviction, about 20% of fined offenders were on the benefit compared to 25% of people on community work (Figure 9, bottom left). There appears to be a short-term differential impact on employment for drink-driving, with people on community work being less likely to be employed in the year following conviction (we cannot tell from these figures whether this difference is statistically significant because no error estimates are shown). We also see that the employment and benefit rates are not exactly matched prior to conviction (the lines in the bottom panel graphs are not exactly aligned before the reference month). As discussed in Section 3.2.2, we will adjust for these pre-existing differences at the impact estimation stage.

²⁵ Appendix Table 1 shows that the differences are not large as most offenders in both groups have their licences disqualified for between 1-2 years. Offenders who are fined are more likely to have a licence disqualified for one year or less compared to offenders receiving community work (22% cf. 12%) and those receiving community work are slightly more likely to have longer disqualification period than the fined group (15% cf. 5%).

²⁶ All offenders convicted of drink-driving in our study population also had their licence disqualified for some period of time, although the disqualification period was shorter than for aggravated drink-driving (Appendix Table 2).

Figure 8 - Employment and benefit status for offenders convicted of aggravated drink-driving, before and after matching

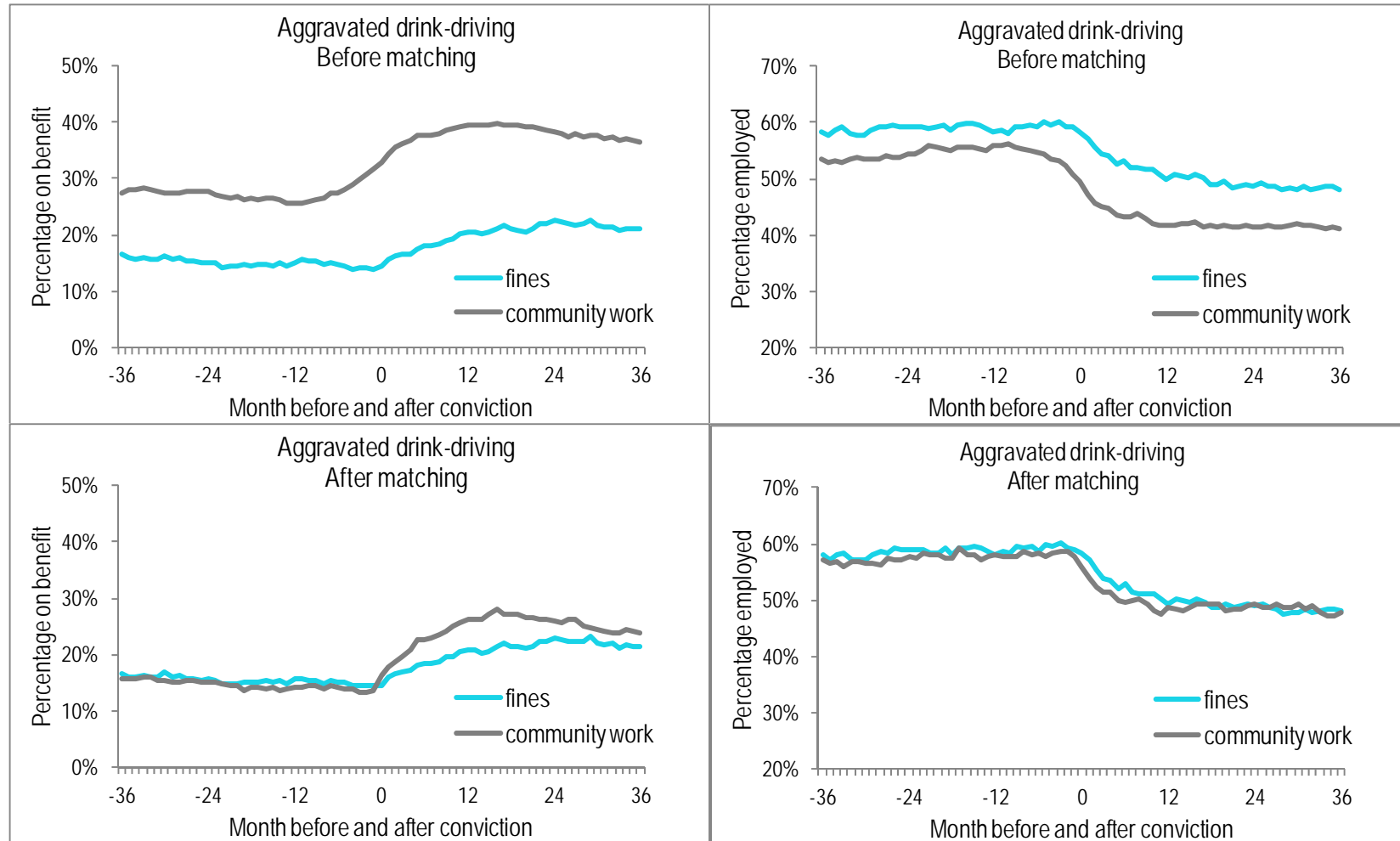


Figure 9 - Employment and benefit status for offenders convicted of drink-driving, before and after matching

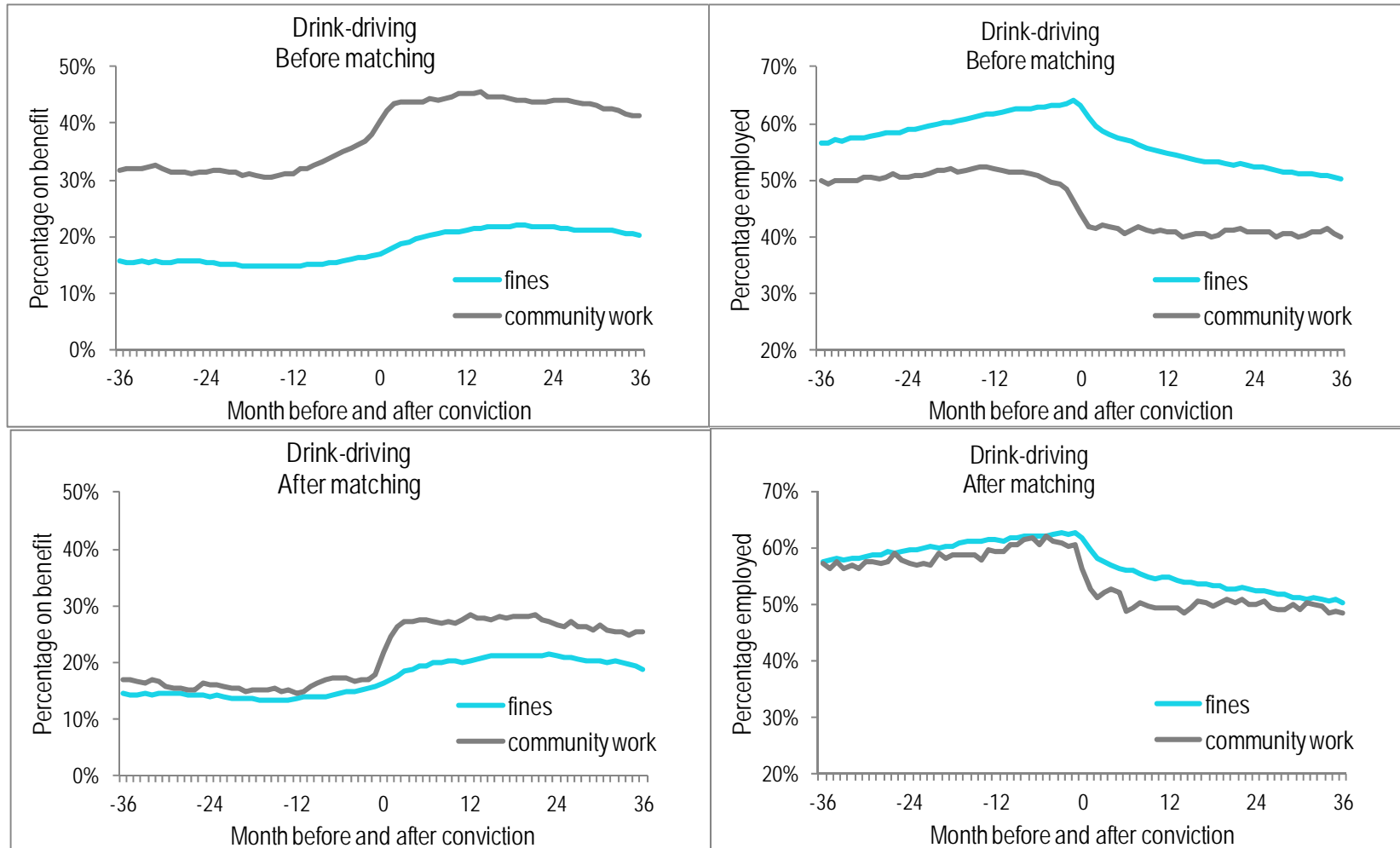


Figure 10 - Employment and benefit status for offenders convicted of shoplifting (under \$500), before and after matching

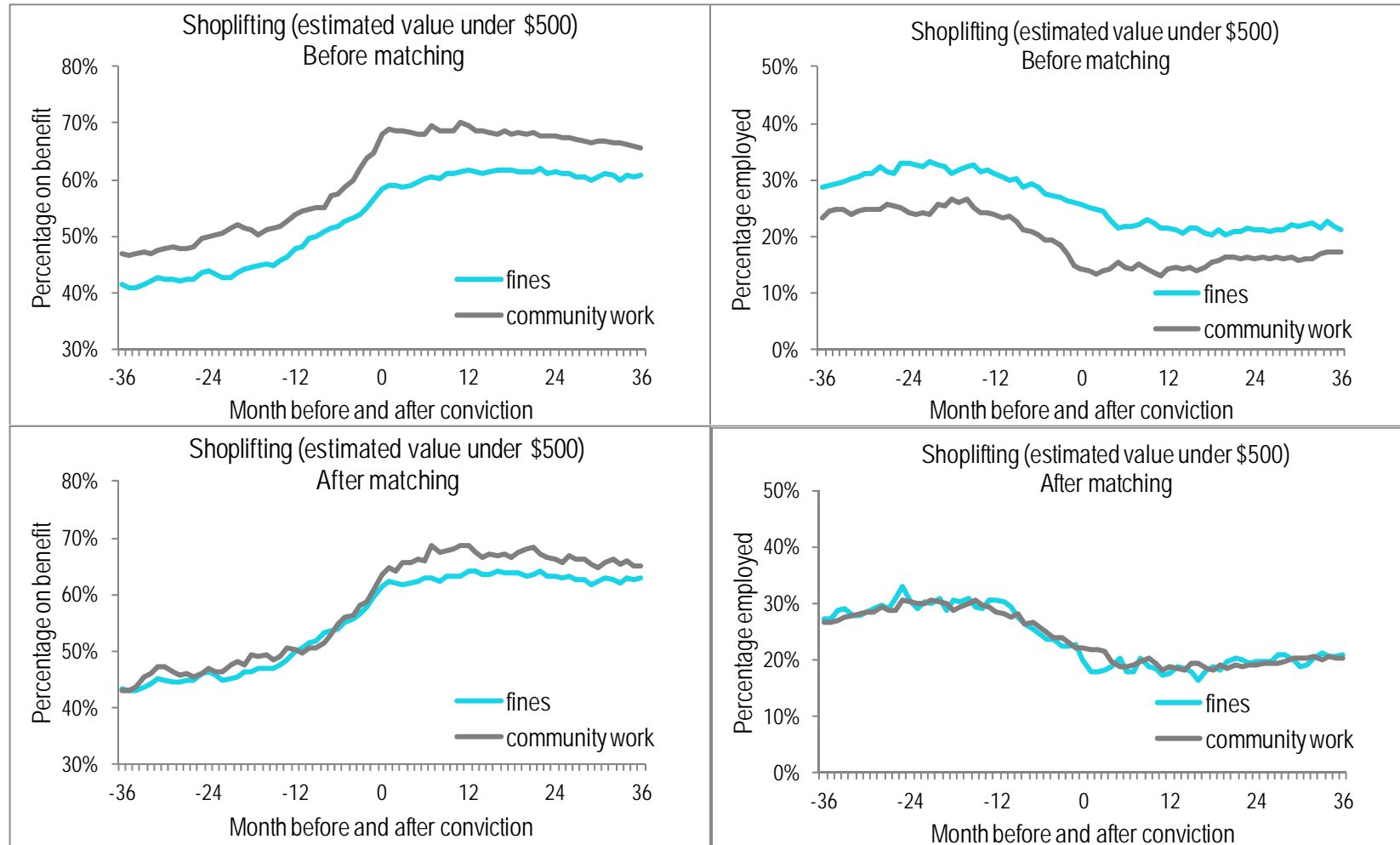


Figure 11 - Employment and benefit status for offenders convicted of common assault, before and after matching

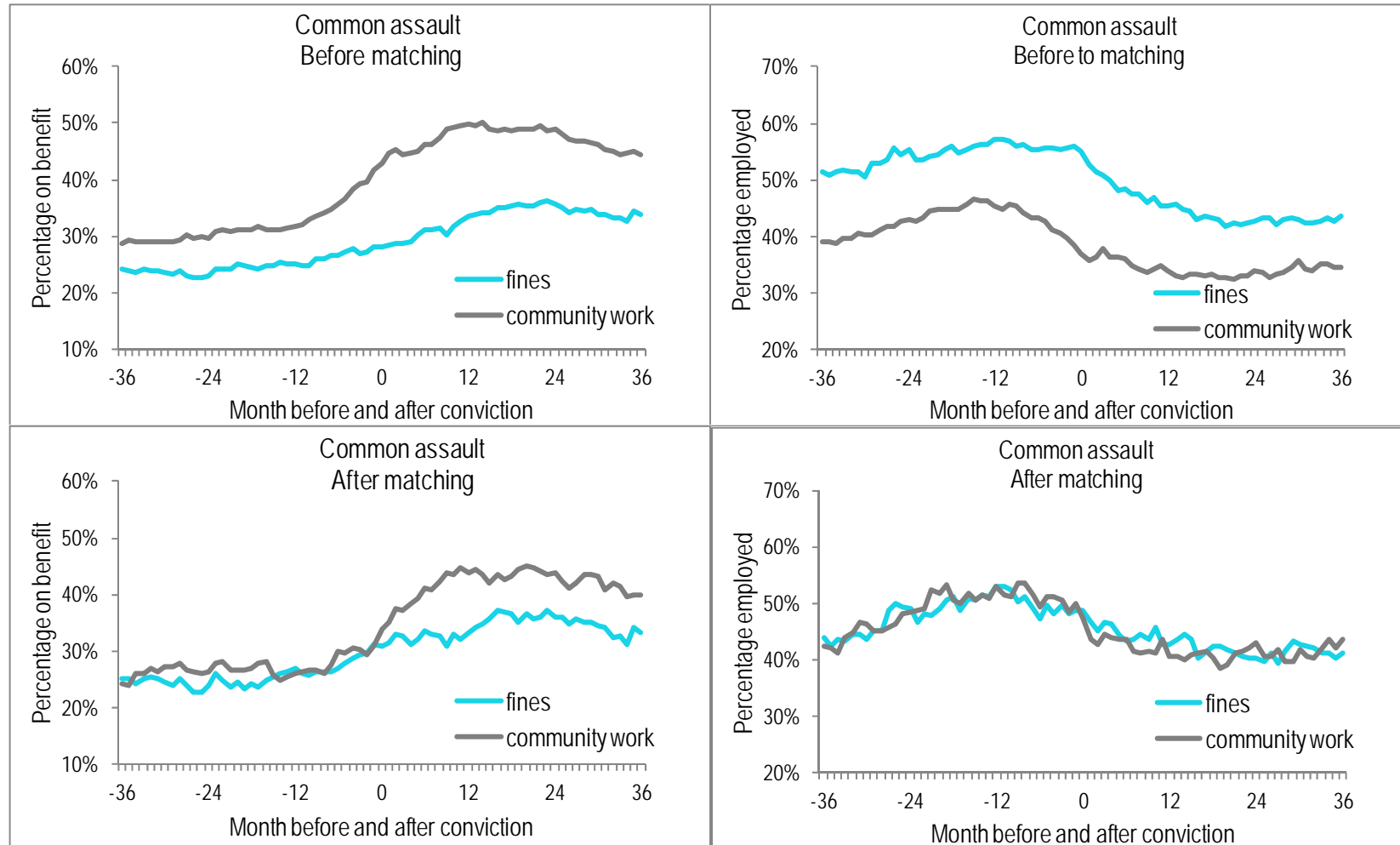
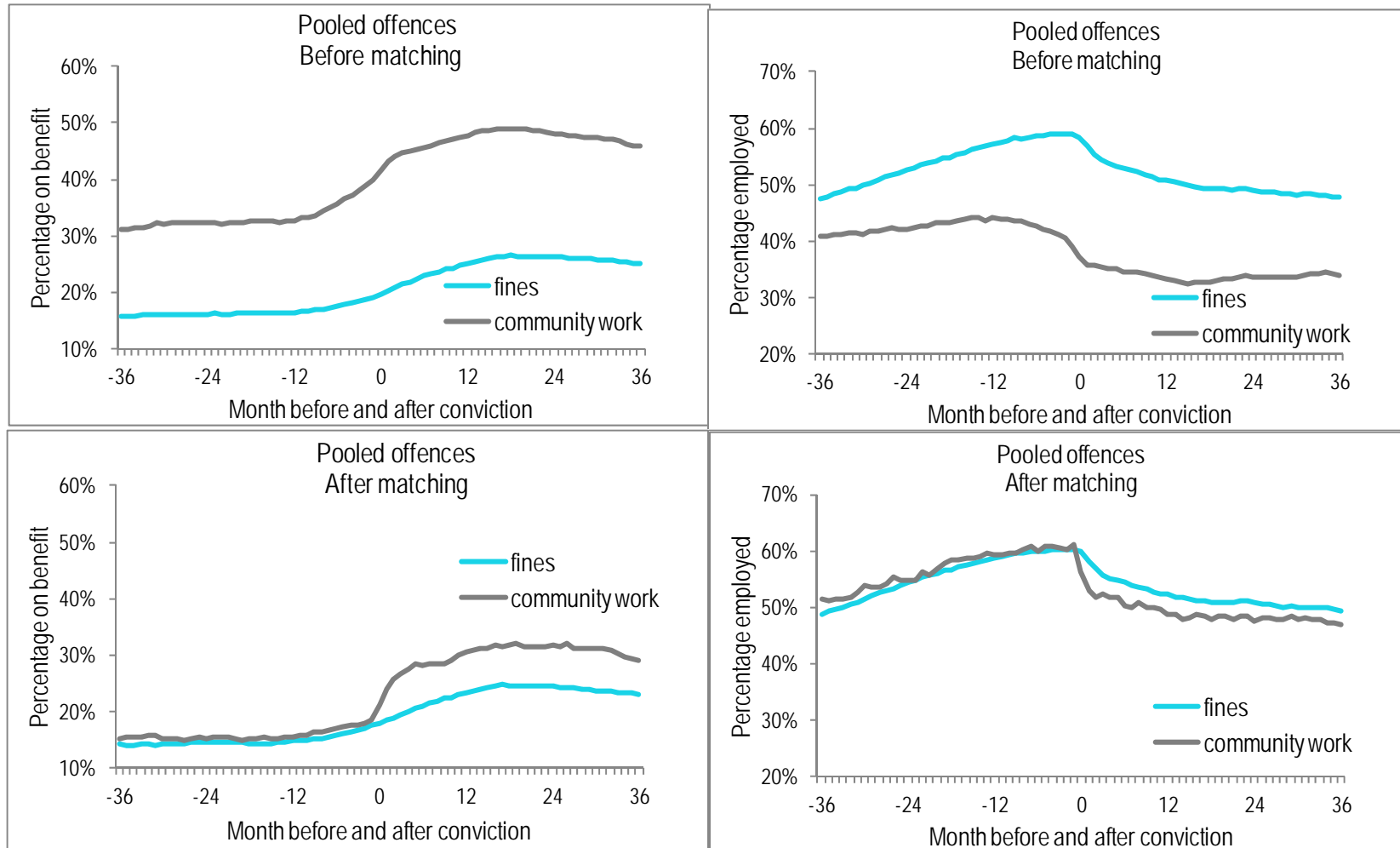


Figure 12 - Employment and benefit status for offenders convicted of a range of offences, before and after matching



Shop-lifting (estimated value under \$500)

The base trends in employment and benefit receipt over time are a bit different for people convicted of shoplifting (Figure 10). There is still a drop in employment and an increase in benefit receipt, however, the changes start well before the conviction date. One interpretation of this trend might be that changes in people's financial situation are driving the person to shoplift. However, also bear in mind that shoplifting is primarily a young person's crime so some of the increase in benefit uptake could be due to offenders becoming eligible for unemployment or other types of benefit (typically available at age 18). This would also partially explain the lower rate of employment (about 20% to 30% prior to conviction) and higher rates of benefit receipt (about 60% to 70% at conviction date).

The impact patterns (bottom panel) are very similar to drink-driving and aggravated drink-driving, despite the fact that these are quite different types of sentences. People convicted of shoplifting and receiving community work are about 5 percentage points more likely to be on benefit following conviction (about 67%) compared to people receiving fines (about 62%). There is no employment impact.

Common assault

Employment and benefit rates for people convicted of common assault fall somewhere in between those associated with convicted shop-lifters and convicted drink-drivers. Figure 11 shows similar trends in time to those already discussed. Following matching, benefit rates appear to be about 5 percentage points higher for people on community work (about 40%) compared to people who were fined (35%).

General model that pools a range of offences

Given that impact patterns are quite similar across a range of different types of offending and offender characteristics, we have also estimated a more general model that pools all types of offences (Figure 12). The overall trends in employment and benefits are similar to those already discussed. Employment rates drop from 40-60% prior to conviction to about 30-50% following conviction and benefit rates rise from about 15-40% prior to conviction to about 25-50% following conviction. Following matching, benefit rates are a few percentage points higher for people on community work compared to people who were fined and there is small differential impact on employment that persists for 3 years following conviction.

Summary

In summary, there appears to be a differential impact on benefit rates whereby offenders who are sentenced to community work are about 5 percentage points more likely to be on benefit following conviction compared to people who are fined. There is no clear impact on employment rates across all types of offences. The differential impacts appear similar across a range of quite different types of offences, which are committed by groups of offenders who differ in their average characteristics (eg, the relatively young, unemployed or on-benefit shoplifters and the older, more financially secure, employed drink-drivers). We do not yet know whether the impacts are statistically significant - this will be discussed in the next section where we present our main results. Before we do that we also consider matching results for other outcomes.

5.1.2 Reconviction, in custody and inactive status outcomes

Appendix Figures 1 - 4 illustrate the results of the matching for four other outcomes. These figures are similar to those that we have just presented except that they only show the results after matching (analogous to the bottom panels of Figures 8 -11). We show the monthly mean proportions of cases in the treated group and the matched comparison group for which offenders are:

- Convicted for breach of community and custodial sentence offences
- Convicted for offences other than breach of sentences (“new offending”)
- In custody (including remand), and
- Not employed, not on benefit and not in custody (hereafter referred to as “inactive”).

Similar patterns emerge across the four offence types. The clearest patterns are that people who are fined appear to be more likely to be inactive following conviction compared to the community work group by about 5 percentage points²⁷. Because inactive status includes those offenders who are not on benefit, this pattern is related to the impact patterns of a similar size already mentioned for benefit receipt.

It is difficult to discern patterns from the monthly conviction and custody indicators because the rates are so small. In the final results, we use cumulative measures over 6 months to a year and this smoothes the month to month variations. Here we wish to show the more detailed conviction and in custody histories to demonstrate balancing occurs between the two groups.

Not surprisingly, offenders sentenced to community work have higher rates of reconviction for a breach of community or custodial sentence than those who were fined. This subsequent breach is not necessarily associated with a breach of the original community work sentence; it may be associated with a completely different offence and conviction date²⁸. This is clearly true for the group of offenders who were fined, because a fine is not a community or custodial work sentence and yet the mean conviction rates for a breach are not zero.

It appears that people who receive community work are more likely to be in custody following conviction, but the impact is very small and for some offences the differences before conviction are of a comparable size. There is no obvious differential impact on new offending (convictions excluding breaches).

5.1.3 Unobserved factors

As discussed previously, there are still many offender characteristics that will influence an offender’s outcomes but we do not observe in the IDI. These include, for example, family background, remorse, mental health background, gang associations, participation in rehabilitation programmes. A judge may have access to information on some of these factors (eg, in a pre-sentencing report) and this may influence the sentence the offender receives.

²⁷ Note that this indicator is not well balanced before conviction for aggravated drink driving. We could have used a different logistic model specification for this outcome, which would have improved the balancing for the inactive status but made balancing of the other outcomes like benefit and employment worse. We tried this and the resulting impact estimates presented in the next section were the same as the results we present here within estimation error.

²⁸ In our exploratory analysis we attempted to associate a breach of sentence with the original sentence in the IDI Courts data, however it was not straightforward and we abandoned this approach early on.

There will be some omitted variables that might be important for the sentencing decision but less important for influencing an offender's outcomes. One example is the offender's payment history of prior fines. Judges may be more inclined to sentence an offender to a community work sentence if they know that there is a poor payment record of prior fines. Unfortunately, the IDI does not contain data on payment history or even information on remittals of fines to community work sentences. Our models do include employment and earnings information prior to conviction and we think it is likely that this is related to the payment record of an offender. Of course, non payment of fines may be due to an offender's attitude rather than their financial situation and our models include no variable directly related to that (except perhaps criminal histories in the extreme case). However, we think it is unlikely that an attitude towards payment of fines has a strong influence over future employment or re-offending behaviour relative to other omitted factors.

Factors such as whether an offender has a history of drug and alcohol abuse, is involved in a gang or is a victim of violence could be much more likely to influence future employment and re-offending. It is possible that even though we have balanced on observed characteristics there is still some systematic bias so that people on community work will have had poorer outcomes regardless of the sentence received. In other words, we could have serious offenders mixed in with low-level offenders in the matched comparison group, because we are unable to measure all the variables that could identify the serious offenders. The serious offenders would not be good matches for the fined offenders but we are unable to determine this. We hope to mitigate this bias by including employment, benefit and criminal histories prior to conviction (because presumably if the omitted factors are important for employment and offending after sentencing then they are also important before sentencing and we make sure that the histories are the same at the conviction date).

5.2 Impact estimates

5.2.1 Main results

The estimated differential impacts, or average treatment effect on the treated (ATT), are presented in Table 5 by type of offence. The standard errors were estimated using bootstrapping methods (100 replications, sampled at the case level prior to propensity estimation). Standard errors are shown below the impact estimates in brackets. We also show the relative size of the impact estimates, which are calculated by dividing the ATT results by the mean rates for offenders who received community work.

The results can be interpreted as follows. Consider as an example, the ATT estimate for benefit receipt in the third year following conviction for offenders convicted of aggravated drink driving (ADD) – the value is -2.7 percentage points. This means that offenders who were fined for this offence were 2.7 percentage points less likely to be on benefit over the third year following conviction than those who received community work. Figure 8 (presented earlier in this paper) shows that the mean benefit rate for offenders convicted of aggravated drink driving in the third year following conviction was about 25%, so the ATT estimate of 2.7 percentage points corresponds to a relative impact of 11% (2.7 divided by 25).

Table 5 - Differential impact estimates for convictions in 2008/9 for four different offences

		Differential impact estimates (ATT) (percentage points)				Relative impact (%)			
		ADD	DD	Shop	CA	ADD	DD	Shop	CA
On benefit	2 to 3 years	-2.7*	-5.5***	-3.0	-7.5*	11	21	5	18
		[1.5]	[1.0]	[1.9]	[4.1]				
	1 to 2 years	-5.3***	-5.5***	-3.5*	-7.8**	20	20	5	18
		[1.6]	[1.1]	[1.9]	[3.8]				
	0 to 1 years	-4.1***	-6.0***	-4.0**	-8.3**	18	22	6	20
		[1.1]	[0.9]	[1.9]	[4.1]				
Employed	2 to 3 years	-0.2	1.8	-0.2	-0.1	0	4	1	0
		[1.7]	[1.1]	[1.5]	[4.7]				
	1 to 2 years	0.6	1.9	0.0	1.1	1	4	0	3
		[1.7]	[1.3]	[1.5]	[4.6]				
	0 to 1 years	2.2	4.0***	1.4	2.0	4	8	8	5
		[1.6]	[1.1]	[1.5]	[4.3]				
Inactive	2 to 3 years	2.5	2.8**	5.1***	9.0***	8	10	34	47
		[1.5]	[1.1]	[1.3]	[3.4]				
	1 to 2 years	3.5**	2.5***	4.3***	7.0*	13	9	27	39
		[1.5]	[1.0]	[1.4]	[3.7]				
	0 to 1 years	1.9	0.7	2.2	5.9	6	3	12	30
		[1.5]	[1.0]	[1.4]	[4.0]				
In custody	2 to 3 years	-0.2	-0.7**	-1.9*	-2.3	20	49	27	46
		[0.3]	[0.3]	[1.0]	[1.9]				
	1 to 2 years	-0.5	-0.4*	-1.8**	-1.0	50	34	26	25
		[0.3]	[0.2]	[0.8]	[1.5]				
	0 to 1 years	-0.3*	-0.3*	-0.6	-0.4	30	44	12	13
		[0.2]	[0.1]	[0.8]	[1.0]				
Reconvicted for breach	within 2 years	-7.9***	-14.1***	-20.7***	-19.2***	36	70	27	45
		[1.0]	[1.0]	[2.3]	[4.3]				
	within 1 year	-6.3***	-11.5***	-20.2***	-14.3***	42	78	33	42
		[0.9]	[1.0]	[2.2]	[3.7]				
	within 6 months	-2.8***	-5.4***	-12.5***	-8.1***	40	77	30	45
		[0.6]	[0.6]	[1.8]	[2.6]				
Reconvicted (excluding breach)	within 2 years	-6.2***	-7.2***	-7.1***	-4.2	16	19	12	7
		[1.9]	[1.5]	[2.0]	[4.5]				
	within 1 year	-4.0***	-5.9***	-5.9**	-3.5	16	22	13	7
		[1.3]	[1.3]	[2.4]	[5.2]				
	within 6 months	-2.7**	-3.7***	-2.7	-1.7	21	22	10	6
		[1.2]	[1.2]	[2.5]	[4.1]				
Number of observations	Fine	1422	25056	1578	993				
	Community work	4437	6420	2364	2100				

Notes: The mean proportions over a year are calculated by averaging 12 monthly binary indicators, where an indicator takes a value of one if an offender receives a benefit of any type (or is employed, in custody, inactive). Bootstrapped error estimates (100 repetitions, sampled at the case level prior to propensity score estimation) are shown on line below ATT estimates. The relative size of the ATT estimate compared to mean rates for offenders receiving community work are shown to the right of the ATT estimates. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. ADD=Aggravated drink-driving, DD=Drink-driving, Shop=Shoplifting (estimated value under \$500), CA=Common Assault

We show differential impacts for a range of outcomes and up to three years post conviction. To summarise the significant results from the offence-specific models:

- Offenders who received fines are less likely to be on benefit after conviction, compared to those who receive community work, by about 3 to 8 percentage points²⁹, corresponding to relative impacts of between 5% and 22% (see first block of results in Table 5). The magnitude of the differential impact depends on the type of offence and the length of time since conviction. The differential impact persists for all offences over the first 2 years but weakens for some offences in the third year. The relative impacts are lowest for offenders convicted of shop-lifting.
- There is no differential impact on employment and earnings, except in the case of drink-driving (see second block of results in Table 5 under “Employed” for employment results; earnings results are not shown for brevity). Offenders convicted of drink-driving and sentenced to fines are more likely to be employed in the first year following conviction compared to those who receive community work, but the impact does not persist.
- Offenders who received fines are more likely to be “inactive” (not employed, not on benefit and not in custody) after the start of the sentence compared to those that received community work (see third block of results in Table 5). The size of the differential impact is about 3 to 9 percentage points (corresponding to relative impacts of 9% to 47%) and is typically stronger 2 to 3 years following conviction. The relative impact is particularly high for offenders convicted of common assault.
- There is little evidence of a differential impact on time spent in prison (including remand) and home detention (see fourth block of results in Table 5).
- The strongest differential impacts were associated with reconvictions for breach of custodial or community work sentences (see fifth block of results in Table 5). Offenders who received community work were between 3 to 13 percentage points more likely to be reconvicted for breach within 6 months, compared to the fined group. The differential impact rose to 8 to 21 percentage points within 2 years after the start of the sentence. The highest impacts on breach conviction rates occurred for offenders convicted of shoplifting, followed by common assault and drink-driving. The differential impact on breach conviction rates for aggravated drink-driving was relatively modest (8 percentage points after 2 years). However, the relative impacts ranging from 27% to 78% (depending on reconviction period and offence type) were high for all offences. The largest relative impacts occurred for drink-drivers, who have the lowest mean breach rates (see Appendix Tables 2 - 5).
- There is a differential impact on new offending (reconviction excluding breach of sentences) from 6 months to 2 years after conviction for most offences (see last block of results in Table 5). Offenders who received community work were more likely than the fined group to be convicted for new offending within 2 years of starting their sentence, by about 4 to 7 percentage points (relative impacts of 7% to 19%). However, the impact estimates for offenders convicted for common assault are not statistically significant.

²⁹ Strictly speaking, the percentage points refer to cases rather than offenders because some cases involve the same offender.

Labour market outcomes

We find the results relating to employment and benefit outcomes quite surprising. Specifically, that people sentenced to community work are more likely to be on benefit following their conviction dates than the fined group, but that we don't see a corresponding negative impact on employment status.

One interpretation of our results is that we have not completely removed the systematic differences between the two groups prior to conviction and therefore, people sentenced to community work have higher rates of benefit receipt than the fined group because they were always going to have poorer outcomes. If that is the case, we might expect to see a differential impact on all outcomes, including employment, but there is no evidence of differences in mean employment rates following conviction (except for the long-term impact for drink-drivers)

Before undertaking this analysis we had hypothesised that if we were to observe any labour market impacts, then the most likely impact would be a negative impact on employment rates for people undertaking community work. We thought that community work might interfere with employment in some way, eg, that employees might lose their jobs due to the stigma of community work or that shift workers or part-time workers who need to be available to work at short notice or in the weekend might not be able to continue to work. There is some evidence of a negative short-term impact on employment for drink-drivers who received community work compared to fines. However, the impact does not persist and it is not evident for any other offences, including aggravated drink-driving.

We also thought that we might see a negative employment impact for convicted drink-drivers due to their drivers licence's being disqualified. Some of the observed change in employment rates that affect both groups equally may be due to people losing their licences; however there is no significant differential impact on employment across all types of offences in our study.

It is possible that the impact of community work may not be as severe as to lose a job, but could still impact the number of hours someone might work. If this is happening, it is not a strong impact because we saw no significant differential impact in monthly mean earnings following conviction (we do not have data on hours worked).

If people do not lose their jobs as a result of community work, why then are people who have been sentenced to community work more likely to be on benefit following conviction than those who were fined? Some of the reasons for changes in benefit receipt over time, eg, young people becoming eligible for benefits, would apply equally to both groups unless there are significant differences in the fined and community work group's characteristics. However we have balanced these two groups for many relevant characteristics (including age, prior employment earnings etc).

It is possible that some of the differential impact is due to unobserved factors, such as, a supportive partner or family environment or higher levels of savings. If both the fined and community work group lose their jobs over the period at a similar rate, but the fined group have more resources to fall back on (working partners, higher levels of savings) so they don't require or aren't eligible for benefit then this would be consistent with the observed patterns for employment and benefit outcomes. It is also consistent with the inactivity outcomes because we observe a higher proportion of the fined group who are inactive following conviction compared to the community work group (although not for every time period and not for all offences).

We wondered whether there might be also be a real impact due to the experience of community work. For example, people may find out more about different types of benefits available and their eligibility by talking to others on their community work teams or by talking with a probation officer at the community work centre as part of their assignment to particular community work. Presumably, this impact is more likely to happen for the first instance of community work.

For this analysis, we have pooled all types of benefit receipt together. We checked to see whether there any distributional changes in the types of benefit received between the fined and community work groups or pre and post conviction dates, but we found none³⁰. We also saw nothing unusual in the distribution of the types of benefit by the type of offence; these were consistent with the age profiles of the group, eg, for aggravated drink-driving the main types of benefit were unemployment and sickness benefits³¹.

Re-offending outcomes

The results confirm our expectations that people who receive community work sentences are more likely to be reconvicted for breach of a community or custodial work sentence following conviction than people who received fines³². These are the largest differential impacts we observe and they are present across all types of offences but strongest for shoplifting, common assault and drink-driving. As mentioned previously, it is relatively easy to commit a breach of a community work sentence. Many people undertaking community work sentences are on Community Work Centre placements – these are made up of work parties that can have up to 10 offenders. People on centre placements must follow the Community Work Centre Rules (listed on Department of Correction’s website). The rules outline expected behaviours such as showing up on time, behaving respectfully to others and not smoking unless given permission. They also include a list of items that are not allowed, including no drugs, alcohol, dangerous weapons, gang patches but also less obvious items such as cell-phones, MP3 players, iPods, electronic games and food.

We do not observe any differential impact due to community work on subsequent spells in custody within 2 years, and this result is reasonable as community work and fines are relatively light sentences. We do however see some differential impact due to community work on new offending (excluding breach of sentences) from 6 months to 2 years, for all offences except common assault. We have not examined the seriousness of the subsequent convictions or whether they are related to the original offence. (We could do so with our dataset but it is outside the scope of this study). It is not clear from these results whether the observed differential impact on new offending applies to convictions for other types of offences besides those chosen in this study; it may be that some offences, such as aggravated drink-driving and shoplifting, are more prone to recidivism. The general model described next suggests that the differential impact on new offending is relevant to a broad range of offences (where community work and fine sentences imposed).

General model that pools multiple types of offences

Table 6 shows estimates of the impact of a fine compared to community work on offenders’ outcomes, for the model that pools multiple types of offences together. We

³⁰ We only checked direct benefit recipients for this exercise, not people who are supported by a partner’s benefit.

³¹ Now known as Jobseeker Support or Supported Living Payments

³² The majority of the breaches are breaches of community sentences, rather than custodial sentences. Recall that the breach may be associated with a prior or subsequent conviction –see discussion in Section 5.2.1.

present two estimates for the average treatment effect on the treated (ATT): one method differences the change in mean outcomes of the treated and matched comparison group following conviction and the second method uses a regression approach to control for any remaining pre-existing differences in the control variables. These two estimates are equal within standard error for all outcomes and time periods. However, the regression-adjusted ATT deals with the residual balancing issues seen in Figure 12 (eg, where the mean benefit and employment rates for the treated and control group were slightly different before conviction - see page 30) and so we regard this as a more robust estimate of the ATT than the differencing of means approach.

The results for the general model are similar in magnitude to those obtained using the four offence-specific models. The main difference is that more of the differential impact estimates are statistically significant for the general model due to the large number of observations. To summarise the results:

- There is a differential impact on benefit as before; offenders who are fined are about 7 percentage points less likely to be on benefit compared to those on community work (relative impacts of about 22%) and this impact persists over the 3 years following conviction.
- There is now a significant differential impact on employment. In the short-term, fined offenders are more likely to be employed compared to those on community work by about 4 percentage points (8%). The differential impact reduces over time to about 2.5 percentage point (5%) after 3 years.
- Fined offenders are more likely to be “inactive” two years after the start of their sentence by about 3 percentage points (relative impact of about 12%) compared to offenders who received community work.
- There is a significant differential impact on time spent in custody (including remand) but the magnitude is close to zero.
- Offenders who received community work are more likely to be reconvicted for breach within 2 years compared to offenders who were fined, by about 17 percentage points (relative impact of 71%).
- Offenders who received community work are more likely than the fined group to be convicted for new offending within 2 years of starting their sentence, by about 7 percentage points (relative impacts of 16%).

Table 6 - Differential impact estimates for convictions of any type of offence in 2008/09

		Differential impact estimates (ATT) (percentage points)		Mean proportion Community Work	Relative impact
		Difference method	Regression method		
On benefit	2 to 3 years	-7.2*** [0.6]	-6.8*** [0.5]	0.31	22%
	1 to 2 years	-7.1*** [0.7]	-6.7*** [0.7]	0.32	21%
	0 to 1 years	-6.9*** [0.6]	-6.2*** [0.5]	0.28	22%
Employed	2 to 3 years	2.2*** [0.7]	2.5*** [0.6]	0.48	5%
	1 to 2 years	2.8*** [0.8]	3.2*** [0.7]	0.48	7%
	0 to 1 years	3.6*** [0.7]	4.0*** [0.5]	0.51	8%
Inactive	2 to 3 years	3.6*** [0.7]	3.1*** [0.7]	0.26	12%
	1 to 2 years	3.3*** [0.6]	2.7*** [0.6]	0.25	11%
	0 to 1 years	1.8*** [0.5]	0.8* [0.5]	0.26	3%
In custody	2 to 3 years	-0.4** [0.2]	-0.5*** [0.2]	0.02	29%
	1 to 2 years	-0.30** [0.2]	-0.4** [0.2]	0.02	25%
	0 to 1 years	-0.20 [0.1]	-0.30 [0.1]	0.01	31%
Reconvicted for breach	within 2 years	-15.8*** [0.7]	-16.8*** [0.6]	0.24	71%
	within 1 year	-12.8*** [0.6]	-13.5*** [0.6]	0.17	81%
	within 6 months	-7.1*** [0.4]	-7.2*** [0.5]	0.09	81%
Reconvicted (excluding breach)	within 2 years	-5.3*** [0.8]	-6.9*** [0.8]	0.42	16%
	within 1 year	-4.4*** [0.8]	-5.6*** [0.8]	0.30	18%
	within 6months	-3.1*** [0.7]	-4.0*** [0.7]	0.20	20%

Notes: Mean proportions and bootstrapped error estimates calculated as per Table 5. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. We use two different methods to estimate the impact of receiving community work compared to a fine on offenders' outcomes: 1) straight differencing of the treated and control group means; 2) a regression estimate (see text). The relative impacts refer to the ATT regression estimates as a percentage of the mean community work rates shown in the adjacent column.

These general results show that community work is having a negative differential impact on an offender's employment compared to those who are fined, which means that some of

the differential impact on benefit receipt may be related to loss of employment. The differential employment impact decreases over three years suggesting that community work may cause the most problems in maintaining employment immediately following conviction and during the community work period. However, we view the pooled offence model with some caution as it is more approximate in the way that it accounts for the nature and seriousness of offending and we did not observe the same pattern in offence-specific models³³.

5.2.2 Sensitivity analysis

Employment variable

We examined whether our definition of employment might be driving some of the observed results. Recall that our definition of employment status and earnings excludes self-employment because the IDI only contains annual records of self-employment. If the proportion of self-employed people differed in the two groups and if there was a differential impact on employment for self-employed people then we would not pick up this impact. To test this, we derived new employment measures by including self-employment income. We distributed the annual self employment earnings equally across each month of the year and assumed that a self employed person was working in every month of the year that they filed a return.

We focused on aggravated drink-driving because this type of offence had the highest proportions of self employed people and we repeated the propensity score matching and impact estimation using the new employment measure. Prior to matching, the employment rates using the new employment variables were slightly higher and the inactive rates were slightly lower across both groups. This was as expected because some of the people previously classified as inactive were actually self-employed. This also shows that people who were fined were slightly more likely to be self employed (by a few percent) than those who received community work. However, after matching, there were no significant differences in the any of the new estimated impacts and those shown in Table 5.

Reference period

As noted previously, our reference period 2008 to 2009 coincided with the Global Financial Crisis. It may be that the impacts we observe are only apparent or are exaggerated by the worsening employment climate over that time period. We tested this by redoing the analysis for one offence type (assault) for a reference period of 2003 - 2004. We chose that reference period because it occurs well before the widespread economic changes in 2008/9 and the major sentencing changes associated with the 2007 Sentencing Amendment Act (which introduced the new sentences of home detention, community detention and intensive supervision).

³³ We also used the pooled model results to calculate alternative differential impacts for drink-drivers and aggravated drink-drivers by applying the pooled matches/weights to the two sub-groups. These alternative differential impacts differed by more than one standard error from the impacts estimated using the specific-offence models for some outcomes (notably employment for both groups, inactivity status for aggravated drink-drivers and re-offending outcomes for drink-drivers).

The estimated impacts were similar in size and significance to those presented in Table 5 for common assault. People convicted for common assault and sentenced to community work in 2003 and 2004 were more likely to be on benefit, less likely to be inactive and more likely to be reconvicted for breach than people who had been fined. There was no differential impact on employment. The main difference between then and now was that there was also a significant impact on new offending for the 2003/4 convicted offenders. This may be partially explained by the inclusion of more serious offenders in the 2003/4 community work group compared to the 2008/9 community work population.

Exclusion of people reconvicted following analysis

The study population for our main analysis includes offenders who received subsequent convictions following their original sentence (in fact, we examine the impact on re-offending). From the perspective of estimating labour market related impacts, it would be better to exclude people who are reconvicted and received another sentence in the follow-up period, in order to estimate the true impact of the initial sentence. We do this for the drink-driving cases and find that the resulting differential impacts on benefit, employment and inactive status are all equal within the standard errors to the main results presented in Table 5.

5.2.3 Sub-population analysis

We redid the main analysis for specific sub-population groups, including:

- Females and males
- Māori and Europeans
- People on long and short community sentences (defined by community work sentences shorter or longer than the median sentence)
- Young and old (two categories that were variously defined depending on offence)

For some offences, the numbers in the sub-populations are low and it is not clear that an insignificant impact estimate is due to the smaller sample size or due to the fact that there is no real impact.

If we focus on people convicted for drink-driving in 2008/9, which has far greater numbers than other types of offences, we found³⁴:

- No differences in impact estimates for all outcomes by age or duration of community work sentence
- No differences in impact estimates for benefit receipt, employment and reconvictions for breach outcomes by gender or ethnicity
- A differential impact on new offending due to community work compared to fines for males but not for females, and for Māori but not for Europeans.
- A differential impact on inactivity status due to community work compared to fines for males but not females.

³⁴ We do not present any tables of results for brevity.

The most important result in terms of societal costs is that males and Māori convicted of drink-driving were more likely to be reconvicted for new offending within two years as a result of receiving a community work sentence, than females and Europeans. We checked whether this pattern was observed across other offence types where we had sufficient numbers to do so. We observed the same gender difference in re-offending impact due to community work for shoplifting and aggravated drink-driving but no ethnic differences, eg, Māori convicted of shoplifting and aggravated drink-driving were no more or less likely to be reconvicted for new offending following their conviction as a result of receiving community work compared to fines.

Regarding the inactivity result, females convicted of drink-driving had much higher benefit rates (about twice as high) and lower employment rates than males before and after conviction and relatively small proportions of females were inactive. We previously suggested that a positive differential impact in inactivity status following conviction might be due to a differing ability of people who were fined compared to those sentenced to community work to support themselves (or be supported by partners/family) if they lost a job. The lack of positive impact for females on inactivity status is probably due to the high proportions of females already on benefit (and low proportions employed) before conviction.

5.3 Interpretation of impact estimates

5.3.1 Interpretation of results

In this section, we present some calculations to aid interpretation of the differential impact estimates presented in Tables 5 and 6. We also discuss how the results might be used to infer wider implications for society.

In Tables 7, 8 and 9 we show how the ATT results in Tables 5 and 6 translate into estimated numbers of people who are not on benefit and who are not reconvicted for breach or new offending, solely due to the fact that they received a fine instead of a community work sentence (holding all other observable factors constant). We choose these outcomes because the differential impact estimates are the most definitive across the four types of offences. Both tables follow the same format; they include the number of community work sentences; the ATT results from Tables 5 and 6; mean benefit rates or mean reconviction rates for breach for the treated group (fines) and the matched comparison group (community work) and an estimate of the number of people either not on benefit or not reconvicted for breach or new offending.

We have also added estimates for a sub-group of the pooled offences model that focuses on cases that are more likely to be on the margins of receiving a fine or community work sentence. The sub-group only includes cases that received below median community work sentences and above median fines. The rationale is that community work sentences are regarded as the more serious sentence and so it is more likely that a case with a shorter community work sentence would be matched to a case associated with a high, rather than a low, value fine (all other factors being equal)³⁵. The sub-group estimate will be used to infer wider implications of this work, to be discussed in the next section.

³⁵ We checked that matched cases in the full pooled model did have shorter than average community work sentences and larger than average fines as expected (and hence cases with longer community work sentences and lower fines lie outside the common support).

Table 7 - Estimated reduction of people on benefit in the second year following conviction, as a result of receiving a fine instead of a community work sentence

Offence	People on community work		ATT	Mean proportion on benefit		Estimated reduction in people on benefit	
	Mean	Mean	95% confidence interval	Fine	CW	Mean	95% confidence interval
ADD	4437	-0.05	(-0.08,-0.02)	22%	27%	234	(97,371)
Drink-driving	6420	-0.06	(-0.08,-0.03)	22%	28%	353	(215,492)
Shoplifting	2364	-0.04	(-0.07,0)	63%	67%	83	(-3,169)
Common Assault	2100	-0.08	(-0.15,0)	36%	44%	163	(5,321)
Pooled offences	26,241	-0.07	(-0.08,-0.05)	32%	32%	1758	(1398,2118)
Pooled -sub-group	13,275	-0.06	(-0.08,-0.05)	22%	28%	850	(641,1058)

Table 7 shows that the impact estimate for aggravated drink-driving translates to 234 fewer people on benefit (calculated by multiplying the mean number of people on community work by 0.05) in the second year following conviction (and a 95% confidence interval of 97 to 371 fewer people). In fact, the number of people will be slightly less because the impact estimate refers to cases rather than offenders. However, relatively few offenders have multiple cases over the reference period for aggravated drink-driving. Another way of presenting the ATT results is by showing the difference in the mean proportions of people on benefit who were fined (the treated group) and the mean proportions of people on benefit in the matched comparison group (drawn from the community work group). We displayed these differences on a monthly basis in Figure 8 for aggravated drink-driving. The mean proportions in Table 7 refer to the average proportions over the second year following conviction and the difference between the fined and community work group is 5 percentage points for aggravated drink-driving.

Considering the pooled offences model results, our ATT estimate translates to between 1,398 and 2,118 fewer people on benefit in the second year following conviction, purely as a result of an offender receiving a fine compared to a community work sentence and holding all other observed factors constant. The corresponding estimate for the pooled offence sub-group model is between 641 and 1,058 fewer people on benefit.

The estimated numbers of people who would not be reconvicted for breach³⁶ or reconvicted for new offending if they had received a fine instead of a community work sentence are shown in the final columns of Tables 8 and 9, respectively. Considering the pooled model results, we estimate between 4,100 and 4,717 fewer people would be reconvicted for a breach of sentence and between 959 and 1,822 fewer people would be reconvicted for new offending within 2 years, if they had received a fine instead of a community work sentence and holding all other observed factors constant. The corresponding estimates for the sub-group pooled offences model are between 1,784 and 2,305 fewer people reconvicted for breach and 470 and 1,043 fewer people reconvicted for new offending within 2 years.

³⁶ Recall that the breach of sentence is not necessarily associated with the original conviction; it may be related to an earlier or subsequent conviction for which a community work or custodial sentence was imposed.

Table 8 - Estimated reduction of people reconvicted for breach within 2 years as a result of receiving a fine instead of a community work sentence

Offence	People on community work		ATT	Mean proportion convicted of breach		Estimated reductions in people convicted of breach		
	Mean	Mean	95% confidence interval	Fine	CW	Mean	95% confidence interval	
ADD	4437	-0.08	(-0.1,-0.06)	14%	22%	352	(268,435)	
Drink-driving	6420	-0.14	(-0.16,-0.12)	6%	20%	905	(779,1031)	
Shoplifting	2364	-0.21	(-0.25,-0.16)	56%	76%	489	(383,595)	
Common Assault	2100	-0.19	(-0.28,-0.11)	24%	43%	403	(227,580)	
Pooled offences	26,241	-0.17	(-0.18,-0.16)	24%	24%	4408	(4100,4717)	
Pooled -sub-group	13,275	-0.15	(-0.17,-0.13)	6%	21%	2044	(1784,2305)	

Table 9 - Estimated reduction of people reconvicted for new offending within 2 years as a result of receiving a fine instead of a community work sentence

Offence	People on community work		ATT	Mean proportion convicted of breach		Estimated reductions in people reconvicted for new offending		
	Mean	Mean	95% confidence interval	Fine	CW	Mean	95% confidence interval	
ADD	4437	-0.05	(-0.08,-0.02)	33%	39%	234	(97,371)	
Drink-driving	6420	-0.06	(-0.09,-0.03)	32%	38%	381	(216,546)	
Shoplifting	2364	-0.07	(-0.11,-0.03)	50%	57%	168	(74,262)	
Common Assault	2100	-0.04	(-0.13,0.05)	59%	63%	88	(-98,273)	
Pooled offences	26,241	-0.05	(-0.07,-0.04)	37%	42%	1391	(959,1822)	
Pooled -sub-group	13,275	-0.06	(-0.08,-0.04)	33%	39%	757	(470,1043)	

Note: The differential impact (ATT) for common assault is not statistically significant.

5.3.2 Wider implication of results

What are the wider implications of our results? In this section, we briefly illustrate how our results could be translated into potential costs to society. The discussion and results presented here are speculative and focused on direct costs rather than benefits. For example, we have shown a differential impact on benefit receipt due to an offender receiving a community work sentence compared to a fine. In this case, community work may have a positive impact from the perspective of an offender if they find out they are eligible for a benefit as a result of the community work experience. This may lead to positive flow-on effects to an offender's family, which we are unable to quantify. Instead, we focus on the direct financial savings to the government of reducing the number of people on benefit (discussed below).

The number of offenders sentenced to community work sentences in 2013 was about 19,000. We observe variation in sentencing between fines and community work for comparable offending in 2008 and 2009 with some part of that variation explained by the court circuit (ie, largely variation between resident judges). We hypothesise that some fraction of these sentences may have been on the margin of receiving community work or a fine. However, we have no way of knowing how many cases are on the margin.

In Table 10, we illustrate some wider impacts if we make different assumptions about the number of cases that might have received a fine rather a community work sentence, from values of 500 to 5000. We use ATT estimates from the pooled offences sub-group model that includes cases that are most likely to be on the margin (ie, cases that received below median community work sentences and above median fines).

The main aim of this table is illustrative and we have no view on the correct number of cases on the margin. Focusing first on benefit receipt, if we assume an average differential impact of between -0.05 to -0.08 for the 3 years following conviction and 1,000 people on the margin received a fine instead of a community work, then we estimate from 150 to 240 fewer people on benefit and cost savings in terms of benefit payments of \$1.5 to \$2.4M.

Table 10 - Illustrative estimates of wider impacts of fines compared to a community work sentences

Assumed number of cases that might receive fines instead of community work	500	1000	5000
<u>Benefit example:</u>			
Estimated reduction of people on benefit over 3 years following conviction (ATT = -0.08 to -0.05)	70 -120	150 - 240	730 – 1200
Additional benefit cost savings over 3 years (average annual cost of benefit =\$10k)	\$0.7M - \$1.2M	\$1.5M - \$2.4M	\$7.3M - \$12M
<u>Re-offending examples:</u>			
Estimated reduction in people reconvicted of breach after 2 years (ATT= -0.17 to -0.13)	70 - 90	130 - 170	670 - 870
Estimated reduction in people reconvicted for new offending after 2 years (ATT= -0.08 to -0.04)	20 - 40	40 - 80	180 - 400
Additional costs savings due to reduced numbers of offenders in prisons or on longer community work sentences		<i>Unknown</i>	

Moving on to the re-offending examples: if we assume there are 1,000 out of 19,000 offenders with community work sentences who might have received a fine instead, then we estimate that between 130 and 170 fewer people would be reconvicted for breach in the two years following the original conviction. A wider concern in terms of societal costs would be if people associated with marginal cases re-offended more often as a result of receiving a community work sentence (where we are interested only in offences other than breaches of community sentences). We have seen evidence of a differential impact on new offending in three out of four offences studied and in the general model. The average differential impact on new offending for the pooled offences sub-group model is between -0.04 and -0.08. This translates to 40 to 80 fewer people who are reconvicted for new offending (excluding breaches) in the two years following the original conviction.

Ideally, we would like to be able to say something about the cost savings associated with fewer offenders going through the courts and being managed by the Department of Corrections. The main cost savings would occur if fewer offenders were sentenced to longer community work periods or more serious sentences such as prison. For example, the average cost of keeping an offender on community work in 2013/4 was about \$10 per day (Department of Corrections). This is clearly more than the costs associated with offenders who are sentenced to fines. However, we have no estimates for the impact on the type and duration of sentences as a result of being reconvicted. Instead, we only have estimated additional numbers going through the courts and the court cost savings (if any) are likely to be negligible compared to savings in keeping offenders from more serious community based or custodial sentences.

6 Conclusions

This study estimates the differential impact of receiving a community work sentence compared to a fine on the convicted offenders' subsequent outcomes for four types of offences that range in seriousness of offending and types of offenders. The chosen offences are responsible for about 32% of all community work and fine sentences for our reference period of 2008 and 2009. We also estimate impacts using a general model that combines several types of offences over the same reference period.

We regard our estimates as an upper bound of the true differential impact of community work compared to fines on offenders' subsequent outcomes. While our method is able to control for observed offender characteristics, it is still possible that there are significant uncontrolled differences between the offenders who were sentenced to community work and those who were fined. The judge may have some knowledge of factors such as remorse, participation in programmes to address re-offending, mental health issues, etc. and will have sentenced accordingly. These types of unobserved factors could bias our impact estimates because the people receiving community work may have had poor outcomes following conviction, regardless of the type of sentence received, and our impact estimates may just reflect this bias. We believe that we have mitigated this issue to some extent by controlling on prior criminal, employment and benefit histories. Presumably, if unobserved factors contribute to outcomes post conviction then they would also be contributing to the same outcomes for the three years before conviction.

With those caveats in mind, we find a persistent differential impact on benefit receipt but not employment. People convicted of community work sentences are more likely to be on benefit following conviction compared to people who are fined and this differential impact of about 5 percentage points persists for three years. Prior to this study, our expectation was that community work might interfere in employment in some way (eg, by making it harder to turn up for shift-work or maintain casual employment). However, there is no evidence of a differential impact on employment status across the four detailed offences included in this study or of a shift towards fewer hours (as measured by monthly mean earnings) following conviction. We do see a short-term differential impact on employment for drink-drivers; people who receive fines are more likely to be employed in the year following conviction compared to those on community work, but this differential impact does not persist.

In the absence of a differential impact on employment, the differential impact on benefit receipt may result from uncontrolled differences between the two groups. If both groups lose their jobs at the same rate following conviction but people who were fined had higher levels of savings or family support (eg, a partner working or on benefit) then they would

not be eligible or would have no need to go on benefit. An alternative explanation for the differential impact on benefit is that this is a real effect associated with the experience of community work. People may find out more about different types of benefits available and their eligibility by talking to others on their community work teams or by talking with a probation officer at the community work centre as part of their assignment to particular community work. Whatever the explanation, we do not interpret increased benefit receipt as a negative outcome because it was not associated with a negative impact on employment. If offenders are finding out they are eligible for benefit as a result of the community work experience then this could have a positive impact on their lives and positive flow-on effects for their families.

Not surprisingly, we observe a significant differential impact on reconvictions for breach of community and custodial sentences following conviction. Offenders who receive community work are between 8 to 21 percentage points more likely to be reconvicted for breach than the fined group, within two years following conviction. The impact varies depending on the type of offence (the lowest differential impacts are associated with aggravated drink-driving and the highest with shoplifting). These results are consistent with prior expectations within the justice sector. People have observed the high rate of breaches of community work sentences for some time; our analysis provides an estimate of the quantitative impact on reconviction for breach for comparable offending (holding all other factors like prior offending, offender characteristics the same).

The differential impact on new offending is of greater concern if community work is somehow escalating offenders into more serious offending. We observed a differential impact on new offending of about 7 percentage points within two years for all but one offence type. More analysis is required to determine which offence types have the highest impacts and to determine whether the new offending is of a more serious nature. The latter, in particular, is possible with our dataset however it is beyond the scope of this study. Not surprisingly, there is no differential impact on prison or home detention sentences.

The reference period was chosen to follow after the 2007 Sentencing Amendment Act, which introduced new types of community sentences. However, this also coincided with wider changes in the economy associated with the Global Financial Crisis. We test the sensitivity of our impact estimates to our choice of reference period by redoing the analysis for convicted cases in 2003/4 (for one offence). The size and significance of the impacts due to community work are similar for all but one outcome and the differences are consistent with changes in the sentencing mix over the time period.

In this study, we have grouped all cases for which community work is the most serious sentence and ignored the fact that there may be other concurrent sentences such as supervision or training. Some of the differential impacts we observe may be due to the other types of sentences included in the package. Further work is required to compare different types of packages of sentences, eg, cases where the sentence is only community work compared to cases where supervision and/or training sentences are included. This type of analysis is possible with our dataset but is beyond the scope of this initial study.

Similarly, we have made no attempt to isolate the impact of the original sentence from subsequent sentences (if any) because we include people who re-offended during the follow-up period of three years in our analysis. We test the sensitivity of our differential impact estimates on labour market outcomes for drink-drivers by excluding anyone who was reconvicted in the follow-up period. We find that the resulting differential impacts on benefit, employment and inactive status are all equal within the standard errors to the main results.

We could find no conclusive differences in the differential impact estimates by age, ethnicity, and duration of community work sentence although this may be partially due to the low numbers of cases in the sub-populations reducing the statistical certainty of the results. We observe that males are more likely to be reconvicted for new offending within two years as a result of receiving a community work sentence rather than a fine but for all other outcomes the differential impacts are the same for males and females.

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Appendix

Appendix Table 1 - Logistic regression model variables

Variable name	Definition
<i>Demographic characteristics</i>	
Gender	Either male(0) or female(1)-sourced from the IDI central personal details table
Ethnicity	Either European/Māori/Pacific Island or Other. We use the primary ethnicity contained in the IDI justice sector data because there is very good coverage for more recent data. A limitation is that the ethnicity may be based on a visual assessment by a staff member completing administrative forms and that only a primary ethnicity is recorded. We compared the justice derived ethnicity with Statistics NZ's ethnicity flags (more than one ethnicity is allowed) and found the two variables to be consistent over a high proportion of offenders.
Age	Age in years at the time of offending. The date of offending is sourced from the justice charges dataset and the birth date is sourced from IDI central personal details table. Variable age bands are used for different offences.
<i>Current case related</i>	
Court circuit	The IDI contains a court identifier (but not a judge identifier), which can be linked to a court circuit. The New Zealand District Courts are organised into circuits and each circuit typically has resident judges. A few circuits have visiting judges but mainly cases are heard by resident judges (except for Gisborne). We use the 18 court circuits provided by Wayne Goodall – these are valid for 2008 and 2009. (Goodall and Durrant, 2013). We mistakenly combined Auckland and Waitakere Circuits together and only found this out after analysis was complete. We reran the analysis for the pooled offences model and there were no substantive changes in the results.
Total charges in current case	The total number of charges in the case (where case is identified by the offender, outcome data and outcome Court)
Multiple concurrent charges of the same offence	Either 0 or 1: This will be 1 if there is more one charge associated with the same offence in the case
Concurrent charges for other types of offences	Either 0 or 1: This will be 1 if there is at least one charge of another type of offence. So, for example, in the case of the aggravated drink-driving model we also included an indicator of whether there were any disqualified or serious driving charges. The other types of offences varied by the main type of offence being studied. We identified these other offences in 2 ways: one used the standard classification (ANZSOC – Australia NZ Standard Offence Classification) available in the IDI and the other using more detailed lists of NZ codes derived by Wayne Goodall and provided to us for this study. The main results use the latter mode detailed codes, but we note that logistic model results were very similar when using more general ANZSOC derived categories.
Concurrent breach of sentence	Either 0 or 1: This will be 1 if there is a charge of breach of sentence (excluding breach of bail) associated with the same offence in the case
Pleaded guilty	Either 0 or 1: This will be 1 if a guilty plea was entered.

Variable name	Definition
Had a blood test	Either 0 or 1 and only relevant to the drink-driving and aggravated drink-driving cases. The indicator is 1 if the offender had a blood test as opposed to the breath test (the cases are pooled)
Standardised alcohol level	The blood and breath tests use different scales so we need to standardise the test results in order to pool the cases for analysis. In 2008-2009 the general legal limits applicable to everyone were 80/400 for blood/breath tests, in addition there was also a separate lower level offence for under 20 year olds who drove with 30/150 blood/breath tests. We divided the test results by the age-dependent legal limits. We also removed any implausible values of blood or breath alcohol results.
Criminal histories	
Previous convictions	Variable bands used depending on offence type. For each case, we added the total number of previous convicted cases (previous to the case of interest and from 1992 onwards). For some offence types, eg, aggravated drink-driving, we split this into two different variables – one for all prior related convictions and one for all prior non-related convictions. We also experimented with splitting this variable by time periods, eg, all prior convictions within 10 years of the current case, and all prior convictions more than 10 years old. However, we found little variation in the impact estimates so stick to the more parsimonious specification.
Prior breach of sentences	Either 0 or 1: This is 1 if the offender had been convicted for prior breaches of custodial or community sentence
Prior spells in custody (including remand)	Either 0 or 1: This is 1 if the offender had a prior spell in custody, including remand. This indicator used Department of Corrections data in the IDI rather than the Ministry of Justice's charges dataset.
In custody in month before conviction	Either 0 or 1:
Number of months in custody between X and Y months before conviction	Only used for common assault model. The total number of months in custody for a period of months defined by X and Y, eg, the 7 to 12 months before conviction.
Prior community work sentences	Variable bands used depending on offence type. The total number of prior convicted cases resulting in community work sentences as the most serious sentence.
Prior fines	Variable bands used depending on offence type. The total number of prior convicted cases resulting in fines as the most serious sentence.
Employment and benefit histories	
Employed in month(s) before conviction <i>(up to 6 months before conviction)</i>	Either 0 or 1: This indicator is 1 if the offender received wages and salaries at any time during the month before conviction. This indicator does not distinguish between full or part time employments. For some models, we included a separate indicator for each month up to 6 months before conviction. For other models, we summed the total number of months with non zero employment records between 2 to 6 months prior
Number of months employed between X and Y months before conviction <i>(up to 36 months before conviction)</i>	Variable definition used depending on offence type. The total number of months with non-zero employment for a period of months defined by X and Y, eg, the 7 to 12 months before conviction. Sometimes, we split the employment histories into several parts. For example, with aggravated drink-driving we used 4 splits: 1 month prior, 7 to 12 months prior, 13-18 months prior and 19-36 months before conviction.
On benefit in month(s) before conviction	As for employment, except indicating whether someone received a

Variable name	Definition
<i>(up to 6 months before conviction)</i>	benefit.
Number of months on benefit between X and Y months before conviction <i>(up to 36 months before conviction)</i>	As for employment, except adding the number of months with non-zero records of someone on benefit whether someone received a benefit.
Inactive in month(s) before conviction <i>(up to 6 months before conviction)</i>	As for employment, except indicating whether someone did not receive employment or benefit payments and was not in custody
Number of months inactive between X and Y months before conviction <i>(up to 36 months before conviction)</i>	As for employment, except adding the number of months where someone did not receive employment or benefit payments and was not in custody
Offence group <i>(All-offences model only)</i>	All offences falling under ANZSOC divisions. There are 12 divisions relevant to our analysis (the most serious offences like homicide are excluded by our definition of the study population). This is used to control for the broad nature of offending in the all-offences model.
Seriousness score <i>(All-offences model only)</i>	Each offence code is assigned an average seriousness score. More serious offending is assigned a high seriousness score. We aggregate into deciles. This is used to control for severity of offending in the all-offences model.

Appendix Table 2 - Characteristics of cases for people sentenced to community work and fines in 2008 and 2009 for aggravated drink-driving

	Fines	Community work
Number of cases	1,422	4,437
<i>Demographic characteristics</i>		
Female	7%	15%
European	57%	41%
Māori	27%	41%
Pacific	7%	12%
Other ethnicity	8%	6%
Aged 17-24	1%	8%
Aged 25-34	12%	25%
Aged 35-44	32%	35%
Aged 45-54	35%	23%
Aged over 54	18%	9%
<i>Court Circuit</i>		
Auckland ³⁷	20%	20%
Christchurch	12%	9%
Dunedin	3%	2%
Gisborne	2%	3%
Hamilton	5%	7%
Invercargill	2%	2%
Manukau	16%	15%
Napier	3%	5%
Nelson	3%	3%
New Plymouth	2%	2%
North Shore	1%	1%
Palmerston	3%	3%
Rotorua	6%	5%
Tauranga	5%	6%
Wanganui	2%	2%
Wellington	9%	7%
Whangarei	4%	8%
<i>Offence related</i>		
Convicted in 2008	54%	50%
Convicted in 2009	46%	50%
Total charges in case		
	1	90%
	2	8%
	3 or more	1%
Multiple concurrent drink-driving charges	Suppressed	1%
Concurrent serious driving charges	1%	3%

³⁷ Includes Waitakere court circuit.

	Fines	Community work
Concurrent breach of sentence charges	1%	4%
Pleaded guilty	97%	98%
Blood test given	20%	16%
Standardised alcohol level	1.73	1.86
Disqualified driving sentence		
Less than or equal to 365 days	22%	12%
Between 365 days and 730 days	72%	71%
Between 730 days and 1095 days	1%	1%
Greater than or equal to 1095 days	5%	15%
Dollar amount of fine		
Less than or equal to \$650	26%	
Between \$650 and \$800	24%	
Between \$800 and \$1000	25%	
More than \$1000	25%	
Length of community work sentence		
Less than or equal to 100 hours		29%
Between 100 and 150 hours		26%
Between 150 and 200 hours		25%
More than 200 hours		20%
<i>Criminal histories</i>		
Previous convictions (excluding drink-driving) since 1992		
None	34%	16%
1 to 3	34%	30%
4 to 9	21%	28%
10 or more	12%	26%
Previous convictions for drink-driving since 1992		
Less than 3	92%	78%
3	6%	15%
4	1%	5%
5 or more	1%	2%
Most recent drink driving within 5 years	18%	47%
Prior spells in custody		
Never	80%	70%
Yes, for drink related conviction	17%	24%
Yes, not for drink related conviction	3%	6%
Prior breach of sentence (excluding breach of bail)		
Never	90%	76%
Yes, over 5 years ago	6%	11%
Yes, within 5 years	4%	12%
Mean number of prior community work sentences	1.63	3.47
Mean number of prior fines	1.98	2.75

	Fines	Community work
<i>Employment histories</i>		
Mean monthly earnings for employed people in 6 months before conviction	\$3,845	\$2,960
Prior employment and benefit status in month before conviction		
Employed and not on benefit	56%	45%
Employed and on benefit	3%	6%
On benefit	11%	26%
Not employed, on benefit or in custody	30%	23%
Mean number of months on benefit before conviction between months		
2 to 6	0.71	1.45
7 to 12	0.91	1.57
13 to 18	0.88	1.58
19 to 36	2.60	4.67
Mean number of months employed before conviction between months		
2 to 6	2.98	2.68
7 to 12	3.53	3.33
13 to 18	3.56	3.32
19 to 36	10.00	9.20
<i>Post conviction outcomes</i>		
Mean proportion of employed post conviction		
1- 12 months	0.53	0.44
12-24 months	0.50	0.42
24-36 months	0.48	0.42
Mean proportion on benefit post conviction		
1- 12 months	0.18	0.38
12-24 months	0.21	0.39
24-36 months	0.22	0.37
Mean proportion not employed, not on benefit, not in custody post conviction		
1- 12 months	0.32	0.24
12-24 months	0.32	0.24
24-36 months	0.32	0.25
Mean proportion in custody post conviction		
1- 12 months	0.00	0.01
12-24 months	0.01	0.02
24-36 months	0.01	0.02
Mean reconviction rate (excluding breach)		
within 6 months	6%	13%
within 12 months	15%	25%
within 24 months	23%	39%
Mean breach of community sentence rate		
within 6 months	1%	7%
within 12 months	1%	15%
within 24 months	3%	22%

Notes: Counts have been randomly rounded to base 3. Figures have been derived from the Integrated Data Infrastructure managed by Statistics NZ.

Appendix Table 3 - Characteristics of cases for people sentenced to community work and fines in 2008 and 2009 for drink-driving (1st or 2nd offence, aged over 19)

	Fines	Community work	
Number of cases	25,056	6,420	
<i>Demographic characteristics</i>			
Female	27%	28%	
European	47%	38%	
Māori	22%	44%	
Pacific	11%	11%	
Other ethnicity	19%	7%	
Aged 20-24	30%	42%	
Aged 25-34	30%	34%	
Aged 35-44	21%	15%	
Aged 45-54	13%	7%	
Aged over 54	7%	3%	
<i>Court Circuit</i>			
Auckland ³⁸	25%	15%	
Christchurch	11%	8%	
Dunedin	3%	3%	
Gisborne	1%	3%	
Hamilton	9%	6%	
Invercargill	2%	2%	
Manukau	15%	10%	
Napier	3%	6%	
Nelson	2%	4%	
New Plymouth	2%	4%	
North Shore	1%	0%	
Palmerston	3%	5%	
Rotorua	4%	5%	
Tauranga	7%	8%	
Wanganui	1%	2%	
Wellington	7%	9%	
Whangarei	4%	9%	
<i>Offence related</i>			
Convicted in 2008	51%	46%	
Convicted in 2009	49%	54%	
Total charges in case			
	1	88%	65%
	2	11%	23%
	3 or more	1%	12%
Multiple concurrent drink-driving charges	0%	4%	
Concurrent disqualified driving charges	1%	7%	

³⁸ Includes Waitakere court circuit.

	Fines	Community work
Concurrent serious driving charges	2%	7%
Concurrent breach of sentence charges	1%	5%
Pleaded guilty	99%	99%
Blood test given	20%	15%
Standardised alcohol level	1.69	1.81
<i>Sentences</i>		
Disqualified driving sentence		
Less than or equal to 6 months	81%	46%
Between 6 months and 3 years	18%	47%
3 years and over	1%	7%
Dollar amount of fine		
Less than or equal to \$450	29%	
Between \$450 and \$550	22%	
Between \$550 and \$700	26%	
More than \$700	23%	
Length of community work		
Less than or equal to 50 hours		20%
Between 50 and 80 hours		33%
Between 80 and 120 hours		26%
More than 120 hours		21%
<i>Criminal histories</i>		
Previous convictions (excluding drink-driving) since 1992		
None	60%	26%
1	14%	14%
2	7%	10%
3 or more	20%	50%
Previous convictions for drink-driving since 1992		
0	79%	44%
1	20%	53%
2 or more	1%	4%
Most recent drink driving within 5 years	11%	41%
Prior spells in custody		
Never	94%	81%
Yes, for drink related conviction	0%	1%
Yes, not for drink related conviction	6%	19%
Prior breach of sentence (excluding breach of bail)		
Never	94%	77%
Yes, over 5 years ago	2%	5%
Yes, within 5 years	4%	18%
Mean number of prior community work sentences	0.63	2.23
Mean number of prior fines	0.83	1.82

	Fines	Community work
<i>Employment histories</i>		
Mean monthly earnings for employed people in 6 months before conviction	\$3,190	\$2,259
Prior employment and benefit status in month before conviction		
Employed and not on benefit	60%	39%
Employed and on benefit	4%	7%
On benefit	13%	31%
Not employed, on benefit or in custody	23%	22%
Mean number of months on benefit before conviction between months		
2 to 6	0.80	1.78
7 to 12	0.90	1.95
13 to 18	0.88	1.85
19 to 36	2.62	5.38
Mean number of months employed before conviction between months		
2 to 6	3.15	2.48
7 to 12	3.73	3.09
13 to 18	3.65	3.12
19 to 36	9.90	8.59
<i>Post conviction outcomes</i>		
Mean proportion of employed post conviction		
1- 12 months	0.57	0.41
12-24 months	0.53	0.41
24-36 months	0.51	0.41
Mean proportion on benefit post conviction		
1- 12 months	0.20	0.44
12-24 months	0.22	0.44
24-36 months	0.21	0.43
Mean proportion not employed, not on benefit, not in custody post conviction		
1- 12 months	0.27	0.21
12-24 months	0.29	0.21
24-36 months	0.31	0.22
Mean proportion in custody post conviction		
1- 12 months	0.00	0.02
12-24 months	0.01	0.02
24-36 months	0.01	0.02
Mean reconviction rate (excluding breach)		
within 6 months	13%	22%
within 12 months	19%	35%
within 24 months	28%	49%
Mean breach of community sentence rate		
within 6 months	1%	12%
within 12 months	2%	24%
within 24 months	5%	32%

Notes: Counts have been randomly rounded to base 3. Figures have been derived from the Integrated Data Infrastructure managed by Statistics NZ.

Appendix Table 4 - Characteristics of cases for people sentenced to community work and fines in 2008 and 2009 for shoplifting (estimated value under \$500)

	Fines	Community work
Number of cases	1,578	2,364
<i>Demographic characteristics</i>		
Female	41%	41%
European	43%	40%
Māori	47%	53%
Pacific	5%	5%
Other ethnicity	5%	2%
Aged 17-24	42%	45%
Aged 25-34	21%	25%
Aged 35-44	20%	19%
Aged 45-54	11%	9%
Aged over 54	5%	2%
<i>Court Circuit</i>		
Auckland ³⁹	15%	12%
Christchurch	18%	11%
Dunedin	4%	4%
Gisborne	1%	2%
Hamilton	7%	7%
Invercargill	1%	2%
Manukau	7%	7%
Napier	6%	7%
Nelson	3%	6%
New Plymouth	1%	3%
North Shore	Suppressed	Suppressed
Palmerston	3%	6%
Rotorua	6%	7%
Tauranga	8%	8%
Wanganui	1%	3%
Wellington	14%	12%
Whangarei	4%	5%
<i>Offence related</i>		
Total charges in case		
	1	85%
	2	12%
	3 or more	3%
Multiple concurrent shoplifting charges	5%	18%
Concurrent breach of sentence charges	7%	15%
Pleaded guilty	97%	99%

³⁹ Includes Waitakere court circuit.

	Fines	Community work
Sentences		
Dollar amount of fine		
Less than or equal to \$100	27%	
Between \$100 and \$200	45%	
Between \$200 and \$250	12%	
More than \$250	16%	
Length of community work		
Less than or equal to 40 hours		47%
Between 40 and 50 hours		12%
Between 50 and 80 hours		23%
More than 80 hours		18%
Criminal histories		
Previous convictions since 1992		
Less than 3	37%	18%
3 to 10	31%	29%
11 to 20	14%	20%
21 or more	18%	33%
Previous convictions for shoplifting since 1992		
0	62%	39%
1	19%	18%
2	7%	12%
3	3%	9%
4	2%	5%
5 to 6	2%	7%
7 or more	4%	11%
Most recent shoplifting within 5 years	27%	53%
Had a prior spell in custody (including remand)	21%	36%
Had a conviction (excluding breach) in past 12 months	40%	64%
Prior breach of sentence (excluding breach of bail)		
Never	63%	41%
yes, over 5 years ago	9%	8%
yes, within 5 years	28%	50%
Mean number of prior community work sentences	3.58	6.42
Mean number of prior fines	2.17	2.52
Employment histories		
Mean monthly earnings for employed people in 6 months before conviction	\$1,665	\$1,278
Mean number of months on benefit before conviction between months		
1 to 6	2.67	3.02
7 to 36	12.93	14.68
Mean number of months employed before conviction between months		
1 to 6	1.36	0.94
7 to 36	9.06	7.09

		Fines	Community work
<i>Post conviction outcomes</i>			
Mean proportion of employed post conviction			
	1- 12 months	0.23	0.14
	12-24 months	0.21	0.15
	24-36 months	0.21	0.17
Mean proportion on benefit post conviction			
	1- 12 months	0.60	0.69
	12-24 months	0.61	0.68
	24-36 months	0.61	0.67
Mean proportion not employed, not on benefit, not in custody post conviction			
	1- 12 months	0.21	0.18
	12-24 months	0.21	0.15
	24-36 months	0.21	0.15
Mean proportion in custody post conviction			
	1- 12 months	0.04	0.08
	12-24 months	0.04	0.09
	24-36 months	0.05	0.09
Mean reconviction rate (excluding breach)			
	within 6 months	31%	41%
	within 12 months	47%	62%
	within 24 months	60%	76%
Mean breach of community sentence rate			
	within 6 months	8%	27%
	within 12 months	16%	45%
	within 24 months	25%	57%

Notes: Counts have been randomly rounded to base 3. Figures have been derived from the Integrated Data Infrastructure managed by Statistics NZ.

Appendix Table 5 - Characteristics of cases for people sentenced to community work and fines in 2008 and 2009 for common assault

	Fines	Community work
Number of cases	993	2,100
<i>Demographic characteristics</i>		
Female	19%	22%
European	49%	40%
Māori	34%	47%
Pacific	10%	10%
Other ethnicity	6%	3%
Aged 17-24	42%	54%
Aged 25-34	22%	24%
Aged 35-44	22%	15%
Aged 45-54	11%	6%
Aged over 54	2%	1%
<i>Court Circuit</i>		
Auckland ⁴⁰	13%	10%
Christchurch	23%	13%
Dunedin	6%	8%
Gisborne	1%	3%
Hamilton	5%	7%
Invercargill	2%	4%
Manukau	5%	6%
Napier	6%	4%
Nelson	4%	5%
New Plymouth	3%	5%
North Shore	Suppressed	Suppressed
Palmerston	7%	5%
Rotorua	4%	5%
Tauranga	3%	7%
Wanganui	2%	3%
Wellington	13%	8%
Whangarei	5%	7%
<i>Offence related</i>		
Total charges in case		
	1	83%
	2	14%
	3 or more	4%
Multiple concurrent common assault charges	5%	12%
Concurrent breach of sentence charges	3%	9%
Pleaded guilty	94%	95%

⁴⁰ Includes Waitakere court circuit.

	Fines	Community work
Sentences		
Dollar amount of fine		
Less than or equal to \$250	27%	
Between \$250 and \$350	24%	
Between \$350 and \$600	40%	
More than \$600	8%	
Length of community work		
Less than or equal to 50 hours		24%
Between 50 and 80 hours		31%
Between 80 and 120 hours		23%
More than 120 hours		22%
Criminal histories		
Previous convictions since 1992		
None	26%	17%
1	16%	10%
2	11%	10%
3 or more	47%	64%
Previous convictions for violence since 1992		
0	22%	13%
1	15%	9%
2 or more	63%	78%
Had a prior serious violence conviction since 1992	10%	17%
Most recent serious violence within 5 years	4%	9%
Had a prior spells in custody (including remand)		
Never	77%	65%
yes, not for violence	13%	23%
yes, for violence	40%	64%
Prior breach of sentence (excluding breach of bail)		
Never	83%	68%
Yes, over 5 years ago	6%	8%
Yes, within 5 years	11%	24%
Mean number of prior community work sentences	2.02	3.76
Mean number of prior fines	1.87	2.42
Employment histories		
Mean monthly earnings for employed people in 6 months before conviction	\$2,630	\$ 2,024
Status in month before conviction		
Employed and not on benefit	50%	32%
Employed and on benefit	5%	6%
On benefit	23%	35%
Not employed, on benefit or in custody	21%	25%
Mean number of months on benefit before conviction between months		
1 to 6	1.36	1.89
7 to 18	3.02	3.87
19 to 36	4.04	5.07

	Fines	Community work
Mean number of months employed before conviction between months		
1 to 6	2.78	2.08
7 to 18	6.73	5.44
19 to 36	9.03	7.09
Mean number of months in custody before conviction between months		
1 to 6	0.03	0.13
7 to 18	0.12	0.34
19 to 36	0.29	0.63
<i>Post conviction outcomes</i>		
Mean proportion of employed post conviction		
1- 12 months	0.48	0.35
12-24 months	0.43	0.33
24-36 months	0.43	0.34
Mean proportion on benefit post conviction		
1- 12 months	0.31	0.47
12-24 months	0.35	0.49
24-36 months	0.34	0.46
Mean proportion not employed, not on benefit, not in custody post conviction		
1- 12 months	0.25	0.21
12-24 months	0.25	0.20
24-36 months	0.27	0.21
Mean proportion in custody post conviction		
1- 12 months	0.01	0.04
12-24 months	0.03	0.06
24-36 months	0.03	0.06
Mean reconviction rate (excluding breach)		
within 6 months	21%	30%
within 12 months	33%	48%
within 24 months	47%	63%
Mean breach of community sentence rate		
within 6 months	4%	18%
within 12 months	8%	34%
within 24 months	12%	43%

Notes: Counts have been randomly rounded to base 3. Figures have been derived from the Integrated Data Infrastructure managed by Statistics NZ.

Appendix Table 6 - Marginal effects for logistic regression to predict the probability of receiving a fine compared to community work for aggravated drink-driving

Additional factors included in base model from left to right	Base demographic	model: current case	criminal history	employment & benefit	court circuit
Female	-0.058*** 0.010	-0.064*** 0.016	-0.141*** 0.030	-0.056* 0.031	-0.064** 0.030
Age : 32-39 (17-31)	0.187*** 0.016	0.191*** 0.026	0.117*** 0.029	0.089*** 0.031	0.094*** 0.026
Age : 48plus (17-31)	0.322*** 0.019	0.317*** 0.031	0.152*** 0.031	0.119*** 0.037	0.120*** 0.029
Māori (European/Other)	-0.066*** 0.008	-0.075*** 0.015	-0.135*** 0.019	-0.115*** 0.023	-0.095*** 0.021
Pacific Islander (European/Other)	-0.068*** 0.011	-0.076*** 0.017	-0.096*** 0.032	-0.096*** 0.033	-0.151*** 0.034
Month relative to Jan 2008	-0.001* 0.001	-0.002** 0.001	-0.003*** 0.001	-0.002* 0.001	-0.002** 0.001
Standardised alcohol level		-0.063*** 0.014	-0.125*** 0.018	-0.108*** 0.024	-0.105*** 0.019
Multiple concurrent drink-drive		-0.126*** 0.038	-0.367*** 0.130	-0.365** 0.161	-0.378** 0.172
Total charges in case: 2 (1)		-0.078*** 0.018	-0.133*** 0.030	-0.140*** 0.031	-0.154*** 0.030
Total charges in case: 3 or more (1)		-0.119*** 0.027	-0.242*** 0.061	-0.249*** 0.065	-0.243*** 0.067
Previous convictions (excluding drink-driving) since 1992: 1 to 3 (0)			0.010	0.016	0.012
			0.024	0.021	0.020
	4 to 9 (0)		0.045	0.056**	0.051**
			0.030	0.027	0.023
	10 or more (0)		0.011	0.036	0.026
			0.039	0.035	0.031
Previous drink driving convictions 3 (<3)			-0.150***	-0.154***	-0.162***
			0.032	0.036	0.035
	4 (<3)		-0.198***	-0.216***	-0.213***
			0.062	0.066	0.067
	5 or more (<3)		-0.079	-0.108	-0.112
			0.086	0.085	0.082
Most recent drink driving within 5 years			-0.252***	-0.251***	-0.257***
			0.020	0.024	0.023
Prior community work: 1 (0)			-0.148***	-0.133***	-0.139***
			0.025	0.028	0.026
	2 or more (0)		-0.203***	-0.182***	-0.193***
			0.026	0.030	0.028
Prior fine: 1			-0.145***	-0.140***	-0.136***

Additional factors included in base model from left to right	Base demographic	model: current case	criminal history	employment & benefit	court circuit
(0)					
			0.026	0.028	0.026
	2 or more (0)		-0.211***	-0.216***	-0.211***
			0.026	0.028	0.026
Observations	5859	5802	5802	5802	5802
Pseudo R2	0.07	0.103	0.18	0.2	0.218

*Notes: Standard errors are shown on line below estimates. Employment, benefit, and earnings histories, court circuit and variables with insignificant coefficients are included in the model but are not shown for brevity. Full results are available from authors on request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

Appendix Table 7 - Marginal effects for logistic regression to predict the probability of receiving community work compared to a fine for drink-driving

Additional factors included in base model from left to right	Base model: demographic	current case	criminal history	employment & benefit	court circuit
Female	0.013*** (0.005)	0.004 (0.004)	-0.022*** (0.002)	0.002 (0.002)	0.001 (0.001)
Age : 32-39 (17-31)	0.047*** (0.005)	0.030*** (0.005)	0.015*** (0.002)	0.010*** (0.002)	0.008*** (0.001)
Age : 40-47 (17-31)	0.079*** (0.005)	0.051*** (0.007)	0.019*** (0.002)	0.012*** (0.002)	0.009*** (0.001)
Age : 48plus (17-31)	0.098*** (0.005)	0.062*** (0.009)	0.018*** (0.002)	0.012*** (0.002)	0.010*** (0.001)
Māori (European/Other)	-0.158*** (0.007)	-0.118*** (0.013)	-0.032*** (0.003)	-0.020*** (0.003)	-0.012*** (0.002)
Pacific Islander (European/Other)	-0.017** (0.007)	-0.001 (0.006)	0.003 (0.002)	0.003 (0.002)	-0.007*** (0.002)
Other	0.098*** (0.006)	0.066*** (0.009)	0.016*** (0.002)	0.012*** (0.002)	0.004*** (0.001)
Month relative to Jan 2008	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Standardised alcohol level		-0.059*** (0.008)	-0.025*** (0.002)	-0.020*** (0.003)	-0.014*** (0.002)
Had a blood test (breath)		0.017*** (0.005)	0.004* (0.002)	0.002 (0.002)	0.001 (0.001)
Multiple concurrent drink-drive		-0.164*** (0.030)	-0.102*** (0.018)	-0.086*** (0.018)	-0.061*** (0.012)
Concurrent disqualified driving		-0.258*** (0.030)	-0.035*** (0.008)	-0.028*** (0.007)	-0.020*** (0.005)
Concurrent serious driving charge		-0.038*** (0.012)	-0.027*** (0.007)	-0.024*** (0.006)	-0.015*** (0.004)
Concurrent breach of sentence		-0.102*** (0.023)	-0.013* (0.008)	-0.006 (0.006)	-0.006 (0.004)
Total charges in case: 2 (1)		-0.077*** (0.011)	-0.033*** (0.004)	-0.024*** (0.004)	-0.017*** (0.003)
Total charges in case: 3 or more (1)		-0.283*** (0.028)	-0.150*** (0.015)	-0.113*** (0.017)	-0.082*** (0.011)
Previous convictions (excluding drink-driving): 1 (0)			-0.017*** (0.003)	-0.010*** (0.003)	-0.008*** (0.002)
2 (0)			-0.030*** (0.005)	-0.017*** (0.004)	-0.011*** (0.003)
3 or more (0)			-0.027*** (0.005)	-0.014*** (0.004)	-0.010*** (0.003)
Previous drink driving convictions: 1 (0)			-0.044*** (0.005)	-0.040*** (0.006)	-0.026*** (0.004)
2 or more (0)			-0.091*** (0.015)	-0.082*** (0.016)	-0.064*** (0.012)

<i>Continued</i>	<i>Base model: demographic</i>	current case	criminal history	employment & benefit history	Court Circuit
Most recent drink driving within 5 years			-0.052*** (0.005)	-0.039*** (0.006)	-0.031*** (0.004)
Prior breach of sentence over 5 years ago			0.003 (0.004)	0.002 (0.003)	0.001 (0.002)
Prior breach of sentence within 5 years			-0.021*** (0.004)	-0.010*** (0.003)	-0.008*** (0.002)
Prior spell in custody			-0.010*** (0.003)	-0.003 (0.002)	-0.003* (0.002)
Prior community work:	1 (0)		-0.042*** (0.005)	-0.030*** (0.005)	-0.020*** (0.003)
	2 (0)		-0.055*** (0.006)	-0.038*** (0.006)	-0.024*** (0.004)
	3 or more (0)		-0.056*** (0.007)	-0.037*** (0.006)	-0.024*** (0.004)
Prior fine:	1 (0)		-0.012*** (0.003)	-0.009*** (0.002)	-0.007*** (0.002)
	2 or more (0)		-0.009*** (0.004)	-0.010*** (0.003)	-0.007*** (0.002)
Observations	31476	31476	31476	31476	31476
Pseudo R2	0.062	0.132	0.25	0.27	0.29

See Notes following Appendix Table 6

Appendix Table 8 - Marginal effects for logistic regression to predict the probability of receiving a fine compared to community work for shoplifting (under \$500)

Additional factors included in base model from left to right	Base model: demographic	current case	criminal history	employment & benefit	Court Circuit
Female	0.006 0.017	0.007 0.017	-0.040*** 0.015	-0.033** 0.015	-0.025** 0.011
Age : 2 nd quintile (1 st)	-0.039 0.026	-0.049* 0.027	0.041** 0.019	0.037** 0.019	0.026* 0.013
Age : 3 rd quintile (1 st)	-0.051** 0.025	-0.063** 0.026	0.070*** 0.018	0.062*** 0.020	0.043*** 0.014
Age : 4 th quintile (1 st)	-0.023 0.025	-0.040 0.026	0.101*** 0.019	0.092*** 0.020	0.064*** 0.015
Age : 5 th quintile (1 st)	0.076*** 0.025	0.047* 0.025	0.125*** 0.018	0.115*** 0.021	0.075*** 0.016
Māori (European/Other)	-0.046*** 0.017	-0.054*** 0.017	-0.015 0.014	-0.009 0.013	0.001 0.009
Pacific Islander (European/Other)	0.011 0.038	0.024 0.038	-0.004 0.029	0.000 0.028	-0.012 0.022
Month relative to Jan 2008	-0.005*** 0.001	-0.006*** 0.001	-0.005*** 0.001	-0.004*** 0.001	-0.003*** 0.001
Concurrent breach charge		0.094** 0.038	0.106*** 0.018	0.100*** 0.018	0.067*** 0.014
Total charges in case: 2 (1)		-0.231*** 0.033	-0.266*** 0.030	-0.263*** 0.032	-0.211*** 0.033
Total charges in case: 3 or more (1)		-0.425*** 0.034	-0.554*** 0.034	-0.554*** 0.035	-0.545*** 0.045
Previous convictions: 3 -10 (< 3)			-0.063** 0.026	-0.058** 0.025	-0.044** 0.018
11 -20 (<3)			-0.119*** 0.041	-0.108*** 0.038	-0.074*** 0.028
21 or more (<3)			-0.155*** 0.050	-0.132*** 0.044	-0.088*** 0.032
Most recent shoplifting conviction within 5 years			-0.141*** 0.031	-0.145*** 0.022	-0.121*** 0.021
Convicted (excluding breach) prior year			-0.081*** 0.017	-0.076*** 0.017	-0.056*** 0.013
Prior community work: 1 (0)			-0.142*** 0.028	-0.141*** 0.028	-0.099*** 0.024
2 or more (0)			-0.231*** 0.034	-0.232*** 0.034	-0.177*** 0.034
Prior fine: 1 (0)			0.000 0.017	-0.005 0.017	
2 or more (0)			0.051***	0.042**	
Observations	3942	3942	3942	3942	3942
Pseudo R2	0.012	0.074	0.182	0.193	0.223

See Notes following Appendix Table 6

Appendix Table 9 - Marginal effects for logistic regression to predict the probability of receiving a fine compared to community work for common assault (manual)

Additional factors included in base model from left to right	Base model: demographic	current case	criminal history	employment & benefit	Court Circuit
Female	-0.041	-0.041	-0.118***	-0.054*	-0.028
	0.026	0.026	0.027	0.028	0.023
Age : 2 nd quintile (1 st)	0.072**	0.053*	0.094***	0.084***	0.069***
	0.031	0.030	0.024	0.028	0.024
Age : 3 rd quintile (1 st)	0.073**	0.042	0.119***	0.107***	0.088***
	0.033	0.032	0.024	0.029	0.026
Age : 4 th quintile (1 st)	0.092***	0.069**	0.133***	0.129***	0.101***
	0.032	0.031	0.024	0.029	0.026
Age : 5 th quintile (1 st)	0.217***	0.174***	0.172***	0.180***	0.139***
	0.029	0.028	0.025	0.029	0.029
Māori (European/Other)	-0.139***	-0.123***	-0.065***	-0.063***	-0.035*
	0.021	0.022	0.020	0.021	0.019
Pacific Islander (European/Other)	-0.024	-0.016	-0.039	-0.040	-0.056*
	0.035	0.035	0.032	0.033	0.032
Assault code=1593 (1653)	-0.264***	-0.272***	-0.306***	-0.320***	-0.313***
	0.020	0.020	0.021	0.021	0.026
Month relative to Jan 2008	-0.008***	-0.008***	-0.005***	-0.005***	-0.004***
	0.001	0.001	0.001	0.001	0.001
Total charges in case: 2 (1)		-0.214***	-0.185***	-0.182***	-0.163***
		0.035	0.029	0.029	0.030
Total charges in case: 3 or more (1)		-0.387***	-0.371***	-0.359***	-0.353***
		0.044	0.045	0.045	0.051
Previous convictions (excluding violence): 1 (0)			-0.001	0.002	0.009
			0.034	0.031	0.026
2 (0)			-0.051	-0.058	-0.054
			0.042	0.038	0.034
3 or more (0)			-0.050	-0.080**	-0.078***
			0.040	0.033	0.030
Previous convictions for violence: 1(0)			-0.104***	-0.117***	-0.118***
			0.034	0.035	0.034
2 or more(0)			-0.221***	-0.233***	-0.224***
			0.031	0.030	0.034
Prior breach of sentence			-0.025	-0.028	-0.035
			0.031	0.032	0.029
Prior spell in custody			-0.078**		

		0.033				
<i>Continued</i>		<i>Base model:</i> demographic	current case	criminal history	employment & benefit history	Court Circuit
Number of months in custody before conviction:	Prior 6 months				-0.034	-0.014
	7 to 18 months prior				0.027	0.023
	19 to 36 months prior				-0.001	0.000
					0.012	0.010
					0.003	0.004
					0.007	0.006
Prior community work:	1 (0)			-0.051	-0.043	-0.030
				0.034	0.035	0.030
	2 (0)			-0.128***	-0.115**	-0.101**
				0.047	0.048	0.045
	3 or more (0)			-0.171***	-0.170***	-0.145***
				0.039	0.039	0.039
Prior fine:	1 (0)			0.010		
				0.028		
	2 (0)			-0.005		
				0.033		
	3 or more (0)			-0.039		
				0.034		
Observations		3093	3093	3093	3093	3093
Pseudo R2		0.088	0.122	0.202	0.215	0.255

See Notes following Appendix Table 6

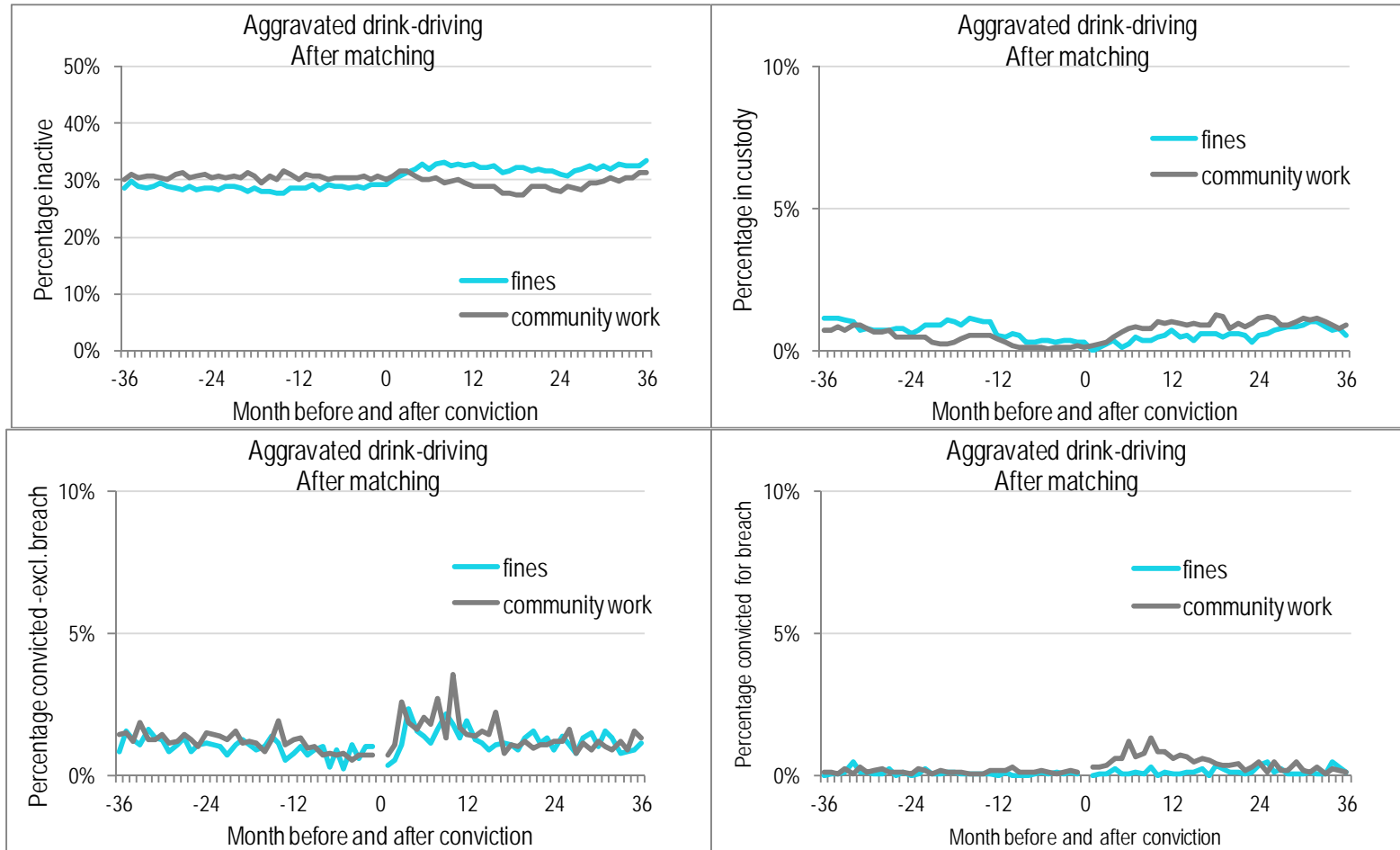
Appendix Table 10 - Marginal effects for logistic regression to predict the probability of receiving a community work compared to a fine for all offences

Additional factors included in base model from left to right	<i>Base model:</i> demographic	current case	criminal history	employment & benefit	Court Circuit
Female	0.044*** (0.004)	-0.010*** (0.003)	-0.049*** (0.003)	-0.012*** (0.004)	-0.011*** (0.003)
Age : 2 nd quintile (1 st)	-0.070*** (0.005)	-0.039*** (0.004)	0.041*** (0.005)	0.038*** (0.005)	0.034*** (0.005)
Age : 3 rd quintile (1 st)	-0.084*** (0.004)	-0.038*** (0.004)	0.065*** (0.005)	0.058*** (0.005)	0.054*** (0.005)
Age : 4 th quintile (1 st)	-0.100*** (0.004)	-0.013*** (0.004)	0.088*** (0.005)	0.082*** (0.005)	0.078*** (0.005)
Age : 5 th quintile (1 st)	-0.044*** (0.005)	0.036*** (0.005)	0.104*** (0.005)	0.100*** (0.005)	0.098*** (0.005)
Māori (European)	-0.146*** (0.003)	-0.084*** (0.003)	-0.054*** (0.003)	-0.047*** (0.003)	-0.040*** (0.003)
Pacific Islander (European)	-0.008 (0.005)	-0.013*** (0.005)	-0.011** (0.005)	-0.013*** (0.005)	-0.035*** (0.005)
Other ethnicity(European)	0.196*** (0.007)	0.091*** (0.005)	0.036*** (0.005)	0.035*** (0.005)	0.019*** (0.005)
Month relative to Jan 2008		-0.000 (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)
Offence group: Theft (Dangerous Acts)		-0.100*** (0.008)	-0.047*** (0.008)	-0.020*** (0.007)	-0.023*** (0.007)
Drugs		0.099*** (0.006)	0.125*** (0.006)	0.138*** (0.006)	0.136*** (0.006)
Weapons		0.050*** (0.009)	0.078*** (0.010)	0.096*** (0.010)	0.095*** (0.009)
Traffic		-0.021*** (0.006)	0.009 (0.006)	0.010* (0.006)	0.005 (0.006)
Against justice		-0.175*** (0.008)	-0.100*** (0.007)	-0.089*** (0.007)	-0.089*** (0.007)
Seriousness score (log):	Decile 2(1)	0.364*** (0.081)	0.360*** (0.079)	0.364*** (0.078)	0.359*** (0.076)
	Decile 3 (1)	-0.408*** (0.017)	-0.429*** (0.016)	-0.429*** (0.016)	-0.421*** (0.016)
	Decile 4 (1)	-0.406*** (0.017)	-0.454*** (0.016)	-0.459*** (0.016)	-0.451*** (0.016)
	Decile 7 (1)	-0.579*** (0.017)	-0.533*** (0.016)	-0.536*** (0.016)	-0.529*** (0.016)

	Decile 8 (1)	-0.544*** (0.017)	-0.526*** (0.017)	-0.528*** (0.016)	-0.520*** (0.016)
	Decile 9 (1)	-0.753*** (0.017)	-0.730*** (0.016)	-0.741*** (0.016)	-0.731*** (0.016)
	Decile 10 (1)	-0.808*** (0.018)	-0.791*** (0.017)	-0.796*** (0.017)	-0.782*** (0.016)
Continued	<i>Base model:</i> demographic	current case	criminal history	employment & benefit	Court Circuit
Total charges in case:	2 (1)	-0.094*** (0.003)	-0.087*** (0.003)	-0.084*** (0.003)	-0.083*** (0.003)
Total charges in case: 3 or more (1)		-0.239*** (0.005)	-0.223*** (0.005)	-0.216*** (0.005)	-0.213*** (0.005)
Previous convictions:	1-2 (0)		-0.068*** (0.006)	-0.071*** (0.005)	-0.070*** (0.005)
	3-5 (0)		-0.091*** (0.007)	-0.096*** (0.006)	-0.095*** (0.006)
	5 or more (0)		-0.090*** (0.008)	-0.093*** (0.007)	-0.094*** (0.006)
Previous conviction within 5 years			-0.061*** (0.004)	-0.058*** (0.004)	-0.058*** (0.004)
Prior breach of sentence			-0.022*** (0.004)	-0.009** (0.004)	-0.009** (0.004)
Prior spell in custody			-0.037*** (0.005)	-0.030*** (0.005)	-0.029*** (0.005)
Prior community work:	1 (0)		-0.073*** (0.005)	-0.067*** (0.005)	-0.063*** (0.005)
	2 (0)		-0.078*** (0.006)	-0.069*** (0.006)	-0.065*** (0.006)
	3 or more (0)		-0.094*** (0.005)	-0.082*** (0.005)	-0.078*** (0.005)
Observations	83154	83154	83154	83154	83154
Pseudo R2	0.047	0.313	0.362	0.374	0.384

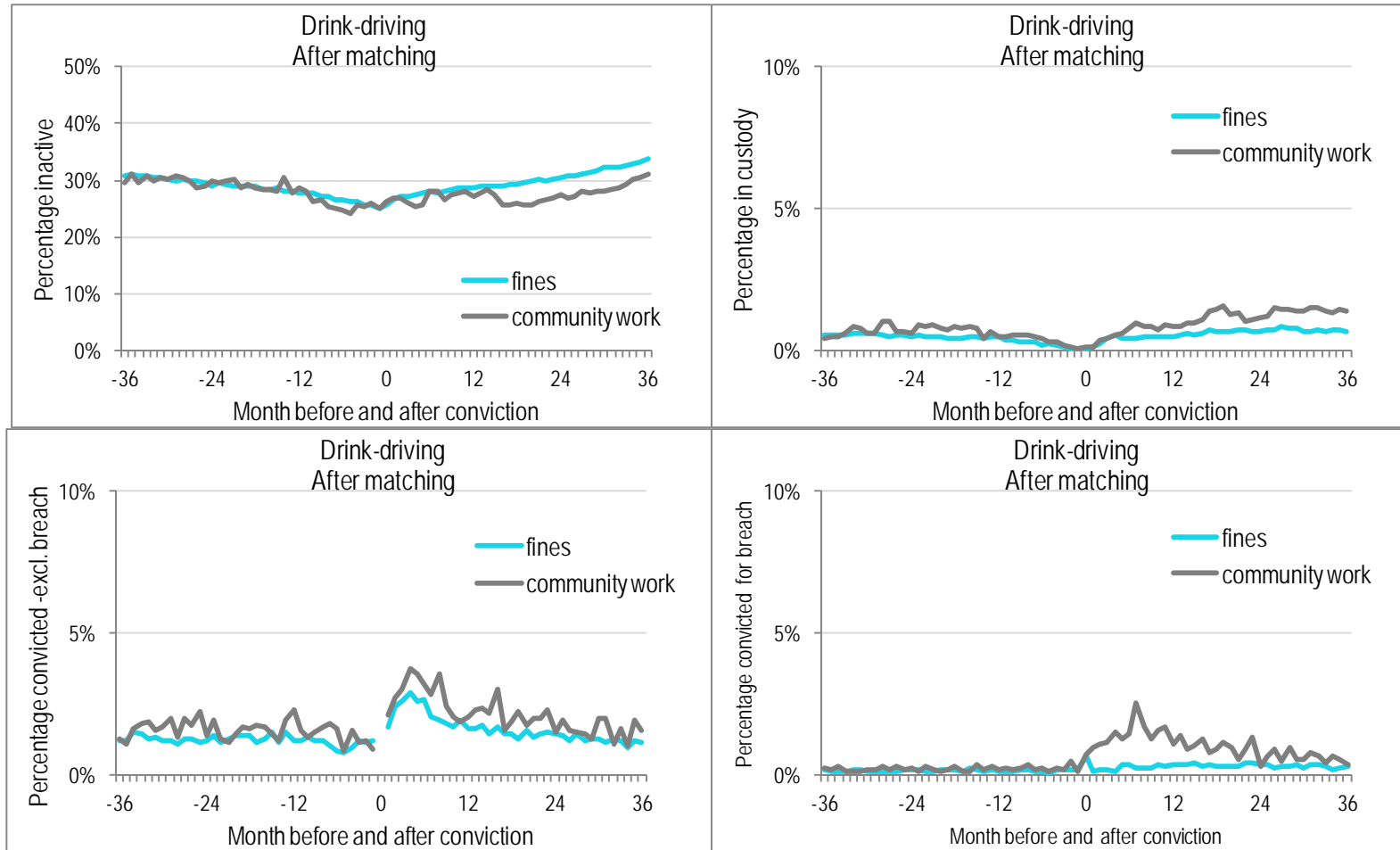
See Notes following Appendix Table 6

Appendix Figure 1 - Conviction, inactivity, and in custody indicators for aggravated drink-driving after matching



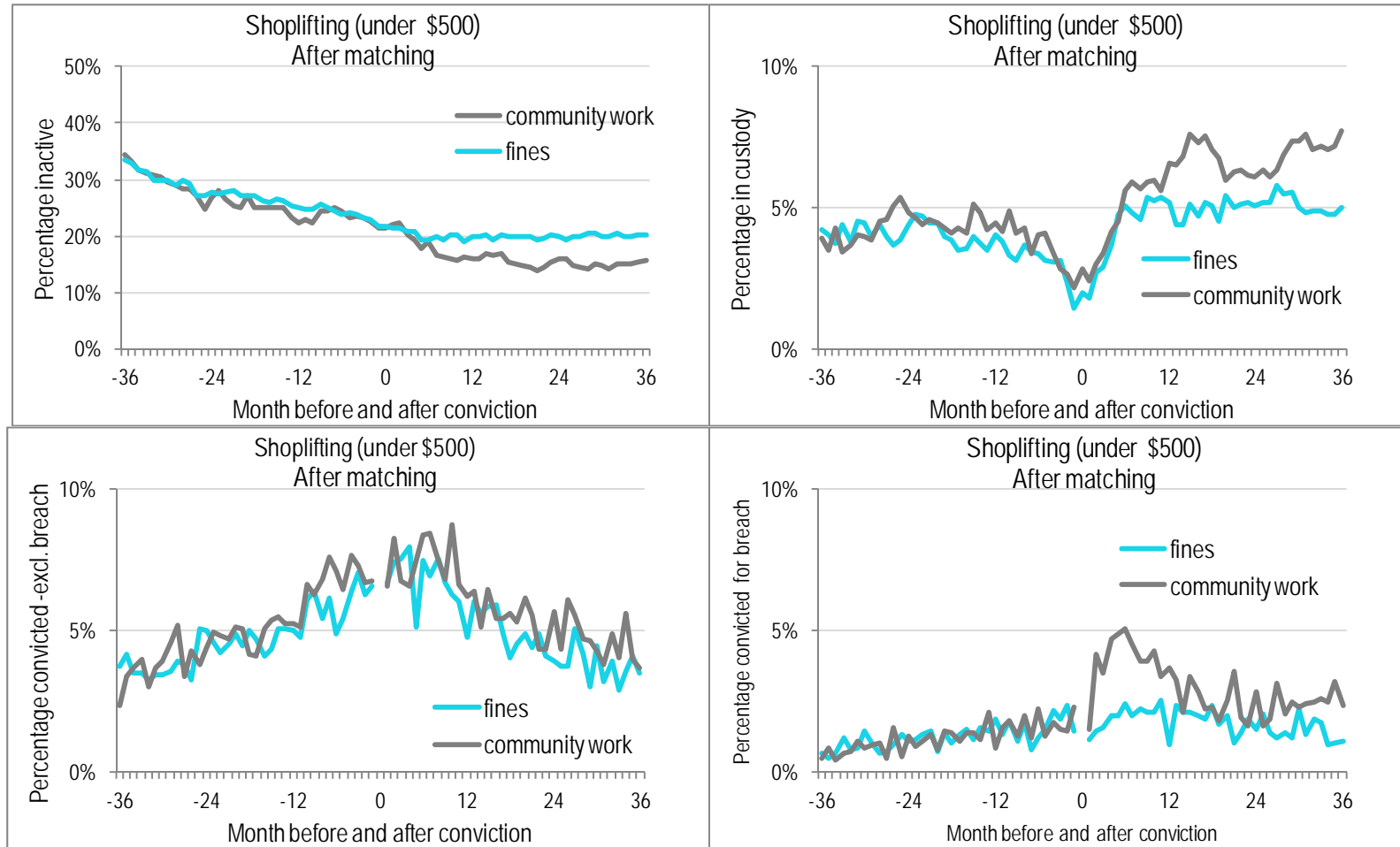
Notes: All figures refer to the mean proportion of cases with a particular status in each month. "Inactive" refers to offenders who were not employed, not on benefit and not in custody in that month; "In custody" includes offenders on remand; "Convicted-excl breach" includes all convictions that were not breach of community or custodial sentences and "convicted for breach" includes all breach convictions.

Appendix Figure 2 - Conviction, inactivity, and in custody indicators for drink-driving after matching



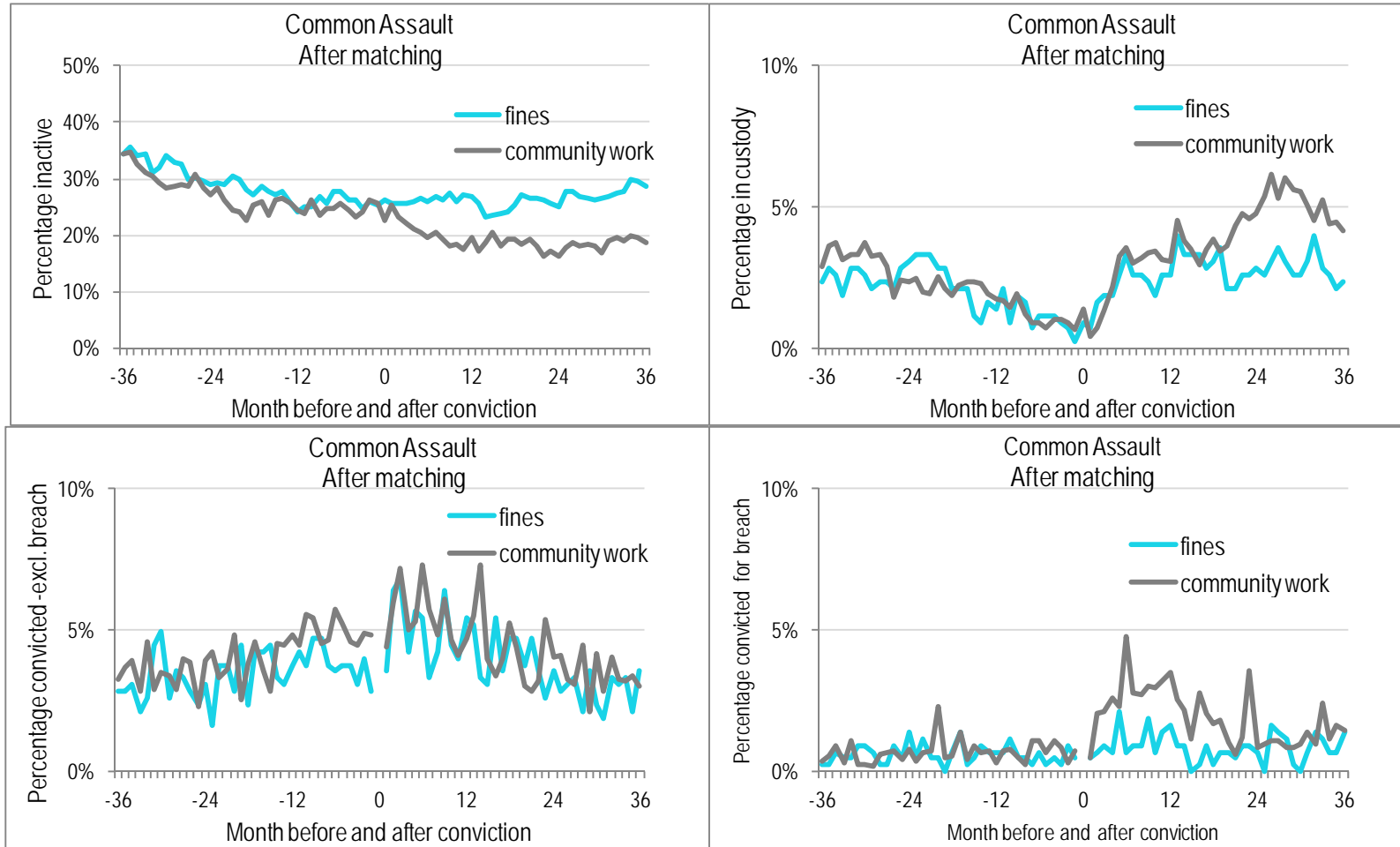
Notes: All figures refer to the mean proportion of cases with a particular status in each month. "Inactive" refers to offenders who were not employed, not on benefit and not in custody in that month; "In custody" includes offenders on remand; "Convicted-excl. breach" includes all convictions that were not breach of community or custodial sentences and "convicted for breach" includes all breach convictions.

Appendix Figure 3 - Conviction, inactivity, and in custody indicators for shoplifting after matching



Notes: All figures refer to the mean proportion of cases with a particular status in each month. "Inactive" refers to offenders who were not employed, not on benefit and not in custody in that month; "In custody" includes offenders on remand; "Convicted-excl breach" includes all convictions that were not breach of community or custodial sentences and "convicted for breach" includes all breach convictions.

Appendix Figure 4 - Conviction, inactivity, and in custody indicators for common assault after matching



Notes: All figures refer to the mean proportion of cases with a particular status in each month. "Inactive" refers to offenders who were not employed, not on benefit and not in custody in that month; "In custody" includes offenders on remand; "Convicted-excl. breach" includes all convictions that were not breach of community or custodial sentences and "convicted for breach" includes all breach convictions.