



# The economic and social factors underpinning Indigenous contact with the justice system: Results from the 2002 NATSISS survey

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*This study uses the 2002 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) to examine the economic and social factors that underpin Indigenous contact with the criminal justice system. The analysis shows that the Indigenous respondents to the NATSISS were far more likely to have been charged with, or imprisoned for, an offence if they abused drugs or alcohol, failed to complete Year 12 or were unemployed. Participating in the Commonwealth Development Employment Scheme (CDEP) appears to reduce the risk of being charged (compared with being unemployed). Other factors that increase the risk of being charged or imprisoned include: experiencing financial stress, living in a crowded household and being a member of the 'stolen generation'.*

## INTRODUCTION

Despite a concerted effort on the part of all Australian Governments to reduce Indigenous contact with the criminal justice system, rates of Indigenous court appearance and imprisonment are now higher than they were at the time of the Royal Commission into Aboriginal Deaths in Custody. In New South Wales (NSW), the rate of Indigenous appearance in court on criminal charges is 13 times that of non-Indigenous Australians (Snowball & Weatherburn 2006). The rate of Indigenous imprisonment in NSW is ten times that of non-Indigenous Australians (Australian Bureau of Statistics 2005a). The high rate of Indigenous contact with the criminal justice system is not unique to NSW – it is found to a greater or lesser extent in all Australian States and Territories (Australian Bureau of Statistics 2005a).

It is difficult to devise ways of reducing Indigenous contact with the criminal

justice system without an understanding of why Indigenous Australians are so often prosecuted and imprisoned. One way to approach this issue is to compare Indigenous people who have had contact with the justice system with those who have not, in terms of factors already known to increase the risk of prosecution and imprisonment. The 2002 Australian Bureau of Statistics (ABS) National Aboriginal and Torres Strait Islander Social Survey (NATSISS) provides an opportunity to pursue this kind of research. Apart from the fact that it is the only existing nationally representative survey that focuses explicitly on Aboriginal and Torres Strait Islanders, it contains a wealth of material highly pertinent to an understanding of Indigenous involvement in crime.<sup>1</sup>

The study reported here uses the 2002 NATSISS data (Australian Bureau of Statistics 2005b) to identify factors which are predictive of Indigenous contact with the criminal justice system. It builds on

earlier work by Hunter (2001), who used the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS) data to examine predictors of Indigenous arrest. The present study differs from Hunter's in three main respects. Firstly, it examines predictor variables that were not available to Hunter in the 1994 NATSIS. Secondly, rather than examine predictors of arrest, the present study examines predictors of being charged with an offence. Thirdly, in addition to examining predictors of being charged with an offence, we examine the predictors of imprisonment.

The remainder of this bulletin is organised as follows. The next section provides some important theoretical and empirical background. The third section provides further detail about the NATSISS data and the statistical methods used to analyse it. We then present the results of our analysis. The final section discusses the results and outlines their implications for policy.

## PAST RESEARCH

The high rate of Indigenous contact with the justice system is in large part a reflection of the high rate of Indigenous involvement in crime (Weatherburn, Fitzgerald & Hua 2003; Snowball & Weatherburn 2006). In searching for possible predictors of Indigenous arrest and imprisonment, it is useful to begin by considering the factors that have been shown to increase the risk of involvement in crime. Although many of the personal and family factors implicated in offending (e.g. poor impulse control, weak parental supervision, poor parental disciplinary practices) are not measured in the NATSISS, the survey does contain a large number of questions that are pertinent to offending. These include:

1. age of person
2. sex of person
3. highest year of school completed
4. labour force status
5. principal source of personal income
6. whether removed from natural family
7. whether relatives removed from natural family
8. whether respondent is a member of a sole-parent family
9. presence of neighbourhood or community problems
10. whether respondent had days without money for basic living expenses over the previous 12 months
11. large household
12. crowded household
13. whether respondent can call on support in time of crisis
14. social involvement
15. social stress
16. drug and alcohol use.<sup>2</sup>

A few brief comments on these factors may facilitate an understanding of their significance to crime, arrest and imprisonment.

### AGE AND SEX

Age is important because the likelihood of involvement in crime (and of being

charged with an offence) increases rapidly from the early teenage years, reaches a peak between the ages of 20 and 24 years and declines steadily after that (Baker 1998; NSW Bureau of Crime Statistics and Research 2006). Gender is important because studies of both self-reported and officially recorded offending show that males are more likely to offend, more likely to be charged with a criminal offence and more likely to receive a prison sentence than females (Blumstein et al. 1986; NSW Bureau of Crime Statistics and Research 2006).

### SCHOOL PERFORMANCE/RETENTION

There is a large body of research showing a close relationship between poor school performance, early school leaving and self-reported/officially recorded involvement in crime (Blumstein et al. 1986; Baker 1998; Maguin & Loeber 1996; National Crime Prevention 1999). Whether this is because poor school performance/early school leaving increases the risk of offending, or because some other factor (e.g. low academic ability) causes both, is unclear (Maguin & Loeber 1996). Measures that improve school performance and/or retention, however, have been shown to reduce the risk of juvenile involvement in crime (MacKenzie 2002).

### UNEMPLOYMENT

Studies tracking the behaviour of individuals over time generally find a strong relationship between unemployment and crime, particularly where offenders from low socio-economic status backgrounds are concerned (Farrington et al. 1986; Good, Pirog-Good & Sickles 1986; Thornberry & Christensen 1984; Fagan & Freeman 1999). In their longitudinal study of 411 London boys, for example, Farrington et al. (1986) found that low socio-economic status offenders commit property crime at a higher rate during periods of unemployment than during periods when they are employed.

The Community Development Employment Projects (CDEP) scheme is one response to the chronically high Indigenous unemployment rate. CDEP participants get paid the equivalent of their entitlement for unemployment benefit in return for working, usually part-time,

on a project that develops the local Indigenous community (Altman, Gray & Levitus 2005). CDEP scheme participants have been found to be less likely to be arrested than Indigenous persons who are unemployed (Office of Evaluation and Audit 1997). In this study, we compare CDEP scheme participants both to those who are employed in non-CDEP work and to those who are unemployed.

### FAMILY DISRUPTION/DISSOLUTION

Hunter (2001) found that Indigenous Australians who were taken away from their natural family were at significantly higher risk of arrest. Although no other study appears to have examined this issue, Hunter's finding is consistent with other research showing that early childhood trauma increases the risk of juvenile involvement in crime (Loeber & Stouthamer-Loeber 1986). A number of studies have also shown that children in sole-parent families are at heightened risk of involvement in crime, particularly where the sole caregiver is poor and/or lacks a close friend, relative or neighbour (Weatherburn & Lind 2001).

### NEIGHBOURHOOD PROBLEMS

There is very little research into the contribution of neighbourhoods to crime, but Weatherburn and Lind (2001) found that juveniles who are poorly supervised by their parents are more likely to become involved in crime if they live in a crime-prone neighbourhood than if they live in a non crime-prone neighbourhood. This finding was attributed to the greater influence of delinquent peers in crime-prone neighbourhoods. A number of studies have found that neighbourhoods with a high percentage of unsupervised peer groups generally have higher rates of involvement in crime (Pratt & Cullen 2005).

### ECONOMIC STRESS

Low socio-economic status and poverty have long been known to be strong correlates of both juvenile and adult involvement in crime (Blumstein et al. 1986). For a while it was thought that this correlation simply reflected bias in the exercise of police discretion. It is now clear,

however, that the relationship between economic well-being and offending, although relatively weak for minor offences, is quite strong for serious offences (Blumstein et al. 1986). Recent research suggests that financial stress increases the risk of child neglect and abuse (and other parenting problems) which, in turn, increases the risk of juvenile involvement in crime (Fergusson et al. 2004).

### LARGE FAMILIES/ HOUSEHOLD CROWDING

Children from large families have been found to be more likely to get involved in crime than children from families with smaller numbers of children (Loeber & Stouthamer-Loeber 1986), partly because of the resource constraints that large families face (Blumstein et al. 1986). Although its causal status is unclear and the avenue through which crowding might effect crime is not obvious, the percentage of 'crowded households' (i.e. households with a large number of people relative to the number of bedrooms) has also been found to be strongly correlated with percentage of residents in an area who have a juvenile criminal record (National Crime Prevention 1999; Weatherburn & Lind 2001).

### LACK OF SOCIAL SUPPORT AND INVOLVEMENT

There is both direct and indirect evidence suggesting that social support and social involvement act to reduce the risk of involvement in crime. The percentage of residents who say they lack social support is a strong independent predictor of the level of crime in an area (Pratt & Cullen 2005). Lack of social support and lack of social involvement are also strong independent predictors of child neglect and abuse (Weatherburn & Lind 2001). Child abuse and neglect, in turn, are known to increase the risk of involvement in crime (Loeber & Stouthamer-Loeber 1986).

### SOCIAL STRESS

Since access to social support appears to reduce the rate of involvement in crime, one would expect social stress to increase it. There is some evidence to support this conjecture. Agnew and White

(1992) found that stressful life events are strongly correlated with self-reported involvement in crime even after controlling for a variety of other factors known to influence involvement in crime. Gendreau, Little and Goggin (1996) have also found interpersonal conflict and personal stress to be strong independent predictors of adult recidivism.

### DRUG AND ALCOHOL ABUSE

The research literature on the relationship between substance abuse and crime is overwhelmingly supportive of the hypothesis that drug and alcohol abuse increase the risk of involvement in crime. Illicit drug dependence increases the rate of involvement in crime, at least in part because of the high costs associated with funding illicit drug dependence (Blumstein et al. 1986). Alcohol abuse, on the other hand, appears to exert a direct effect on the proclivity of individuals to become aggressive and violent in certain situations (Exum 2006). Chikritzhs and Brady (2006) have recently highlighted the problem of Indigenous alcohol abuse. Delahunty and Putt (2006) have recently documented similar problems in relation to illicit drug use.

### DATA AND METHOD

As already noted, the data for this study are drawn from the 2002 NATSISS. This survey, which was conducted from August 2002 to April 2003, involved interviews with Indigenous people aged 15 years or more living in private dwellings.<sup>3</sup> The survey was administered in both community and non-community areas.<sup>4</sup> It had a response rate of 80 per cent within non-community areas. In community areas,<sup>5</sup> 78 per cent fully responded and 94 per cent partially responded. In total, 9,359 Indigenous persons living in 5,887 households were surveyed out of a total Indigenous population of 282,205. In other words, about one in 30 Indigenous Australians took part in the survey.

Our analysis focuses only on adults (respondents who were aged 18 years or more at the time of the survey), a group which accounted for 91.1 per cent of the total Australian sample (8,523 respondents). Two respondents were

removed because they had a missing value for the incarceration variable.

The dependent variables<sup>6</sup> used in our analysis were:

- whether the respondent had ever been charged by police ('Charged'); and
- whether the respondent had been incarcerated in the five years previous to the survey ('Imprisoned').<sup>7</sup>

Our analysis proceeds in two stages. First we examine the bivariate relationships between the independent variables listed above and the two dependent variables. In the second stage, we conduct a multivariate logistic regression analysis to determine which independent variables make an independent contribution to the risk of being charged or imprisoned.<sup>8</sup>

## RESULTS

### BIVARIATE COMPARISONS

The following bivariate comparisons are statistically significant at the five per cent level, unless otherwise stated. They are also weighted using the appropriate person weight included in the NATSISS confidentialised unit record file (CURF). For a point of comparison, Figure 1 shows the distributions of the 'Charged' and 'Imprisoned' variables across the whole Indigenous adult population. It shows that the likelihood of an Indigenous person ever being charged<sup>9</sup> is more than one in three, while the likelihood of being imprisoned in the past five years is one in 13.

### Demographic variables

The first three variables we examine are: age of respondent, sex of respondent, and whether the respondent identified as being of Torres Strait Islander origin.

Tables 1 and 2 consider the relationship between the age and sex of an Indigenous person and their probability of being charged by the police or being imprisoned. Table 1 shows that younger respondents were more likely to have been imprisoned but slightly less likely to be charged than older respondents. The relationship between a respondent's age and the 'Imprisoned' variable is easy to interpret because the information on

imprisonment captures whether or not the respondent had been imprisoned within the previous five years. The 'Charged' variable, on the other hand, captures whether or not the respondent has ever been charged. Since older individuals have been exposed to the possibility of having been charged over a longer period, the relationship between 'Charged' and age is more difficult to interpret.

Table 2 shows that male respondents were considerably more likely to be both charged and imprisoned than female respondents. The male-female ratio is 2.5:1 for charged and 4:1 for imprisoned.

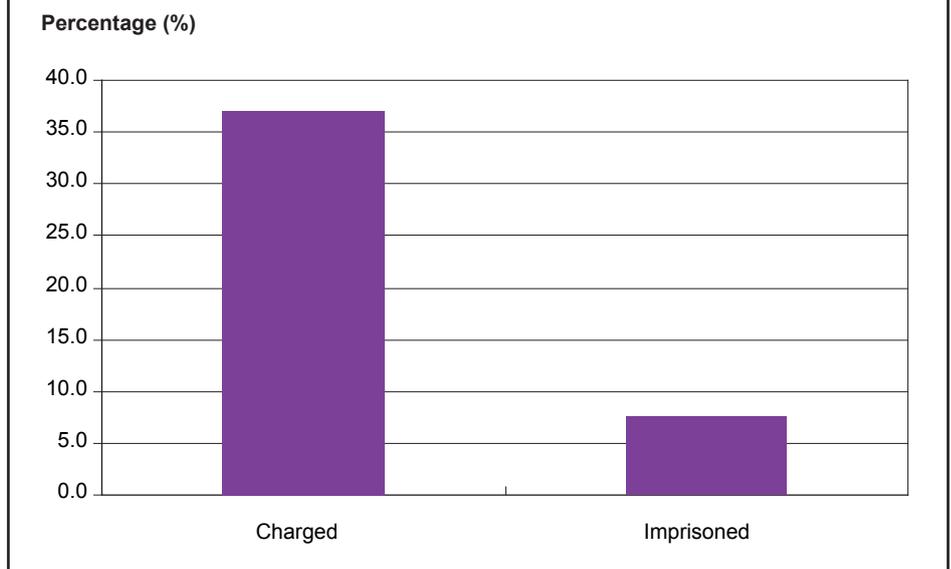
The NATSISS includes a question that asks respondents whether they identify as being Aboriginal, Torres Strait Islander or both. This question is only asked of respondents who live in Queensland (approximately 58 per cent of Torres Strait Islander people), which makes it difficult to draw conclusions about the whole of the Torres Strait Islander population. Table 3 shows the likelihood of being charged or imprisoned according to whether the respondent identifies as an Aboriginal person, a Torres Strait Islander or both. It can be seen that Torres Strait Islander respondents were less likely to be charged than Aboriginal people (slightly under 1 in 4 compared with more than 1 in 3) and to be imprisoned (approximately 1 in 29 compared with 1 in 15). For the group who identified as both Aboriginal and Torres Strait Islander, the likelihood increased for both characteristics, which suggests that they need to be treated as a separate group in the model.

**Economic and labour market indicators**

The following tables explore the link between contact with the criminal justice system and a number of economic indicators that were available through the NATSISS, namely: labour force status and involvement in a CDEP scheme, principal source of income, days without money for basic expenses, and highest level of schooling completed.

Table 4 shows the percentage of respondents charged and imprisoned by their labour force status. For both

**Figure 1: Percentage of respondents who were charged or imprisoned**



**Table 1: Percentage of respondents who were charged or imprisoned by age**

	18 to 24	25 to 34	35 to 44	45 plus
	%	%	%	%
Charged	36.9	38.3	42.1	31.7
Imprisoned	10.7	9.4	7.6	3.3

**Table 2: Percentage of respondents who were charged or imprisoned by sex**

	Male	Female
	%	%
Charged	54.1	21.6
Imprisoned	12.4	3.1

**Table 3: Percentage of Queensland respondents who were charged or imprisoned by Indigenous status**

	Torres Strait Islander	Aboriginal	Both
	%	%	%
Charged	23.9	36.5	44.3
Imprisoned	3.5	6.8	8.3

the charged and imprisoned variables, the 'employed' group have a similar distribution to the 'not in the labour force' (NILF) group. Both have approximately a one in three likelihood of having been charged and a one in 17 chance of previous imprisonment. The 'unemployed' group are more likely to be charged (almost 3 in 5) and considerably more likely to be imprisoned (1 in 5).

Of the employed group, 26 per cent are in a CDEP scheme. Whether to treat this group separately from the rest of the employed group is a difficult question. Table 5 considers the distribution of the two variables of interest with respect to whether a respondent, having stated they were employed, was in a CDEP scheme. The two groups have different likelihoods for both variables. The CDEP group have just over a two in five likelihood of having received a formal charge and a one in eight chance of imprisonment. The non-CDEP group have just under a one in three chance of charge and a one in 28 chance of imprisonment.

Table 6 considers the relationship between a person's principal source of income and their contact with the criminal justice system. The 'Welfare' category includes both CDEP payments and government cash pensions and allowances. Not included in this table were 275 respondents (3.2%) for whom the question was not applicable or the response not stated.

The group receiving welfare as their principal source of income was more likely to be imprisoned (almost 1 in 10) and charged (more than 2 in 5) than either the group receiving income from wages, business or property; or income from another source.

The NATSISS asks households whether they had days without money for basic living expenses in the previous 12 months. We used this as a measure of financial stress. Table 7 looks at the relationship between this variable and a person's likelihood of being charged or imprisoned.

It is clear that respondents who lived within households that had experienced financial stress were more likely to be both charged and imprisoned.

**Table 4: Percentage of respondents who were charged or imprisoned by their labour force status**

	<i>Employed</i>	<i>Unemployed</i>	<i>Not in the labour force</i>
	%	%	%
Charged	33.9	57.6	34.4
Imprisoned	5.8	20.0	5.7

**Table 5: Percentage of respondents who were charged or imprisoned by whether they were involved in CDEP**

	<i>Employed – CDEP</i>	<i>Employed – Non-CDEP</i>
	%	%
Charged	43.7	30.4
Imprisoned	12.0	3.6

**Table 6: Percentage of respondents who were charged or imprisoned by their principal source of income**

	<i>Welfare</i>	<i>Wages or business/property</i>	<i>Other</i>
	%	%	%
Charged	41.2	29.7	30.4
Imprisoned	9.8	3.3	4.1

**Table 7: Percentage of respondents who were charged or imprisoned by their principal source of income**

	<i>Had days without money</i>	<i>Did not have days without money</i>
	%	%
Charged	45.4	30.6
Imprisoned	10.2	5.5

Table 8 explores the link between educational attainment and involvement in the justice system. Clearly, respondents who stayed longer at school were less likely to be either charged or imprisoned. For respondents who completed Year 12, their likelihood of being charged is approximately one in five and their likelihood of imprisonment is one in 30.

For respondents who only completed either Year 10 or Year 11, the likelihood rises to approximately one in 2.6 for being charged and one in 16 for imprisonment. It rises further for students who completed only Year 9 or below (or who did not attend school). This group stands a one in 2.4 chance of being charged and a one in ten chance of being imprisoned.

**SOCIAL INDICATORS**

The following tables explore the link between being charged and being imprisoned, and a number of social indicators. These are: whether the household is 'crowded', number of dependents in the household, whether the household is a 'one-parent' household, whether the respondent is a member of the 'stolen' generation or has a relative who was taken away from their natural family, whether the respondent has social support and whether the respondent is socially isolated.

The link between household crowding, the number dependents in a household and a person's involvement with the criminal justice system is explored in Table 9. We define a 'large' family as a household with three or more dependents and a 'crowded' household as one in which the ratio of the number of people per bedroom is more than two.<sup>10</sup>

The effect of living in a crowded household is far more pronounced for the 'Imprisoned' variable than for the 'Charged' variable. Living in a large household has no effect on the risk of being charged or imprisoned.

Table 10 looks at the effect of living in a sole-parent household with dependent children or students. Living in a sole-parent household appears to reduce the likelihood of being charged or imprisoned. This is in contradiction to most literature on the topic and will need to be considered again when looking at the results of the multivariate model.

Table 11 examines the effect on the risk of being charged or imprisoned of either having been removed from your natural family or of having had a relative who was removed from his/her natural family. The risk of being charged or imprisoned is higher in both cases but is more pronounced, as would be expected, in relation to the respondent's own removal. The likelihood of being charged rises from slightly more than one in three for respondents who were not removed to over one in two for respondents who were removed. For those with relatives removed (irrespective of whether they themselves were removed), the likelihood

**Table 8: Percentage of respondents who were charged or imprisoned by the highest level of school completed**

	<b>Year 12</b>	<b>Year 10 or 11</b>	<b>Year 9 or below</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Charged	21.0	38.8	42.5
Imprisoned	3.3	6.6	10.4

**Table 9: Percentage of respondents who were charged or imprisoned by crowded household and number of dependents in the household**

	<b>Crowded household</b>		<b>Number of dependents in household</b>	
	<b>Yes</b>	<b>No</b>	<b>2 or less</b>	<b>3 or more</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Charged	37.7	36.9	36.8	37.7
Imprisoned	12.7	6.6	7.4	7.9

**Table 10: Percentage of respondents who were charged or imprisoned by family type**

	<b>One parent with dependents</b>	<b>Other family type</b>
	<b>%</b>	<b>%</b>
Charged	35.9	37.3
Imprisoned	7.2	7.6

**Table 11: Percentage of respondents who were charged or imprisoned by removal from natural family**

	<b>Removed from natural family</b>		<b>Relative removed from natural family</b>	
	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Charged	53.6	35.8	42.5	33.1
Imprisoned	16.5	6.7	10.3	5.8

rises from one in three to one in 2.4. The effect on imprisonment is even stronger, with the risk of being imprisoned rising from one in 16 to one in six for those removed from their natural family. For respondents with a relative removed, the same risk rises from one in 17 to one in ten.

In order to measure whether a respondent felt they had social support, we used the question asking whether they felt they had support in the time of a crisis, which required a simple yes/no response. Table 12 looks at the relationship between social support

**Table 12: Percentage of respondents who were charged or imprisoned by social support**

	<i>Has support</i>	<i>Does not have support</i>
	%	%
Charged	36.0	46.8
Imprisoned	6.9	13.5

and whether the respondent has been charged or imprisoned. For respondents who felt they had social support, the likelihood of having been charged was just over one in three and their likelihood of imprisonment was approximately one in 14. For those who felt they did not have support, the likelihood jumps to almost one in two for being charged and approximately one in seven for imprisonment.

**Table 13: Percentage of respondents who were charged or imprisoned by social isolation**

	<i>Involved in social activities</i>	<i>Not involved in social activities</i>
	%	%
Charged	36.4	41.7
Imprisoned	7.6	7.2

Social involvement is another factor of interest. For this variable, we used the NATSISS question asking whether the respondent had been involved in social activities in the last three months. Table 13 shows that respondents who were involved in social activities were less likely to be charged. The difference for imprisonment is only just significant (at the 5% level). Taken at face value, Table 13 suggests social involvement increases the likelihood of being imprisoned, which is a rather questionable finding in the light of past research.

**Table 14: Percentage of respondents who were charged or imprisoned by stressors**

	<i>Stressors in last 12 months</i>	<i>No stressors in last 12 months</i>
	%	%
Charged	37.7	36.9
Imprisoned	7.6	7.5

The NATSISS asks whether a respondent has faced any type of stressor in the previous 12 months and then asks them to specify which type or types of stressors they experienced. Because we measured alcohol, drug use, employment and crime separately, we only considered respondents who indicated another type of stressor. Neither difference is significant at the five per cent level.

**Table 15: Percentage of respondents who were charged or imprisoned by community problems**

	<i>Neighbourhood/ community problems</i>	<i>No problems</i>
	%	%
Charged	39.0	31.5
Imprisoned	8.0	6.1

**GEOGRAPHIC VARIABLES**

Table 15 looks at the effect of living in a crime-prone area on the risk of having been charged or imprisoned. We define a crime-prone area as one where the respondent has stated that neighbourhood or community problems exist. This table does not include the 106 respondents (1.24% of the sample) who did not know or did not state whether they lived in an area with problems.

**Table 16: Percentage of respondents who were charged or imprisoned by remoteness**

	<i>Major city</i>	<i>Regional</i>	<i>Remote or very remote</i>
	%	%	%
Charged	33.2	41.1	34.8
Imprisoned	7.5	6.6	9.0

Living in a crime-prone area increases the likelihood of being charged and imprisoned. The likelihood rises from approximately one in three to two in five for charged and one in 16 to one in 12 for being imprisoned.

Areas are classified as remote/very remote, regional or a major city using the Australian Standard Geographic Classification (ASGC) scale. Table 16 shows that location has a differing impact on a person’s likelihood of coming into contact with the criminal justice system. Respondents living in remote areas are about as likely as those in major cities to be charged (1 in 3). Both groups are likely to be charged than those living in regional areas (2 in 5). However, for imprisonment, those living in remote areas have the highest likelihood (1 in 11 compared with 1 in 16 for regional respondents and 1 in 13 for respondents living in major cities). Because of the high correlation between location and the other variables considered, the results may change when controlling for other factors in the model.

**Alcohol and substance use**

The National Health and Medical Research Council (NHMRC) guidelines were applied to define the relative risk levels for alcohol consumption used in the NATSISS. We used the variable tracking alcohol consumption over the previous 12 months, as opposed to the previous two weeks, in order to examine a respondent’s long-term

alcohol usage. Table 17 shows a clear relationship between alcohol consumption and involvement with the criminal justice system. For high-risk users of alcohol, the likelihood of being charged is approximately three in five, compared with one in four for non-consumers, two in five for low-risk consumers and one in two for medium-risk consumers. The same effect is seen for imprisonment, with the likelihood over one in five for high-risk consumers as compared with slightly under one in 20 for non-consumers, approximately one in 13 for low-risk consumers and one in 12 for medium-risk consumers. Note that this table does not include 58 respondents (0.68% of the sample) who did not state their usage.

The substance abuse question was administered separately for respondents within the community and non-community samples of NATSISS (with the latter sample being concentrated in remote Australia). Respondents living in non-community areas filled out a separate form specifying their usage of illicit substances. Respondents living in such communities were required to respond verbally to the interviewer. The ABS has cited a low prevalence rate for people in community areas and subsequently did not release

these results. Table 18 is based only on respondents who lived in non-remote areas.

We used the variable ‘ever used substances for non-medical purposes’ as a proxy for substance abuse. Table 18 looks at the relationship between being a substance user and imprisonment or charge. Just over one in four respondents who had not abused substances had been charged. This compares with more than half of those respondents who had abused substances at some stage. For imprisonment, the relationship is more pronounced. Approximately one in 29 respondents who said they were not substance abusers had been imprisoned compared with more than one in nine respondents who had abused substances at some stage. The following table does not include 359 respondents (3.97% of the sample) who did not state their drug use or did not respond to this question.

**MULTIVARIATE LOGISTIC REGRESSION**

The logistic regression models for the ‘Charged’ and ‘Imprisoned’ variables were estimated using unweighted data from the 8,521 respondents who met the study criteria described previously.

All variables discussed in the above bivariate analysis were tested for explanatory significance in the model. A number of variables had ‘Not stated’, ‘Don’t know’ and ‘Don’t want to answer’ responses. In order to retain as much information as possible, we created additional variables that reflected whether the response for that question took one of these three forms. In most cases, these created variables were not significant. Only those created variables that were found to be significant at the five per cent level were retained.

For the imprisonment model, two variables were retained which were found to be not significant at the five per cent level. These were retained in order to facilitate comparison across the two models. For the same reason, the Torres Strait Islander variable was omitted from both models.<sup>11</sup>

**Table 17: Percentage of respondents who were charged or imprisoned by alcohol consumption**

	<i>Does not consume alcohol</i>	<i>Low-risk</i>	<i>Medium-risk</i>	<i>High-risk</i>
	%	%	%	%
Charged	25.8	39.2	50.3	61.3
Imprisoned	4.6	7.6	8.5	22.6

**Table 18: Percentage of respondents who were charged or imprisoned by substance abuse**

	<i>Never abused substances</i>	<i>Substance abuser</i>
	%	%
Charged	26.9	52.4
Imprisoned	3.5	11.8

### Charged

For the 'Charged' model, the base case is a female who:

- is aged 25 years or over
- is employed or not in the labour force
- does not receive welfare as their principal source of income
- is not experiencing financial stress
- is not a member of the 'stolen generation' and has no relatives who were removed from their natural family
- has a highest level of school completed that is equivalent to Year 11 or less
- does not live in a sole-parent family with dependents
- has social support
- lives in a remote area
- does not live in a crime-prone area

- consumes alcohol in a manner which is not considered high-risk
- has never consumed illicit substances.

The parameter estimates and odds ratios for the full model are presented in Table 19, along with their associated confidence intervals in brackets.

The model suggests the following:

- Age, as in the bivariate analysis, does not have a large marginal effect on the probability of being charged. The model suggests that being under the age of 25 years slightly reduces the probability. However, this result could be due to the fact that younger respondents have had less opportunity to be charged, compared with older respondents (i.e. 'Charged' is cumulative over time).
- Sex is a very powerful explanatory variable, with males being much

more likely to be charged with an offence, holding other characteristics constant. This is the largest effect in the model.

- Being unemployed, as opposed to being employed or NILF, has quite a large effect on the probability of being charged. Its effect is comparable to that of the financial stress variable and both have a greater impact on being charged than whether a person's principal source of income is a welfare payment.
- Inspection of the relevant parameter estimates indicates that, by comparison with being unemployed, being a member of a CDEP scheme reduces the probability of being charged. However, the probability is larger for this group than for those who are employed in a non-CDEP scheme or NILF.
- Education also has quite a large effect on the probability of being charged, with a reduction in probability for those who finish Year 12.
- Belonging to a sole-parent family with dependents and not being involved in social activities both have a small positive effect on the probability of being charged. Living in a crime-prone area has a similar positive effect on the probability of being charged.
- The less remote a person's location is, the smaller the chance of being charged. Living in a regional area, as compared with a remote area, has a small negative effect. Living in a major city has quite a large negative effect.
- High-risk consumption of alcohol and use of illicit substances exert very large effects on the chance of being charged. Respondents who did not state whether they had used substances were more likely to be charged than those who stated they had never used substances.
- Social support, large family, crowded household and social stressors were not significant predictors of being charged.

**Table 19: Results from the logistic regression model for the 'Charged' variable**

<i>Comparison</i>	<i>Parameter estimate</i>	<i>Odds Ratio (with CI)</i>
Intercept	-2.64 (0.13)	N/A
Under 25 years vs 25 years and over	-0.20 (0.07)	0.82 (0.72 - 0.94)
Male vs Female	1.54 (0.06)	4.69 (4.21 - 5.22)
Unemployed vs Employed or NILF	0.49 (0.09)	1.64 (1.38 - 1.94)
CDEP vs Employed or NILF	0.21 (0.08)	1.23 (1.06 - 1.42)
Welfare vs Other income source	0.44 (0.06)	1.55 (1.38 - 1.76)
Financial stress vs No financial stress	0.48 (0.05)	1.62 (1.46 - 1.79)
Completed Year 12 vs Did not complete Year 12	-0.66 (0.08)	0.52 (0.44 - 0.61)
Person or family member of 'stolen generation' vs Person or family not a member of the 'stolen generation'	0.37 (0.05)	1.45 (1.30 - 1.60)
Sole-parent family vs Other family type	0.20 (0.07)	1.22 (1.07 - 1.40)
No social involvement vs Social involvement	0.30 (0.08)	1.35 (1.16 - 1.57)
Major city vs Remote	-0.47 (0.09)	0.77 (0.68 - 0.88)
Regional vs Remote	-0.26 (0.07)	0.63 (0.53 - 0.75)
Lives in a crime-prone area vs Does not live in a crime-prone area	0.27 (0.06)	1.31 (1.16 - 1.48)
High-risk alcohol use vs Not high-risk alcohol use	0.96 (0.10)	2.60 (2.13 - 3.17)
Substance use vs No substance use	1.05 (0.00)	2.87 (2.49 - 3.31)
Substance use missing vs No substance use	0.44 (0.13)	1.55 (1.20 - 2.01)
Hosmer-Lemeshow = 3.26 ( $p = 0.917$ )		
-2 Log Likelihood = 9345.1		
Pseudo R2 = 0.196		

### Imprisoned

For the 'Imprisoned' model, the base case is female who:

- is aged 25 years or over
- is employed or not in the labour force

- does not receive welfare as their principal source of income
- is not experiencing financial stress
- lives in a non-crowded household (6 people or less)
- is not a member of the 'stolen generation' and has no relatives who were removed from their natural family
- has a highest level of school completed that is equivalent to Year 11 or less
- lives in a remote area
- consumes alcohol in a manner which is not considered high-risk
- has never consumed illicit substances.

The parameter estimates and odds ratios for the full model are presented in Table 20.

The model suggests the following:

- Sex is again a very powerful indicator of whether or not someone has been imprisoned in the last five years.

As with the 'Charged' model, it has the largest coefficient in the model.

- Age is not a significant predictor of having been imprisoned within the previous five years.
- Being unemployed, as opposed to being employed or NILF, again has a very large effect on the probability of imprisonment. However, the effect of being in a CDEP scheme on the probability of being imprisoned is not significant.
- Completing Year 12 reduces the chances of imprisonment.
- Living in a 'crowded' household increases the chances of having been imprisoned.
- As with the 'Charged' model, being a member or having a relative who was a member of the 'stolen generation' increases the probability of imprisonment.

- Living in either a regional area or major city significantly reduces the chances of having been imprisoned.
- High-risk consumption of alcohol and illicit substance use has a substantial effect on the probability of imprisonment. Substance abuse is the second largest effect in the model. High alcohol use is the fourth largest effect. As with the 'Charged' model, people who did not state whether they used substances were more likely to have been sentenced to prison.
- Living in a one-parent family, involvement in social activities, living in a crime-prone area, having a large family and social stress were not significant predictors of imprisonment at the five per cent level.

### Largest marginal effects for both models

In order to assess the effect of each variable in relation to others, it is useful to consider its marginal effect. To determine marginal effects, we calculate the risk of being charged (or imprisoned) for an average respondent and then examine the effect of changing one of the respondent's characteristics. Using the median values for all of the characteristics we examine, we define an 'average respondent' as a respondent who is female, aged 25 years or over, does not participate in social activities and lives in a regional area that is crime-prone. Each other variable has been given the value of zero, except for the variable of interest.

As mentioned above, the marginal effects for the 'Charged' model are significantly larger than those for the 'Imprisoned' model. Rather than comparing the marginal effects for the same variable between models, it is more appropriate to compare the marginal effects for each variable in the same model to the probability of being charged or imprisoned in the median case.

The most powerful predictors of being charged or imprisoned are clearly alcohol consumption and drug use. For an average person (as defined above), being a substance user increases the probability of being charged by almost 13 percentage points. Being a high-risk user of alcohol increases the risk of

**Table 20: Results from the logistic regression model for the 'Imprisoned' variable**

<b>Comparison</b>	<b>Parameter estimate</b>	<b>Odds Ratio (with CI)</b>
Intercept	-4.78 (0.17)	N/A
Male vs Female	1.49 (0.10)	4.45 (3.65 - 5.44)
Under 25 years vs 25 years and over	0.17 (0.11)*	1.19 (0.96 - 1.47)
Unemployed vs Employed or NILF	0.63 (0.12)	1.88 (1.48 - 2.39)
CDEP vs Employed or NILF	0.15 (0.12)*	1.16 (0.92 - 1.47)
Welfare vs Other income source	1.07 (0.13)	2.92 (2.25 - 3.79)
Financial stress vs No financial stress	0.37 (0.09)	1.45 (1.21 - 1.74)
Completed Year 12 vs Did not complete Year 12	-0.59 (0.16)	0.56 (0.40 - 0.77)
Crowded household vs Non-crowded household	0.29 (0.12)	1.34 (1.06 - 1.69)
Person or family member of 'stolen generation' vs Not a member of the 'stolen generation'	0.48 (0.09)	1.61 (1.34 - 1.93)
Major city vs Remote	-0.94 (0.19)	0.39 (0.27 - 0.56)
Regional vs Remote	-0.94 (0.15)	0.39 (0.29 - 0.53)
High-risk alcohol use vs Not high-risk alcohol use	1.00 (0.12)	2.71 (2.13 - 3.45)
Substance use vs No substance use	1.21 (0.15)	3.36 (2.49 - 4.53)
Substance use missing vs No substance use	0.57 (0.26)	1.77 (1.06 - 2.97)
Hosmer-Lemeshow = 7.40 ( $p = 0.495$ )		
-2 Log Likelihood = 3664.6		
Pseudo R2 = 0.0829		

\* Variable not significant at the five per cent level.

**Table 21: Marginal effects of selected variables for ‘Charged’ and ‘Imprisoned’ models**

Variable	Marginal effect	
	Charged	Imprisoned
Substance abuse	12.89%	0.76%
High-risk alcohol consumption	11.40%	0.56%
Year 12 completion	-4.08%	-0.15%
Welfare as principal income source	4.26%	0.62%
Unemployed	4.84%	0.29%
CDEP	1.80%	not significant
Expected probability for the median case	8.90%	0.33%

being charged by over 11 percentage points. The effects of alcohol and drug use on the risk of imprisonment are much smaller. However, the effect of substance abuse is higher than any other effect in the model. Alcohol is the third largest of the five effects.

Most of the other factors in Table 21 exert effects on the ‘Charged’ variable that are roughly comparable in magnitude. Completing Year 12 reduces a person’s likelihood of being charged by 4.08 percentage points, while obtaining welfare as the principal source of income increases the risk of having been charged by 4.26 percentage points. Being unemployed increases the risk of having been charged by 4.84 percentage points; however, being in a CDEP scheme only increases the likelihood by 1.8 percentage points. In other words, the risk of being charged is less for those participating in a CDEP scheme than for those who are unemployed.

Year 12 completion and unemployment exert similar effects on the risk of imprisonment. Being on welfare, however, has a bigger effect on the risk of being imprisoned than high-risk alcohol consumption. The CDEP variable is not a significant predictor of imprisonment.

## DISCUSSION

It is always hazardous drawing causal inferences from a study, like the NATSISS, that seeks information from a group of individuals at a single point in time. It is even more hazardous when, as in the

present case, the dependent variables measure aspects of the experience of the respondent over the previous five years or over their lifetime, whereas the explanatory variables measure characteristics of the respondent at the time of the survey or in the preceding 12 months. In using the NATSISS to try and identify the factors that influence the risk of being charged or imprisoned, we are assuming that the conditions we examine were present and exerted an influence at the time of, or before, the respondent was arrested and charged or imprisoned. This is a plausible assumption but it should be noted that we have no way of testing whether it is correct.

Setting this issue to one side, the present study contains a number of findings that may be of assistance in reducing Indigenous over-representation in the criminal justice system. The most important finding concerns substance use. The marginal effects of drug use are stronger than those of any other factor, with the exception of sex. Alcohol is the third strongest factor for the ‘Charged’ model and fourth strongest in the ‘Imprisoned’ model. The suggestion that drug and alcohol abuse is an important cause of Indigenous contact with the justice system is consistent with a large body of other evidence linking drug and alcohol abuse to increased risk of involvement in property and violent crime (Blumstein et al. 1986; Exum 2006). Several studies have found evidence that crime can be reduced through measures that reduce the availability of alcohol

(Gray et al. 2000; d’Abbs & Togni 2000) and illicit drugs (Moffatt, Weatherburn & Donnelly 2005). There is also strong evidence that coerced treatment programs (e.g. the NSW Drug Court) reduce the rate at which drug dependent offenders re-offend (Lind et al. 2002). The present study strongly suggests, therefore, that one of the key ways to reduce Indigenous contact with the criminal justice system is to reduce Indigenous drug and alcohol abuse.

Although the other factors examined in the study exerted smaller effects, those effects are still quite significant. Failure to complete Year 12 exerts only a small direct effect on the risk of imprisonment but it exerts a significant effect on the likelihood of being charged. This is consistent with a large body of evidence linking school failure and poor school performance to juvenile involvement in crime (Baker 1998; Grunseit et al. 2005; Maguin & Loeber 1996.). As noted earlier, there is some disagreement amongst researchers about whether the relationship between poor school performance and offending is actually causal or a reflection of some other factor or factors (Maguin & Loeber 1996). In the early 1990s, however, the Ford Foundation established a program for ‘at risk’ youth which used a combination of coaching and cash incentives to promote school retention. Rates of arrest for students participating in the program were only three-tenths those of a control group of students who did not participate in the program (Greenwood et al. 1998). This suggests that improving Indigenous school performance and retention is another potentially valuable point of leverage on Indigenous contact with the justice system.

The significant effect of unemployment on the risk of being charged and imprisoned mirrors that obtained by Hunter (2001) in his analysis of the 1994 NATSISS survey data. Longitudinal studies also generally find a strong relationship between unemployment and crime, particularly where low socio-economic status offenders are concerned (Farrington et al. 1986; Good, Pirog-Good & Sickles 1986; Thornberry & Christensen 1984; Fagan

& Freeman 1999). Schochet, Burghardt and Glazeman (2000) compared arrest rates among Job Corps<sup>12</sup> participants in the United States with those of a control group of young people deemed eligible for Job Corps but who were (as a result of a random ballot) not offered a place on the program. Their study found substantial and significant difference in arrest rates favouring Job Corps participants. Labour market programs or policies that reduce the level of Indigenous unemployment are therefore a third potentially fruitful line of attack on Indigenous contact with the justice system.

Given that unemployment increases the risk of arrest and imprisonment, it is not surprising to find that financial stress has similar effects. Being employed but on a very low income would be expected to exert a strong effect on income-generating crime and there is strong evidence from longitudinal studies that it does (Grogger 1998). This may be one reason why, relative to those who are employed or not in the labour force, respondents who reported being on CDEP were more likely to have been charged or imprisoned. The higher risk of being charged and imprisoned for those on CDEP might reflect other factors as well. CDEP schemes are sometimes used to assist illiterate and semi-literate community members in dealing with the justice system (see Kral forthcoming). There may be a tendency, therefore, to locate them in crime-prone communities. Of course, for many Indigenous Australians, the alternative to participation in the CDEP scheme is unemployment. In judging the contribution of the CDEP scheme to Indigenous contact with the justice system, it is therefore more appropriate to compare the scheme with unemployment. Viewed from this perspective, the CDEP scheme appears to provide a protective effect against the risk of being charged.

In light of the ongoing political debate about the causes and consequences of welfare dependence, the finding that being on welfare increases the risk of being charged and imprisoned is bound to be controversial. Some

have argued that welfare dependence encourages Indigenous involvement in crime and have blamed Indigenous welfare dependence on, for example, the absence of private property rights under native title legislation (Hughes 2005). It is possible, however, that welfare dependence is simply acting as a proxy for poverty and other forms of social disadvantage (e.g. intellectual or physical disability), which are already known to be risk factors for involvement in crime (Farrington 1997). All sides agree that policies which reduce Indigenous economic disadvantage are likely to reduce Indigenous contact with the criminal justice system. How best to reduce Indigenous economic disadvantage is not a question we propose to discuss here.

A few comments are in order about the variable 'social support', which was found significant in the bivariate analysis but not in the multivariate analysis. It will be recalled that about one in three respondents who felt they had social support were charged, compared with about one in two of those who felt that they did not have social support. Similarly, one in 14 of those who felt they had social support had been imprisoned, compared with one in seven of those who felt they did not have social support. Although this effect disappeared in the multivariate analysis, past research has shown that social support plays an important role in buffering the effects of economic stress on child maltreatment (Weatherburn & Lind 2001), a common precursor to juvenile involvement in crime. It is possible that the protective effect of social support on the risk of being charged or imprisoned was simply obscured by its close association with other factors such as financial stress and involvement in social activities. In light of this, we should not dismiss the possibility that measures which strengthen Indigenous social support might reduce Indigenous contact with the justice system.

Since an individual cannot be imprisoned without first being charged with a criminal offence, one would expect to see a fair degree of overlap between the factors

that predict being charged and those that predict being imprisoned. A comparison of Tables 19 and 20 shows some notable differences. Living in a crime-prone area increases the risk of being charged (Table 19) but is not a significant independent predictor of being imprisoned (Table 20). Being socially involved reduces the risk of being charged but has no independent effect on the risk of imprisonment. Household crowding is a significant independent predictor of imprisonment (Table 20) but not of being charged (Table 19). Finally, although drug and alcohol use, school retention, welfare and unemployment are significant predictors of both being charged and being imprisoned, the marginal effects of these factors are much larger in the 'Charged' model than in the 'Imprisoned' model (Table 21).

These differences are probably a reflection of both the sample size and of differences in the factors that lead to being charged and imprisoned. The number of persons in the NATSISS who reported having been imprisoned is far smaller than the number who reported having been charged. The power of our analyses to detect significant effects in relation to imprisonment would therefore have been much smaller than the corresponding power in relation to being charged. The developmental antecedents of violent offending, on the other hand, differ to some extent from those that lead to involvement in non-violent crime (Crime Prevention Victoria 2003). Alcohol abuse, for example, is more heavily implicated in violent crime than in non-violent crime (Butler et al. 2003). Since violent offenders are more likely to receive a prison sentence than non-violent offenders (Snowball & Weatherburn 2006), we would expect to find some differences between the NATSISS variables that predict being charged and those that predict being imprisoned.

In concluding the present study, we note that it is one of only a handful so far that have looked at the predictors of Indigenous contact with the justice system. Given that Indigenous imprisonment rates are now higher

than they were at the time of the Royal Commission into Aboriginal Deaths in Custody, there is a pressing need for further research in this area. It is no easy task trying to identify the factors underpinning Indigenous contact with the justice system but, with all its limitations, research of the kind reported here provides a far better basis on which to develop policy solutions than intuition, guesswork and good intentions.

## NOTES

1. The National Health Survey and National Housing Survey have an augmented Indigenous sample, but do not focus specifically on Indigenous issues and do not include information on contact with the justice system. The proposed Longitudinal Study of Indigenous Children is still in the pilot phase and will focus on issues relating to child development.
  2. Chikritzhs and Brady (2006) have argued that the 2002 NATSISS seriously underestimates the true extent of Indigenous alcohol abuse. That criticism does not affect the present study because we only use the NATSISS to rank respondents in terms of alcohol consumption, not to measure the absolute amount of alcohol they consume.
  3. The ABS defines private dwellings as 'houses, flats, home units and any other structures used as private places of residence at the time of the [NATSISS]' (Australian Bureau of Statistics 2005b).
  4. See Australian Bureau of Statistics (2004, p. 53) for details.
  5. The 80 per cent response rate for non-community areas does not include 12 per cent of households who could not be contacted to ascertain whether an Indigenous person resided there.
  6. Appendix 2 provides a full list of variables and their frequencies.
  7. The imprisonment variable included all people who had spent any time in prison in the five years previous.
- The ABS attempted to discount imprisonment in protective custody, for unpaid parking fines and other infringements of good order, however this could not be guaranteed.
8. Because it is virtually impossible to be imprisoned without first being charged, for convenience in what follows we refer simply to being 'charged' and being 'imprisoned'.
  9. The true fraction of Aboriginal and Torres Strait Islanders who are ever charged with an offence is almost certainly higher than the figure we present below because the data in Table 1 are drawn from respondents who are still alive and, in many cases, quite young.
  10. While this definition of family size would not be considered large relative to Indigenous norms, it is certainly large compared to the Australian average (Hunter, Kennedy & Smith 2003).
  11. The Torres Strait Islander variable was found to be significant for the charged variable when treating the 'both Aboriginal and Torres Strait Islander' group separately from the 'only Torres Strait Islander' group. For the 'Imprisoned' model, it was found to be significant when the two groups were combined. In order to keep consistency between the models, we felt it more appropriate not to include the Torres Strait Islander variable in either model. In addition, the fact that this variable was only collected for Queensland made it difficult to draw useful conclusions.
  12. In 1999, Job Corps received \$1.3 billion and enrolled 60,000 young people in tailored one-year programs that included classroom training in basic education, vocational skills and a wide range of supportive services (including health care) at a cost of roughly \$15,000 per student.
  13. Note that neither the frequency nor percentage columns contain 'not stated', 'non-response' and 'not applicable' responses. For this reason, the percentages may not add to 100 per cent within each category.

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APPENDIX 1

Because the substance abuse variable is only determined for respondents living in non-remote areas (for reasons outlined above) it is necessary to carry out a form of sensitivity analysis to determine the effect this has on the other coefficients in each model. We calculated coefficients for the same variables in the models outlined above for (a) all respondents; and (b) only respondents in non-remote areas. The results are outlined in Table 22 for the ‘Charged’ model and Table 23 for the ‘Imprisoned’ model. Because of the way the geographical variables were specified in the models, we needed to respecify the model to have ‘living in a major city’ in the base case (this accounts for the differences in the intercept and geographic coefficients). Apart from this, the base cases for the two models are exactly as specified in the results section above.

There is a large change in coefficients for a number of variables, however most can be explained by the differing experiences of remote and non-remote Indigenous people which are not completely accounted for by the geographic variables. For example, the effect of living in a crowded house in remote and non-remote areas is likely to be fundamentally different, given the different set of choices and constraints facing Indigenous householders in the respective areas (Sanders 2005).

The drop in the effect of the alcohol variable in the ‘Charged’ model is a cause for concern, due to its high correlation with the substance abuse variable. It is impossible to determine the actual coefficient for substance abuse across remote and non-remote regions but these results need to be taken into account when examining the model.

Table 22: Parameter estimates for the ‘Charged’ models

Comparison	Total model (a)	Non-remote model (b)
Intercept	-3.10 (0.13)	-2.91 (0.18)
Under 25 years vs 25 years and over	-0.20 (0.07)	-0.19 (0.09)
Male vs Female	1.54 (0.06)	1.63 (0.08)
Unemployed vs Employed or NILF	0.49 (0.09)	0.41 (0.11)
CDEP vs Employed or NILF	0.21 (0.08)	-0.01 (0.15)*
Welfare vs Other income source	0.44 (0.06)	0.77 (0.09)
Financial stress vs No financial stress	0.48 (0.05)	0.44 (0.07)
Completed Year 12 vs Did not complete Year 12	-0.66 (0.08)	-0.74 (0.10)
Person or family member of ‘stolen generation’ vs Person or family not a member of the ‘stolen generation’	0.37 (0.05)	0.29 (0.07)
Sole-parent family vs Other family type	0.20 (0.07)	0.18 (0.08)
No social involvement vs Social involvement	0.30 (0.08)	0.07 (0.11)*
Regional vs Major city	0.21 (0.08)	0.18 (0.08)
Remote vs Major city	0.47 (0.09)	-
Lives in a crime-prone area vs Does not live in a crime-prone area	0.27 (0.06)	0.18 (0.08)
High-risk alcohol use vs Not high-risk alcohol use	0.96 (0.10)	0.72 (0.14)
Substance use vs No substance use	1.05 (0.00)	1.09 (0.07)
Substance use missing vs No substance use	0.44 (0.13)	0.43 (0.13)

\* Variable not significant at the five per cent level

Table 23: Parameter estimates for the ‘Imprisoned’ models

Comparison	Total model (a)	Non-remote model (b)
Intercept	-5.73 (0.23)	-5.86 (0.22)
Male vs Female	1.49 (0.10)	1.49 (0.10)
Under 25 years vs 25 years and over	0.17 (0.11)*	0.19 (0.11)*
Unemployed vs Employed or NILF	0.63 (0.12)	0.60 (0.12)
CDEP vs Employed or NILF	0.15 (0.12)*	0.20 (0.12)*
Welfare vs Other income source	1.07 (0.13)	1.05 (0.13)
Financial stress vs No financial stress	0.37 (0.09)	0.38 (0.09)
Completed Year 12 vs Did not complete Year 12	-0.59 (0.16)	-0.57 (0.16)
Crowded household vs Non-crowded household	0.29 (0.12)	0.35 (0.12)
Person or family member of ‘stolen generation’ vs Not a member of the ‘stolen generation’	0.48 (0.09)	0.48 (0.09)
Regional vs Major city	0.01 (0.15)*	0.49 (0.10)
Remote vs Major city	0.94 (0.19)	-
High-risk alcohol risk vs Not high-risk alcohol use	1.00 (0.12)	1.02 (0.12)
Substance use vs No substance use	1.21 (0.15)	0.98 (0.13)
Substance use missing vs No substance use	0.57 (0.26)	0.32 (0.25)*

\* Variable not significant at the five per cent level

## APPENDIX 2

Table 24: Frequency distribution of regressor variables<sup>13</sup>

		<i>Frequency in sample</i>	<i>Weighted per cent</i>
Age	Under 25 years	6,927	20.7
	25 years or over	1,594	79.3
Sex	Female	4,919	52.6
	Male	3,602	47.4
Labour force status	Employed or NILF	6,317	74.8
	Unemployed	833	12.4
	Employed – CDEP	1,371	12.8
Principal income source	Welfare	5,748	62.6
	Other than welfare	2,688	36.8
Financial stress	Experienced financial stress	3,756	43.2
	Has not experienced financial stress	4,765	56.8
Education	Completed Year 12 or equivalent	1,285	18.5
	Did not complete Year 12 or equivalent	7,236	81.5
Crowded household	Lives in crowded household	1,284	14.6
	Does not live in crowded household	7,237	85.4
'Stolen generation'	Relative or individual removed from family	3,221	38.2
	No family removal	3,809	43.2
Family type	Sole-parent family	1,744	20.2
	Other family type	6,777	79.8
Social isolation	Involvement in social activities	7,482	89.5
	Not involved in social activities	1,039	10.5
Location	Major city	1,311	30.2
	Regional area	3,416	42.2
	Remote area	3,794	27.6
Crime-prone area	Lives in a crime-prone area	6,485	74.2
	Does not live in a crime-prone area	2,036	25.8
Alcohol consumption	High-risk consumption	577	6.1
	Non high-risk consumption	7,886	93.1
Substance abuse	Used substances	1,896	29.7
	Never used substances	2,472	37.1