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Does a lack of alternatives to custody increase the risk of a prison sentence?

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The 2006 report of the NSW Standing Committee on Law and Justice raised concerns about the shortage of resources to service community-based sentencing options in remote areas. It was feared that this could result in an increased likelihood of prison for offenders residing in remote areas and exacerbate Indigenous over-representation in prison. This research found that, after controlling for legally relevant factors, the area of residence of an offender did affect their likelihood of imprisonment. However, the effect was in the opposite direction than expected, with remote and regional offenders being less likely to receive a prison sentence than offenders in inner metropolitan areas. No interaction effect was found for Indigenous status and area of residence suggesting that Indigenous offenders were neither more likely to be imprisoned nor less likely to be imprisoned within any particular area of residence. This bulletin sets out the research methodology and results and provides some explanations for the findings.

KEYWORDS: imprisonment rates, remote and regional areas, disadvantaged populations, Indigenous offenders, offender characteristics

INTRODUCTION

The 2006 report of the NSW Standing Committee on Law and Justice (Standing Committee on Law and Justice 2006, pp. 32-39) raised concerns about the shortage of resources to service community-based sentencing options in remote areas and among disadvantaged populations. The report also suggested that, because magistrates and judges in remote areas do not have access to the full range of community-based sanctions (e.g. home detention, periodic detention, community service orders, supervised bonds), offenders in such locations were more likely than urban offenders to end up in prison.

The Committee's report raises general concerns about equity for offenders residing in remote areas. These concerns are particularly pertinent for Indigenous Australians. More than six per cent of Indigenous NSW residents live in a remote or very remote area, compared with just 0.6 per cent of non-Indigenous residents (unpublished Australian Bureau of Statistics 2001 census data). If there is a sentencing bias against offenders living in remote areas, it will be felt most acutely by Indigenous offenders.

On the surface, the available evidence would seem to support the suggestion of bias. Table 1 shows that over the period from 2001 to 2005, offenders residing in remote and very remote areas were more likely to receive a prison sentence in most years. This effect is particularly pronounced in 2005, during which offenders in very remote areas were almost twice as likely to be sentenced to prison as offenders in inner metropolitan and regional areas.

The discrepancy shown in Table 1, however, does not necessarily mean that remote offenders are being treated more harshly than their counterparts in inner metropolitan and regional areas. It is possible, for example, that a higher proportion of offenders in remote areas are repeat offenders or that they commit more serious types of crimes (and therefore have a higher likelihood of imprisonment). In order to assess whether a bias exists, it is necessary to examine whether a discrepancy in the risk of imprisonment remains after accounting for other relevant factors. This bulletin examines this issue. The following section discusses the data and methodology employed. Section three presents the results and the final section discusses the findings.

Table 1: Imprisonment rates by residence of offender, 2001-2005[1]

	2001	*2002*	*2003*	*2004*	*2005*
Inner metropolitan	6.32	7.18	7.33	6.74	6.15
Inner regional	6.45	7.07	6.86	7.13	6.44
Outer regional	6.17	5.99	7.13	6.96	6.77
Remote	7.14	6.91	7.67	9.37	10.57
Very remote	8.32	5.36	9.46	8.44	12.06

This bulletin has been independently peer reviewed.

DATA AND METHODOLOGY

The data were extracted from the NSW Bureau of Crime Statistics and Research's Reoffending Database (ROD) and comprised adult offenders who were convicted of at least one offence in a Local, District or Supreme Court in NSW in 2005. The majority of matters (more than 97 per cent) were finalised in a Local Court.

Offenders were excluded if their principal offence type[2] was rare (such as abduction or exporting illicit substances) or a near perfect predictor for imprisonment (e.g. homicide). Offenders were also excluded if they were convicted of driving or other traffic offences because these offenders are very unlikely to go to prison. Offenders with a postcode outside NSW (2,853 offenders or 10.4 per cent) were also removed from the analysis. There were a number of offenders who met the study criteria and who had more than one finalised court appearance in 2005. When this happened only the most recent case was retained. The final dataset contained 27,381 offenders. In the following analysis, the 2005 case included in the study is referred to as the index case.

Area of residence was measured using the 2001 State Accessibility Remoteness Index of Australia (State ARIA+) for NSW (National Centre for Social Applications of Geographic Information Systems 2007). This index uses road distances from population centres of differing sizes to determine the score. The mean[3] State ARIA+ score was matched to the Statistical Local Area (SLA) in which the offender resided at the time of their index court appearance.[4] Areas were then grouped using ABS methodology as follows (Australian Bureau of Statistics 2006):

Classification	*Mean ARIA+ score*
Major cities	0.00 – 0.20
Inner regional	0.21 – 2.40
Outer regional	2.41 – 5.920
Remote	5.921 – 10.530
Very remote	10.531 – 15.00

In NSW for example, Gosford would be defined as inner regional, Lismore as outer regional, Murrumbidgee as remote and Cobar as very remote. The major cities classification include most SLAs in Sydney and Newcastle but does not include Wollongong (which is included in inner regional). Because the term could be misleading, inner metropolitan has been used in its place in this bulletin.

Previous research identified the following variables as legally relevant and statistically significant in the decision to imprison an offender (Snowball & Weatherburn 2006):

- Age;
- Sex;
- Indigenous status;
- Whether the principal index offence was classified as aggravated violence (defined as aggravated assault, aggravated sexual assault and aggravated robbery);
- The number of concurrent offences in the index case;
- The number of prior court appearances where at least one conviction was recorded (and offender was not sentenced to prison);
- Whether the offender had previously been sentenced to prison;

Table 2: Distribution of variables[5]

Variable name	*Categories*	*Frequency (%)*
Area	Inner metropolitan	47.5
	Inner regional	26.6
	Outer regional	22.2
	Remote	2.7
	Very remote	1.1
Indigenous status	Indigenous	17.2
	Non-Indigenous	75.5
	Unknown	7.3
Gender	Female	18.1
	Male	81.9
Age	Under 30	47.6
	30 and over	52.4
Principal offence	Serious violence	2.6
	Other	97.4
Concurrent offences	0	73.4
	1	17.1
	2+	9.6
Legal representation	Yes	68.3
	No	31.7
Plea	Guilty	76.3
	Not guilty or other	23.7
Prior appearances with at least one conviction	0	35.9
	1	16.2
	2	10.9
	3	8.4
	4	6.9
	5	5.1
	6	4.0
	7	3.3
	8+	9.2
Prior prison	Yes	17.6
	No	82.4
Prison sentence in current case	Yes	10.4
	No	89.6

- Whether the offender had pleaded guilty in the index case; and
- Whether the offender was legally represented in their index case.

Table 2 outlines some characteristics of the dataset for reference.

Because of the low number of offenders living in 'very remote' areas, this group was combined with the 'remote' group.

A logistic regression model was developed to determine whether, after controlling for other factors, the offender's area of residence was related to their probability of imprisonment. The model was validated by examining appropriate diagnostics and using a 50 per cent cross validation approach.[6]

RESULTS

Table 3 outlines the results of the logistic regression modelling. Note that guilty plea and Indigenous status are not in the final model. Guilty plea was found not to be significant at the five per cent level. Indigenous status could not be included in the model due to its level of correlation with the area variable.[7] This would have lead to multi-collinearity in the model and unstable results.

Table 3 gives the odds ratios (and associated 95% confidence intervals) associated with each of the comparisons. The odds ratios in this model can be interpreted as the probability of a prison sentence compared with another sort of sentence for an offender with the given characteristic. An odds ratio larger than one suggests that an offender with that characteristic is more likely to receive a prison sentence than not. Conversely, if the odds ratio is less than one, the offender is less likely to receive a prison sentence. For example, the results suggest that male offenders are more likely to be imprisoned than female offenders when other characteristics are held constant (odds ratio = 1.588). On the other hand, offenders under the age of 30 are less likely to be imprisoned than offenders aged 30 or over (odds ratio = 0.898). The further the odds ratio is from one (in either direction), the bigger the effect that variable has on the risk of imprisonment.

The model shown in Table 3 suggests that the area of residence of the offender exerts an effect on their likelihood of imprisonment, with all three area variables remaining statistically significant after other factors were included in the model. Notice, however, that remoteness exerts a negative effect on the likelihood of imprisonment. That is, offenders in regional and remote areas are less likely to be imprisoned compared with offenders in inner metropolitan areas when other factors are held constant. The effect is most pronounced for offenders residing in remote or very remote areas, where the odds ratio is 0.644. However there is also an effect for offenders living in inner regional and outer regional areas (odds ratios of 0.732 and 0.716 respectively).

Because of the collinearity problems discussed above, it is not possible to determine whether the results shown in Table 3 apply equally to Indigenous and non-Indigenous offenders. One way to get around this problem is to test for an interaction effect between Indigenous status and area of residence of an offender.[9] When this was done, there was no significant effect for any of the area-level variables, suggesting that an Indigenous offender is neither more likely to be imprisoned nor less likely to be imprisoned within any particular area of residence. There is no evidence, in other words, that Indigenous offenders in regional or remote areas are treated differently from Indigenous offenders in inner metropolitan areas, after accounting for the overall difference in treatment shown in the model.

DISCUSSION

This study was motivated by a concern that offenders in remote areas were more likely to be sentenced to prison than other offenders because of a lack of community-based sentencing options. The study sought to determine whether a discrepancy in the risk of imprisonment exists between inner metropolitan areas, regional and remote areas, after taking into account other factors that might account for the discrepancy between imprisonment rates.

The results show that the area of residence of the offender does exert an effect on the probability of imprisonment when other relevant variables are taken into account. However, contrary to expectation, offenders in remote and very remote areas (as well as in inner

Table 3: Logistic regression results, modelling the likelihood of a prison sentence

Comparison	*Odds ratio (with 95% confidence interval)*	*p-value*
Inner regional vs. Inner metropolitan	0.732 (0.652 - 0.820)	<0.0001
Outer regional vs. Inner metropolitan	0.716 (0.634 - 0.809)	<0.0001
Remote or very remote vs. Inner metropolitan	0.644 (0.509 - 0.815)	0.0002
Aged under 30 vs. Aged 30 or over	0.898 (0.817 - 0.987)	0.0260
Male vs. Female	1.588 (1.371 - 1.840)	<0.0001
Serious violent index offence vs. Other index offence	13.353 (11.109 - 16.049)	<0.0001
One concurrent offence vs. No concurrent offences	2.415 (2.155 - 2.707)	<0.0001
Two or more concurrent offence vs. No concurrent offences	7.567 (6.728 - 8.511)	<0.0001
Prior appearances with at least one conviction[8]	1.158 (1.136 - 1.180)	<0.0001
Prior prison vs. No prior prison	5.840 (5.221 - 6.533)	<0.0001
Legal representation vs. No legal representation	7.195 (5.963 - 8.681)	<0.0001
Area under ROC curve = 0.892		
Deviance = 1493.05 (df = 1438) p-value = 0.2002		

regional and outer regional areas) are less likely to be given a prison sentence than offenders in inner metropolitan areas. In addition, no interaction effect was found for Indigenous status and area of residence of offender, suggesting that Indigenous offenders are treated comparably wherever they live.

The question arises as to why offenders in remote and regional areas are less likely to be imprisoned than similar offenders in inner metropolitan areas. There are several possible explanations for this finding. One is that offenders residing in regional, remote and inner metropolitan areas differ in terms of one or more unmeasured factors that are relevant to sentencing. It is possible, for example, that offenders in regional and remote areas are more remorseful or have stronger community ties.

Another possibility is that courts in inner metropolitan areas place more weight than courts in regional or remote areas on sentencing aims such as punishment and deterrence. This would seem unlikely because crime rates are as high, if not higher, in remote locations such as Dubbo, Bourke, Brewarrina and Walgett than they are in inner metropolitan areas. One way to test this possibility, nevertheless, would be to survey judges and magistrates to obtain their views on the relative importance of punishment and deterrence in inner metropolitan areas versus remote or regional parts of NSW.

A third possibility is that courts in regional and remote areas are sensitive to the shortage of community-based sentencing options in these areas and react to this shortage by being more sparing in their use of imprisonment. This seems the most likely of the three explanations presented but, again, the only way to test it would be to carry out a survey of judges and magistrates.

The fact that offenders in regional and remote NSW are not treated more harshly than their counterparts in inner metropolitan areas is reassuring, but the fact that courts may compensate for the lack of community-based sentencing options by reducing their use of imprisonment is not. Clearly, further research is required to shed more light on the reasons behind the results presented here.

Nothing in this report detracts from the need to ensure that courts operating in regional or remote parts of NSW are provided with a wider range of sentencing options.

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NOTES

1. Area is defined using the 2001 State Accessibility Remoteness Index of Australia (State ARIA+) for NSW. This is further discussed in the data and methodology section.
2. The four-digit Australian Standard Offence Classification (ASOC) system was used to classify offence type. The principal offence is defined as that which received the most serious penalty.
3. Note that all results presented here are based on the use of the mean ARIA+ score for SLA. The minimum score for each SLA was also tried and it yielded similar results.
4. SLA was derived from the postcode of the offender.
5. Note that due to rounding the figures may not add to 100%.
6. Diagnostics included the deviance, the area under the receiver operating characteristics (ROC) curve and the Hosmer-Lemeshow statistic. In a 50 per cent cross validation, a model is developed on 50 per cent of the data using the variables identified as significant. This model is used to predict the outcome for the remaining 50 per cent of the data and the predicted outcome is then compared against the actual outcome for each observation.
7. Using a chi squared test for independence for Indigenous status and area of residence, the statistic was 2377.4 (df = 6) with a p-value less than 0.0001.
8. This was modelled as a continuous variable and coded as 1, 2, 3, 4, 5, 6, 7, 8+. The final category was grouped in this manner to ensure the variable remained linear against the logit of the outcome variable. For this reason, the variable can only be interpreted for 8 or less prior contacts.
9. This was done by building two separate models, one based only on Indigenous offenders and the other based on non-Indigenous offenders, and then testing for a difference in the coefficients. The standard error was determined using methodology outlined in Brame et al. (1998). In order to use this methodology the assumption was made that the functional form and the dispersion of the residual term are identical for the response variable for both the Indigenous and non-Indigenous groups. The first assumption is appropriate in this case. After examining the residuals for both models it is valid to make the second assumption.

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