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### **New Zealand Regions, 1986-2001: Dependency and Development of Social Capital**

**Pool, I., Baxendine, S., Cochrane, W., Lindop J.**



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# **New Zealand Regions, 1986-2001: Dependency and Development of Social Capital**

Pool, I., Baxendine, S., Cochrane, W., Lindop J.

## **Abstract**

The development of social capital is significantly affected by benefit dependency of the population. This paper investigates measures of social cohesion and measures of dependency on society across the regions of New Zealand. Some of the measures looked at specifically are social security benefit use and convictions, custodial sentences and the prison muster across regions. The paper also focuses on housing and specifically considers overcrowding.

*Keywords:* Benefits, Overcrowding, Convictions, Regions, New Zealand

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## **1 Introduction**

This working paper is part of a large project, funded by the Foundation for Research, Science and Technology (FoRST), being undertaken by the Population Studies Centre. This project explores the links between population transitions, social transformations of various kinds and changes in the political economy of New Zealand's regions between the 1980s and the dawn of the 21st century. It relates to a period of rapid change at the end of which the regional architecture of the country was very different from the way it had been in 1985. The trends also represented a radical departure from what preceded these last two decades.

This particular discussion paper, using data from the five yearly Census of Population and Dwellings collected by Statistics New Zealand, examines aspects of the development of social capital of the population between regions in New Zealand<sup>1</sup>.

## **2 The Development of Social Underdevelopment**

The other papers in this series have shown major regional differences in demographic, economic and related social indicators. The emerging picture, at least at a regional level, is of a New Zealand dichotomised into regions that are advantaged and those of the "forgotten New Zealand". This was seen to be particularly notable in the case of income. This division, of course, comes at a cost: in a welfare state exclusion must be addressed by benefits. Perhaps more importantly, without full access of regions to the factors of development, the social fabric may become strained. Thus social welfare and judicial interventions may become more prevalent and costly to the state and voluntary agencies.

Access to (or need for) welfare benefits is thus a measure of both cohesion and exclusion. Beyond this, as will become more evident later in the paper and by comparison with factors analysed in other papers in this series (e.g., regional disparities in education, human capital, income), the benefits represent a persistent prevalence of real need. This requires stressing because much of the emphasis in the 1990s in the area of policy was on "welfare dependency", and on the part of some policy makers, on the elimination of welfare not through minimising need but by increasingly constricting supply.

This paper looks at welfare dependency, and then moves to overcrowding and imprisonment as indicators of factors that are derivatives of exclusion, and that affect cohesion. Finally, imprisonment is linked back to what can be seen as its natural co-variate – unemployment (Papps and Winkelmann 2000: 79). This returns the analysis to an earlier issue: regional differences in the "quality" and exploitation of human capital. Imprisonment is not only a control mechanism in response to a breakdown of the force of cohesion, but it can also be seen as the mal-utilisation of human capital. Prisoners are not available to participate in the labour force, they are a fiscal cost and even with the best intentions and well-run systems are more likely to gain negative rather than positive skills.

It must be stressed that this paper addresses factors of exclusion and cohesion at a population level. It looks at the proportions in each region who fit into the categories that are selected here as measures of relative disadvantage or to indicate where the fabric of society may be

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<sup>1</sup> Other topics covered in this series of discussion papers are listed in the end piece to this paper. The culmination of this project will be the publishing of a monograph synthesizing the various themes explored in this series of working papers (Pool et al. forthcoming-a).

being torn. In any region, of course, there will be individuals, households and groups – the vast majority in fact – that are far from disadvantaged or whose daily lives fit within the mainstreams of New Zealand society. But the aim in this paper is to focus on the minority, to document the position of any region relative to others in terms of the prevalence of these various factors of exclusion and cohesion. In this sense exclusion is a macro-level factor – it is the region relative to others that is the focus.

### **3 Benefit use 1986-2001**

In New Zealand “welfare” and other social democratic systems takes several forms. Policy and interventions from education, training and retraining, housing, health services, etc are normally directed at the population as a whole (Pool et al. 2005c; Pool et al. 2005a; Pool et al. forthcoming-e; Westbrook et al. forthcoming). Then there are other social services or other forms of payment, termed “benefits” and typically available to minorities in need, or target population eg. pensions for the elderly.

Access to benefits is difficult to measure for a number of reasons. It is possible for one person to have had a number of income support sources over the previous twelve months. Multiple income sources are so prevalent that the frequency of supports accessed can be greater than the population total for some sub-groups. Equally well, not all eligible beneficiaries receive what is their due.

The Census question dealing with income support asks for the main income support sources accessed over the last twelve months, and these can be one or more, as well as a mix of benefits and market incomes. This poses critical measurement issues. It is not clear whether research should employ data on multiple benefit use, or attempt to develop some sort of hierarchical system of prioritisation analogous to what is done for ethnicity, or should measure total use (i.e., where the number of benefits will exceed the number of persons receiving one or more benefits).

There was a slight difference in the way the question was asked over the time period 1986 to 2001. The 1986 census asked in terms of social welfare payments in the last 12 months, in 1991 it was in terms of income support in the last 12 months, whereas in 1996 and 2001 it referred to sources of income over the last 12 months. This could possibly have altered the way people responded to the question. That said, the growth in benefit use was not merely an artefact of question design. This is shown in the numbers receiving these benefits from Department of Social Welfare and later Work and Income New Zealand data.

To add to the methodological and substantive problems the benefit system itself has undergone significant changes. Most notably, between 1991 and 1996 the entire benefit system was restructured as changes announced in the 1991 budget (Richardson *et al.*, Budget speech) were implemented and extended. The census of 1991 was taken before these very significant changes took effect.

Before the 1991 budget many key benefits had been virtually universal. Thus, for example, in the case of national superannuation the main barrier to receiving this benefit had been age with only those aged 60 years or older being eligible. But changes in the 1991 budget meant that the age of eligibility for national superannuation gradually rose to 65 years by March 1999. At the time of the 1996 census, the national superannuation allowance was available

only to those aged 62 years and over. This section will consider only people aged between 15 and 59 years (referred to as the working age population).

In Table 1 data on recipients of single and multiple benefits are presented for the 15-59 year age group. Overall the percentage of the population receiving a benefit increased dramatically from 1986 and 1991 and then decreased, almost halving between 1991 to 1996, with a small decrease from 1996 to 2001. The change between 1991 and 1996 could be mainly explained by the dropping of the universal family benefit given to women with dependent children. The proportion of people receiving a benefit of any type who received multiple benefits has declined from 34 per cent in 1986 to around 13 per cent in 1996 and 2001 (see Table 1).

**Table 1: Single and multiple benefit use for people aged 15-59 years for New Zealand, 1986-2001**

	1986	1991	1996	2001
Single Benefit use	419,040	683,466	466,173	409,086
Multiple Benefit use	214,962	242,463	70,623	59,673
Total Benefits	634,002	925,929	536,796	468,759
% receiving multiple benefit of those receiving a benefit	33.9	26.2	13.2	12.7
% of the total population receiving one or more benefits of any kind	31.9	44.7	24.1	20.5

The information in Table 1 is given in more detail in Table 2 for 1986 and 1991; unfortunately similar published information was not available for 1996 and 2001. There are some differences in the way the available data for the two censuses was summarised in published sources. The most prevalent benefit was the Family Benefit which was given to all women with a dependent child and also varied according to the number of children in a family. The Unemployment Benefit was the second most common single benefit in both 1986 and 1991. The rise in the number of beneficiaries in this category increased as a direct consequence of the economic restructuring of the 1986 – 91 period.

**Table 2: Benefits Received by People Aged 15-59 Years for New Zealand, 1986 and 1991**

	1986	1991
Family Benefit	249,240	315,588
National Superannuation	11,388	14,481
Accident Compensation Weekly Payments	*	38,883
Domestic Purposes Benefit	16,269	*
Unemployment Benefit	82,935	178,476
Youth and Student Allowance	0	51,600
Sickness or Invalid's Benefit	39,819	47,865
War Pension	2,121	1,179
Other single Benefits	17,268	35,394
Family Benefit and Family Support	147,885	65,856
Family Benefit and Domestic Purposes Benefit	39,471	15,456
Other Two Payments or Three Payments or more	27,606	161,151
Total People Receiving a Benefit	634,002	925,929

\* No data in available

Sources: 1986 Census of Population and Dwellings, Series C Report 2, Department of Statistics; 1991 Census, National Summary, Department of Statistics

A second method of measuring overall benefit use is to create a hierarchical list of benefit types (similar to the hierarchical list of ethnic types), so that each person, even those receiving several, would be counted as receiving one type only. Like all forms of prioritisation of nominal variables, selection is arbitrary. The following categories were identified as follows:

- 1 Domestic Purposes Benefit (DPB)
- 2 Unemployment Benefit
- 3 Superannuation (national and Guaranteed Retirement Income) (not used)
- 4 Disability (comprises the Sickness and Invalid's Benefit)
- 5 Youth/Student Allowance, relating to 1991-2001 Censuses only (not used)
- 6 Both Family Allowances, relating to 1986 and 1991 Censuses only (not used)
- 7 Other Benefits, namely War Pensions and other benefits (not used)

Only three targeted benefit types were examined, the Domestic Purposes Benefit (DPB), the Unemployment Benefit, and the Sickness and Invalids Benefits. Income support was provided for many other situations but these three benefits remained largely unaltered, except for variations in implementation strategies, over the fifteen-year period.<sup>2</sup> In prioritising as employed here, if a person received the DPB and any other benefit over the previous twelve months up to when the census was taken, only the DPB would be counted. In the same way, the Unemployment Benefit takes priority over all other benefit types, except the DPB (a person receiving both unemployment and DPB will have been counted only once as DPB). This methodology has the potential to overestimate the quantum of benefits that are given priority and to underestimate those that are not. These difficulties can be overcome by reference to more complete data sets, particularly the length of time that people have been on each benefit in the previous twelve months. These data may be available from other sources, for example Work and Income New Zealand, but, they could not be linked to census data. The total response for Sickness and Invalid benefit is investigated later in this section.

<sup>2</sup> Midland Health (1994) and Johnstone and Baxendine (1998) also examine only these three major (targeted) benefits for the Midland region with also Youth/Student Allowance.

### 3.1 Benefit use

#### *Total Population*

Benefit use of the three main benefit types for the total New Zealand population aged 15-59 years in 1986 amounted to nine per cent of the population, increased to a peak in 1991 of 19 per cent with a slight drop in 1996 and 2001 to a level of 16 per cent as is shown in Table 3. Of the three benefits considered, the Unemployment benefit which had the largest influence on the overall patterns went through an initial increase to 1991 and then a decline. The level for Domestic Purposes benefit did not change much after the initial increase from 1986 to 1991 over the remainder of the time period. The use of the Sickness and Invalid benefit has increased over time, especially for Māori.

**Table 3: Standardised<sup>1</sup> Prioritised Benefit Usage<sup>2</sup> as a Percentage of the Population 15-59 years by Benefit Type and Ethnicity for New Zealand, 1986-2001**

Ethnicity	Year	Domestic Purposes benefit	Unemployment benefit	Sickness/Invalid benefit	Total of three benefits
Pakeha	1986	2.0	3.4	2.1	7.5
	1991	3.6	10.0	2.6	16.2
	1996	3.5	7.9	3.2	14.5
	2001	3.6	6.7	3.4	13.7
Māori	1986	5.3	9.4	3.9	18.6
	1991	11.8	22.3	5.0	39.2
	1996	11.3	17.6	6.0	34.9
	2001	11.5	13.7	6.6	31.7
Total	1986	2.4	4.2	2.2	8.8
	1991	4.7	11.7	2.8	19.2
	1996	4.6	9.4	3.4	17.3
	2001	4.6	7.6	3.6	15.8

(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received the specified benefit any time in the last 12 months.

There is a large difference between Pakeha and Māori benefit use with Māori levels being twice those of Pakeha (Table 3). The major difference is that Māori have over double usage of the Domestic Purposes and Unemployment benefits than Pakeha. The Sickness/Invalid benefit is also consistently higher for Māori than for Pakeha.

#### *Variation between the regions*

Over the time period 1986 to 2001 the variation has increased considerably between the regions (see Table 4). This increased occurred between 1986 and 1991 with 1991 having the highest variation for the overall total of the three benefits and the sub-category Unemployment benefit. For Domestic Purpose and Sickness/Invalid benefit the highest variation was in 2001. This is also true for both Pakeha and Māori though the variations are much larger for Māori in every benefit group other than Sickness/Invalid benefit. The only benefit to not have the highest variation in 2001 was Unemployment benefit where it peaked in 1991.

**Table 4: Weighted Average Inter-regional Deviation<sup>1</sup>, Standardised<sup>2</sup> Prioritised Benefit Usage<sup>3</sup> as a Percentage of the Population 15-59 years by Benefit Type and Ethnicity for New Zealand, 1986-2001**

<b>Ethnicity</b>	<b>Year</b>	<b>Domestic Purposes Benefit</b>	<b>Unemployment Benefit</b>	<b>Sickness/Invalid benefit</b>	<b>Total of three benefits</b>
Pakeha	1986	0.16	0.85	0.26	1.12
	1991	0.54	1.96	0.43	2.80
	1996	0.56	1.43	0.57	2.48
	2001	0.72	1.34	0.65	2.67
Māori	1986	0.34	1.79	0.41	1.66
	1991	1.06	4.00	0.48	4.90
	1996	1.27	3.80	0.51	5.29
	2001	1.36	2.37	0.63	4.05
Total	1986	0.20	0.90	0.20	1.07
	1991	0.84	1.94	0.36	2.81
	1996	0.95	1.49	0.48	2.66
	2001	1.05	1.34	0.57	2.72

(1) Sum of the deviations from New Zealand, weighted according to population (Population Monitoring Group 1989).

(2) Standardised by Age and Gender to New Zealand 1996.

(3) Received a benefit any time in the last 12 months.

### *Regional Populations*

It is the marginal regions, typically the ones that can be considered as “excluded” in terms of human capital and personal incomes that have higher levels of need for benefits. Gisborne had the highest benefit use at all four censuses, with Northland also being high as is evident in Table 5 and Figure 1. In these regions the benefits that contributed most to high benefit use were Unemployment and Domestic Purposes Benefits. Other regions which tend higher than other regions are Hawke’s Bay, West Coast and the Bay of Plenty<sup>3</sup> but not to the same levels of Gisborne and Northland. Hawke’s Bay and the Bay of Plenty had higher levels of Domestic Purposes and Unemployment Benefit use, whereas West Coast had higher levels of Sickness/Invalids and Unemployment Benefits use.

By contrast, but as might be expected, Wellington<sup>4</sup> and Auckland<sup>5</sup> had lower benefit usage than the other regions, with Wellington being the lowest in 1986 and 1991 and Auckland being the lowest in 1996 and 2001. In these two regions usage of all of Domestic Purposes, Sickness/Invalids and Unemployment benefits was low.

<sup>3</sup> The overall benefit use for Eastern Bay of Plenty was 27 per cent compared to Western Bay of Plenty and Rotorua District at 19 per cent in 2001.

<sup>4</sup> The 2001 urban zones of Wellington for overall benefit use varied from 11 per cent for Wellington Central to 19 per cent in Porirua with Upper and Lower Hutt at 15 per cent.

<sup>5</sup> The 2001 urban zones of Auckland for overall benefit use varied from 9 per cent in North Shore to 15 per cent in South Auckland, with Central Auckland 12 per cent and West Auckland 14 per cent.

**Table 5: Standardised<sup>1</sup> Prioritised Benefit Usage<sup>2</sup> as a Percentage of the Population 15-59 years by Benefit Type and Region for New Zealand, 1986-2001**

Region	1986	1991	1996	2001	1986	1991	1996	2001
	Domestic Purposes Benefit				Unemployment Benefit			
Northland	2.4	6.4	7.0	7.1	6.0	17.2	14.5	10.7
Auckland	2.3	4.1	3.9	3.8	3.1	9.6	7.4	5.7
Waikato	2.5	5.2	5.3	5.5	4.0	11.9	9.8	8.1
Bay of Plenty	2.9	6.6	6.8	6.9	4.9	15.6	12.0	9.9
Gisborne	3.1	7.8	7.4	8.8	6.6	18.0	16.1	11.8
Hawke's Bay	3.1	6.9	6.8	7.2	6.0	15.1	12.1	9.4
Taranaki	2.4	5.7	5.3	5.7	4.6	12.8	10.4	9.7
Manawatu-Wanganui	2.6	5.3	5.5	5.8	4.6	12.0	10.2	9.1
Wellington	2.0	3.5	3.7	3.8	3.2	9.1	9.3	7.3
West Coast	2.3	4.9	5.0	4.8	6.0	15.4	11.9	10.9
Canterbury	2.4	4.2	3.9	4.0	4.8	11.6	8.5	7.5
Otago	2.0	3.8	3.5	3.6	5.2	14.2	10.7	8.7
Southland	2.2	4.7	4.6	4.7	5.7	14.5	9.9	8.9
Nelson-Tasman	2.1	4.2	4.9	5.1	4.9	13.2	10.0	8.4
Marlborough	2.3	4.2	4.1	4.4	4.6	12.4	9.0	6.9
<b>New Zealand</b>	<b>2.4</b>	<b>4.7</b>	<b>4.6</b>	<b>4.6</b>	<b>4.2</b>	<b>11.7</b>	<b>9.4</b>	<b>7.6</b>
<i>Range</i>	<i>1.1</i>	<i>4.3</i>	<i>3.9</i>	<i>5.2</i>	<i>3.5</i>	<i>8.9</i>	<i>8.7</i>	<i>6.1</i>
	Sickness/Invalid benefit				Total of three benefits			
Northland	2.2	3.4	4.3	4.8	10.5	27.1	25.8	22.6
Auckland	2.3	2.6	2.9	3.0	7.7	16.3	14.1	12.5
Waikato	2.2	2.8	3.5	3.8	8.7	19.9	18.5	17.5
Bay of Plenty	2.1	2.8	3.5	3.8	9.8	25.0	22.2	20.6
Gisborne	2.3	3.4	3.8	4.8	12.0	29.2	27.3	25.4
Hawke's Bay	2.3	2.7	3.7	4.0	11.3	24.7	22.7	20.6
Taranaki	1.8	2.4	3.4	3.9	8.8	20.9	19.1	19.3
Manawatu-Wanganui	2.5	3.3	4.1	4.6	9.7	20.5	19.7	19.4
Wellington	1.8	2.1	2.6	2.9	7.0	14.7	15.7	14.1
West Coast	3.0	5.0	5.3	5.5	11.3	25.2	22.2	21.3
Canterbury	2.4	3.3	3.9	4.1	9.6	19.1	16.3	15.7
Otago	2.3	3.1	3.8	4.1	9.5	21.1	18.0	16.4
Southland	1.7	2.1	3.6	3.7	9.5	21.2	18.0	17.3
Nelson-Tasman	3.1	3.6	4.2	4.6	10.0	21.1	19.1	18.1
Marlborough	2.2	2.7	3.3	3.8	9.0	19.3	16.3	15.0
<b>New Zealand</b>	<b>2.2</b>	<b>2.8</b>	<b>3.4</b>	<b>3.6</b>	<b>8.8</b>	<b>19.2</b>	<b>17.3</b>	<b>15.8</b>
<i>Range</i>	<i>1.4</i>	<i>2.9</i>	<i>2.7</i>	<i>2.6</i>	<i>5.0</i>	<i>14.5</i>	<i>13.2</i>	<i>13.0</i>

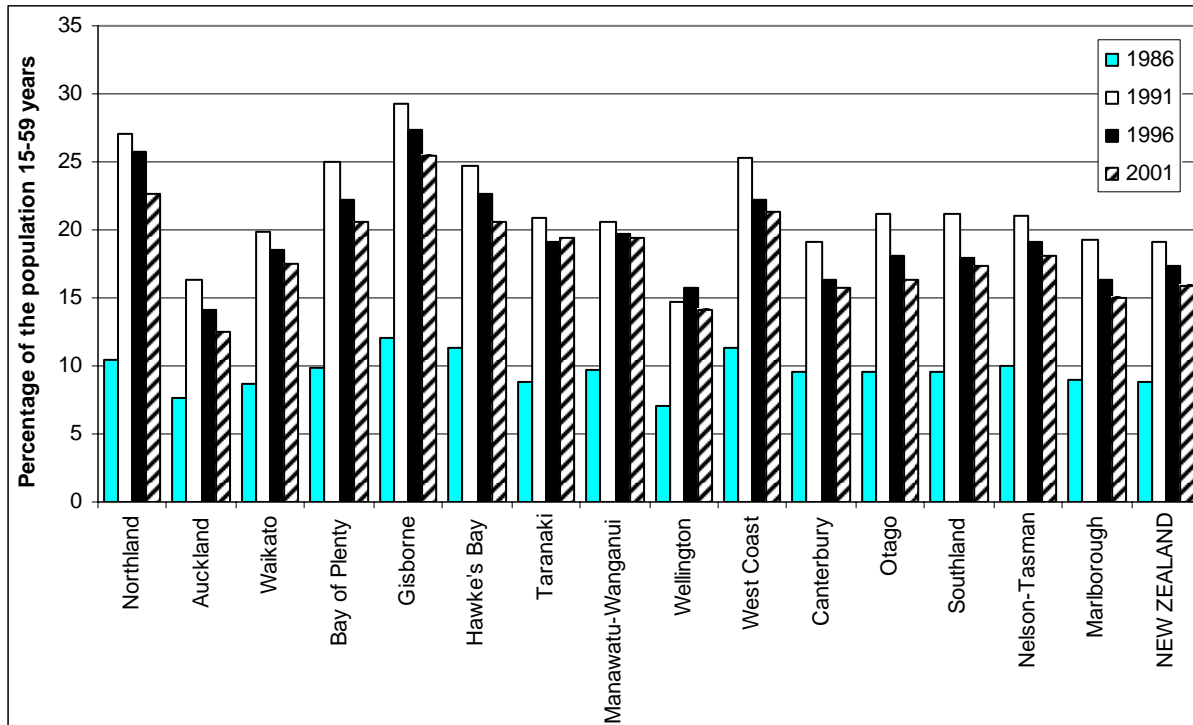
(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received the specified benefit any time in the last 12 months.

The low levels above all in Auckland are interesting in another sense. This is a degree of association between ethnicity and need for benefits – the highest levels are seen in the northern regions where there are high concentration of Māori, although the West Coast also has high prevalence. But Auckland, that most diverse region (Pool et al. forthcoming-d) has

low prevalence levels. What this shows is that a key factor is the economic and social development described in other papers in this series.

**Figure 1: Standardised<sup>1</sup> Total Benefit Usage<sup>2</sup> as a Percentage of the Population 15-59 years of the Total of Three Benefits<sup>3</sup> by Region for New Zealand, 1986-2001**



- (1) Standardised by Age and Gender to New Zealand 1996.
- (2) Received a benefit any time in the last 12 months.
- (3) Domestic Purposes, Unemployment and Sickness/Invalid benefit (person only counted once).

### 3.2 *Benefit Use by Ethnicity*

The argument just above can be taken further. For the Pakeha population benefit usage was lowest in Auckland<sup>6</sup> and Wellington<sup>7</sup>, as is shown in Figure 2 (see also Appendix Table 1). This mirrors the results for the total population with the same benefits contributing to these low levels. However, for Pakeha the West Coast had the high regional levels of benefit use for all four years. This is contributed to by high levels of all three benefits but having the highest in Unemployment and Sickness/Invalid benefits, and underlines the links to development noted just above.

Hawke's Bay had high levels of Domestic Purposes benefit for Pakeha for all three years. In 1996 and 2001 Pakeha in the Northland region had high levels of Domestic Purposes benefit use.

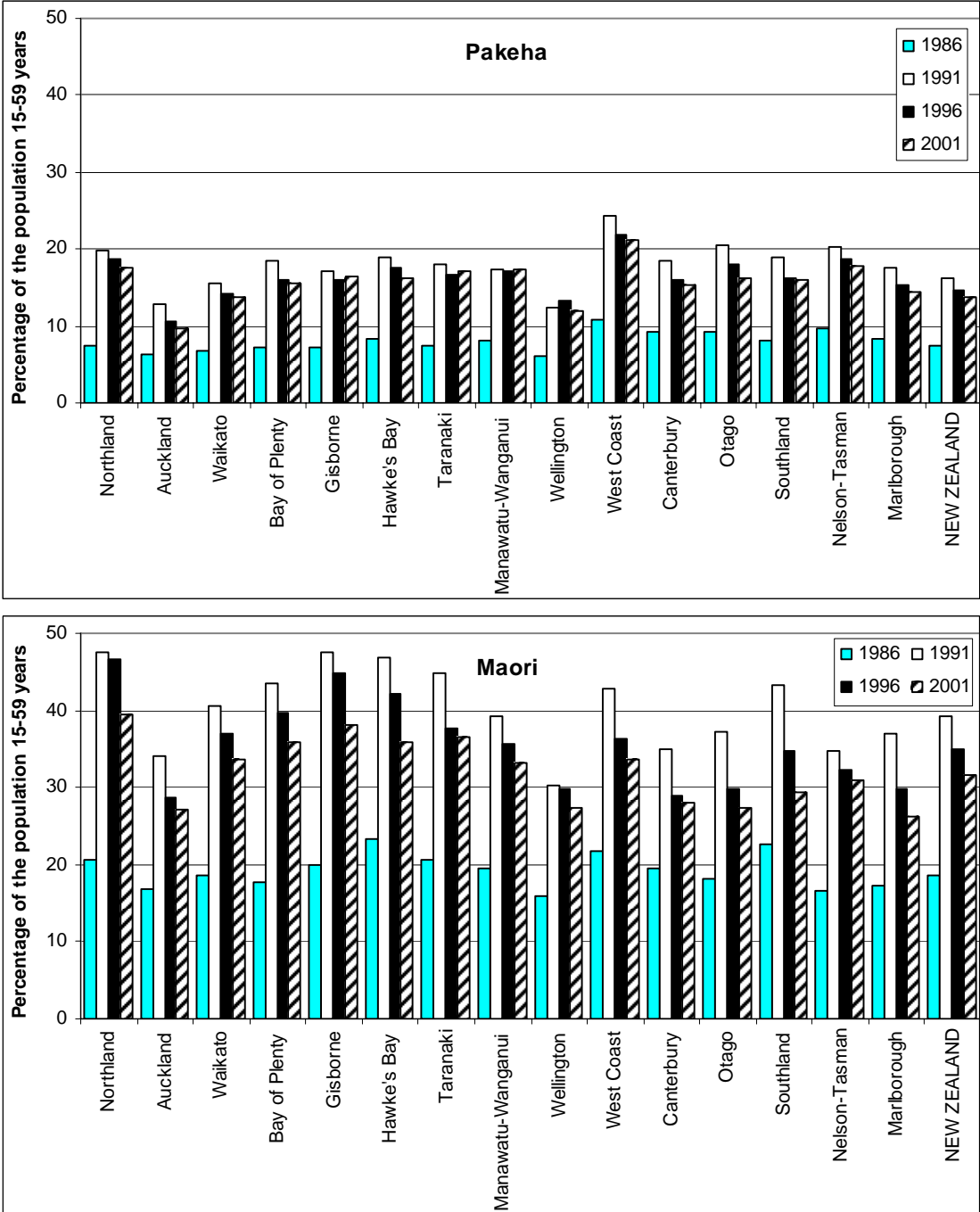
<sup>6</sup> In 2001 the urban zones of Auckland for Pakeha for overall benefit use varied from eight per cent in North Shore to 12 per cent in West Auckland with Central and Southern Auckland nine per cent. For Māori the sub-regions varied from 19 per cent in North Shore to 30 per cent in Southern Auckland with Western and Central Auckland being 27 per cent.

<sup>7</sup> In 2001 the urban zones of Wellington for Pakeha for overall benefit use varied from 10 per cent in Wellington Central to 13 per cent in Upper Hutt. For Māori the sub-regions varied from 22 per cent in Wellington Central to 33 per cent in Porirua with Upper Hutt 24 per cent and Lower Hutt 29 per cent.



As for Pakeha, benefit usage for Māori in Auckland and Wellington was the lowest level of all regions (see Figure 2 and Appendix Table 2). This was mainly contributed to by the low Unemployment benefit usage for these two regions.

**Figure 2: Standardised<sup>1</sup> Total Benefit Usage<sup>2</sup> as a Percentage of the Population 15-59 years of the Total of Three Benefits<sup>3</sup> by Ethnicity and Region for New Zealand, 1986-2001**



- (1) Standardised by Age and Gender to New Zealand 1996.
- (2) Received a benefit any time in the last 12 months.
- (3) Domestic Purposes, Unemployment and Sickness/Invalid benefit.

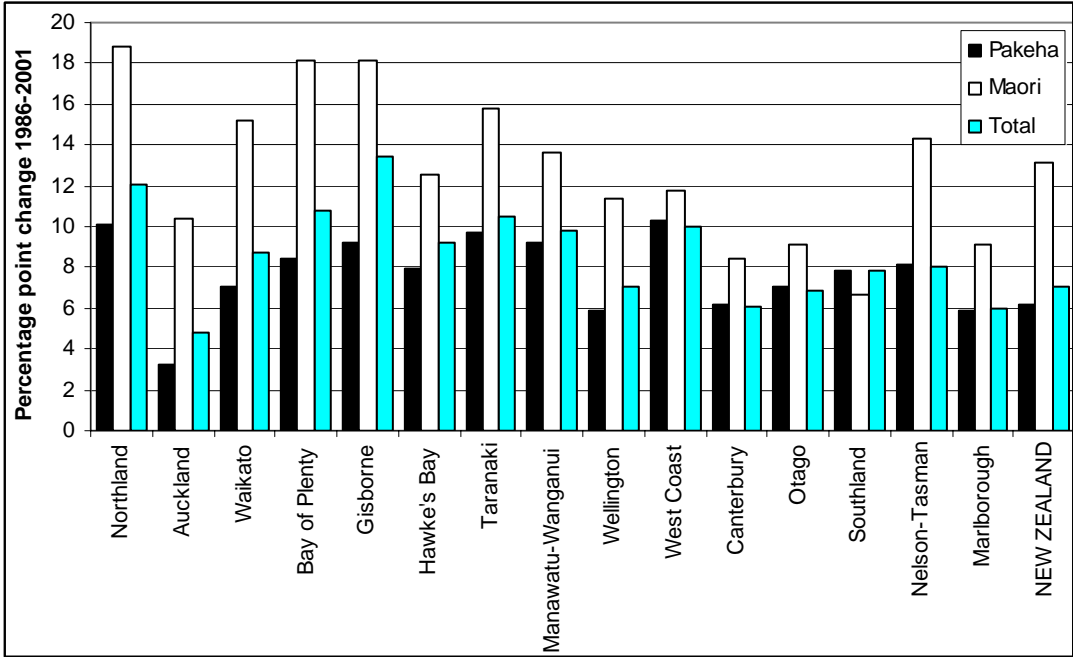
For Māori, high levels of benefit usage were seen in Northland, Gisborne and Hawke’s Bay; these regions have populations with high proportions of Māori. The high benefit use is contributed to by high levels of Unemployment benefits.

**3.3 Change in Benefit Use 1986 and 2001**

The period 1986 to 2001 saw a very significant increase in benefit reliance in New Zealand. The peak was in 1991 but the interest in this section is the change of benefits between 1986 and 2001. This section considers the percentage point difference in benefit use between 1986 and 2001.

For the New Zealand population from 1986 to 2001 benefit usage increased by 7 percentage points, so that the 2001 level was almost double the 1986 level. There was a similar trend for the regions although the magnitude of the differences varied as shown in Figure 3. Generally the regions with the highest proportions of benefit use in 1986 had the largest percentage point increase, and those with lowest use had the smallest. The smallest change was five percentage points for Auckland, and the largest was 13 percentage points increase for Gisborne. Other regions which had a high percentage point increase were Northland, the Bay of Plenty, Taranaki and West Coast. The benefits from the different sources generally followed the overall regional trend (see Appendix Table 3).

**Figure 3: Percentage Point Difference between 1986 and 2001 in Standardised<sup>1</sup> Benefit Usage<sup>2,3</sup> as a Percentage of the Population 15-59 years, Ethnicity and Region for New Zealand**



- (1) Standardised by Age and Gender to New Zealand 1996.
- (2) Received a benefit any time in the last 12 months.
- (3) Domestic Purposes, Unemployment and Sickness/Invalid benefit (person only counted once).

For Pakeha there was a six percentage points increase in benefit use. Benefit usage more than doubled between 1986 and 2001, with all the regions following similar trends although the magnitude of the differences varied. The range among the regions was from 3 to 10 percentage points. The largest increases in benefit use were in Northland, Gisborne, Taranaki,

Manawatu-Wanganui and West Coast with the smallest increase being in Auckland (see Figure 3 and Appendix Table 3).

The Māori population in New Zealand went through a 13 percentage points increase in benefit usage, rising from 19 per cent in 1986 to 32 per cent in 2001, with all the regions following similar trends although the magnitude varied. The lowest difference was for Southland with 7 percentage points difference and the highest difference of 19 percentage points was in Northland. The other regions with high increase in benefit usage were Hawke's Bay and Gisborne, and regions with low change in benefit usage among Māori were Auckland, Canterbury, Otago and Marlborough.

### **3.4 Age-specific Benefit Use**

Benefit usage is highest among the 15-24 year olds, but declines with age, with needs being lowest at the 45-59 years age group. Peak benefit usage occurred in 1991 as is outlined in Table 6. By 2001, the gaps between the age groups had narrowed by comparison with 1991. Of the welfare measures, Unemployment benefits had the highest percentage at the 15-24 and 25-44 years age groups with it also being the highest in 1991 and 1996 for the 45-59 years age group. Sickness/Invalids benefit were the more important measure at 45-59 years in the other two years. This could indicate that people move from the Unemployment Benefit to the Sickness/Invalid benefit over time as they get older (levels of overall Sickness/Invalid benefit will be investigated in the next section). The Domestic Purposes Benefit is received more at the 25-44 years than at any other age group, as would be expected.

#### *Ethnicity*

Both Pakeha and Māori saw peak benefit usage occur in 1991 (see Table 6). Pakeha mirrored the same results as the Total population with the age group 15-24 having the highest levels but lower at older ages. Māori followed Pakeha in 1986 and 1991, whereas in 1996 and 2001 peak needs were at 25-44 years. Māori rates at all ages are over twice those of Pakeha, with only the 15-24 years age group dipping below this in 1996 and 2001. The gap has reduced at all age groups between Pakeha and Māori since 1991, but the pattern has changed: the widest gap was at 15-24 years age group in 1986 but shifted to 25-44 years from 1991.

Looking at the three components for Unemployment benefits the gap was wide at all three age groups, but has reduced considerably since 1991. The gap for the Domestic Purposes benefit was especially marked for the 25-44 years age group, and to a lesser extent at 15-24 years. Demand for the Domestic Purposes benefit doubled for all the age groups, for both Pakeha and Māori between 1986 and 1991, but levels have remained relatively stable since 1991 so the gap between Pakeha and Māori has not changed. The gap between Pakeha and Māori for Sickness/Invalid benefit is large for the 45-59 years age group, with this gap getting larger over time.

#### *Regional Populations*

Regionally the results for all the age groups generally follow the overall national results although there are some exceptions (see Appendix Table 5). For the 15-24 years age group total benefit usage in Wellington is not low in 1996 and 2001 while usage in Marlborough was low in 1996 and 2001. Otago had very low levels of Domestic Purposes benefit in the 15-24 years age group. West Coast had especially high levels of Sickness/Invalid benefit for the age groups 25-59 years and Unemployment benefit for those 45-59 years.

**Table 6: Prioritised Benefit Usage<sup>1</sup> as a Percentage of the Population by Age Group, Benefit Type and Ethnicity for New Zealand, 1986-2001**

<b>Ethnicity</b>	<b>Age Group (years)</b>	<b>Year</b>	<b>Domestic Purposes benefit</b>	<b>Unemployment benefit</b>	<b>Sickness/Invalid benefit</b>	<b>Total of three benefits</b>
Pakeha	15-24	1986	1.2	7.7	1.9	10.8
		1991	2.4	17.5	1.8	21.8
		1996	2.6	14.2	2.2	18.9
		2001	2.3	12.1	2.0	16.4
	25-44	1986	3.0	2.5	1.8	7.3
		1991	5.0	8.5	2.3	15.9
		1996	5.0	6.5	2.9	14.4
		2001	5.2	5.2	3.3	13.6
	45-59	1986	0.6	1.5	2.8	4.9
		1991	1.5	5.8	4.1	11.3
		1996	1.4	4.7	4.6	10.7
		2001	1.5	3.8	5.2	10.5
Māori	15-24	1986	5.3	18.1	2.7	26.1
		1991	10.3	30.1	2.4	42.8
		1996	9.7	22.5	2.9	35.0
		2001	9.5	19.8	2.6	31.9
	25-44	1986	7.4	8.1	3.0	18.5
		1991	17.0	21.8	3.8	42.7
		1996	16.3	16.9	4.9	38.1
		2001	16.4	12.5	5.3	34.2
	45-59	1986	2.0	4.9	6.5	13.4
		1991	5.0	16.8	9.5	31.3
		1996	4.6	14.1	10.8	29.5
		2001	5.0	9.7	12.0	26.7
Total	15-24	1986	1.9	9.3	2.0	13.2
		1991	3.8	19.6	1.8	25.2
		1996	3.8	15.0	2.1	20.9
		2001	3.6	12.7	1.9	18.2
	25-44	1986	3.4	3.1	1.9	8.5
		1991	6.5	10.5	2.4	19.3
		1996	6.4	8.5	3.0	18.0
		2001	6.5	6.4	3.3	16.3
	45-59	1986	0.7	1.9	3.2	5.7
		1991	1.8	7.1	4.5	13.4
		1996	1.7	6.0	5.2	12.8
		2001	1.8	4.5	5.8	12.1

(1) Received the specified benefit any time in the last 12 months.

### 3.5 *Sickness/Invalid Benefit*

A more detailed analysis of sickness/invalid benefits is carried out as it shows the effect of the changing economy. Though people on sickness/invalid benefits need to meet set medical criteria to be eligible for these benefits, when the economy is doing well people who might be eligible, such as some handicapped or mentally ill, often hold down a job. But when the economy is not doing well, these are the first people who lose their jobs, and thus end up on a benefit, legitimately receiving sickness/invalid payments. Some of this group could also be discouraged workers.

But there is another dimension to this being explained in depth in a separate study (Pool et al. forthcoming-f). This shows that there is also a link to the health status of the region and the availability of acute and elective services. It must be recalled that, particularly in the 1990s, the health system was radically restructured, including the integration of disability services into the broader health system and de-institutionalisation, while other aspects of social welfare delivery were also being reshaped. It seems that as a result some displacement occurred between the more formal hospital sector and informal and primary health care sectors. There is also the financial drain on the economy as well as the waste of human capital that sickness/invalid benefit group represents. A person on sickness/invalid benefit gets a higher benefit than those on the unemployment benefit so making it more preferable to be on these benefits. Hence if they are eligible they try to move to the sickness/invalid benefit.

There have been some changes in sickness/invalid benefit levels with respect to the unemployment benefit over the period from 1986 to 1996 which can affect decisions on benefit choice. Initially in 1986, benefit levels for sickness and invalid benefits were higher than the unemployment benefit thereby creating a two tier system making it more advantageous to be on the sickness/invalid benefit than on the unemployment benefit. In 1991 there were *pro rata* benefit cuts for unemployment and sickness benefits, but not invalid benefits, creating a three tier system which was still in place in 1996. The different levels of benefits give people an incentive to move from one benefit to another. "Analysis of the figures also indicates a high degree of "mobility" into the higher paid invalids and sickness benefits from the formerly unemployed. For example 30% of all new grants of Sickness Benefit in 1995 were to people previously on Unemployment Benefit" (Preston 1996).

In this section the age-specific rates of all the people receiving sickness/invalid benefit of age 15-59 years is investigated. In the previous section benefit use for the overall population (15-59 years) was investigated with sickness/invalid benefit being part of an hierarchical structure which did not measure an overall prevalence.

The trends for New Zealand over time have shown an increase in the levels of sickness/invalid benefit (see Table 7) which follows the results shown earlier in this paper. In 1986 and 1991 males generally had higher rates than females except in the age group 15-24 years which includes women who go on the sickness/invalid benefit while they are pregnant. By 1996 in the older two age groups there was not that much difference between males and females. In 2001 the 45-59 years group had higher rates for females than males.

**Table 7: Percentage of the Population getting Sickness/Invalid Benefit<sup>1</sup>, by Age, Gender and Ethnicity, New Zealand, 1986-2001**

Year	Age Group (years)	Pakeha		Māori		Total	
		Males	Females	Males	Females	Males	Females
1986	15-24	2.3	2.7	2.9	4.7	2.3	3.0
	25-44	2.2	1.5	4.0	2.6	2.4	1.6
	45-59	3.7	1.8	9.0	4.1	4.1	2.0
1991	15-24	2.1	2.6	2.7	3.6	2.1	2.7
	25-44	2.7	2.2	4.7	3.7	2.8	2.3
	45-59	4.5	3.3	10.7	7.9	5.0	3.7
1996	15-24	2.8	3.7	3.7	6.4	2.7	3.9
	25-44	3.8	3.2	6.7	5.9	3.9	3.5
	45-59	5.0	5.7	12.0	12.2	5.6	5.8
2001	15-24	2.5	3.1	3.5	5.1	2.4	3.2
	25-44	4.0	3.4	7.0	5.8	4.2	3.6
	45-59	5.2	5.8	12.5	13.3	5.8	6.5

(1) Received a sickness/invalid benefit any time in the last 12 months.

The oldest age group 45-59 years had the highest percentage of people on sickness/invalid benefit with this percentage going up considerably over the time period compared to little change for the people aged 15-24 years. Māori has considerably higher percentages of sickness/invalid benefit than Pakeha. The increase over time for Māori was larger than for Pakeha especially for females 45-59 years.

### *Regional*

For the remainder of the analysis the focus will be on the overall standardised rate as shown in Table 8. The regions which had the smallest increase in Sickness/Invalid Benefit usage over the 12 month leading up to the census over the time period 1986 to 2001, and also the lowest rate in 2001, were Auckland and Wellington. Southland, Wellington and Taranaki were all low in 1986 with Southland and Taranaki joining the middle of the pack by 2001.

The regions with the highest levels in 2001 were Northland, Gisborne and the West Coast. These first two regions also experienced the largest change over the 1986 – 2001 period of over three percentage points with a large change occurring between 1991 and 1996. West Coast and Nelson-Tasman had the highest rates in 1986 with Nelson-Tasman still remaining relatively high.

In another paper in this series the relationship between Sickness/Invalid benefit and hospital utilisation is investigated (Pool et al. forthcoming-e). This is also investigated in another publication (Pool et al. forthcoming-f). There is shown to be some relationship between these two factors though not always in the same direction.

**Table 8: Standardised<sup>1</sup> Percentage of the Population Receiving Sickness/Invalid Benefit<sup>2</sup>, by Region, 1986-2001**

Region	Percentage of Population				Percentage Point Change			
	1986	1991	1996	2001	1986-91	1991-96	1996-01	1986-01
Northland	2.4	3.8	5.4	5.7	1.3	1.6	0.3	3.3
Auckland	2.5	2.8	3.4	3.4	0.4	0.6	0.0	0.9
Waikato	2.4	3.1	4.3	4.5	0.7	1.2	0.2	2.0
Bay Of Plenty	2.3	3.1	4.5	4.6	0.8	1.3	0.1	2.2
Gisborne	2.6	3.7	4.9	5.8	1.1	1.2	0.9	3.1
Hawke's Bay	2.6	3.1	4.8	4.9	0.5	1.7	0.1	2.3
Taranaki	2.0	2.8	4.3	4.7	0.8	1.5	0.4	2.7
Manawatu-Wanganui	2.7	3.6	4.9	5.3	0.9	1.3	0.4	2.6
Wellington	1.9	2.3	3.2	3.4	0.4	0.9	0.1	1.4
West Coast	3.7	5.8	6.6	6.3	2.1	0.9	-0.4	2.6
Canterbury	2.7	3.7	4.7	4.8	1.0	1.1	0.0	2.1
Otago	2.6	3.4	4.5	4.7	0.9	1.1	0.2	2.2
Southland	1.9	2.4	4.4	4.3	0.5	2.0	-0.1	2.4
Nelson-Tasman	3.5	4.1	5.5	5.6	0.6	1.4	0.1	2.1
Marlborough	2.5	3.2	4.2	4.6	0.7	1.0	0.4	2.1
<b>New Zealand</b>	<b>2.5</b>	<b>3.1</b>	<b>4.1</b>	<b>4.2</b>	<b>0.7</b>	<b>1.0</b>	<b>0.1</b>	<b>1.8</b>
<i>Range</i>	<i>1.8</i>	<i>3.4</i>	<i>3.4</i>	<i>2.9</i>	<i>1.7</i>	<i>1.4</i>	<i>1.2</i>	<i>2.3</i>

(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received a sickness/invalid benefit any time in the last 12 months.

#### 4 Overcrowding

In other paper in this series the structures, economic circumstances (incomes) and tenure of households and dwellings were analysed (Cochrane et al. forthcoming; Pool et al. 2005a). In this paper housing is viewed from a different perspective: overcrowding is looked at as a factor of exclusion and cohesion. This section adapts a method developed by Midland Regional Health Authority, based around bedroom occupancy, to estimate overcrowding in their area of responsibility (Gray 2001; Midland Health 1994). It is a conservative estimate as the age and sex composition of the population are not taken into consideration. Statistics New Zealand publishes a more sophisticated index of overcrowding which overcomes these difficulties. However, that index is only available at a national level (Statistics New Zealand 1998), and data by which to compute it regionally are not readily available. This is because there are only limited data available from the census. For example, there is no information on the size of the house.

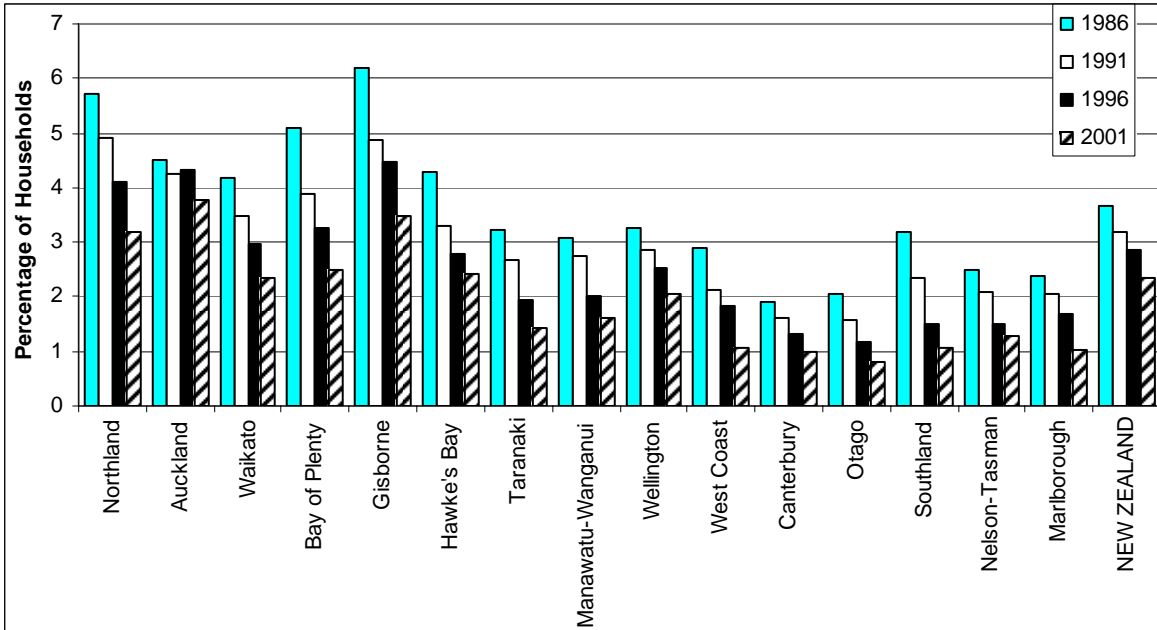
Smith *et al.* (1992) note that individuals and households are likely to encounter “serious and persistent deprivation” if they do not have access to “decent and affordable shelter”. It has been indicated that people living in crowded conditions often have lower-paying jobs, lower personal incomes, higher unemployment and greater reliance on income support than those in less crowded conditions (Statistics New Zealand 1998). Clearly family size in relation to household income is a factor of significance, while cultural differences in both family formation and family structures may play a role. All these factors are likely to be interrelated. They also affect where people live, how they behave, their health status and their ability to cope with crowded conditions (Ambrose 1996; Kearns *et al.* 1992; Lowry 1989).

Bedroom occupancy can also be used as an indicator of overcrowding. Following the Midland method, in this study we have used a simple calculation of the ratio of household members to bedrooms and set limits for overcrowding (Johnstone and Baxendine 1998; Midland Health 1994). Two levels of overcrowding are defined here, Moderate and Serious, as follows:

- Moderate Overcrowding
  - 3-4 people / 1 bedroom
  - 5-7 people / 2 bedrooms
  - 6-8 people / 3 bedrooms
  - 9 or more people / 4 or more bedrooms
- Serious Overcrowding
  - 5 or more people / 1 bedroom
  - 8 or more people / 2 bedrooms
  - 9 or more people / 3 bedrooms

In New Zealand there has been a decline in the percentage of households which are moderate and seriously overcrowded from 3.7 per cent to 2.4 per cent as shown in Figure 4. Auckland<sup>8</sup> is the region with the smallest amount of change in overcrowding between 1986 and 2001. However, it went from the fourth highest to the highest. The three highest regions in 1986 were Gisborne, Northland and the Bay of Plenty<sup>9</sup>, with all these regions having the largest drop to 2001, leaving Gisborne and Northland only remaining high. The regions south of Taranaki have much lower rates of overcrowding than for New Zealand as a whole.

**Figure 4: Percentage of household moderate and seriously overcrowded by region, 1986-2001**



Note: The Wellington urban sub-regions in 2001 for households moderate and serious overcrowding combined varies from 1.5 per cent in Wellington Central closely followed by Upper Hutt at 1.7 to 5.0 per cent in Porirua with Lower Hutt at 2.6 per cent.

<sup>8</sup> The Auckland urban sub-regions in 2001 for households moderate and serious overcrowding combined varies from 1.2 per cent in North Shore to 6.8 per cent in Southern Auckland with Western and Central Auckland just below four per cent.

<sup>9</sup> The sub-regions of Bay of Plenty in 2001 for households moderate and serious overcrowding combined varied from 1.6 per cent in Western Bay of Plenty to 4.2 per cent in Eastern Bay of Plenty with Rotorua District being 3.0 per cent.



Only a very small percentage of households show serious overcrowding as seen in Table 9 although this involves many people, as will be shown later. The regional pattern for serious overcrowding generally reflects the overall national trend. For regions south of Hawke's Bay less than 0.3 per cent of households were seriously overcrowded in both 1986 and 2001. In some regions, namely Northland and the Bay of Plenty, there has been a substantial reduction in the percentage of households suffering serious overcrowding. In 2001 Auckland, Gisborne and Northland had the highest proportion of households that were overcrowded.

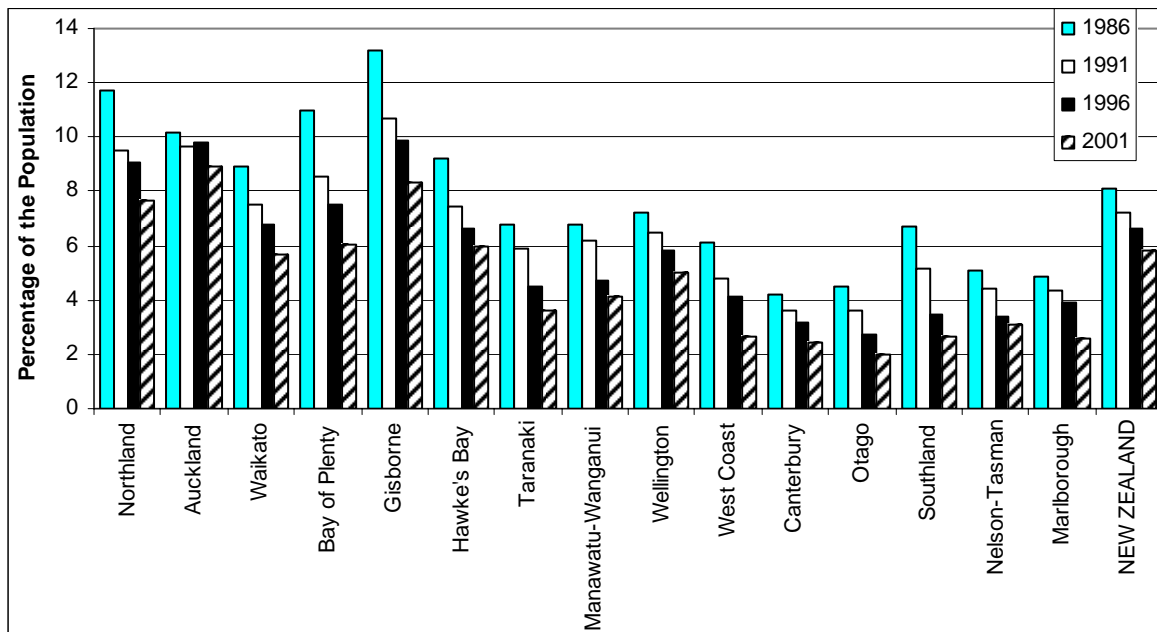
**Table 9: Moderate and Serious Overcrowding, by Household, 1986-2001**

Region	Moderate Overcrowding				Serious Overcrowding			
	1986	1991	1996	2001	1986	1991	1996	2001
Northland	5.2	4.5	3.8	2.9	0.6	0.4	0.3	0.2
Auckland	4.1	3.9	4.0	3.5	0.4	0.3	0.4	0.3
Waikato	3.9	3.3	2.8	2.2	0.2	0.1	0.2	0.1
Bay of Plenty	4.7	3.6	3.0	2.3	0.4	0.3	0.2	0.1
Gisborne	5.8	4.6	4.1	3.2	0.4	0.3	0.3	0.3
Hawke's Bay	4.1	3.2	2.6	2.3	0.2	0.1	0.1	0.1
Taranaki	3.1	2.6	1.9	1.4	0.1	0.1	[0.03]	0.1
Manawatu-Wanganui	2.9	2.7	1.9	1.6	0.1	0.1	0.1	0.1
Wellington	3.1	2.7	2.4	2.0	0.2	0.1	0.1	0.1
West Coast	2.8	2.0	1.8	1.0	0.1	0.1	0.1	[0.03]
Canterbury	1.9	1.6	1.3	0.9	[0.04]	[0.05]	0.1	[0.03]
Otago	2.0	1.5	1.1	0.8	[0.04]	[0.04]	[0.04]	[0.02]
Southland	3.1	2.3	1.4	1.0	0.1	[0.03]	0.1	[0.04]
Nelson-Tasman	2.4	2.1	1.4	1.2	0.1	[0.05]	0.1	0.1
Marlborough	2.3	1.9	1.7	1.0	0.1	0.1	[0.02]	0.0
<b>New Zealand</b>	<b>3.4</b>	<b>3.0</b>	<b>2.7</b>	<b>2.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<i>Ranges</i>	<i>3.9</i>	<i>3.0</i>	<i>3.0</i>	<i>2.7</i>	<i>0.5</i>	<i>0.4</i>	<i>0.3</i>	<i>0.3</i>

When the proportion of the population who live in overcrowded households is considered the rate is much higher even though the pattern is almost identical (see Appendix Table 5). In 1986 eight per cent of people lived in overcrowded houses, but this involved fewer than four per cent of all households. In 2001 six per cent of people lived in overcrowded houses, and this constituted 2.4 per cent of households. This is because, as these households are large, they have more people in them.

Between 1986 and 2001 the proportion of people in seriously overcrowded households decreased from 0.8 per cent to 0.5 per cent compared to only 0.2 per cent of Households. However, in regions with high levels of overcrowding a large number of people are affected. In 1986 Northland was the highest at 1.6 per cent, with Auckland, the Bay of Plenty and Gisborne following behind. In 2001 the level dropped slightly with Auckland being the highest at 1.0 per cent, and with Gisborne and Northland following.

**Figure 5: Percentage of the population living in overcrowded household by Region, 1986-2001**



There are significant differences in the results for Pakeha and Māori ethnic groups (see Figure 6 and Appendix Table 5). In 1986 for the New Zealand population four per cent of Pakeha were living in overcrowded conditions compared to 26 per cent of Māori. In 2001 there was a decrease for both ethnic groups: the Pakeha rate was two per cent compared to 14 per cent for Māori. Moreover, there are decreases for Māori and Pakeha across regions. Nevertheless, improvements across regions are not even for Māori. Rates are still particularly high, for example, in Northland. Nonetheless, there is a sizable reduction indicating that housing conditions are improving. We do not consider Pacific Island people here but in 2001 the overcrowding rate for this group was even higher than for Māori, at 31 per cent.

There is considerable social policy concern that Māori and Pacific Island People live in overcrowded conditions (Crothers et al. 1953; Crothers et al. 1995; Gray 2001; Kearns et al. 1992; Smith et al. 1992). Gray (2001) considers that crowding among Pacific people and obligations towards family members intensifies pressures on household space, especially among low-income groups who cannot afford to set up separate households.

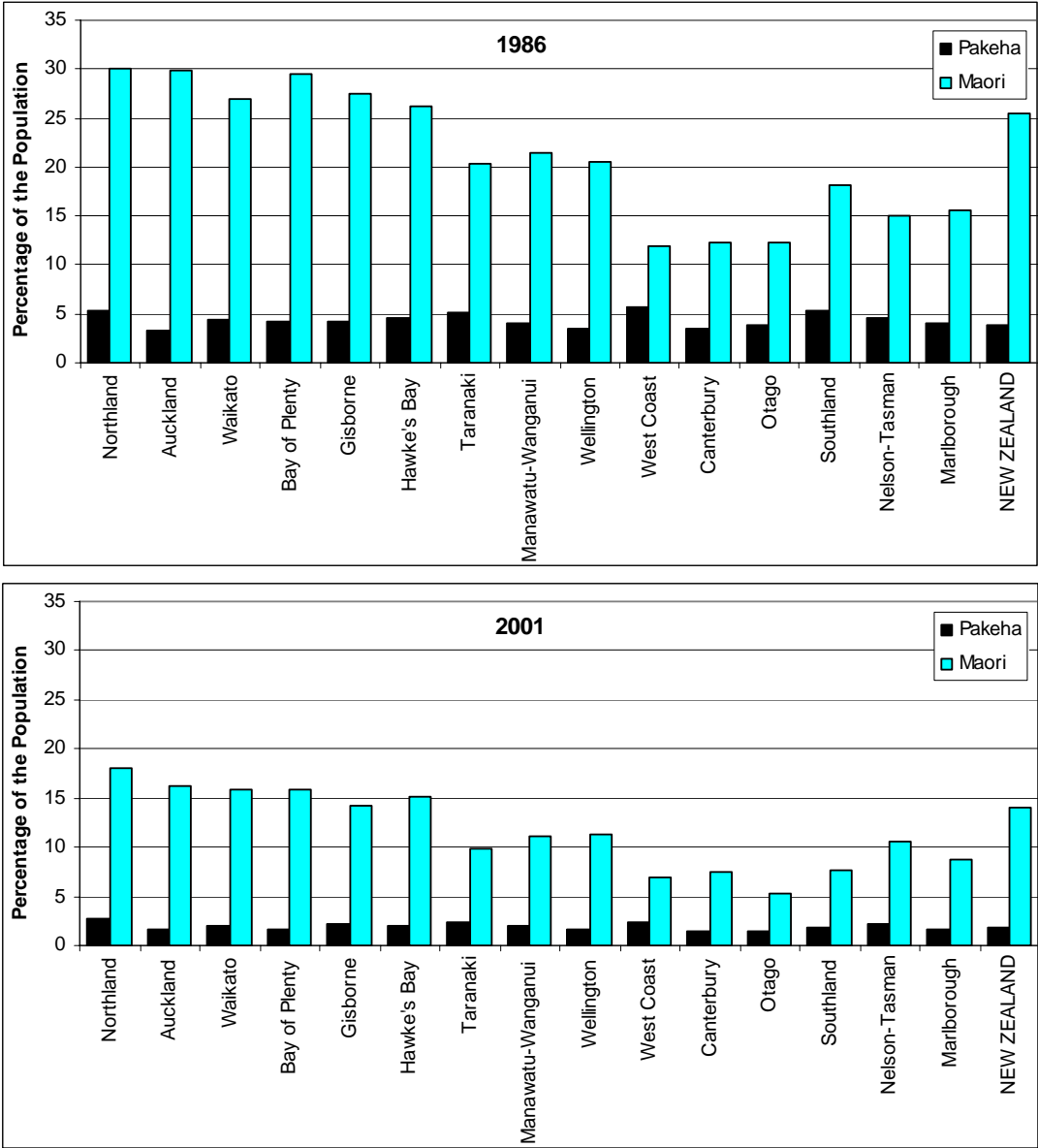
For Pakeha the percentage of people living in households that are overcrowded varies between regions and is different from the trend for the total population. In 1986 the regions with over five per cent of Pakeha in overcrowded households are Northland, Taranaki, West Coast and Southland. In 2001 no region was above three per cent overcrowding with Northland being the highest. The percentage of serious overcrowding is very low for Pakeha.

For Māori the regions fall into three groups. The first group contains regions in the North and Central North Island which had high levels of overcrowding in both 1986 and 2001, and includes Northland, Auckland<sup>10</sup>, Waikato, the Bay of Plenty<sup>11</sup>, Gisborne and Hawke's Bay.

<sup>10</sup> The percentage of people in moderate and serious overcrowded household in the four urban sub-regions of Auckland for Māori in 2001 varied from 7 per cent in North Shore to 22 per cent in Southern Auckland with Western and Central Auckland around 13 per cent.

However, in these regions the rate was 11 percentage points lower in 2001 than it had been in 1986. The second group includes the remaining regions in the North Island, Taranaki, Manawatu-Wanganui and Wellington<sup>12</sup>. These regions had levels of overcrowding of around 21 per cent in 1986 and 11 per cent in 2001. The third group includes all the South Island regions which had lower levels of overcrowding in both years.

**Figure 6: Percentage of people living in overcrowded households by ethnicity and region, 1986 and 2001**



<sup>11</sup> The percentage of people in moderate and serious overcrowded household in the sub-regions of Bay of Plenty for Māori in 2001 varied from 15 per cent in Western Bay of Plenty and Rotorua District to 18 per cent in Eastern Bay of Plenty.

<sup>12</sup> The percentage of people in moderate and serious overcrowded household in the four urban zones of Wellington for Māori in 2001 varied from 7 per cent in Wellington Central to about 14 per cent in Porirua and Lower Hutt with Upper Hutt 9 per cent.

The percentage of Māori living in serious overcrowding decreased by over half from 1986 and 2001, from 3.4 to 1.3 per cent of people. As in the case of the total national overcrowding figure, for Māori there are three distinct groups of regions especially in 1986 with the low North Island group of regions not as distinct in 2001. The level of overcrowding in regions with a high level dropped considerably between 1986 and 1996 from around 5 per cent to around 2 per cent with the highest regions being Northland and Auckland along with the Bay of Plenty in 1986 and Gisborne in 2001.

## **5 Convictions and Prisons**

So far in this paper it has been shown that rates for factors that indicate aspects of social cohesion vary considerably across regions. It can be argued that prison and conviction data are also important as a measure of social cohesion of regions since those regions with raised levels may well have higher levels of social dysfunction. To the extent that crime and imprisonment are linked to other social and economic factors, then convictions throw further light on problems of exclusion.

There are different ways of recording and analysing data on offending and offenders, such as recording of reported offences, the numbers of charges involved, and the number of prosecutions (Ministry of Justice: Criminal Justice Policy Group 1998; Triggs 1998). There are also differences between data from police sources and from the courts (i.e. differences between offences and cases) (Triggs 1998: 35). In this section data from the Department of Corrections and Ministry of Justice have been used in a number of different ways to investigate regional prison and conviction patterns.

The court data used in this section were obtained from the Ministry of Justice for each court then aggregated to regions. The courts were assigned to the region in which they are located, assuming people resident in that region are tried in their own regions courts<sup>13</sup>. There will however, be some cases, especially for serious crimes, when trials are held in another region and convictions from such trials will be counted in another region's data.

Information was obtained on the type of sentence, age, gender and ethnicity of those sentenced and, for those sentenced to prison, the length of sentence. In this section four time periods will be studied: 1985-87, 1990-92, 1995-97 and 2000-02 and three-year averages will be used to dampen random fluctuations. The appropriate population data from the Census of Population and Dwellings were used as a denominator for rates. It is important to note here that the same person can pass through the courts more than once in one year, a situation analogous to that for hospitalisation data (Pool et al. forthcoming-e). All the rates except the age-specific rates are standardised to adjust for the effects of the differing age-structures in each regions.

New Zealand courts can impose a number of different types of sentences. The one commonly reported in the media is imprisonment. But there are three other main types of sentences: community (include periodic detention, community programme, community service, supervision), monetary (fine or reparation; however, are data do not include infringement

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<sup>13</sup> Generally people who commit a crime do it in the regions in which they are resident, though there will obviously be exceptions. In the case of more serious crimes trials are moved out of a region because of High Court availability or because the community is too small to expect a fair trial. Thus there could be undercounts in the smaller region like the West Coast.

offences such as speeding or parking tickets), and other (including driver disqualification, deferred sentence, conviction and discharge).

### 5.1 All Convictions

The data for all the convictions were considered separately for each gender since there were substantial gender differences in patterns: for males nationally the rate was around six per cent of the population and for females just over one per cent for all four periods, with very little variation over time as shown in Table 10.

**Table 10: Conviction Rate as a Per cent<sup>1</sup> of the Population by Gender and Type of Sentence, Inter-Regional Range and New Zealand, 1985-87 – 2000-02**

Year	Males					Females				
	Com-munity	Cust-odial	Mone-tary	Other	Total	Com-munity	Cust-odial	Mone-tary	Other	Total
<b>New Zealand</b>										
1985-87	1.0	0.4	4.2	0.3	6.0	0.2	[0.02]	0.7	0.1	1.1
1990-92	2.0	0.5	3.2	0.4	6.1	0.4	[0.03]	0.6	0.1	1.1
1995-97	2.0	0.5	2.9	0.5	5.9	0.4	[0.03]	0.5	0.1	1.1
2000-02	1.7	0.6	3.0	0.6	5.9	0.4	[0.05]	0.5	0.2	1.2
<b>Inter-regional ranges</b>										
1985-87	1.1	0.5	2.6	0.3	3.3	0.3	[0.04]	0.6	0.1	0.7
1990-92	2.5	0.6	2.8	0.5	5.7	0.6	[0.05]	0.6	0.1	1.2
1995-97	2.4	0.5	1.8	0.5	3.8	0.6	[0.04]	0.7	0.2	1.1
2000-02	2.7	0.6	2.2	0.9	5.7	0.8	0.1	0.7	0.3	1.8

(1) Age Standardised to the Total Population for New Zealand, 1996

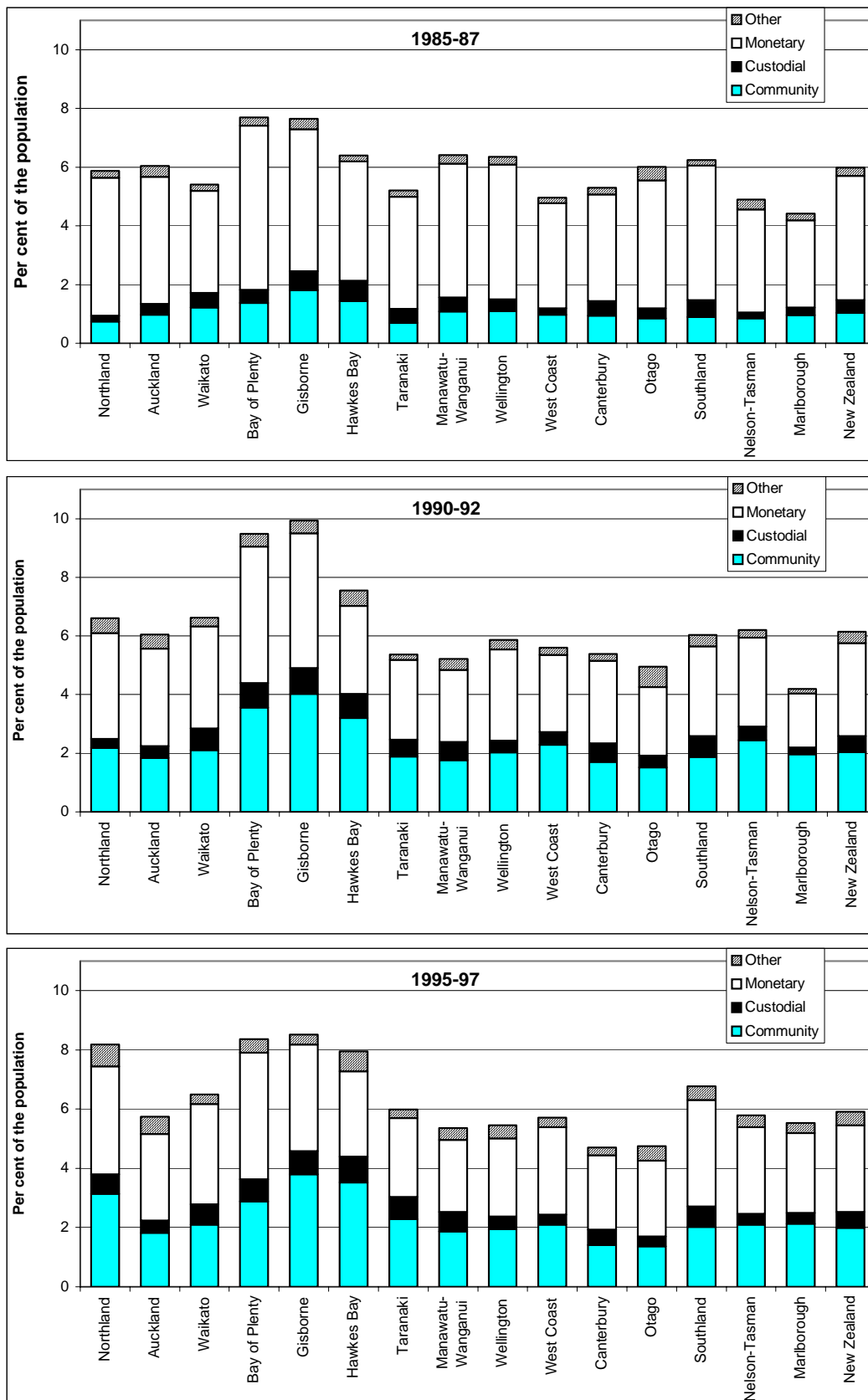
Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

For both males and females, for the whole period, the Bay of Plenty and Gisborne rates were high with Northland and Hawke's Bay rates being high in the two recent periods 1995-97 and 2000-02 (the rates are graphed in Figure 7 (males), Figure 8 (females), and drawing on Appendix Table 6). It must be stressed that Figures 7 and 8 have different scales reflecting gender differences.

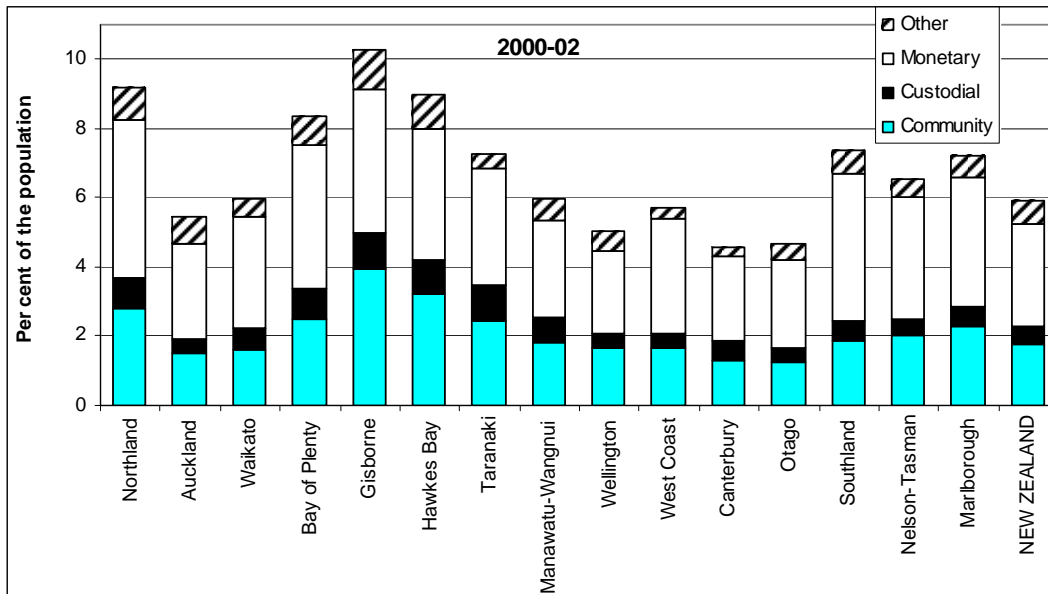
Regions with relatively low rates changed over time. In 1985-87 Marlborough, Nelson-Tasman and West Coast for both genders and Taranaki (females) were all at the low end of the scale. In 1990-92 for both males and females Marlborough was low followed by Otago. By 1995-97 and 2000-02 Canterbury was low followed by Otago for males whereas for females, Otago was the lowest. Most of the regions with low rates are in the South Island.

**Figure 7: Conviction Rate for Male as a Per cent<sup>1</sup> of the Males Population by Type of Sentence by Region, 1985-87 – 2000-02**



(continues on next page)

Figure 7. (continued)

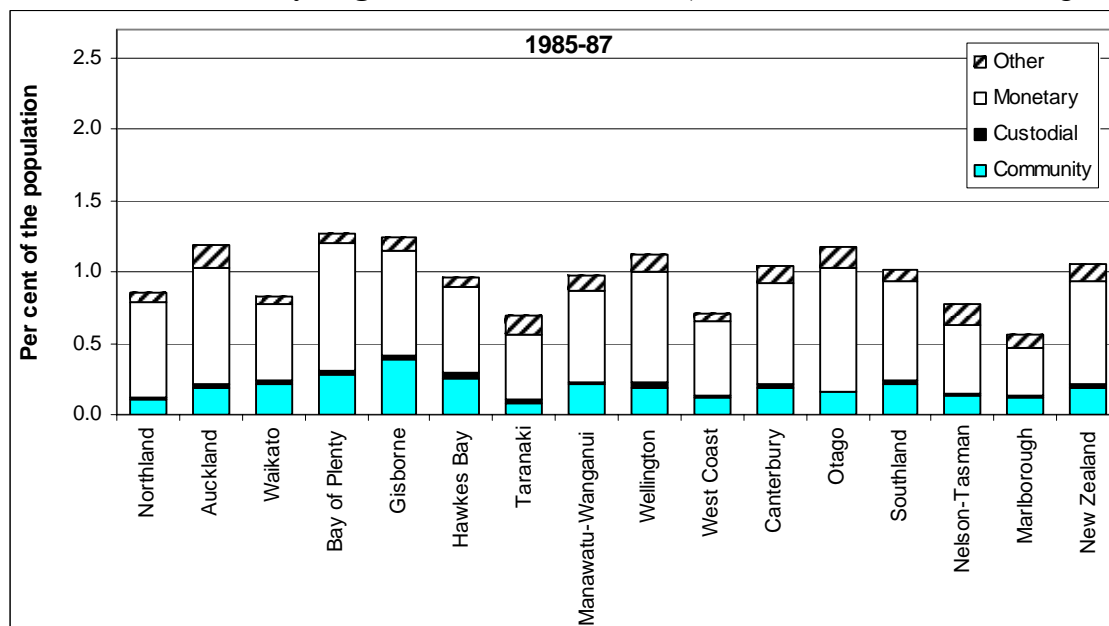


(1) Age Standardised to the Total Population for New Zealand, 1996

Sources: Ministry of Justice, customised convictions data set.

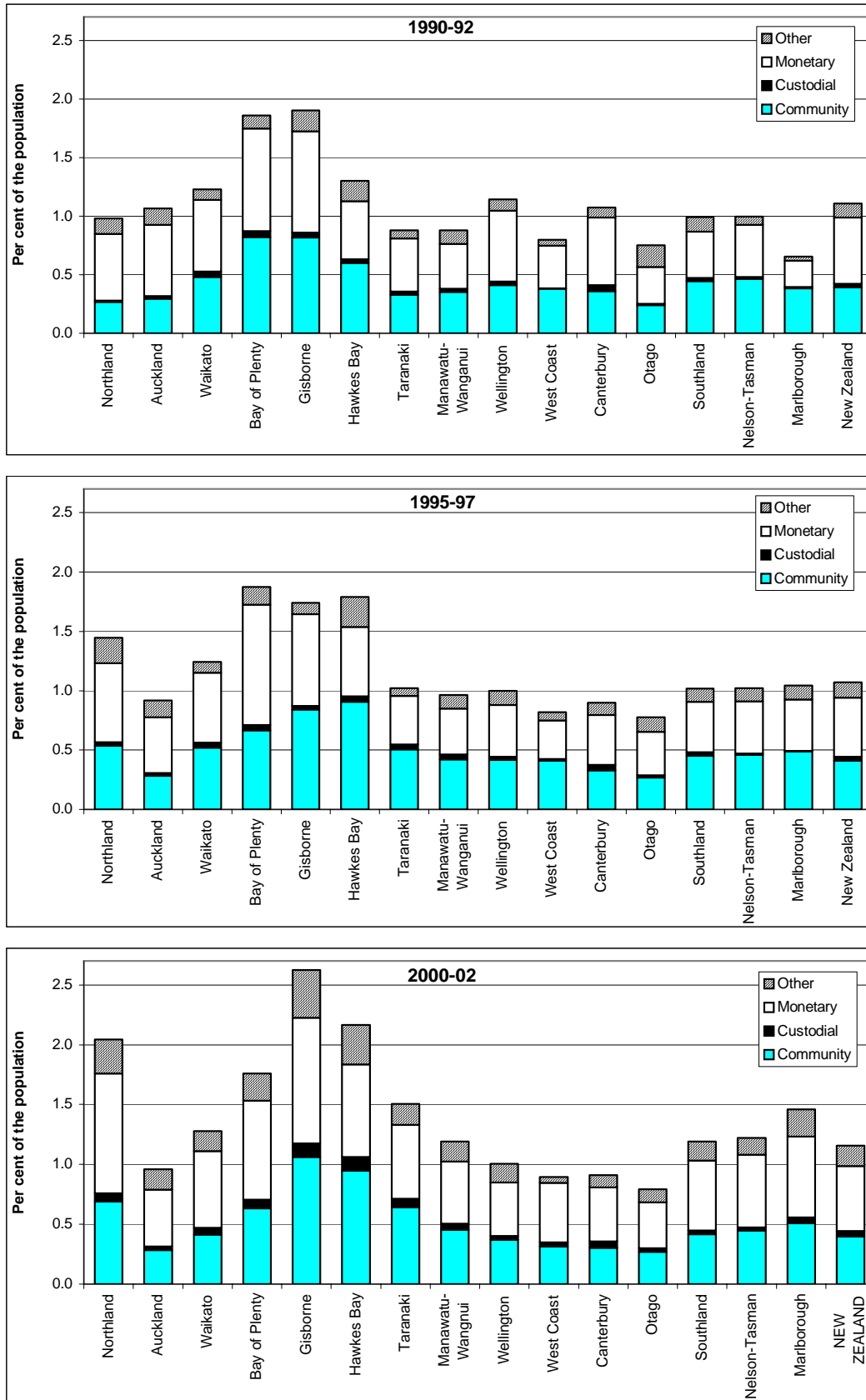
Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

Figure 8: Conviction Rate for Female as a Per cent<sup>1</sup> of the Females Population by Type of Sentence by Region, 1985-87 – 2000-02 (Note: different scale from Figure 7)



(continues on next page)

Figure 8. (continued)



(1) Age Standardised to the Total Population for New Zealand, 1996

Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.



What is interesting in these figures is that the New Zealand national pattern of convictions has been very stable over the entire period under review, for both males and females. But even though the rates for males remained consistent for New Zealand, in only three regions, Auckland, the Bay of Plenty and Manawatu-Wanganui, was the rate in 2000-02 within 10 per cent of their 1985-87 rate. Regions which dropped by more than 10 per cent over this period were Otago and Wellington, 22 and 21 per cent respectively. Counterbalancing this was the fact that many regions had an increase of more than 10 per cent for males between 1985-87 and 2000-02. The largest increase of 64 per cent was in Marlborough, but it started from a very low level and thus is less significant, with Northland, Hawke's Bay, Taranaki, Gisborne and Nelson-Tasman (again a low start) having increases of over 30 per cent. The other regions with increases were Southland and West Coast.

For females there are a number of regions in which the rate doubled in the time period 1985-97 to 2000-02, including Northland, Gisborne, Hawke's Bay, Taranaki and Marlborough. Regions showing at least a 10 per cent decrease for females were Otago, Auckland, Canterbury and Wellington.

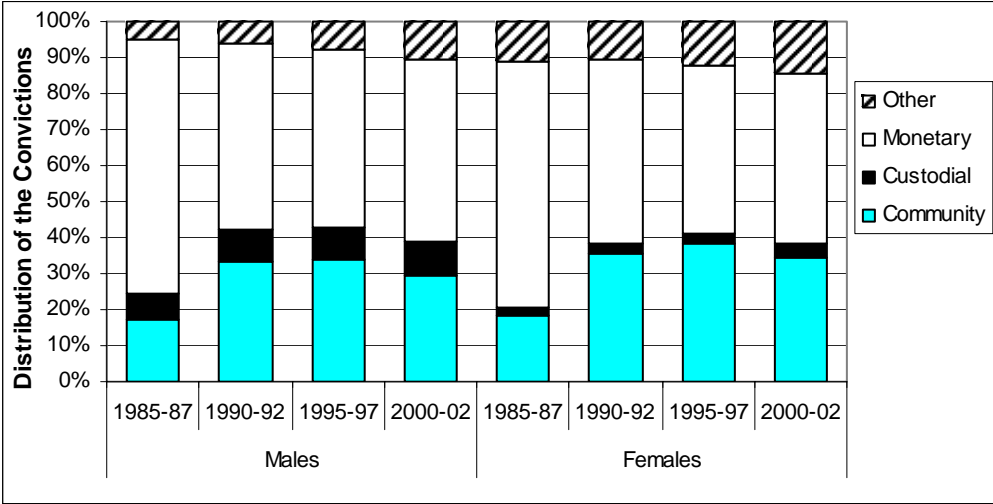
What comes out of this analysis is that change was slight for New Zealand as a whole. Instead a shift-share went on between regions, involving very rapid increases in some areas, sometimes, as in the case of Gisborne and the Bay of Plenty from levels that were already relatively high. Then there are other regions that decrease, notable several metropolitan regions, Auckland, Wellington and Otago. The inter-regional range increased from three to six percentage points between 1985-87 and 2000-02 as shown in Table 10. The range between the regions also doubled for females though at a much lower level.

## ***5.2 Conviction by Type of Sentence***

The data from this study show that the types of sentences imposed for New Zealand as a whole have changed over time with community sentences increasingly replacing monetary sentences as shown in Figure 9, a pattern identified by Triggs (1998). This change has come about because in 1985 a wider range of community-based sentencing options were introduced (Ministry of Justice: Criminal Justice Policy Group 1998). The distribution pattern for the two largest groups of sentences, Community and Monetary, are similar for males and females even though the levels are very different. A higher proportion of males than females are sentenced to prison and fewer are given Other sentences.

For New Zealand as a whole the types of sentences imposed by the courts have changed over time. Community sentencing doubled between 1985-87 and 1990-92 for both males and females and then remained stable to 1995-97 with a slight drop for males in 2000-02 as shown in Table 10. There was an increase in custodial sentences from 1985-87 to 1990-92 and then the rate remained stable. Monetary sentences declines till 1995-97, then remained stable, whereas "other" sentences increased.

**Figure 9: Distribution of Sentences Imposed<sup>1</sup> by Gender, New Zealand, 1985-87 – 2000-02**



(1) Age Standardised to the Total Population for New Zealand, 1996.  
 Sources: Ministry of Justice, customised convictions data set.  
 Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

Far more importantly, there are interesting regional differences in the sentencing rates for males and females (see Appendix Table 6 and Figure 7 and 8). Each of the four sentence types will be considered separately.

*Community Sentences*

For New Zealand as a whole for both males and females there was an increase in community sentences between 1985-87 and 1990-92 with little change to 1995-97 but with a decline for males in 2000-02. Although the levels are quite different for males and females, the pattern for both genders is similar, thus the results described here will focus on males. Gisborne, the Hawke’s Bay and the Bay of Plenty had high levels throughout the time period with Northland joining these regions from 1995-97 on. Northland and Taranaki had low levels in 1985-87 with Canterbury and Otago being low throughout the remainder of the time period. Auckland also tended to have low levels. The regions which had the largest increase between 1985-87 and 2000-02 were Northland and Taranaki of over 200 per cent with the smallest increase occurring in Waikato, Canterbury and Otago of less than 50 per cent.

*Custodial Sentences*

There were only a very small number of custodial sentences for females (as was reported by the Ministry of Justice 1998 p.15), thus the focus of this section will be on males. The age standardised rate for people sentenced to prison shows considerable differences between regions and over time. For New Zealand overall there was an increase between 1985-87 and 1990-92, with little change to 1995-97 with another slight increase to 2000-02, but the regions did not necessary follow this pattern. There was little change in Auckland and Wellington with the level being slightly lower than for New Zealand as a whole. The regions which tended to have low rates were West Coast, Otago, Nelson-Tasman and Marlborough with Northland being low in 1985-87 and 1990-92. The regions which had high rates for the whole period were Gisborne and Hawke’s Bay with the Bay of Plenty being high from 1990-92 onwards. Waikato and Southland were high to 1995-97 with Northland and Taranaki also being high in 1995-97, and especially in 2000-02.

The regions with the largest increase between 1985-87 and 2000-02 was Northland, while Nelson-Tasman, Marlborough and Taranaki also had a sizable increase though nowhere near the levels of Northland. Nelson-Tasman, Marlborough and Northland started off at a low level, Taranaki much higher, but Nelson-Tasman and Marlborough ended up below New Zealand despite their rapid rise. Regions with under 20 per cent change include Auckland, Wellington, Southland, Canterbury and Otago.

#### *Monetary Sentences*

The monetary sentence is the most common type of sentence. For New Zealand as a whole over time the Monetary Sentences have decreased between 1985-87 and 1995-97 with a slight increase to 2000-02, for both males and females. The female level is about one sixth that of males. For both males and females the levels are high in the Bay of Plenty and Hawke's Bay with Northland also high for the whole period especially for males. Marlborough was low up till 1995-97 with Otago and Canterbury being low from 1990-92 and Wellington from 1995-97 for both males and females. Wellington and Otago had the largest declines between 1985-87 and 2000-01 whereas Marlborough was the only region to have an increase. Other regions which had little change were Nelson-Tasman, Northland, Waikato, Hawke's Bay, Southland and West Coast.

#### *Other<sup>14</sup> Sentences*

For males the level of "Other" sentences was low initially though increased significantly over the time periods. For females the increase was not quite as dramatic. The differences between males and females are not as significant as for other sentencing categories with the female rate being two-fifths of the males rate in 1985-87, though the gap then widened so that women had a rate only one-quarter of the males in 2000-02. In 2000-02 the rate was highest in Gisborne, Hawke's Bay and Northland for both males and females, and low in Canterbury, West Coast, Otago and Taranaki.

### **5.3 Conviction by Age**

For New Zealand as a whole, males in the 20-24 years age group consistently had the highest conviction rates with that at 15-19 years being second in 1985-87 with 15-19 and 25-29 being roughly second equal for the other three periods (see Table 11 and Figure 10). There was a large decline between 1985-87 and 1990-92 in the rate at 15-19 years with little change in rates after 1990-92. The 20-24 years age group had a decline from the level in 1985-97 and 1990-92 to a lower level in the last two periods. There has been a rise in the conviction rates between 1985-87 and 1990-92 for the age groups 25-39 years, but a gradual decline at 25-29 years, and the levels being steady at 30-39 years. There was a gradual increase at 40-49 years.

The conviction levels for females are significantly below those for males. They show similar patterns using age except in 1985-87 when the rates at the 15-19 and 20-24 years age groups had been the same. The rise and fall in convictions for females in each age group follow the trend for males. For the remainder of this section the focus will be on males where the numbers are larger than for females, and at three prime ages for convictions namely 15-19 years to 25-29.

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<sup>14</sup> Including driver disqualification, deferred sentence, conviction and discharge.

**Table 11: Convictions as a Percentage of the Population by Age Group and Gender, 1985-87 – 2000-02**

Age Group (years)	Males				Females			
	1985-87	1990-92	1995-97	2000-02	1985-87	1990-92	1995-97	2000-02
15-19	15.0	11.2	11.7	11.5	2.8	1.8	1.9	2.0
20-24	17.3	17.8	15.3	15.4	2.8	3.0	2.5	2.7
25-29	9.7	11.7	11.2	10.4	1.7	2.2	2.1	2.0
30-39	5.1	6.4	6.5	6.6	1.0	1.3	1.4	1.5
40-49	3.0	3.1	3.2	3.4	0.5	0.6	0.6	0.8
50+	1.0	1.0	0.9	0.9	0.2	0.2	0.2	0.2

*Sources:* Ministry of Justice, customised convictions data set.  
 Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

Taking convictions overall, the results are rather stunning. Rates for most ages decline, yet the inter-regional ranges goes up, in fact to levels that exceed the national rate. In 1985-87 rates at all ages were highest in the upper central North Island, Auckland, the southern North Island, Southland and Otago, and, to a degree, Northland. By 2000-02, the regional pattern had changed in two important regards. South Island rates were generally with some exceptions highest. The lowest rates were in the metropolitan regions of Auckland, Wellington, Canterbury and Otago, but not Waikato.

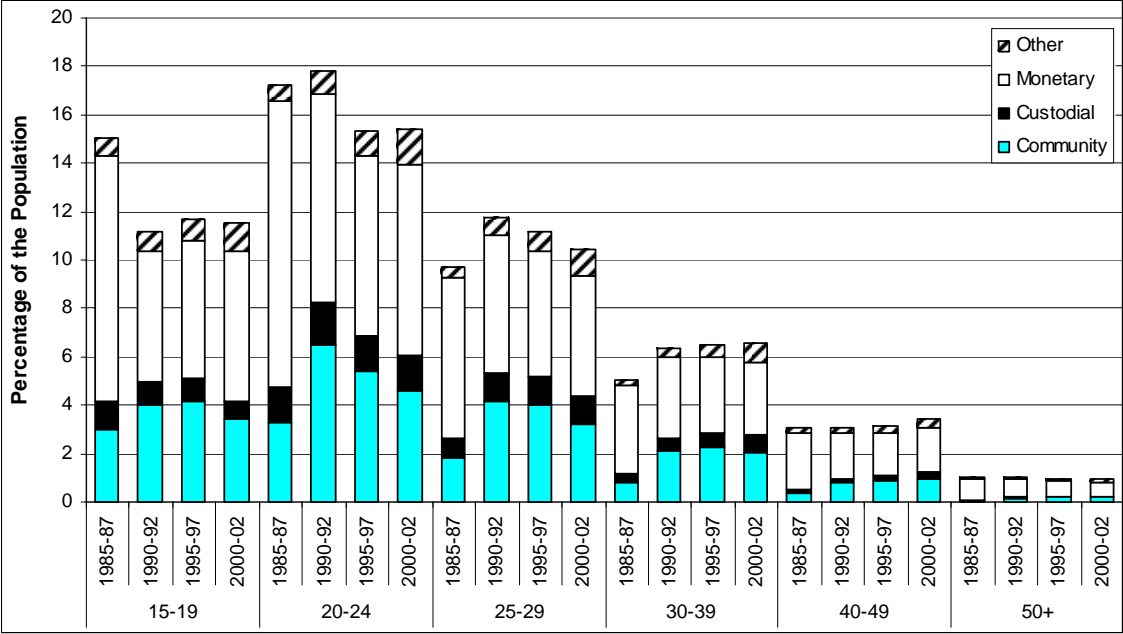
#### *Sentence Type*

This section considers the pattern of conviction types by age and years for males in New Zealand as a whole (see Figure 10). The age-specific patterns of convictions generally follow that of the whole population. However, Community and Custodial sentences make up a larger proportion of convictions in the younger ages than those for the 40 years and over age groups. When considering the age-specific rates by region the focus will be on those in the 15-29 years age group as this group has the highest conviction rates. Also the 1985-87 and 2000-02 periods will be analysed as they represent the beginning and end of the overall time period under consideration.

Finally, a methodological caveat is in order. We have no data on the relative severity of crime and thus the comment here may not reflect the realities of the criminal justice system. To a degree of course the type of sentences does reflect this.

Rates for monetary sentences decrease, yet the inter-regional variance goes up. For other sentence type (we ignore “other” here as rates are so low) the levels more or less change rather little, yet their ranges also go up. Age variance also goes up with an increasing degree of concentration at 20-24 years except for custodial sentences.

**Figure 10: Sentence Type by Age Group: Percentage of the population, Males, New Zealand, 1985-87 – 1995-97**



Sources: Ministry of Justice, customised convictions data set.  
 Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

Regional patterns for each sentence type follow more or less that described for sentence types as a whole. A difference does however emerge. Northland and the other upper North Island peripheral regions show higher concentration from the New Zealand figure for custodial and community sentences than holds true for the peripheral South Island regions (see Appendix Table 7). In contrast, peripheral regions throughout the country have levels well above New Zealand for monetary sentences.

Between 1985-87 and 2000-02 there were some interesting changes in the pattern of sentencing. For New Zealand as a whole the sentencing rate for the 15-19 and 20-24 years age groups decreased 23 and 11 per cent respectively and the rate for the 25-29 years age group increased 7 per cent. For all these age groups community and other sentences rose with those for the 25-29 years age group for custodial sentences while monetary and custodial sentences for the 15-24 years age groups decreased. Between 1985-87 and 2000-02 Northland had marked increases in community, custodial and other sentences for all age groups with the 20-29 years age group having a major increase overall. Taranaki had a significant increase in community sentences for all age groups with a high overall increase and Hawke’s Bay had a rapid growth in other sentences. Marlborough had a high overall increase in the total rate in all three age groups, contributed to by an increase in monetary sentences against the rational trend. Southland had a large increase in age groups 15-24 years which was contributed to by a large increase in community and other sentences.

Auckland had a large drop in custodial sentences for the 15-19 years age group and this contributed to a large drop in the overall conviction rate for this age group. Wellington had a large decline in the overall rate for the three age groups contributed mainly by a large decrease in monetary sentences. In Otago for the 15-24 years age groups there was a large drop in the overall sentencing rate. Contributing to this was a small increase in community sentences for 20-24 years and a decline in other sentences. Canterbury was one of three regions which had a drop in the overall conviction rate for the 25-29 years age group resulting

from a smaller rise in community and custodial sentences than was found for other regions. On the other hand, Nelson-Tasman had one of the largest rises in sentencing rate for the 25-29 years age group. A contributing factor was the large rise in community and custodial sentences in this region. Waikato had a decline in community sentences in the 15-19 years age group and a small increase in community sentences.

#### ***5.4 Conviction by Ethnicity***

In this section the analysis will focus on males as the numbers of convictions for females in some regions are very small. Anecdotally, official police practice for ethnicity “is self-identified by the offender (and then coded on the Law Enforcement System into the categories: Caucasian, Māori, African American, Pacific Island, Indian, Asian, and Other). However, in practice, ethnicity is likely to be recorded by a mixture of self-identification and recorder judgement. No allowance is made for people wanting to specify more than one ethnic group.” This means that definitions used here are not comparable with census usage, where people can identify with more than one ethnicity. When calculating a rate by ethnic groups this should not be too large a problem if the differences are large between the ethnic groups, though magnitude might be in question.

In a large number of cases the ethnicity of the offender was unknown, though the percentage has reduced over time. This was particularly the case for Monetary (42 per cent of cases in 1985-87 and 19 per cent in 2000-02 were not specified) and “Other” sentences (23 and 11 per cent respectively). The proportions with unknown ethnicity were lower for Community and Custodial sentences. For New Zealand as a whole the proportions of the population receiving community sentences where the ethnicity was unknown were 11 and five per cent for 1985-87 and 2000-02 respectively. For Custodial sentences the levels of unknown ethnicity were five and one per cent respectively. It is important to note that the proportion of those sentenced for whom ethnicity is unknown, and not reported by someone like an arresting officer, increases by age. This section will focus on Community and Custodial sentences where the proportion of the population with unreported ethnicity is lower. Rates used in this section are age standardised to the New Zealand Total Population in 1996.

Community sentences are applied about five times more commonly for Māori than Pakeha. However, the differences for custodial sentences are even more marked with the Māori rate being six times above the Pakeha in all years concerned in this analysis as shown in Table 12. The rate for community sentences roughly doubles between 1985-87 and 1990-92 and that for custodial sentences went up significantly as well. In all regions north of Hawke’s Bay and Wellington community sentencing of Māori was between five and six times that of Pakeha for all four periods. Most of these regions also had large differences between Māori and Pakeha for custodial sentences, but the variation was greatest for Gisborne where Māori were over 12 times more likely to receive custodial sentences than Pakeha for 1990-92 in 1995-97, and eight times in 2000-02. In Auckland, the Māori custodial sentencing rate was also over eight times that for Pakeha for all four years.

The regional rates for all ethnicities combined vary by the ethnic composition of the population; regions with a higher percentage of their population who are Māori have higher rates, and those with a lower Māori percentage have lower rates. For custodial and community sentences, the patterns in the regions differ from the overall pattern by ethnic group in some cases.

For community sentences, the overall rates for the Bay of Plenty, Gisborne and Hawke's Bay were high, whereas Pakeha rates were about or just above the New Zealand level (see Table 12). For Māori, the rate was high throughout the fifteen year period for Hawke's Bay, with the Bay of Plenty and Gisborne, starting around the New Zealand level and then going up. Northland had low rates for both Pakeha and Māori for 1985-97 and 1990-92 with the Māori rate becoming high from 1995-97. Auckland and Waikato had low rates for Pakeha especially in 2000-02. Taranaki had low rates in 1985-87 for both Pakeha and Māori whereas the overall rate was not significantly different to the New Zealand level. In Wellington, the Māori rate tended to be high for the whole period. In West Coast, the rate was high for Pakeha throughout the time period. All the South Island regions tended to have rates that were high or around the New Zealand level for Pakeha whereas for Māori there was a less consistent pattern resulting from the small number of Māori in these regions.

For custodial sentences, Hawke's Bay had high levels for Māori and started just above the New Zealand level for Pakeha, but was above New Zealand by 2000-02, whereas for Gisborne, the Pakeha rate was low and the Māori rate was just below the New Zealand Māori rate (see Table 12). The effect of the different ethnic composition of the population is most evident in Canterbury for custodial sentences, with both Pakeha and Māori rates being high over the time period whereas the total population rate is around the New Zealand level (see Appendix Table 6). This is because there is a smaller proportion of Māori who have high convictions so that the total New Zealand rate is dominated by the Pakeha population which is lower than the overall New Zealand rate. This is called Simpson's Paradox (Westbrooke 1997). Southland had high levels of custodial sentences for Pakeha in all years and high levels around 1990-92 for Māori, producing a high overall rate. Marlborough had a low rate over time with Māori rates being particular low. Northland had low levels for both Pakeha and Māori for 1985-87 and 1990-92 which led to the overall low level for this region in those years, but the Māori and Pakeha rates were mounting monotonically so that 2000-02 levels were well above the New Zealand figure. The Auckland rate of custodial sentences remained low for Pakeha throughout the fifteen year period. In Waikato, the Māori rate was high in 1990-92 and 1995-97 whereas the Pakeha rate remained around the New Zealand level. This led to the overall rate for this region being high in 1995-97 and also tended high in 2000-02. The Bay of Plenty had a high overall rate for the whole period, although the rates for Pakeha were around New Zealand or below, and Māori were around the New Zealand level for 1995-97 and below in 1985-87. In Taranaki, the rates for both Pakeha and Māori were high from 1995-97 leading to high rates overall for this region.

To summarise, not only is there an ethnic differential, but there are also regional differentials, both between Māori and Pakeha, and by comparison with the national figures for their own ethnic groups. Frequently when Pakeha sentence rates are lower than the national figures, then Māori will be higher. Generally, Māori sentences rates are highest in the upper North Island and Canterbury, with Pakeha high in the South Island. Finally, the increases in Northland are noticeable.

**Table 12: Percentage of People Sentenced to Community and Custodial Sentences Standardised<sup>1</sup> for Males by Ethnicity and Region, 1985-87 – 2000-02**

Region	Pakeha				Māori			
	1985-87	1990-92	1995-97	2000-02	1985-87	1990-92	1995-97	2000-02
<b>Community Sentences</b>								
Northland	0.30	0.78	1.29	1.19	1.73	4.34	6.99	6.39
Auckland	0.51	0.96	1.00	0.88	3.01	5.23	5.58	4.98
Waikato	0.55	1.01	1.06	0.87	3.22	5.33	5.50	3.96
Bay of Plenty	0.53	1.35	1.23	1.04	3.08	7.44	6.55	5.73
Gisborne	0.60	1.16	1.28	1.40	3.14	6.33	7.13	6.98
Hawkes Bay	0.57	1.38	1.57	1.59	3.29	7.68	8.97	7.68
Taranaki	0.42	1.17	1.49	1.61	1.92	4.78	5.87	6.79
Manawatu-Wanganui	0.64	0.98	1.12	1.12	2.90	4.56	4.93	4.93
Wellington	0.61	1.06	1.20	1.00	3.46	6.19	6.11	5.31
West Coast	0.81	1.87	1.96	1.62	2.73	5.93	3.99	2.76
Canterbury	0.69	1.23	1.16	1.11	2.95	4.97	3.88	3.59
Otago	0.72	1.18	1.30	1.12	2.30	3.62	2.73	2.89
Southland	0.58	1.25	1.69	1.54	2.72	5.50	4.53	4.23
Nelson-Tasman	0.64	1.67	1.70	1.63	3.31	7.87	5.56	6.45
Marlborough	0.70	1.38	1.75	1.90	3.19	4.90	5.36	5.88
<b>New Zealand</b>	<b>0.58</b>	<b>1.11</b>	<b>1.19</b>	<b>1.08</b>	<b>2.96</b>	<b>5.61</b>	<b>5.79</b>	<b>5.16</b>
<i>Range</i>	<i>0.51</i>	<i>1.09</i>	<i>0.96</i>	<i>1.03</i>	<i>1.73</i>	<i>4.25</i>	<i>6.24</i>	<i>4.92</i>
<b>Custodial Sentences</b>								
Northland	0.07	0.11	0.22	0.36	0.52	0.71	1.62	2.12
Auckland	0.18	0.18	0.18	0.19	1.54	1.56	1.72	1.78
Waikato	0.22	0.33	0.29	0.29	1.54	2.17	2.08	1.85
Bay of Plenty	0.14	0.29	0.27	0.32	1.15	2.01	1.83	2.18
Gisborne	0.20	0.13	0.13	0.26	1.30	1.64	1.61	1.92
Hawkes Bay	0.23	0.34	0.38	0.44	2.01	2.18	2.43	2.75
Taranaki	0.28	0.31	0.48	0.62	1.58	1.75	2.11	3.36
Manawatu-Wanganui	0.26	0.31	0.37	0.41	1.55	1.92	1.97	2.21
Wellington	0.22	0.25	0.25	0.23	1.66	1.46	1.61	1.54
West Coast	0.17	0.34	0.28	0.39	0.80	1.26	1.01	1.05
Canterbury	0.35	0.45	0.40	0.45	2.42	2.78	2.03	2.16
Otago	0.28	0.33	0.33	0.35	1.28	1.28	0.90	1.20
Southland	0.35	0.49	0.59	0.48	1.99	2.38	1.62	1.59
Nelson-Tasman	0.16	0.35	0.31	0.32	0.99	1.92	1.12	1.96
Marlborough	0.20	0.18	0.32	0.42	0.73	0.73	0.87	1.64
<b>New Zealand</b>	<b>0.23</b>	<b>0.29</b>	<b>0.30</b>	<b>0.32</b>	<b>1.49</b>	<b>1.76</b>	<b>1.81</b>	<b>1.97</b>
<i>Range</i>	<i>0.28</i>	<i>0.38</i>	<i>0.46</i>	<i>0.43</i>	<i>1.90</i>	<i>2.07</i>	<i>1.56</i>	<i>2.31</i>

(1) Standardised by age to 1996 for Total New Zealand

Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.



### 5.5 Length of Sentences to Prison

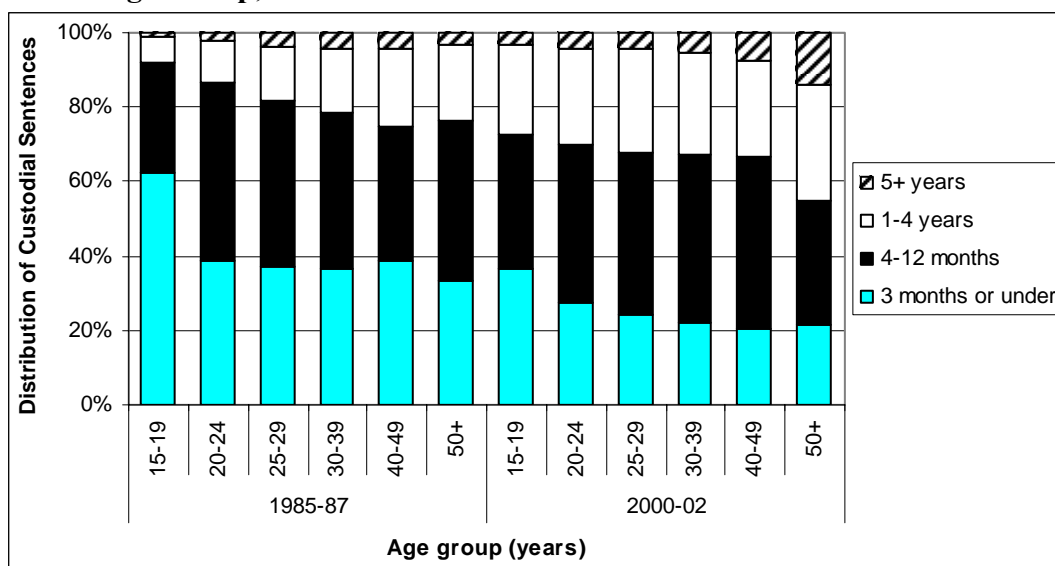
In this section the length of custodial sentences is investigated. This could give an indication of different sentencing patterns in different regions and changing patterns of sentencing over time.

In this study the regional data are based on the court in which crimes were tried. More serious crimes are tried only in High Courts and thus, as noted earlier, offenders are not always tried in the region where they normally reside. In New Zealand in 2002 High Court judges were based in Auckland, Hamilton, Wellington and Christchurch but travelled on circuit to 13 other centres from Whangarei to Invercargill ([www.courts.govt.nz/courts/high\\_court.html](http://www.courts.govt.nz/courts/high_court.html) 21 Oct 2002). However, there is an indication that in 1985-87 no high court trials were held in West Coast and Marlborough as, in these regions, no-one was sentenced to five or more years imprisonment, the key to a High Court sitting for criminal procedures. This could affect the distribution of sentences over time. The focus of this section is on male custodial sentences as the numbers for females are very small.

In this section, firstly the New Zealand pattern will be investigated – of course, this is not affected by where a person is tried. The focus of this section will be on the distribution of sentences, not the rate of sentencing relative to the population. Only the beginning- and end-periods will be used. Over time for New Zealand as a whole the custodial sentences for males have become longer, with sentences over a year increasing from 15 per cent in 1985-87 to 32 per cent in 2000-02. This coincides with reports by Triggs (1998) and Ministry of Justice (1998).

The national trend for sentences for males by age shows that the 15-19 year olds have a high percentage of shorter sentences as shown in Figure 11. There is also a trend for longer sentences for the older age groups, although it is important to note that only a very small number of people sentenced to a custodial sentence are in the 40 years and over age group. There is also a trend between 1985-87 and 2000-02 for sentences to be longer for all the age groups as was noted for 1985-87 to 1995-97 by Triggs (1998: 79).

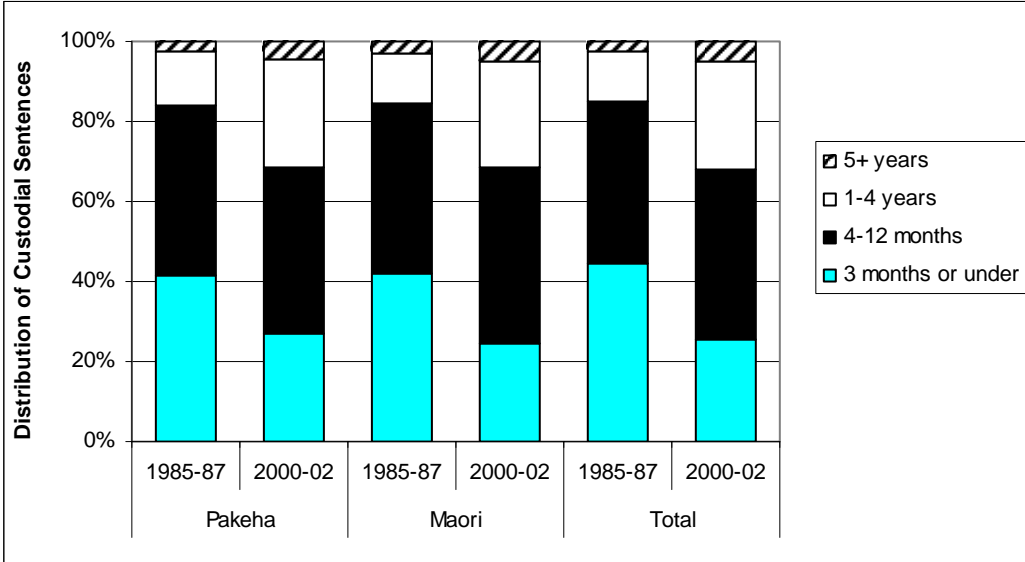
**Figure 11: Distribution of Custodial Sentences for Males by Length of Sentence and Age Group, New Zealand 1985-87 and 2000-02**



Sources: Ministry of Justice, customised convictions data set.  
 Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

The sentence length by ethnicity for males does not show significant differences between Pakeha and Māori as shown in Figure 12. Though it is important to note, as shown in the previous section, Māori are much more likely to be sentenced to a custodial sentence than are Pakeha.

**Figure 12: Distribution of Custodial Sentences<sup>1</sup> for Males by Length of Sentence and Ethnicity, New Zealand 1985-87 and 2000-02**



(1) Standardised by age to 1996 for Total New Zealand  
 Sources: Ministry of Justice, customised convictions data set.  
 Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

The regional ethnic differences for males in sentencing for Pakeha and Māori generally reflect the overall population. Thus, in this study we considered regional differences using the overall population.

Auckland had longer sentences for males than any other region in New Zealand (see Appendix Table 8). However, Auckland’s prevalence rate for custodial sentences is lower than that for New Zealand as a whole. Hawke’s Bay had one of the highest custodial sentence rates but had lower than the national average proportion of sentences over one year. This indicates that the real difference in this region is that the custodial sentences are shorter and they would have similar rate to other regions of serious offending. In 1985-87 all the regions in the South Island had rates that were lower than New Zealand average for sentences over one year. By 2000-02, however, Canterbury tended to have higher rates while the other South Island regions’ rates remained low. Other regions which had low rates were Taranaki and Manawatu-Wanganui in 2000-02 for sentences of over one year.

**5.6 Estimated Prison Muster**

These results above raise a critical question for this work: that is, to assess the impact of imprisonment on regional populations. Beyond this, the analysis earlier showed that regions in which Māori are concentrated had higher rate of convictions, especially custodial. To analyse this we attempt to see if there are other co-variates, especially relating to employment and income. This is discussed further in Pool and Baxendine (2006).

This is important not only because it allows us to identify possible links between social cohesion and underlying economic conditions, but also to provide data on a question that is more criminological in nature: whether or not, at least at an aggregate level, Māori are handled differently from Pakeha in the convictions process and whether this is uniform or varies across the country. We must stress here that the paper does not attempt to resolve what are serious research questions for the justice system – that is far beyond the authors’ competence in this area. The authors’ are merely looking at population-level trends that might suggest a need for further research by experts in domains such as criminology.

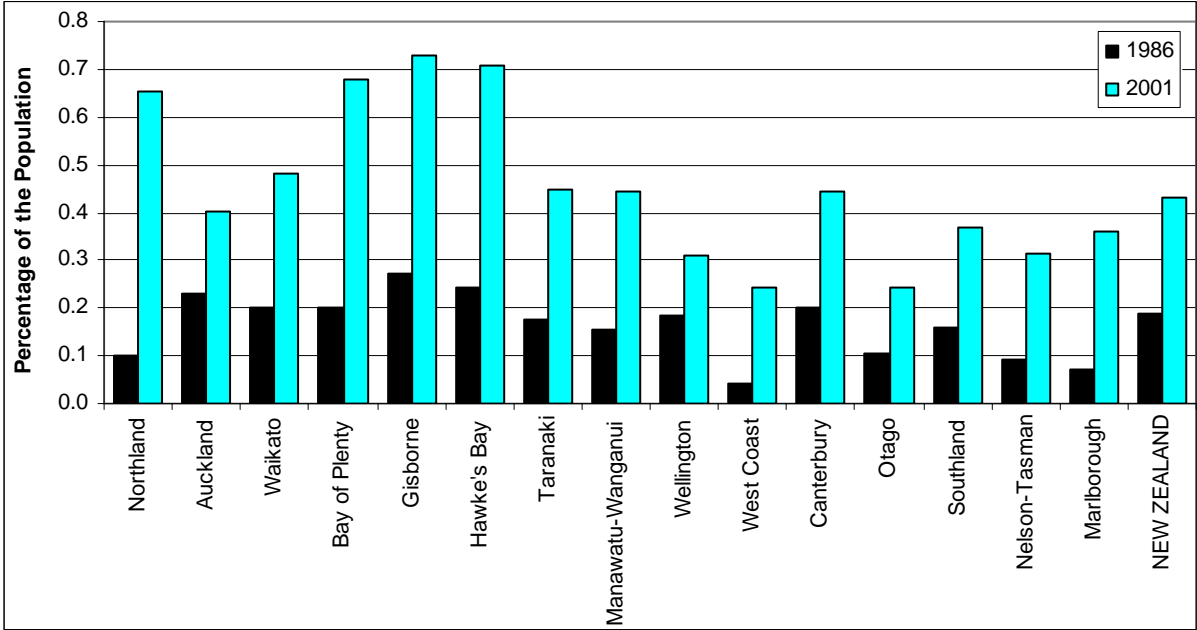
In order to analyse these questions, a first step was to estimate a regional-level prevalence rate for imprisonment. To do this a prison “muster”, or “census” figure was derived that provides data on the number of prisoners of a given age coming from a particular region. The only information available about the muster of the prisons was the yearly average number of inmates based on weekly actuals from the Ministry of Corrections. The term “muster” is used to refer to the number of inmates in prison at a given time. However, no information was available on the region of origin of the prisoners in the muster. The only data were the prisons in which inmates were housed. The analysis in this section will consider only males because the small number of female inmates (106 in 1986 and 280 in 2001) would make it problematic to study regional distributions for the latter.

To estimate the regional prevalence rate, the overall number of male inmates in 1986 and 2001 (2,534 and 5,607 respectively) was distributed according to three-year averages derived from data on the length of sentences around the respective year by age group, ethnicity and region. The total custodial sentences were derived by age, ethnicity and region by taking the mid-point of the sentence interval and summing these sentences to obtain a total. This was done by multiplying muster by the total sentence by age, gender and ethnicity divided by the sum of all the total sentences. The resulting number was the estimated prevalence. It was found that the sum of the total sentencing information better approximated the age and ethnic structure of the prison census than using the number of sentences. It also makes sense to use the information on sentencing as this will reflect the number of people in prison better because longer sentences result in people spending longer in prison. It is important to note that the estimates are based on the data described in the previous section.

The New Zealand male prison rate has increased from 0.19 per cent of the population in 1986 to 0.43 per cent in 2001 which goes with the overall increase in the muster between 1986 and 2001 (see Figure 13 and Appendix Table 9). Overall, the regional percentages are very small but have varying and significant impacts on certain regions, age and ethnic groups.

In 1986 the region with the highest percentage of its males in prison was Gisborne with Auckland and Hawke’s Bay also being high. By 2001 Gisborne is still the highest percentage with Northland, Hawke’s Bay and the Bay of Plenty high, but with Auckland falling just below the New Zealand level. The region with the lowest rate in 1986 was the West Coast with Otago and Northland also low. In 2001 the lowest was West Coast and Otago with Wellington and Nelson-Tasman also low. The regions with the largest increase between 1986 and 2001 in the percentage of their population in prison were Northland (0.56 percentage points), the Bay of Plenty (0.48), Hawke’s Bay (0.45) and Gisborne (0.44) and the regions with the smallest increase between 1986 and 2001 were Wellington and Otago (0.13), Auckland (0.17) and West Coast (0.20).

**Figure 13: Estimated Male Prison Muster as a Percentage of the Population<sup>(1)</sup>, by Region, 1986 and 2001**



(1) Standardised by age to 1996 for Total New Zealand

Sources: Ministry of Justice, customised convictions data set.

Ministry of Corrections, muster averages.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

A very important point should be noted here. For every region the imprisonment rate (number in prison at a time, not the incidence of custodial sentences) went up dramatically. Yet, the conviction rates for all forms of sentencing remained relatively stable (see Table 10).

The patterns in some regions are slightly different for Pakeha and Māori than for the total population; these differences are related to the different ethnic structures of the regions (see Appendix Table 2.9). Canterbury shows this clearly with the highest rates for both Pakeha and Māori (not the highest in 2001) but for the total population the rate was only slightly higher than the New Zealand rate. This is because this region has a lower proportion of Māori than most other regions. This leads to Simpson’s Paradox (Westbrooke 1997). The overall rate in Gisborne was high in 2001 but the Māori and Pakeha rate was below that for New Zealand for this year. For Auckland in 2001 the overall rate is just below New Zealand whereas the rate was high for Māori which was counteracted by the lowest rate for Pakeha. The other regions generally followed the overall trend.

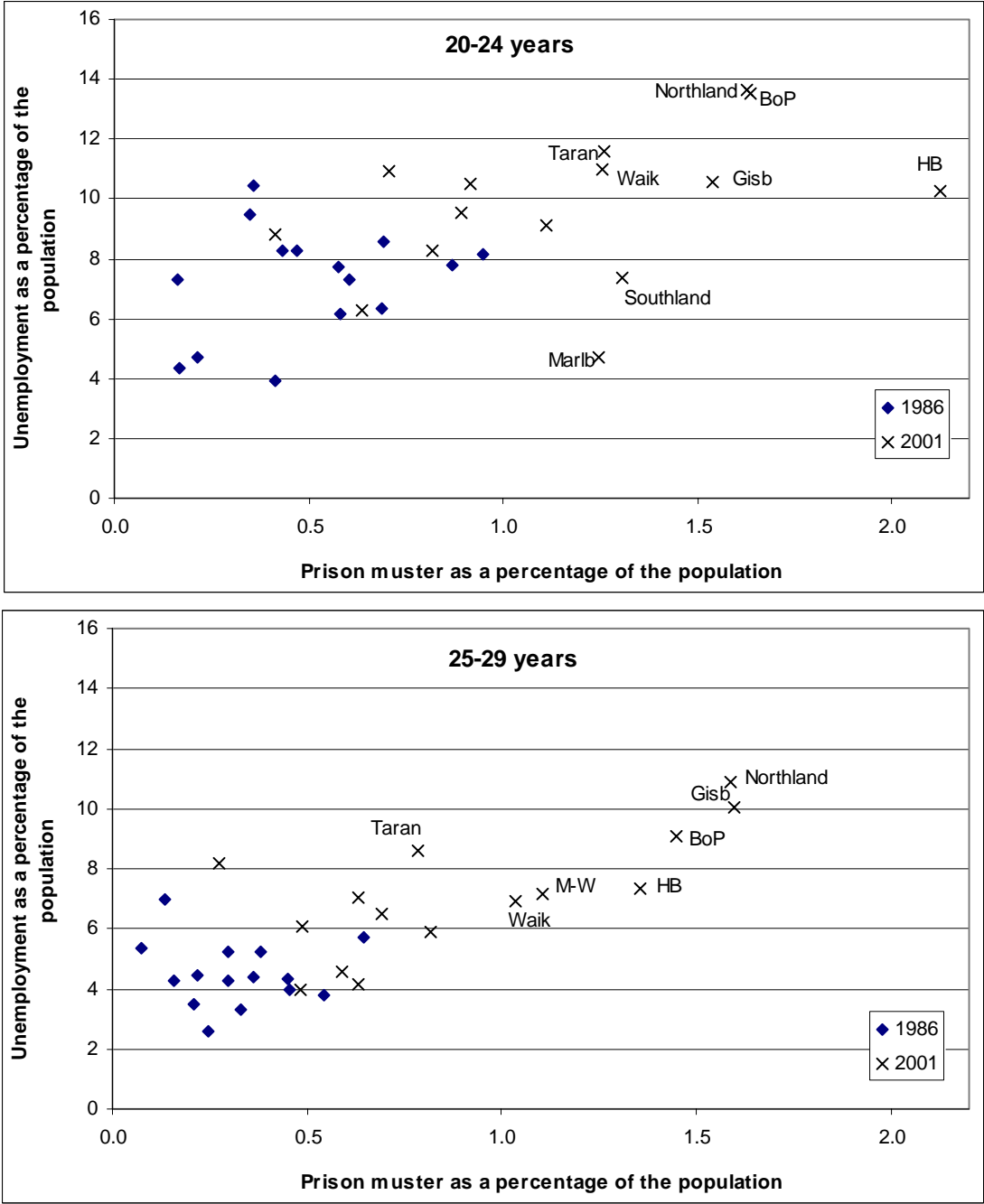
Analysis of the age group patterns shows that the various age groups contribute differently to an overall high or low rate (see Appendix Table 10). In 1986 Auckland, Gisborne and Hawke’s Bay had high overall rates with different age groups contributing to the high rate. Auckland had a higher rate in the 25-39 years age group, Gisborne had a high rate in the 20-29 years age group with the rate for the 40-49 years age group also being high, while Hawke’s Bay had a high rate for the 15-24 years age groups. In 2001 the Bay of Plenty, Gisborne, Hawke’s Bay and Northland had high rates overall with the Bay of Plenty and Hawke’s Bay having high rates in all age groups under 50 years. Gisborne and Northland had a high rate in the 20-39 years age groups. West Coast was low overall for both 1986 and 2001 with the rates for most age groups being low. Otago, Nelson-Tasman and Marlborough also tended low overall for both 1986 and 2001 with the rate for all age groups being low.

### ***5.7 Imprisonment and Unemployment Rates***

Prison rates in the population are normally taken as a measure of social exclusion. But beyond this the number of adults in prison theoretically, could have an impact on the unemployment rate in the total population (Baxendine *et al.* 2002). The relationship between unemployment and crime was investigated in detail by Papps and Winkelmann (2000) who showed a strong relationship. We are refining this investigation by showing the relationship of unemployment and criminal acts for which imprisonment is the result of the crime. This is an attempt to look at the impact of incarceration on a region's human capital.

In Figure 14 we present scattergrams of two key age groups 20-24 and 25-29 years where prison rates are the highest, comparing unemployment rates with rates of imprisonment for the regions. In this diagram some key results are highlighted with the regions labelled. The relationships between prison muster and unemployment have become stronger over time. In 1986 there was no real relationship but by 2001 this had changed with the relationship being quite strong. A further extension of this analysis can be found in Pool and Baxendine (2006).

**Figure 14: Age-Specific Prison and Unemployment Rates by Age and Region, 1986 and 2001**



In summary, we again show a human capital effect. While imprisonment may “reduce” what might have been a higher rate of unemployment, clearly it also represents a dissipation of potential human capital. Equally well, however, these data could argue that high unemployment is a factor of regional exclusion and thus creates attendant social pathologies leading to imprisonment.

## 6 Conclusion

This paper starts off with what has become a fairly familiar theme in this set of papers (Pool et al. forthcoming-a). The socio-economic disparities between regions increased in New Zealand over the last two decades. In this case the measures relate to the social outcomes of human capital.

The results do show a very modest reprise over the last few years. All three of the factors considered here, at a national level, have generally shown slight or modest improvements (sickness/invalid benefits and imprisonment are the most interesting exceptions). Nevertheless, regional disparities have remained, and in some cases increased. Moreover, the most disadvantaged regions, typically the upper North Island's more peripheral areas, have been in this situation throughout the entire period. Critics of benefit systems may be in fact attacking the population of peripheral regions that have low incomes and lack some of the human capital assets that might help turn the regions around.

The most astounding results relate to sentencing and to imprisonment. Sentencing levels have remained remarkable stable, yet major regional disparities have opened up. This is also reflected in the data presented here on imprisonment. Of all results presented in this set of papers (Pool et al. forthcoming-a) these are arguably the most upsetting. The development of underdevelopment has clearly not just produced social inequalities and exclusion but has also led to decreases in social cohesion. The link to unemployment shows up in the data presented in the last section of the paper.

This raises question that are beyond the scope of this study. At least the argument about economic disadvantage spinning off into social cohesion seems sustained. But differences in both the incidence of convictions and the prevalence of imprisonment take the analysis into domains of social control.

**Appendix Table 1: Standardised<sup>1</sup> Prioritised Benefit Usage Rates<sup>2</sup> (%) of the Pakeha Population 15-59 years, by Benefit Type and Region for New Zealand, 1986-2001**

Region	1986	1991	1996	2001	1986	1991	1996	2001
	<b>Domestic Purposes Benefit</b>				<b>Unemployment Benefit</b>			
Northland	1.6	4.1	4.4	4.8	4.0	12.9	10.8	8.5
Auckland	1.9	3.0	2.8	2.6	2.4	7.5	5.2	4.3
Waikato	1.9	3.6	3.7	3.9	2.9	9.4	7.6	6.6
Bay of Plenty	2.1	4.3	4.2	4.5	3.3	11.9	8.8	7.6
Gisborne	1.9	4.0	3.8	4.9	3.7	10.8	9.5	7.8
Hawke's Bay	2.3	4.8	4.8	5.0	4.1	11.8	9.3	7.5
Taranaki	2.1	4.5	4.3	4.6	3.7	11.3	9.1	8.8
Manawatu-Wanganui	2.2	4.2	4.3	4.7	3.6	10.2	8.9	8.1
Wellington	1.7	2.7	2.8	2.9	2.6	7.8	7.9	6.4
West Coast	2.2	4.6	4.7	4.6	5.7	14.9	11.8	10.9
Canterbury	2.2	3.9	3.6	3.8	4.5	11.2	8.3	7.4
Otago	2.0	3.6	3.4	3.5	4.9	13.8	10.7	8.6
Southland	2.0	4.1	3.8	4.0	4.6	12.8	9.0	8.4
Nelson-Tasman	2.0	4.0	4.6	4.8	4.5	12.8	9.9	8.4
Marlborough	2.1	3.6	3.6	3.9	4.1	11.4	8.4	6.6
<b>New Zealand</b>	<b>2.0</b>	<b>3.6</b>	<b>3.5</b>	<b>3.6</b>	<b>3.4</b>	<b>10.0</b>	<b>7.9</b>	<b>6.7</b>
<i>Range</i>	<i>0.7</i>	<i>2.1</i>	<i>2.1</i>	<i>2.4</i>	<i>3.3</i>	<i>7.4</i>	<i>6.5</i>	<i>6.5</i>
	<b>Sickness/Invalid benefit</b>				<b>Total of three benefits</b>			
Northland	1.8	2.8	3.5	4.1	7.3	19.8	18.8	17.5
Auckland	2.1	2.4	2.6	2.6	6.4	12.8	10.6	9.6
Waikato	1.9	2.5	3.0	3.3	6.7	15.4	14.2	13.8
Bay of Plenty	1.7	2.3	3.0	3.4	7.1	18.6	15.9	15.5
Gisborne	1.6	2.4	2.8	3.6	7.1	17.2	16.1	16.4
Hawke's Bay	2.0	2.4	3.5	3.7	8.4	19.0	17.6	16.3
Taranaki	1.6	2.2	3.2	3.7	7.4	18.0	16.7	17.1
Manawatu-Wanganui	2.3	3.1	4.0	4.5	8.1	17.4	17.1	17.3
Wellington	1.7	2.0	2.4	2.7	6.0	12.5	13.2	11.9
West Coast	2.9	4.8	5.3	5.7	10.8	24.3	21.8	21.1
Canterbury	2.4	3.3	4.0	4.2	9.2	18.4	15.9	15.4
Otago	2.3	3.1	3.8	4.2	9.2	20.5	17.9	16.3
Southland	1.6	2.0	3.5	3.7	8.2	18.9	16.3	16.1
Nelson-Tasman	3.1	3.6	4.2	4.6	9.6	20.3	18.7	17.8
Marlborough	2.2	2.7	3.3	3.8	8.4	17.7	15.3	14.3
<b>New Zealand</b>	<b>2.1</b>	<b>2.6</b>	<b>3.2</b>	<b>3.4</b>	<b>7.5</b>	<b>16.2</b>	<b>14.5</b>	<b>13.7</b>
<i>Range</i>	<i>1.5</i>	<i>2.8</i>	<i>2.9</i>	<i>3.0</i>	<i>4.8</i>	<i>11.8</i>	<i>11.2</i>	<i>11.5</i>

(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received a benefit any time in the last 12 months.



**Appendix Table 2: Standardised<sup>1</sup> Prioritised Benefit Usage Rates<sup>2</sup> (%) of the Māori Population 15-59 years, by Benefit Type and Region for New Zealand, 1986-2001**

Region	1986	1991	1996	2001	1986	1991	1996	2001
	<b>Domestic Purposes Benefit</b>				<b>Unemployment Benefit</b>			
Northland	4.8	12.5	13.4	13.2	11.9	28.9	25.8	17.8
Auckland	5.6	11.4	10.5	10.6	6.7	17.3	12.1	10.3
Waikato	5.3	12.3	11.7	12.1	9.0	23.0	18.8	14.3
Bay of Plenty	5.2	12.6	13.0	13.2	9.2	26.3	21.4	16.6
Gisborne	5.1	13.2	12.1	13.6	11.2	29.3	26.6	17.4
Hawke's Bay	6.3	14.3	13.9	13.9	13.2	28.0	22.4	16.1
Taranaki	5.6	15.2	12.3	12.9	11.7	24.9	19.9	16.8
Manawatu-Wanganui	5.1	11.4	11.7	11.7	10.7	22.5	17.6	14.7
Wellington	4.9	9.7	9.7	10.0	7.7	16.4	15.0	12.0
West Coast	4.0	9.5	10.1	9.0	11.4	25.5	18.8	16.7
Canterbury	5.8	10.8	8.9	9.5	9.7	19.3	13.5	11.5
Otago	4.1	9.2	7.4	7.3	11.3	23.1	17.0	13.6
Southland	4.7	10.5	10.7	9.7	15.6	29.4	18.3	14.3
Nelson-Tasman	3.4	8.2	9.7	10.2	8.5	21.1	15.9	13.8
Marlborough	4.3	9.6	8.8	9.9	10.3	23.9	16.2	10.9
<b>New Zealand</b>	<b>5.3</b>	<b>11.8</b>	<b>11.3</b>	<b>11.5</b>	<b>9.4</b>	<b>22.3</b>	<b>17.6</b>	<b>13.7</b>
<i>Range</i>	<i>2.9</i>	<i>7.0</i>	<i>6.5</i>	<i>6.6</i>	<i>8.9</i>	<i>13.0</i>	<i>14.4</i>	<i>7.6</i>
	<b>Sickness/Invalid benefit</b>				<b>Total of three benefits</b>			
Northland	4.0	6.1	7.6	8.4	20.7	47.5	46.7	39.5
Auckland	4.5	5.4	5.9	6.3	16.8	34.0	28.6	27.2
Waikato	4.2	5.2	6.6	7.3	18.5	40.6	37.0	33.7
Bay of Plenty	3.4	4.6	5.4	6.1	17.8	43.4	39.8	35.9
Gisborne	3.7	5.1	6.2	7.1	20.0	47.6	44.9	38.1
Hawke's Bay	3.8	4.5	5.9	5.9	23.3	46.9	42.2	35.9
Taranaki	3.3	4.8	5.6	6.8	20.7	44.9	37.8	36.5
Manawatu-Wanganui	3.8	5.4	6.4	6.8	19.6	39.2	35.7	33.2
Wellington	3.4	4.2	5.1	5.3	16.0	30.3	29.8	27.3
West Coast	6.4	7.8	7.4	7.8	21.8	42.8	36.3	33.6
Canterbury	4.0	4.9	6.5	6.9	19.6	34.9	28.8	27.9
Otago	2.9	4.9	5.4	6.4	18.3	37.1	29.8	27.4
Southland	2.4	3.3	5.6	5.3	22.6	43.3	34.6	29.4
Nelson-Tasman	4.8	5.4	6.7	7.1	16.7	34.7	32.3	31.0
Marlborough	2.6	3.3	4.9	5.5	17.2	36.9	29.8	26.3
<b>New Zealand</b>	<b>3.9</b>	<b>5.0</b>	<b>6.0</b>	<b>6.6</b>	<b>18.6</b>	<b>39.2</b>	<b>34.9</b>	<b>31.7</b>
<i>Range</i>	<i>4.0</i>	<i>4.5</i>	<i>2.7</i>	<i>3.1</i>	<i>7.4</i>	<i>17.3</i>	<i>18.1</i>	<i>13.2</i>

(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received a benefit any time in the last 12 months.

**Appendix Table 3: Percentage Point Difference between 1986 and 2001 in Standardised<sup>1</sup> Prioritised Benefit Usage Rates<sup>2</sup> (%) of the Population 15-59 years, by Benefit Type, Ethnicity and Region for New Zealand**

Region	Pakeha				Māori				Total			
	Domestic Purposes benefit	Unem-employment benefit	Sickness/Invalids benefit	Total of three benefit	Domestic Purposes benefit	Unem-employment benefit	Sickness/Invalids benefit	Total of three benefit	Domestic Purposes benefit	Unem-employment Benefit	Sickness/Invalids benefit	Total of three benefit
Northland	3.2	4.6	2.3	10.1	8.5	5.9	4.4	18.8	4.8	4.7	2.6	12.1
Auckland	0.8	1.9	0.5	3.2	5.0	3.5	1.9	10.4	1.5	2.6	0.7	4.8
Waikato	1.9	3.7	1.4	7.1	6.8	5.3	3.1	15.2	3.0	4.1	1.6	8.8
Bay Of Plenty	2.4	4.3	1.7	8.4	8.0	7.4	2.7	18.1	4.0	5.0	1.7	10.7
Gisborne	3.0	4.2	2.0	9.2	8.5	6.2	3.5	18.2	5.7	5.2	2.5	13.4
Hawke's Bay	2.8	3.5	1.7	7.9	7.7	2.9	2.0	12.6	4.1	3.4	1.7	9.2
Taranaki	2.6	5.1	2.0	9.8	7.3	5.1	3.5	15.8	3.3	5.1	2.1	10.5
Manawatu-Wanganui	2.5	4.5	2.2	9.2	6.6	4.0	3.0	13.6	3.2	4.4	2.2	9.8
Wellington	1.2	3.7	1.0	5.9	5.1	4.4	1.9	11.4	1.9	4.1	1.1	7.0
West Coast	2.4	5.1	2.8	10.3	5.1	5.3	1.4	11.8	2.6	4.9	2.5	10.0
Canterbury	1.6	2.8	1.8	6.2	3.7	1.8	2.9	8.4	1.7	2.7	1.7	6.1
Otago	1.5	3.7	1.9	7.1	3.2	2.3	3.6	9.2	1.6	3.5	1.8	6.8
Southland	2.1	3.8	2.0	7.8	5.1	-1.2	2.9	6.7	2.5	3.3	2.1	7.8
Nelson-Tasman	2.8	3.8	1.6	8.2	6.8	5.3	2.2	14.3	3.0	3.5	1.5	8.1
Marlborough	1.8	2.5	1.6	5.9	5.6	0.6	2.9	9.1	2.1	2.3	1.6	6.0
<b>New Zealand</b>	<b>1.6</b>	<b>3.2</b>	<b>1.4</b>	<b>6.2</b>	<b>6.2</b>	<b>4.3</b>	<b>2.7</b>	<b>13.2</b>	<b>2.3</b>	<b>3.4</b>	<b>1.4</b>	<b>7.0</b>

(1) Standardised by Age and Gender to New Zealand 1996.

(2) Received a benefit any time in the last 12 months.

**Appendix Table 4: Prioritised Benefit Usage<sup>1</sup> as a Percentage of the Population by Age Group and Benefit Type for New Zealand, 1986-2001**

Region	15-24 years				25-44 years				45-59 years			
	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001
	<b>Domestic Purposes Benefit</b>											
Northland	2.3	5.7	6.1	5.3	3.2	8.8	9.8	9.8	0.6	2.1	2.1	2.5
Auckland	1.7	3.4	3.3	3.0	3.4	5.7	5.4	5.2	0.7	1.8	1.7	1.7
Waikato	2.2	4.3	4.4	4.3	3.5	7.2	7.4	7.8	0.7	1.9	1.7	1.9
Bay of Plenty	2.7	6.0	6.4	5.9	4.0	9.1	9.3	9.6	0.8	2.3	2.1	2.2
Gisborne	3.4	7.5	6.5	7.5	4.0	10.4	9.9	12.0	1.1	3.0	2.8	3.3
Hawke's Bay	3.0	6.1	6.5	6.0	4.2	9.4	9.2	9.8	1.0	2.4	2.2	2.3
Taranaki	2.1	4.9	4.5	4.3	3.4	7.8	7.3	7.9	0.6	1.7	1.6	2.0
Manawatu-Wanganui	2.1	4.2	4.4	4.2	3.7	7.4	7.9	8.3	0.7	1.9	1.8	2.1
Wellington	1.7	3.3	3.3	3.2	2.8	4.7	5.2	5.3	0.6	1.4	1.5	1.7
West Coast	1.9	4.1	4.3	3.1	3.3	6.6	7.0	6.7	0.4	1.8	1.2	2.0
Canterbury	1.4	2.8	2.7	2.6	3.6	6.0	5.5	5.9	0.8	1.8	1.5	1.6
Otago	1.2	2.3	2.2	1.9	3.1	5.5	5.2	5.5	0.6	1.7	1.4	1.5
Southland	2.1	4.3	4.4	4.3	2.9	6.1	6.0	6.0	0.6	1.5	1.2	1.4
Nelson-Tasman	1.4	2.7	3.5	3.3	3.1	6.0	7.1	7.3	0.5	1.8	1.7	1.9
Marlborough	1.8	2.9	3.1	3.0	3.0	5.7	5.7	6.2	0.7	1.4	1.1	1.4
<b>New Zealand</b>	<b>1.9</b>	<b>3.8</b>	<b>3.8</b>	<b>3.6</b>	<b>3.4</b>	<b>6.5</b>	<b>6.4</b>	<b>6.5</b>	<b>0.7</b>	<b>1.8</b>	<b>1.7</b>	<b>1.8</b>
<i>Range</i>	<i>2.2</i>	<i>5.2</i>	<i>4.3</i>	<i>5.6</i>	<i>1.3</i>	<i>5.6</i>	<i>4.7</i>	<i>6.8</i>	<i>0.7</i>	<i>1.6</i>	<i>1.8</i>	<i>1.9</i>
	<b>Unemployment Benefit</b>											
Northland	12.5	24.2	18.2	15.0	4.7	17.2	14.8	9.7	2.7	9.8	9.2	6.4
Auckland	6.6	16.2	10.7	9.2	2.3	8.6	7.1	5.1	1.6	5.7	4.9	3.4
Waikato	9.8	20.7	16.5	14.5	2.6	10.2	8.6	6.6	1.7	7.0	5.8	4.4
Bay of Plenty	11.9	24.7	17.9	15.9	3.2	14.1	10.9	8.2	1.9	9.6	8.0	6.0
Gisborne	14.0	27.3	22.4	17.6	5.4	17.5	15.7	10.7	2.6	9.9	10.1	6.9
Hawke's Bay	13.7	24.7	18.3	14.8	4.3	13.5	11.3	8.2	2.3	8.7	7.3	5.3
Taranaki	11.1	21.8	17.6	16.5	3.3	11.2	8.8	7.8	1.7	7.5	6.4	5.4
Manawatu-Wanganui	10.5	20.1	17.2	15.4	3.5	10.9	8.9	7.5	1.9	6.8	6.2	5.4
Wellington	7.2	16.8	16.8	13.7	2.5	7.8	7.8	5.9	1.4	5.1	5.6	3.9
West Coast	13.3	23.2	16.1	14.0	4.8	14.8	11.4	10.5	2.2	9.5	8.7	7.5
Canterbury	10.4	19.8	14.9	13.4	3.6	10.1	7.2	6.0	2.3	7.2	5.3	4.3
Otago	11.0	23.2	19.5	14.8	4.2	12.7	9.1	7.2	2.3	9.1	6.2	5.1
Southland	10.6	21.7	14.9	14.0	5.1	13.8	8.7	7.4	3.1	9.4	7.2	6.0
Nelson-Tasman	10.8	21.9	15.9	13.2	3.6	11.6	9.2	7.3	1.9	7.7	6.0	4.8
Marlborough	9.9	18.4	13.2	11.7	3.6	11.4	8.2	5.3	2.1	8.2	6.5	4.5
<b>New Zealand</b>	<b>9.3</b>	<b>19.6</b>	<b>15.0</b>	<b>12.7</b>	<b>3.1</b>	<b>10.5</b>	<b>8.5</b>	<b>6.4</b>	<b>1.9</b>	<b>7.1</b>	<b>6.0</b>	<b>4.5</b>
<i>Range</i>	<i>7.4</i>	<i>11.1</i>	<i>11.7</i>	<i>8.4</i>	<i>3.1</i>	<i>9.7</i>	<i>8.6</i>	<i>5.7</i>	<i>1.7</i>	<i>4.9</i>	<i>5.2</i>	<i>4.0</i>

(continued on next page)

**Appendix Table 4. (continued)**

Region	15-24 years				25-44 years				45-59 years			
	1986	1991	1996	2001	1986	1991	1996	2001	1986	1991	1996	2001
	<b>Sickness/Invalid benefit</b>											
Northland	2.1	2.1	2.5	2.1	1.7	2.9	4.0	4.7	3.3	5.8	6.5	7.5
Auckland	2.1	1.7	1.7	1.6	1.9	2.2	2.5	2.7	3.4	4.2	4.6	5.0
Waikato	2.1	1.9	2.0	2.1	1.9	2.4	3.2	3.5	3.0	4.5	5.3	6.0
Bay of Plenty	2.1	2.0	2.3	2.3	1.7	2.3	3.2	3.5	2.8	4.4	5.1	5.6
Gisborne	1.8	2.1	2.5	2.6	2.0	2.7	3.3	4.3	3.4	6.0	6.1	7.6
Hawke's Bay	2.0	1.9	2.8	2.4	1.9	2.1	3.2	3.6	3.2	4.6	5.5	6.3
Taranaki	1.7	1.8	2.4	2.1	1.5	1.9	3.0	3.7	2.6	4.0	5.1	6.0
Manawatu-Wanganui	2.1	2.1	2.3	2.1	2.3	3.0	3.9	4.4	3.2	5.0	6.2	7.4
Wellington	1.6	1.5	1.8	1.7	1.5	1.8	2.4	2.6	2.5	3.3	3.9	4.6
West Coast	2.4	2.8	2.5	2.1	2.4	4.1	4.9	5.6	5.2	8.7	8.5	8.9
Canterbury	2.0	2.1	2.5	2.2	2.2	2.9	3.6	4.0	3.5	5.2	5.8	6.3
Otago	2.1	1.8	2.1	1.8	2.0	2.7	3.6	4.0	3.1	5.0	5.8	6.5
Southland	1.6	1.6	2.6	2.2	1.4	1.6	3.0	3.3	2.3	3.5	5.5	5.9
Nelson-Tasman	2.9	2.0	2.8	2.5	2.8	3.3	4.0	4.7	4.0	5.7	5.8	6.5
Marlborough	2.1	1.8	2.2	2.0	1.7	2.3	2.9	3.8	3.2	4.5	4.9	5.6
<b>New Zealand</b>	<b>2.0</b>	<b>1.8</b>	<b>2.1</b>	<b>1.9</b>	<b>1.9</b>	<b>2.4</b>	<b>3.0</b>	<b>3.3</b>	<b>3.2</b>	<b>4.5</b>	<b>5.2</b>	<b>5.8</b>
<i>Range</i>	<i>1.3</i>	<i>1.3</i>	<i>1.1</i>	<i>1.0</i>	<i>1.3</i>	<i>2.5</i>	<i>2.5</i>	<i>2.9</i>	<i>2.9</i>	<i>5.3</i>	<i>4.6</i>	<i>4.3</i>
	<b>Total of three benefits</b>											
Northland	16.9	32.0	26.8	22.4	9.6	28.8	28.5	24.2	6.7	17.7	17.8	16.4
Auckland	10.4	21.3	15.7	13.8	7.6	16.5	15.0	13.0	5.7	11.7	11.1	10.1
Waikato	14.1	26.9	22.9	21.0	8.1	19.8	19.2	17.9	5.3	13.4	12.9	12.3
Bay of Plenty	16.7	32.7	26.6	24.1	9.0	25.5	23.3	21.3	5.4	16.3	15.3	13.9
Gisborne	19.2	36.9	31.4	27.7	11.3	30.5	28.9	27.1	7.1	18.9	19.1	17.8
Hawke's Bay	18.8	32.7	27.6	23.2	10.4	25.0	23.7	21.6	6.5	15.7	15.0	13.8
Taranaki	14.9	28.4	24.5	22.9	8.2	20.9	19.1	19.3	4.8	13.2	13.1	13.5
Manawatu-Wanganui	14.8	26.5	23.9	21.7	9.5	21.4	20.6	20.2	5.8	13.7	14.2	14.9
Wellington	10.5	21.6	21.9	18.7	6.9	14.3	15.4	13.8	4.5	9.8	11.0	10.1
West Coast	17.6	30.1	22.9	19.2	10.5	25.5	23.3	22.8	7.8	20.0	18.4	18.4
Canterbury	13.8	24.7	20.1	18.2	9.3	18.9	16.4	15.9	6.5	14.3	12.7	12.3
Otago	14.3	27.3	23.7	18.5	9.3	20.9	17.9	16.7	6.0	15.7	13.4	13.1
Southland	14.4	27.6	21.9	20.5	9.4	21.4	17.7	16.7	6.0	14.4	13.9	13.3
Nelson-Tasman	15.1	26.6	22.2	19.0	9.5	20.8	20.3	19.3	6.4	15.1	13.5	13.2
Marlborough	13.8	23.1	18.5	16.6	8.3	19.5	16.8	15.3	6.0	14.1	12.5	11.6
<b>New Zealand</b>	<b>13.2</b>	<b>25.2</b>	<b>20.9</b>	<b>18.2</b>	<b>8.5</b>	<b>19.3</b>	<b>18.0</b>	<b>16.3</b>	<b>5.7</b>	<b>13.4</b>	<b>12.8</b>	<b>12.1</b>
<i>Range</i>	<i>8.8</i>	<i>15.6</i>	<i>15.6</i>	<i>13.9</i>	<i>4.5</i>	<i>16.2</i>	<i>13.8</i>	<i>14.1</i>	<i>3.3</i>	<i>10.2</i>	<i>8.1</i>	<i>8.2</i>

(1) Received a benefit any time in the last 12 months.

**Appendix Table 5: Moderate and Serious Overcrowding<sup>1</sup> Rate by Ethnicity, per Person, 1986 and 2001**

Region	Moderate			Serious			Total		
	Pakeha	Māori	Total	Pakeha	Māori	Total	Pakeha	Māori	Total
<b>1986</b>									
Northland	5.0	24.8	10.1	0.3	5.1	1.6	5.3	30.0	11.7
Auckland	3.2	25.1	8.9	0.1	4.7	1.4	3.3	29.8	10.2
Waikato	4.2	23.9	8.1	0.1	3.2	0.7	4.4	27.0	8.9
Bay of Plenty	4.2	24.8	9.7	0.1	4.7	1.3	4.3	29.5	11.0
Gisborne	4.2	24.1	11.8	0.1	3.3	1.3	4.3	27.4	13.2
Hawke's Bay	4.4	23.5	8.5	0.1	2.8	0.7	4.5	26.2	9.2
Taranaki	5.0	18.2	6.5	0.1	2.2	0.3	5.1	20.4	6.8
Manawatu-Wanganui	3.9	19.2	6.3	0.1	2.2	0.5	4.0	21.5	6.8
Wellington	3.5	18.9	6.7	0.1	1.6	0.5	3.5	20.5	7.2
West Coast	5.5	10.6	5.8	0.2	1.5	0.2	5.7	12.0	6.1
Canterbury	3.4	11.5	4.0	0.1	0.7	0.1	3.5	12.3	4.2
Otago	3.9	10.4	4.4	[0.05]	1.7	0.1	3.9	12.2	4.5
Southland	5.3	17.2	6.6	0.1	0.9	0.2	5.4	18.1	6.7
Nelson-Tasman	4.4	14.0	4.9	0.1	1.0	0.2	4.5	15.0	5.1
Marlborough	3.9	14.4	4.7	0.1	1.1	0.2	4.0	15.5	4.9
<b>New Zealand</b>	<b>3.8</b>	<b>22.1</b>	<b>7.3</b>	<b>0.1</b>	<b>3.4</b>	<b>0.8</b>	<b>3.9</b>	<b>25.5</b>	<b>8.1</b>
<i>Region</i>	<i>2.3</i>	<i>14.7</i>	<i>7.8</i>	<i>0.3</i>	<i>4.4</i>	<i>1.5</i>	<i>2.4</i>	<i>18.0</i>	<i>9.0</i>
<b>2001</b>									
Northland	2.6	16.1	6.9	0.1	2.1	0.8	2.8	18.1	7.7
Auckland	1.6	14.5	7.9	0.1	1.7	1.0	1.7	16.2	8.9
Waikato	2.0	14.5	5.3	0.1	1.4	0.4	2.0	15.9	5.7
Bay of Plenty	1.6	14.5	5.5	[0.05]	1.5	0.5	1.7	15.9	6.0
Gisborne	2.2	12.5	7.3	[0.05]	1.8	1.0	2.2	14.3	8.3
Hawke's Bay	2.1	13.9	5.5	[0.03]	1.2	0.4	2.1	15.1	6.0
Taranaki	2.3	9.0	3.4	[0.04]	0.9	0.2	2.3	9.9	3.6
Manawatu-Wanganui	1.9	10.3	3.9	0.1	0.7	0.2	1.9	11.0	4.1
Wellington	1.6	10.4	4.7	[0.03]	0.8	0.3	1.7	11.2	5.0
West Coast	2.3	6.9	2.6	0.1	0.0	[0.04]	2.3	6.9	2.7
Canterbury	1.5	7.0	2.4	[0.03]	0.4	0.1	1.5	7.4	2.5
Otago	1.4	5.2	1.9	[0.03]	0.0	0.1	1.4	5.2	2.0
Southland	1.8	7.2	2.5	0.1	0.6	0.1	1.9	7.7	2.7
Nelson-Tasman	2.1	9.4	2.8	0.1	1.1	0.3	2.2	10.5	3.1
Marlborough	1.7	8.2	2.5	[0.04]	0.5	0.1	1.7	8.7	2.5
<b>New Zealand</b>	<b>1.7</b>	<b>12.7</b>	<b>5.3</b>	<b>0.1</b>	<b>1.3</b>	<b>0.5</b>	<b>1.8</b>	<b>14.0</b>	<b>5.8</b>
<i>Region</i>	<i>1.3</i>	<i>10.8</i>	<i>6.0</i>	<i>0.1</i>	<i>2.1</i>	<i>1.0</i>	<i>1.4</i>	<i>12.9</i>	<i>6.9</i>

(1) Moderate Overcrowding: 3-4 people/1 bedroom, 5-7 people/2 bedrooms, 6-8 people/3 bedrooms, 9 or more people/4 or more bedrooms

Serious Overcrowding: 5 or more people/1 bedroom, 8 or more people/2 bedrooms, 9 or more people/3 bedrooms

**Appendix Table 6: Standardised<sup>1</sup> Convictions (%) by Sentence Type, Gender and Region, 1985-87 – 2000-02**

Region	Males					Females				
	Com- munity	Cust- odial	Mone- tary	Other	Total	Com- munity	Cust- odial	Mone- tary	Other	Total
	<b>1985-87</b>									
Northland	0.75	0.20	4.70	0.23	5.88	0.11	0.01	0.68	0.06	0.85
Auckland	0.97	0.38	4.32	0.37	6.05	0.19	0.02	0.82	0.17	1.19
Waikato	1.22	0.50	3.47	0.22	5.41	0.21	0.03	0.54	0.06	0.83
Bay of Plenty	1.37	0.46	5.59	0.27	7.70	0.28	0.03	0.89	0.08	1.27
Gisborne	1.81	0.65	4.83	0.36	7.64	0.38	0.03	0.73	0.10	1.24
Hawkes Bay	1.43	0.70	4.07	0.20	6.40	0.25	0.04	0.60	0.06	0.96
Taranaki	0.69	0.48	3.82	0.21	5.20	0.09	0.03	0.45	0.12	0.69
Manawatu- Wanganui	1.08	0.47	4.56	0.30	6.41	0.21	0.02	0.64	0.10	0.97
Wellington	1.09	0.40	4.59	0.27	6.35	0.19	0.04	0.78	0.12	1.12
West Coast	0.97	0.21	3.59	0.19	4.96	0.12	0.01	0.53	0.04	0.71
Canterbury	0.94	0.50	3.63	0.22	5.29	0.18	0.03	0.71	0.12	1.04
Otago	0.85	0.33	4.37	0.46	6.00	0.15	0.01	0.86	0.15	1.18
Southland	0.90	0.57	4.59	0.18	6.24	0.21	0.03	0.70	0.08	1.02
Nelson-Tasman	0.84	0.21	3.50	0.33	4.89	0.13	0.01	0.49	0.14	0.78
Marlborough	0.96	0.25	2.97	0.24	4.43	0.12	0.01	0.33	0.10	0.57
<b>New Zealand</b>	<b>1.04</b>	<b>0.43</b>	<b>4.23</b>	<b>0.29</b>	<b>5.99</b>	<b>0.19</b>	<b>0.02</b>	<b>0.72</b>	<b>0.12</b>	<b>1.06</b>
<i>Range</i>	<i>1.11</i>	<i>0.50</i>	<i>2.62</i>	<i>0.27</i>	<i>3.27</i>	<i>0.30</i>	<i>0.04</i>	<i>0.56</i>	<i>0.13</i>	<i>0.71</i>
	<b>1990-92</b>									
Northland	2.18	0.32	3.60	0.50	6.60	0.27	0.01	0.57	0.13	0.98
Auckland	1.85	0.40	3.33	0.48	6.05	0.29	0.02	0.61	0.14	1.06
Waikato	2.11	0.74	3.48	0.28	6.62	0.48	0.05	0.61	0.09	1.23
Bay of Plenty	3.55	0.84	4.66	0.44	9.49	0.82	0.05	0.87	0.11	1.86
Gisborne	4.02	0.88	4.60	0.44	9.94	0.82	0.04	0.87	0.18	1.90
Hawkes Bay	3.20	0.83	3.00	0.52	7.55	0.60	0.03	0.50	0.17	1.30
Taranaki	1.89	0.56	2.73	0.18	5.37	0.33	0.03	0.45	0.07	0.88
Manawatu- Wanganui	1.77	0.62	2.45	0.38	5.21	0.35	0.03	0.38	0.12	0.88
Wellington	2.03	0.41	3.11	0.32	5.86	0.41	0.03	0.60	0.10	1.14
West Coast	2.29	0.43	2.63	0.25	5.60	0.38	[0.003]	0.36	0.05	0.80
Canterbury	1.70	0.63	2.82	0.23	5.38	0.36	0.05	0.58	0.08	1.07
Otago	1.51	0.40	2.33	0.70	4.94	0.24	0.01	0.32	0.18	0.75
Southland	1.88	0.70	3.06	0.39	6.03	0.45	0.03	0.39	0.12	0.99
Nelson-Tasman	2.44	0.46	3.03	0.27	6.21	0.47	0.01	0.44	0.07	1.00
Marlborough	1.96	0.24	1.84	0.16	4.20	0.38	0.01	0.23	0.04	0.66
<b>New Zealand</b>	<b>2.05</b>	<b>0.53</b>	<b>3.16</b>	<b>0.39</b>	<b>6.14</b>	<b>0.39</b>	<b>0.03</b>	<b>0.57</b>	<b>0.12</b>	<b>1.11</b>
<i>Range</i>	<i>2.51</i>	<i>0.64</i>	<i>2.81</i>	<i>0.54</i>	<i>5.74</i>	<i>0.58</i>	<i>0.05</i>	<i>0.65</i>	<i>0.15</i>	<i>1.25</i>

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**Appendix Table 6. (continued)**

Region	Males					Females				
	Com- munity	Cust- odial	Mone- tary	Other	Total	Com- munity	Cust- odial	Mone- tary	Other	Total
	<b>1995-97</b>									
Northland	3.14	0.66	3.64	0.74	8.19	0.54	0.03	0.67	0.21	1.44
Auckland	1.82	0.41	2.93	0.59	5.75	0.28	0.02	0.47	0.14	0.92
Waikato	2.10	0.69	3.38	0.33	6.50	0.52	0.04	0.59	0.09	1.24
Bay of Plenty	2.88	0.76	4.26	0.46	8.36	0.67	0.04	1.01	0.15	1.87
Gisborne	3.80	0.78	3.60	0.33	8.51	0.84	0.03	0.77	0.10	1.74
Hawkes Bay	3.53	0.87	2.87	0.68	7.95	0.90	0.05	0.59	0.25	1.79
Taranaki	2.29	0.74	2.68	0.28	5.98	0.50	0.04	0.41	0.06	1.02
Manawatu- Wanganui	1.88	0.66	2.44	0.40	5.37	0.42	0.04	0.39	0.11	0.96
Wellington	1.95	0.43	2.63	0.44	5.45	0.42	0.03	0.44	0.12	1.00
West Coast	2.10	0.34	2.96	0.32	5.71	0.41	0.02	0.32	0.07	0.82
Canterbury	1.41	0.53	2.50	0.27	4.70	0.33	0.05	0.42	0.11	0.90
Otago	1.36	0.35	2.55	0.48	4.74	0.27	0.02	0.37	0.13	0.78
Southland	2.03	0.69	3.60	0.46	6.77	0.45	0.03	0.42	0.11	1.02
Nelson-Tasman	2.10	0.36	2.93	0.39	5.79	0.46	0.01	0.44	0.11	1.02
Marlborough	2.13	0.38	2.69	0.34	5.53	0.49	0.01	0.43	0.12	1.04
<b>New Zealand</b>	<b>2.00</b>	<b>0.53</b>	<b>2.94</b>	<b>0.46</b>	<b>5.92</b>	<b>0.41</b>	<b>0.03</b>	<b>0.50</b>	<b>0.13</b>	<b>1.07</b>
<i>Range</i>	<i>2.45</i>	<i>0.54</i>	<i>1.82</i>	<i>0.48</i>	<i>3.81</i>	<i>0.64</i>	<i>0.04</i>	<i>0.69</i>	<i>0.19</i>	<i>1.10</i>
	<b>2000-02</b>									
Northland	2.80	0.90	4.53	0.96	9.19	0.69	0.07	1.00	0.28	2.04
Auckland	1.52	0.41	2.75	0.76	5.44	0.28	0.03	0.47	0.17	0.96
Waikato	1.59	0.62	3.23	0.54	5.98	0.41	0.06	0.64	0.17	1.28
Bay of Plenty	2.47	0.88	4.20	0.79	8.34	0.63	0.07	0.83	0.23	1.76
Gisborne	3.94	1.02	4.16	1.18	10.30	1.06	0.11	1.05	0.40	2.62
Hawkes Bay	3.19	1.02	3.79	0.95	8.96	0.95	0.11	0.77	0.33	2.16
Taranaki	2.43	1.03	3.38	0.42	7.26	0.64	0.07	0.62	0.17	1.50
Manawatu- Wanganui	1.81	0.73	2.82	0.60	5.96	0.46	0.05	0.52	0.17	1.19
Wellington	1.67	0.41	2.38	0.58	5.04	0.37	0.03	0.45	0.16	1.00
West Coast	1.68	0.42	3.27	0.32	5.70	0.31	0.04	0.50	0.05	0.90
Canterbury	1.32	0.56	2.42	0.29	4.59	0.30	0.05	0.45	0.10	0.91
Otago	1.26	0.40	2.53	0.48	4.67	0.27	0.03	0.38	0.11	0.79
Southland	1.86	0.60	4.22	0.70	7.37	0.42	0.03	0.58	0.16	1.19
Nelson-Tasman	2.04	0.46	3.51	0.54	6.56	0.45	0.03	0.61	0.14	1.22
Marlborough	2.28	0.55	3.76	0.62	7.21	0.51	0.05	0.67	0.23	1.46
<b>New Zealand</b>	<b>1.74</b>	<b>0.56</b>	<b>2.96</b>	<b>0.63</b>	<b>5.89</b>	<b>0.40</b>	<b>0.05</b>	<b>0.54</b>	<b>0.17</b>	<b>1.16</b>
<i>Range</i>	<i>2.68</i>	<i>0.63</i>	<i>2.15</i>	<i>0.89</i>	<i>5.71</i>	<i>0.79</i>	<i>0.09</i>	<i>0.67</i>	<i>0.35</i>	<i>1.83</i>

(1) Age Standardised to New Zealand Total Population 1996.

Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

**Appendix Table 7: Convictions as a Percentage of the Population for Males by Selected Age Groups, Sentence Type and Region, 1985-87 and 2000-02**

**a) 1985-87**

Region	Community			Custodial			Monetary			Other			Total		
	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29
Northland	2.0	2.6	1.3	0.6	0.7	0.3	10.4	14.2	8.5	0.4	0.6	0.3	13.4	18.1	10.4
Auckland	2.8	3.0	1.6	1.1	1.2	0.7	9.9	12.4	7.1	0.8	0.9	0.7	14.6	17.6	10.1
Waikato	3.6	3.9	2.1	1.5	1.6	0.9	8.3	9.7	5.1	0.5	0.5	0.4	14.0	15.6	8.5
Bay of Plenty	4.0	4.6	2.6	1.4	1.7	0.8	13.1	17.2	9.0	0.6	0.7	0.5	19.2	24.2	12.8
Gisborne	4.5	5.3	3.9	1.9	2.5	1.1	10.6	14.2	6.9	0.9	0.9	0.5	17.9	22.8	12.4
Hawkes Bay	4.0	4.5	2.6	2.1	2.3	1.1	9.7	12.4	6.6	0.5	0.5	0.3	16.2	19.7	10.6
Taranaki	2.2	2.5	1.2	1.5	1.5	0.9	8.6	11.2	5.9	0.7	0.5	0.3	12.9	15.6	8.3
Manawatu-Wanganui	3.2	3.4	1.7	1.4	1.6	0.8	9.8	11.9	7.0	0.7	0.6	0.4	15.1	17.5	9.9
Wellington	2.7	3.4	1.9	1.1	1.4	0.8	10.9	12.7	7.2	0.7	0.7	0.4	15.4	18.1	10.3
West Coast	2.9	3.2	1.5	0.4	0.8	0.4	10.3	9.4	5.0	0.5	0.5	0.3	14.1	13.9	7.2
Canterbury	2.6	2.8	1.7	1.1	1.6	1.0	9.0	9.4	5.6	0.5	0.5	0.3	13.2	14.3	8.7
Otago	2.7	2.7	1.4	0.9	1.2	0.7	14.8	10.8	5.7	1.3	1.2	0.7	19.7	16.0	8.5
Southland	2.7	2.9	1.8	1.7	1.8	1.1	11.6	13.0	7.5	0.7	0.4	0.2	16.8	18.1	10.6
Nelson-Tasman	2.9	3.1	1.3	0.7	0.7	0.3	8.9	10.9	5.3	1.2	0.7	0.4	13.6	15.4	7.3
Marlborough	2.8	3.1	1.5	0.7	0.8	0.5	7.9	8.8	4.8	0.5	0.4	0.4	11.9	13.2	7.2
<b>New Zealand</b>	<b>3.0</b>	<b>3.3</b>	<b>1.8</b>	<b>1.2</b>	<b>1.4</b>	<b>0.8</b>	<b>10.2</b>	<b>11.9</b>	<b>6.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>15.0</b>	<b>17.3</b>	<b>9.7</b>
<i>Range</i>	<i>2.5</i>	<i>2.9</i>	<i>2.7</i>	<i>1.8</i>	<i>1.8</i>	<i>0.8</i>	<i>7.0</i>	<i>8.4</i>	<i>4.2</i>	<i>0.8</i>	<i>0.8</i>	<i>0.5</i>	<i>7.9</i>	<i>11.1</i>	<i>5.6</i>

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Appendix Table 7. (continued)

**b) 2000-02**

Region	Community			Custodial			Monetary			Other			Total		
	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29	15-19	20-24	25-29
Northland	4.3	7.7	5.6	0.7	2.4	2.1	8.6	13.0	8.3	1.5	2.4	1.9	15.2	25.4	17.9
Auckland	2.7	3.8	2.7	0.5	1.0	0.8	4.9	6.7	4.6	1.2	1.7	1.3	9.3	13.3	9.4
Waikato	3.0	4.3	3.0	0.9	1.7	1.4	7.9	8.9	5.1	1.1	1.4	0.8	13.0	16.3	10.3
Bay of Plenty	4.5	7.2	5.1	1.0	2.3	2.0	9.2	13.4	7.1	1.5	1.9	1.3	16.2	24.7	15.5
Gisborne	4.8	11.5	8.1	1.2	2.7	2.2	6.9	11.1	7.8	2.0	2.6	2.5	14.9	27.9	20.5
Hawkes Bay	5.5	8.8	6.4	1.3	3.2	2.0	6.7	10.7	6.9	2.0	2.2	1.8	15.6	24.8	17.2
Taranaki	5.3	7.8	4.3	1.6	3.1	2.1	7.3	11.0	6.0	0.8	1.2	0.8	14.9	23.1	13.2
Manawatu-Wanganui	3.6	4.6	3.6	0.7	1.6	1.9	5.7	7.6	5.1	1.2	1.4	1.2	11.2	15.3	11.8
Wellington	3.5	4.4	2.9	0.5	1.1	0.8	4.4	6.0	4.0	1.0	1.2	1.1	9.4	12.8	8.8
West Coast	3.7	5.3	2.4	0.4	1.5	0.9	7.8	11.1	4.4	0.5	0.8	0.3	12.4	18.6	8.1
Canterbury	2.9	3.6	2.3	0.8	1.3	1.1	5.6	6.2	3.8	0.6	0.6	0.5	9.9	11.6	7.7
Otago	3.3	3.0	2.2	0.7	0.8	0.8	6.1	6.5	4.7	1.1	1.0	0.9	11.2	11.2	8.6
Southland	5.4	6.9	2.8	1.3	2.2	1.0	11.3	15.5	6.1	2.0	2.2	1.0	20.0	26.8	10.9
Nelson-Tasman	4.2	6.0	3.6	0.6	1.2	1.1	7.6	10.5	5.8	1.2	1.2	0.9	13.7	18.9	11.4
Marlborough	4.9	7.3	3.6	0.6	2.1	0.9	8.5	11.3	5.5	1.0	1.9	0.9	15.0	22.5	10.9
<b>New Zealand</b>	<b>3.4</b>	<b>4.6</b>	<b>3.2</b>	<b>0.7</b>	<b>1.4</b>	<b>1.2</b>	<b>6.2</b>	<b>7.9</b>	<b>4.9</b>	<b>1.2</b>	<b>1.4</b>	<b>1.1</b>	<b>11.5</b>	<b>15.4</b>	<b>10.4</b>
<i>Range</i>	2.8	8.5	5.9	1.2	2.4	1.4	6.9	9.5	4.5	1.5	2	2.2	10.7	16.7	12.8

Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

**Appendix Table 8: Percentage Distribution of Custodial Sentences<sup>1</sup> for Males by Length of Sentence and Regions, 1985-87 and 2000-02**

Region	Length of Sentence				Total
	3 months or under	4-12 months	1-4 years	5+ years	
<b>1985-87</b>					
Northland	41.7	41.4	12.9	4.0	100.0
Auckland	38.1	39.1	17.7	5.1	100.0
Waikato	45.3	40.9	11.7	2.0	100.0
Bay of Plenty	41.6	44.2	11.3	2.8	100.0
Gisborne	55.6	29.9	12.1	2.5	100.0
Hawkes Bay	49.9	40.0	8.4	1.7	100.0
Taranaki	40.9	43.2	15.5	0.5	100.0
Manawatu-Wanganui	48.2	41.3	9.2	1.3	100.0
Wellington	42.4	42.1	12.8	2.7	100.0
West Coast	49.6	48.0	2.4	0.0	100.0
Canterbury	45.7	41.8	10.0	2.4	100.0
Otago	50.5	39.1	9.1	1.3	100.0
Southland	56.9	36.0	6.3	0.8	100.0
Nelson-Tasman	42.7	49.1	5.9	2.4	100.0
Marlborough	36.3	55.6	8.0	0.0	100.0
<b>New Zealand</b>	<b>44.3</b>	<b>40.7</b>	<b>12.3</b>	<b>2.7</b>	<b>100.0</b>
<i>Range</i>	<i>20.6</i>	<i>25.7</i>	<i>15.3</i>	<i>5.1</i>	
<b>2000-02</b>					
Northland	23.5	44.2	28.3	4.0	100.0
Auckland	23.1	37.5	31.3	8.1	100.0
Waikato	21.7	46.5	26.7	5.1	100.0
Bay of Plenty	20.4	47.4	27.3	5.0	100.0
Gisborne	22.7	45.2	28.0	4.1	100.0
Hawkes Bay	28.0	44.3	23.5	4.2	100.0
Taranaki	45.4	39.9	12.4	2.3	100.0
Manawatu-Wanganui	30.6	44.0	22.0	3.5	100.0
Wellington	25.0	42.3	27.4	5.2	100.0
West Coast	26.8	51.4	18.9	3.0	100.0
Canterbury	22.3	44.1	28.7	4.9	100.0
Otago	30.9	42.2	24.5	2.5	100.0
Southland	35.3	38.5	22.6	3.5	100.0
Nelson-Tasman	29.7	45.2	20.6	4.5	100.0
Marlborough	24.6	48.3	24.6	2.5	100.0
<b>New Zealand</b>	<b>25.4</b>	<b>42.6</b>	<b>26.7</b>	<b>5.2</b>	<b>100.0</b>
<i>Range</i>	<i>25.0</i>	<i>13.8</i>	<i>18.9</i>	<i>5.8</i>	

(1) Age Standardised to New Zealand Total Population 1996.

Sources: Ministry of Justice, customised convictions data set.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

**Appendix Table 9: Estimated Male Prison Muster as a Percentage of the Population<sup>1</sup>, by Ethnicity and Region, 1986 and 2001**

Region	Pakeha		Māori		Total	
	1986	2001	1986	2001	1986	2001
Northland	0.04	0.27	0.26	1.55	0.10	0.65
Auckland	0.12	0.17	0.86	1.74	0.23	0.40
Waikato	0.10	0.22	0.61	1.44	0.20	0.48
Bay of Plenty	0.08	0.26	0.49	1.64	0.20	0.68
Gisborne	0.11	0.21	0.56	1.37	0.27	0.73
Hawke's Bay	0.08	0.29	0.76	1.83	0.24	0.71
Taranaki	0.12	0.25	0.54	1.65	0.18	0.45
Manawatu-Wanganui	0.09	0.28	0.51	1.20	0.15	0.44
Wellington	0.09	0.17	0.93	1.10	0.18	0.31
West Coast	0.03	0.20	0.18	0.81	0.04	0.24
Canterbury	0.15	0.36	1.12	1.73	0.20	0.44
Otago	0.09	0.21	0.51	0.75	0.11	0.24
Southland	0.11	0.28	0.54	1.00	0.16	0.37
Nelson-Tasman	0.05	0.24	0.95	1.08	0.09	0.31
Marlborough	0.06	0.30	0.21	0.90	0.07	0.36
<b>New Zealand</b>	<b>0.10</b>	<b>0.24</b>	<b>0.68</b>	<b>1.50</b>	<b>0.19</b>	<b>0.43</b>
<i>Range</i>	<i>0.11</i>	<i>0.19</i>	<i>0.94</i>	<i>1.08</i>	<i>0.23</i>	<i>0.49</i>

(1) Age Standardised to New Zealand Total Population 1996.

Sources: Ministry of Justice, customised convictions data set.

Ministry of Corrections, muster averages.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

**Appendix Table 10: Estimated Male Prison Muster as a Percentage of the Population, by Age Group and Region, 1986 and 2001**

Region	Age Group (years)					
	15-19	20-24	25-29	30-39	40-49	50+
	<b>1986</b>					
Northland	0.19	0.36	0.13	0.08	0.03	0.03
Auckland	0.36	0.69	0.54	0.24	0.10	0.01
Waikato	0.37	0.60	0.45	0.19	0.06	0.02
Bay of Plenty	0.42	0.69	0.38	0.16	0.07	0.01
Gisborne	0.39	0.95	0.65	0.10	0.24	0.03
Hawke's Bay	0.64	0.87	0.36	0.16	0.10	0.02
Taranaki	0.39	0.47	0.30	0.16	0.14	0.01
Manawatu-Wanganui	0.34	0.43	0.30	0.16	0.05	0.02
Wellington	0.32	0.58	0.33	0.22	0.08	0.01
West Coast	0.06	0.16	0.07	0.04	0.01	[0.004]
Canterbury	0.28	0.58	0.45	0.22	0.13	0.01
Otago	0.19	0.35	0.22	0.11	0.03	0.01
Southland	0.52	0.42	0.25	0.17	0.04	[0.004]
Nelson-Tasman	0.22	0.17	0.21	0.13	0.02	[0.004]
Marlborough	0.18	0.21	0.16	0.07	0.02	[0.001]
<b>New Zealand</b>	<b>0.34</b>	<b>0.58</b>	<b>0.40</b>	<b>0.19</b>	<b>0.08</b>	<b>0.01</b>
<i>Range</i>	<i>0.58</i>	<i>0.79</i>	<i>0.57</i>	<i>0.19</i>	<i>0.23</i>	<i>0.03</i>
	<b>2001</b>					
Northland	0.50	1.64	1.59	0.90	0.39	0.08
Auckland	0.43	0.89	0.69	0.57	0.29	0.10
Waikato	0.55	1.26	1.03	0.58	0.29	0.08
Bay of Plenty	0.66	1.63	1.45	0.97	0.43	0.09
Gisborne	0.71	1.54	1.59	1.02	0.39	0.21
Hawke's Bay	0.79	2.13	1.35	0.82	0.50	0.08
Taranaki	0.48	1.26	0.79	0.51	0.29	0.13
Manawatu-Wanganui	0.41	0.92	1.11	0.56	0.31	0.09
Wellington	0.33	0.71	0.63	0.38	0.24	0.08
West Coast	0.12	1.11	0.27	0.24	0.18	0.03
Canterbury	0.49	0.82	0.82	0.72	0.32	0.09
Otago	0.33	0.41	0.49	0.40	0.14	0.03
Southland	0.52	1.31	0.59	0.29	0.26	0.07
Nelson-Tasman	0.39	0.64	0.63	0.44	0.20	0.07
Marlborough	0.32	1.24	0.48	0.48	0.25	0.04
<b>New Zealand</b>	<b>0.47</b>	<b>0.98</b>	<b>0.84</b>	<b>0.59</b>	<b>0.30</b>	<b>0.09</b>
<i>Range</i>	<i>0.67</i>	<i>1.71</i>	<i>1.32</i>	<i>0.78</i>	<i>0.35</i>	<i>0.18</i>

Sources: Ministry of Justice, customised convictions data set.

Ministry of Corrections, muster averages.

Statistics New Zealand, 1986-2001 Censuses of Population and Dwellings.

## References

- Ambrose, P. (1996). *The Real Cost of Poor Homes: A Critical Review of the Literature*. University of Sussex and University of Westminster.
- Baxendine, S., Dharmalingam, A., Pool, I., & Hodder, C. (2002). The Role of Human Capital in Regional Development, New Zealand 1986-96, *End Users Meeting, The Socio-Economic Impacts of ICT*. Wellington.
- Cochrane, W., Pool, I., & Baxendine, S. (forthcoming). New Zealand Regions, 1986-2001: Household Incomes, Joblessness and Parenting, *Population Studies Centre Discussion Paper Series*. Hamilton: University of Waikato.
- Crothers, C., Kearns, R., & Lindsey, D. (1953). Housing in Manukau City: Overcrowding, Poor Housing and their Consequences, *Working Papers in Sociology*: University of Auckland.
- (1995). Housing in Manukau City: Overcrowding, Poor Housing and their Consequences, *Working Papers in Sociology*: University of Auckland.
- Gray, A. (2001). *Definitions of Crowding and the Effects of Crowding on Health: A Literature Review*. Wellington: Ministry of Social Policy.
- Johnstone, K., & Baxendine, S. (1998). *The People of the Midland Region II: Composition and Change*. Hamilton: Health Funding Authority, Health and Disability Analysis Unit, Midland Office.
- Kearns, R., C.J., S., & Abbott, M. (1992). The Stress of Incipient Homelessness. *Housing Studies*, 7(4), 280-298.
- Lowry, S. (1989). Noise, Space and Light. *British Medical Journal*, 299, 1439-1442.
- Midland Health (1994). *The People of the Midland Health Region: Volume One, Population Profile*. Hamilton: Health and Disability Analysis Unit, Midland Health.
- Ministry of Justice: Criminal Justice Policy Group (1998). *The Use of Imprisonment in New Zealand*. Wellington: Ministry of Justice.
- Papps, K., & Winkelmann, R. (2000). Unemployment and Crime: New Evidence for an Old Question. *New Zealand Economic Papers*, 34(1), 53-72.
- Pool, I. & Baxendine, S. (2006). Population Trends, Convictions and Imprisonment: Demographic Divergence, Dichotomy and Diversity. *Population Studies Centre Discussion Paper, No. 61*. Hamilton: University of Waikato.
- Pool, I., Baxendine, S., Bedford, R., Cochrane, W., Lidgard, J., & Lindop, J. (forthcoming-a). *Developing Underdevelopment and Geographical Disparities: A Social Demography of New Zealand Regions*. Hamilton: Population Studies Centre.
- Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. (2005c). New Zealand Regions, 1986-2001: Education and Qualifications, *Population Studies Centre Discussion Paper 56*. Hamilton: University of Waikato.
- Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. (2005a). New Zealand Regions, 1986-2001: Household and Families, and their Dwellings, *Population Studies Centre Discussion Paper 55*. Hamilton: University of Waikato.
- Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. (2005b). New Zealand Regions, 1986-2001: Population Structures, *Population Studies Centre Discussion Paper 53*. Hamilton: University of Waikato.
- Pool, I., Baxendine, S., & Katzenellenbogen, J. (forthcoming-e). New Zealand Regions, 1986-2001: Hospitalisation and some of its Health Contexts, *Population Studies Centre Discussion Paper Series*. Hamilton: University of Waikato.
- Pool, I., Sceats, J., Baxendine, S., Cheung, J., Katzenellenbogen, J., & Dharmalingam, A. (forthcoming-f). *Sub-national Differentials in Health in New Zealand: Hospital*

- Utilisation Expectancies and Other Population-Health Measures of Regional Trends*. Hamilton: University of Waikato.
- Population Monitoring Group (1989). Diversity and Change: Regional Populations in New Zealand, *PMG Report No. 5, New Zealand Planning Council*. Wellington, New Zealand.
- Preston, D. A. (1996). Reducing Benefit Dependence. *Social Policy Journal of New Zealand*, 6, 69-91.
- Smith, C., Kearns, R., & Abbott, M. (1992). A Tale of Two Cities: The Experience of Housing Problems in Auckland and Christchurch. *New Zealand Geographer*, 48(1), 2-10.
- Statistics New Zealand (1998). *New Zealand Now: Housing*. Wellington: Statistics New Zealand.
- Triggs, S. (1998). *From Crime to Sentence: Trends in Criminal Justice, 1986 to 1996*. Wellington: Ministry of Justice.
- Westbrook, A., Cochrane, W., Baxendine, S., & Pool, I. (forthcoming). New Zealand Regions, 1986-2001: Governance and Service Delivery in the Context of Globalisation, *Population Studies Centre Discussion Paper Series*. Hamilton: University of Waikato.
- Westbrooke, I. (1997). Simpson's Paradox - An example in a New Zealand Survey of Jury Composition. Wellington: Statistics New Zealand.

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