PSC

DISCUSSION PAPERS

Population Studies Centre

No 61 February 2006

# Population Trends, Convictions and Imprisonment: Demographic Divergence, Dichotomy and Diversity

**Pool, I., & Baxendine, S.,**


**University of Waikato**
**Te Whare Wānanga ō Waikato**
**HAMILTON NEW ZEALAND**

The Population Studies Centre was established at the University of Waikato in 1982.

POPULATIONS STUDIES CENTRE DISCUSSION PAPERS are intended as a forum for the publication of selected papers on research within the Centre, for the discussion and comment within the research community and among policy analysts prior to more formal refereeing and publication.

Discussion Papers can be obtained in pdf form from the centre's website at
http://www.waikato.ac.nz/wfass/populationstudiescentre

The views expressed in this discussion paper are those of the authors and do not reflect any official position on the part of the Centre.


University of Waikato
Private Bag 3105
Hamilton
New Zealand
www.waikato.ac.nz/wfass/populationstudiescentre
pscadmin@waikato.ac.nz

ISBN: 1-877149-64-0

# Population Trends, Convictions and Imprisonment: Demographic Divergence, Dichotomy and Diversity

**by**

**Ian Pool**
**Sandra Baxendine**

**Abstract**
The links between population patterns and trends, and policy and planning for the justice system is important. The trends in the number of convictions and imprisonments by regional councils are investigated for the period 1986 to 2001. This does not just focus on Custodial sentences but also looks at other types of sentences such as monetary and community sentences. Additionally, a regional estimate of the muster in prison is derived to give "normal" place of residence of those in prison. The relationship of imprisonment to other factors such as income, unemployment, sickness/invalid benefit rates, labour force participation rates and ethnicity is investigated. Some policy implications of these findings are presented.

*Keywords:* Convictions, Imprisonment, Population, Regions, New Zealand

**Acknowledgements:** This analysis is based on a paper first presented to the Annual Conference of District Court Judges, Rotorua, 1 April 2003. We thank Philip Spier, Ministry of Justice who provided customized tables on sentencing and Michael Rich, Department of Corrections for prison muster numbers. Support for this analysis comes from a grant from the Foundation for Research Science and Technology. Thanks are given to Jacques Poot and Lynda Sanderson for their comments on an earlier version. Sandra Baxendine contributed to this discussion paper while being employed at the Population Studies Centre and the material contained herein does not reflect any official position of the part of her current employer, Waikato District Health Board.

## Table of Contents



### List of Tables



### List of Figures



### List of Appendices

## 1. Population, and Policy and Planning for the Justice System

In identifying the links between population patterns and trends, and policies and planning for the justice system, it is useful to adopt two assumptions that may be seen as provocative, or even unjustified. Firstly, the view taken in this paper is that policy and planning have been severely constrained because they have concentrated primarily on questions of financing, infrastructure, physical capital or services, with human capital issues placed lower on the scale of priorities. Secondly and more importantly, that when "population needs" are addressed in "business plans", the focus is rather simplistic, merely taking two forms: trends in population numbers nationally and regionally, providing a so-called population-based plan, and the number of cases handled by courts. The problem is that this traditional approach to planning and management fails to ask questions about population-level factors that will determine changes over time and differentials in case-rates. "Population" is the macro-level manifestation of social and cultural differences in the society (Pool 1999).

Underpinning this concern is the fact that New Zealand has moved over recent years from trends and patterns of population dynamics and patterns that were essentially growth-driven – the volumes of people being born, dying and migrating – to one of change being composition-driven. Today, of mounting importance are shift-shares in demographic structures, such as in variations in the proportions in different cohorts, age groups, regions, ethnic groups or employment categories. Of singular significance in this regard are momentum effects coming from age-structural transitions, which are discussed below. These propel growth but also determine a restructuring of the society and of its human capital. The most publicly recognised age-transitional pattern is so-called population ageing, but there are other more immediate shifts that will have major implications for policy, particularly in social domains such as education, justice, health or welfare.

A further argument here is that, for policy and planning purposes, the justice system must analyse social and economic factors that have a bearing on case-loads and other aspects of service-provision. Research on changes and differentials in population-level patterns and trends for a wide range of variables (not just narrowly defined demographic phenomena such as births, deaths and migration) provides an overview of shifts and transformations in these various factors. This gives a macro-level perspective, but we will often have to turn to the micro-level, e.g. psychological, sociological or criminological studies, to explain the population trends. But it must not be forgotten that macro-level analyses have an inherent value as they deal with the universe of the policy-maker, the population or sub-population. In contrast, the domain of the service provider is frequently at a micro-level, dealing with an individual, a family or a small group, or a particular enterprise, or several firms, in the case of commercial law.

At the population-level the justice system faces challenges from major demographic changes, only some of which are frequently the subject of public debate. There are others that are more latent, less frequently discussed, and whose role may not be given sufficient attention in policy analyses.

The trends that will be looked at are firstly increasing demographic divergence at a national level coming from disordered cohort flows and population waves, both of which terms will be defined below, and co-terminous shifts in patterns of social inequality. Then another set of structural factors will be investigated to illustrate the growing dichotomisation, even

trichotomisation, of New Zealand regionally. This is occurring in two ways with the division into metropolitan and non-metropolitan New Zealand, and particularly between Auckland and Wellington, and the rest.

Co-varying in time with these shifts in population geography are growing inequalities between and within have and have-not regions. This trend may carry over to sentencing patterns and to imprisonment. Thus a separate section of this paper will deal with this issue.

Finally, increasing diversity will be investigated, which is one of the more manifest social trends. But the question will be asked whether this factor is as significant as is sometimes argued by comparison with divergence and dichotomisation.

## 2. Demographic Divergence

As a society, and since Waitangi, New Zealand has maintained a self-image of a rapidly growing, virile in-migrant population. This is now becoming less and less true. Fertility levels are below replacement among Pakeha (approx. 1.9 live births per women), and even are not far above replacement in what traditionally have been high fertility populations – Māori and Pacific Islanders. Mortality is low, but changes in its major growth impact are limited to extensions to the life-span at older ages in that have minor effects on the quantum of population change.

Migration at the beginning of the 21st Century contributed very significantly. In the year ending June 2004, 58 per cent of the national growth came from natural increase; only 42 percent from net migration (Statistics New Zealand 2005). Essentially then, its levels fluctuate wildly from year to year as a function of policy changes, coupled with changing attitudes and needs on the part of prospective migrants and the movements of New Zealanders, particularly from and to Australia. New Zealand is part of a world migration system, and thus what happens with larger host populations, Australia, Canada or the United States, will affect our intakes. Moreover, a very important component of the so-called permanent and long-term flow has been composed in some years of students coming from Asia for courses lasting 12 months or more.

Net migration trends, seized upon by journalists and politicians, are affected as much by the outflow of New Zealand residents as by in-flows from overseas. Indeed, many of the "immigrants" are in reality returning New Zealanders, or Australian nationals who may have been born in New Zealand, or whose parents were. In sum, even migration can not be relied on to drive growth, assuming that were desirable. Over the last quarter of the 20th century, despite massive inflows in the early 1970s and early 1990s, both of which produced anti-migration backlashes and were fraught with settlement problems, immigration has not greatly outpaced the emigration of New Zealand residents.

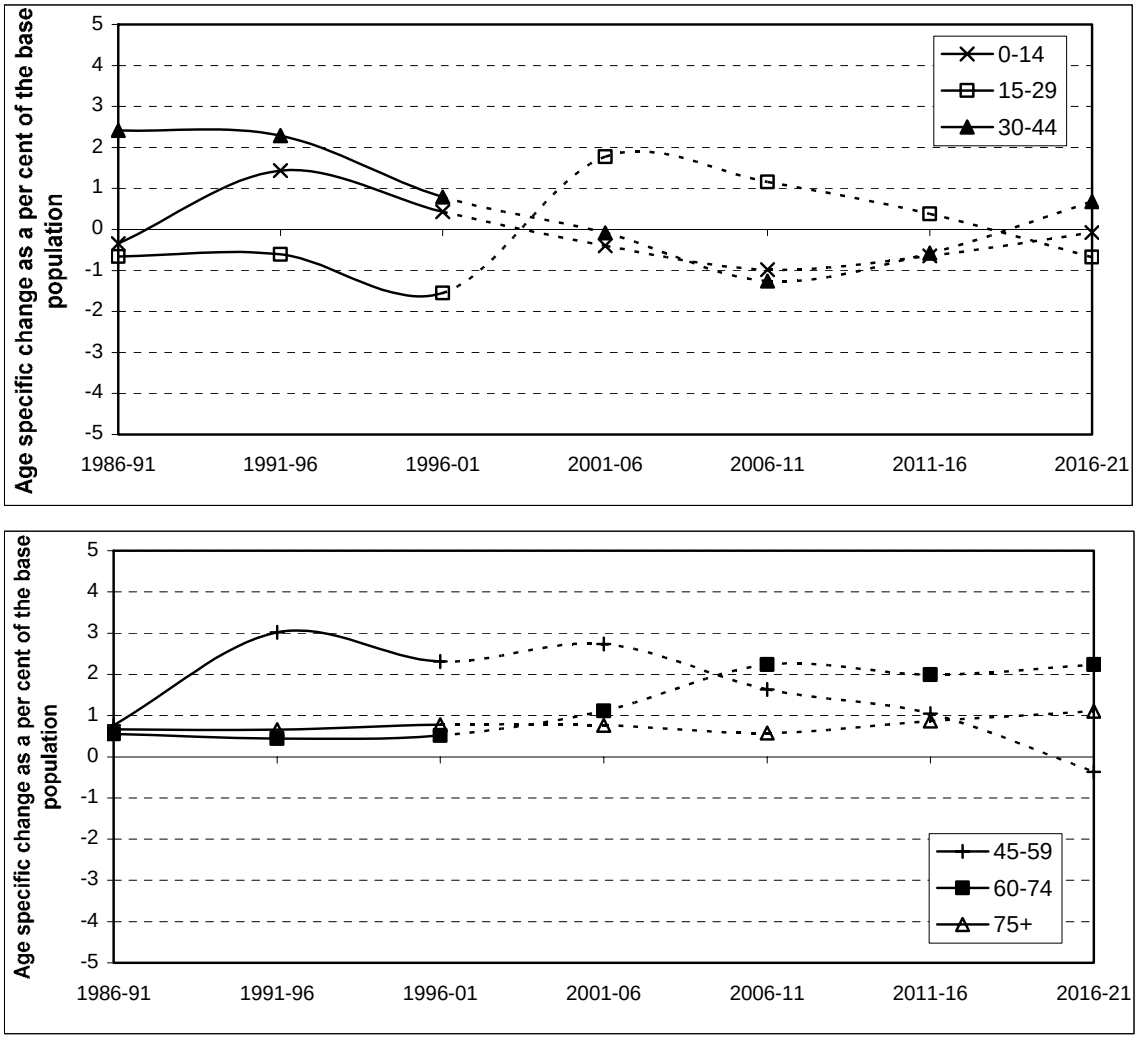
Population changes now will come increasingly from structural shifts rather than from growth *per se*. The most important structural change is the age-structural transition New Zealand is facing. This is the product primarily of shifts in Pakeha fertility over past decades, reinforced to a limited degree by migration. These fluctuations shifted from low fertility in the 1930s depression and war, to very high fertility in the baby-boom, peaking at 4.3 about 1960 and lasting from 1943 to 1973. Then they moved to a "baby-bust", when fertility levels dropped below replacement, from then until 1988, and finally the "baby-blip" around 1990 when

fertility reached back up to replacement. Since 1990 the rates have gradually drifted down to below replacement again. The baby-blip is playing itself out by a recent movement up produced by an upsurge in births to older women who had previously delayed childbearing. The arrival of larger cohorts at those same ages reinforces this pattern. Finally, the baby-bust also coincided with a very rapid decrease in Māori fertility, from 6+ births per woman in the early 1960s to 5.0 in 1973, to 2.8 by 1978.

For policy and planning, the fertility rates *per se* are of less interest than shifts in the sizes of the birth cohorts. The fluctuations in these are of critical importance, with troughs in the 1930s, bi-modal peaks in 1960 and 1970, then a trough, and finally another peak around 1990 – about 60,000 births for each of the recent peaks. To add to this, by chance peak in-migration flows, typically of people at reproductive ages, have coincided with the peaks in birth cohort sizes. The net result of these troughs and peaks, shown in Figure 1, is that New Zealand has disordered cohort flows, among the most extreme in the western developed countries. As cohorts of varying sizes move up through the age-groups, they produce momentum growth effects – popularly called "pipeline growth". In turn, as peak flows pass through key life-cycle stages they bring pressures on all policy domains and markets directed to that life-cycle stage; as the flow moves on, this pressure diminishes, requiring policy-makers to face on-, off-again demands.

The effects of recent changes in birth-cohort sizes are much more severe than in the past because the fertility changes between the 1870s and the late 1930s were more gradual, and went consistently in one direction (decreases). To complicate this, in any one quinquennium these pressures may fall on several different life-cycle stages simultaneously, as one can see in Figure 1 for the period 2011-2016. And these pressures will also be on- then off-again. Thus the planning and policy process is today far more complex than it was for any factor that is age-specific. The case-load of courts falls into this category, as do most social and economic phenomena, even fiscal questions (who pays the tax; who produces fiscal burdens).

**Figure 1: New Zealand Historical and Projected "Population Waves", 1986 – 2021**




*Sources:* Historic, Statistics New Zealand, 1986 to 2001 Census of Population and Dwellings.
Projections, Statistics New Zealand, 2001 based Median Series.

An example that is appropriate for the court system, is the baby-blip that has brought pressure on primary school rolls, then intermediate, and by now secondary. By 2010 there will be pressures on all policy domains relating to the needs of 15-24 year olds, such as for tertiary education, labour market absorption, and, of course, justice. One should add that, when the baby-blippers reach the young adult ages, if as a society we treat them as badly as we dealt with the last such wave to reach those ages, then the outlook for us is very bleak. The last such wave hit about 1988, yet at that time we restructured radically, totally ignoring human capital issues, and confronted the young with very high levels of unemployment. We can prepare for the arrival of the baby-blip at these ages, and hope that they contribute to fiscal capacity; or we can fail to do this and ensure that they become a fiscal burden through unemployment, welfare and perhaps crime.

The final stage for population waves and troughs is when the cohorts concerned reach old age. In New Zealand's case population structural ageing, the proportion of the total at old ages will not become significant only from about 2020. The trajectory of New Zealand towards ageing falls below those of all Western developed countries, even North America and Australia (Pool under editorial review).

Co-varying over time with increasing divergences in the society produced by pressures coming from disordered cohort-flows, has been growing inequality in terms of income and wealth. This is shown in Table 1, on income, and Table 2 that uses house ownership as an indicator of wealth. Two things stand out. Firstly, median incomes, inflation adjusted - and thus the purchasing power - have decreased. Wealth accumulation in the form most prevalent among New Zealanders, ownership of housing, has also decreased sharply, at the age at which this is most critical when family formation is most likely to occur. But secondly, inequality is growing. This was most marked after 1991, with both the inter-quartile range and the ratio between the upper and lower quartile range increasing.

**Table 1: Trends in Income ($)[1], New Zealand, 1986-2001**

| | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|
| All adult ages[2] | | | | |
| Median | 17,875 | 15,774 | 15,603 | 17,143 |
| Inter-quartile range | 20,716 | 19,748 | 21,628 | 23,846 |
| Upper quartile/Lower quartile (times) | 3.1x | 3.2x | 3.8x | 3.9x |
| Age group 25-29 males | | | | |
| Median | 29,134 | 25,142 | 26,010 | 26,006 |
| Inter-quartile range | 17,141 | 20,420 | 20,069 | 21,382 |
| Upper quartile/Lower quartile (times) | 1.8x | 2.4x | 2.3x | 2.4x |

*Notes:* 1. Inflation adjusted to 1996 $(dollars)
2. Age and gender standardised to 1996 New Zealand Population Structure
*Source:* Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

**Table 2: Percentage of Household Owner-Occupied, occupiers aged 25-34 years, New Zealand, 1986-2001**

| | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|
| *% owner – occupied* | *62* | *61* | *53* | *47* |

*Source:* Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

## 3. Demographic Dichotomisation: Metropolitanisation

New Zealand as a society is increasingly being split in two. Over time, the economic power is concentrating in the largest metropoli, and above all Auckland. Between 1986 and 2001 the only region to show growth in the number of top 200 company headquarters was Auckland. Canterbury and Otago remained almost static; all other regions saw declines (Westbrook et al. forthcoming). Accompanying this, above all for Auckland, was increasing overseas ownership. Thus Auckland's power is constrained by the fact that it may be becoming a middle-management based economy with governance, and all the ancillary services such as accounting, law and information technology associated with that, now sourced offshore by the parent company from its traditional suppliers of these services. In short its economic base may be more and more like that of a secondary Australian state capital, with the major difference that the political power is located elsewhere.

This shift has demographic manifestations as is clear in Table 3. The industrial growth of Auckland and Wellington and to a lesser extent Christchurch, as is true across the developed countries, has come mainly from the development of the tertiary sector, the service industries, both their "high tech" and "high touch" components. The concentration of economic power, however, rests with the former of these, the highly skilled service jobs, or quaternary sector as this is sometimes called. While slightly below half the entire population lives in the three

largest metropoli, almost two-thirds of the quaternary sector workforce is located in these urban areas.

**Table 3: Growing Metropolitan Dominance: Percentage of New Zealand Total in the "Big 3" Metropoli, Auckland, Wellington and Christchurch, 1986-2001**

| | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|
| % of Population, all ages | 44 | 45 | 46 | 47 |
| % of NZ's at working ages | 45 | 46 | 47 | 48 |
| % of quaternary sector[1] workers aged 15-64 years[2] | 59 | 60 | 62 | 64 |

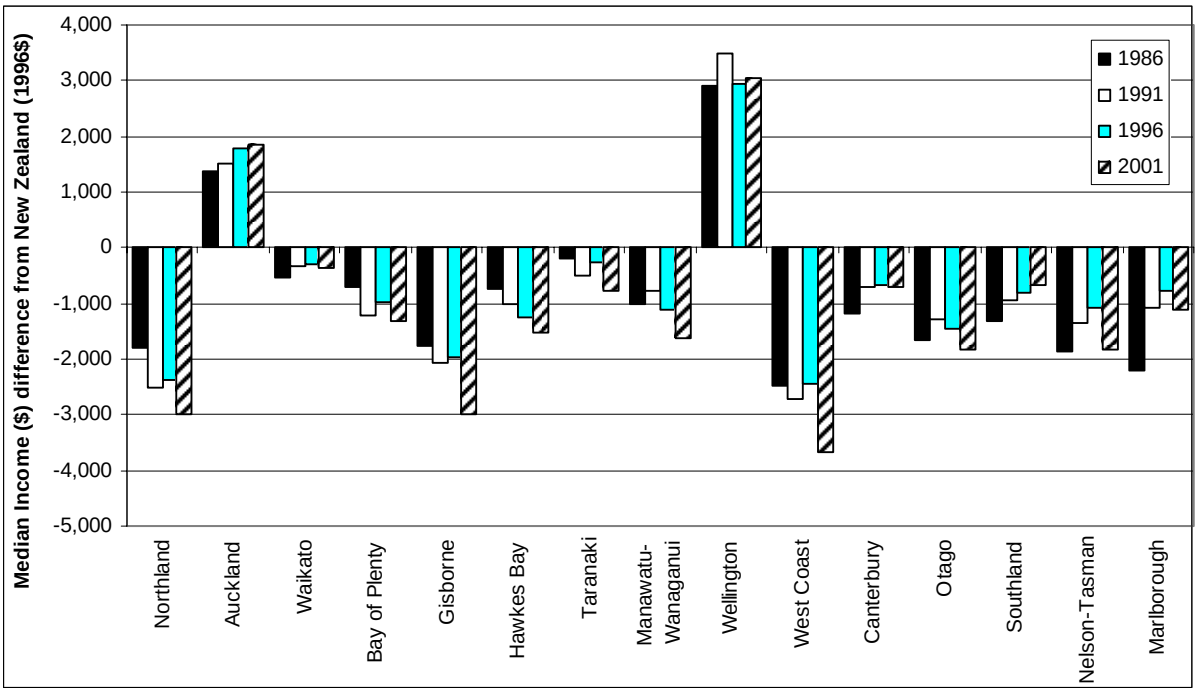
(1) People employed in the Industry: Business and Financial Services; Public Services, Social Services, Utilities and Occupations: Professional, Technical and Related Workers; Administrative and Managerial Workers.
(2) Auckland, Wellington and Canterbury Regional Council regions used here.
Source: Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

## 4. Demographic Dichotomisation: Regional Disparities

New Zealand is dichotomising into have and have-not regions. Indeed, it has almost trichotomised into those regions which gained demographically, and in terms of human capital, those that stood still, and finally those that became disadvantaged. These patterns are also reflected in trends in social inequality, in factors like education, health, income and employment patterns, and social cohesion, including need for benefits and imprisonment (Pool et al. forthcoming-a). This shift abated a little over the last quinquennium, but had been very marked and systematic in the decade of restructuring 1986-96. As noted already, metropolitanisation was a driver of dichotomisation.

Overall median incomes in New Zealand dropped significantly between 1986 and 1991 then recovered somewhat by 2001 (see Table 1). For the regions, median incomes are highest in Auckland and Wellington, below the New Zealand level in all other regions, and particularly low in three peripheral regions, Northland, Gisborne and the West Coast, as is seen in Figure 2. Generally, the disparities have grown in the North Island, but the trends have been less systematic in the South. It should be noted that the Bay of Plenty is composed of three separate areas, the Rotorua sub-region, and Western and Eastern Bay of Plenty, with markedly different trends.

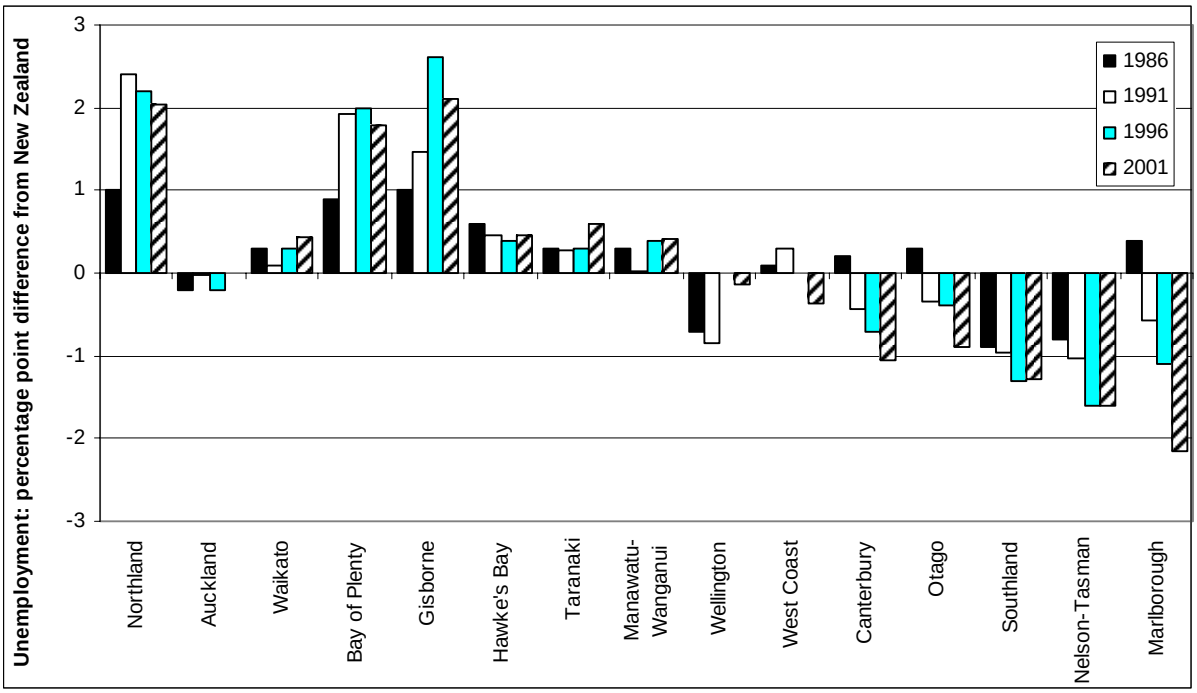
**Figure 2: Difference in Median income (1996 dollars)[1] between New Zealand and each Region, 1986-2001**




(1) Standardised by age and gender to Total New Zealand 1996. Dollars inflation adjusted to 1996$.
*Source:* Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

For New Zealand unemployment rates standardised by age and gender as a percentage of the working age population went from five per cent in 1986 to seven per cent in 1991 and was six per cent in 1996 and 2001. Unemployment trends compared to New Zealand are shown in Figure 3. Rates well above New Zealand are shown for Northland, the Bay of Plenty and Gisborne regions, but with levels well below in the South Island, and just below in Auckland and Wellington.

**Figure 3: Percentage Point Difference in Unemployment[1] between New Zealand and each region, 1986-2001**




(1) Standardised by age and gender to Total New Zealand 1996. This rate is a percentage of the total population rather than labour force.

Source: Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

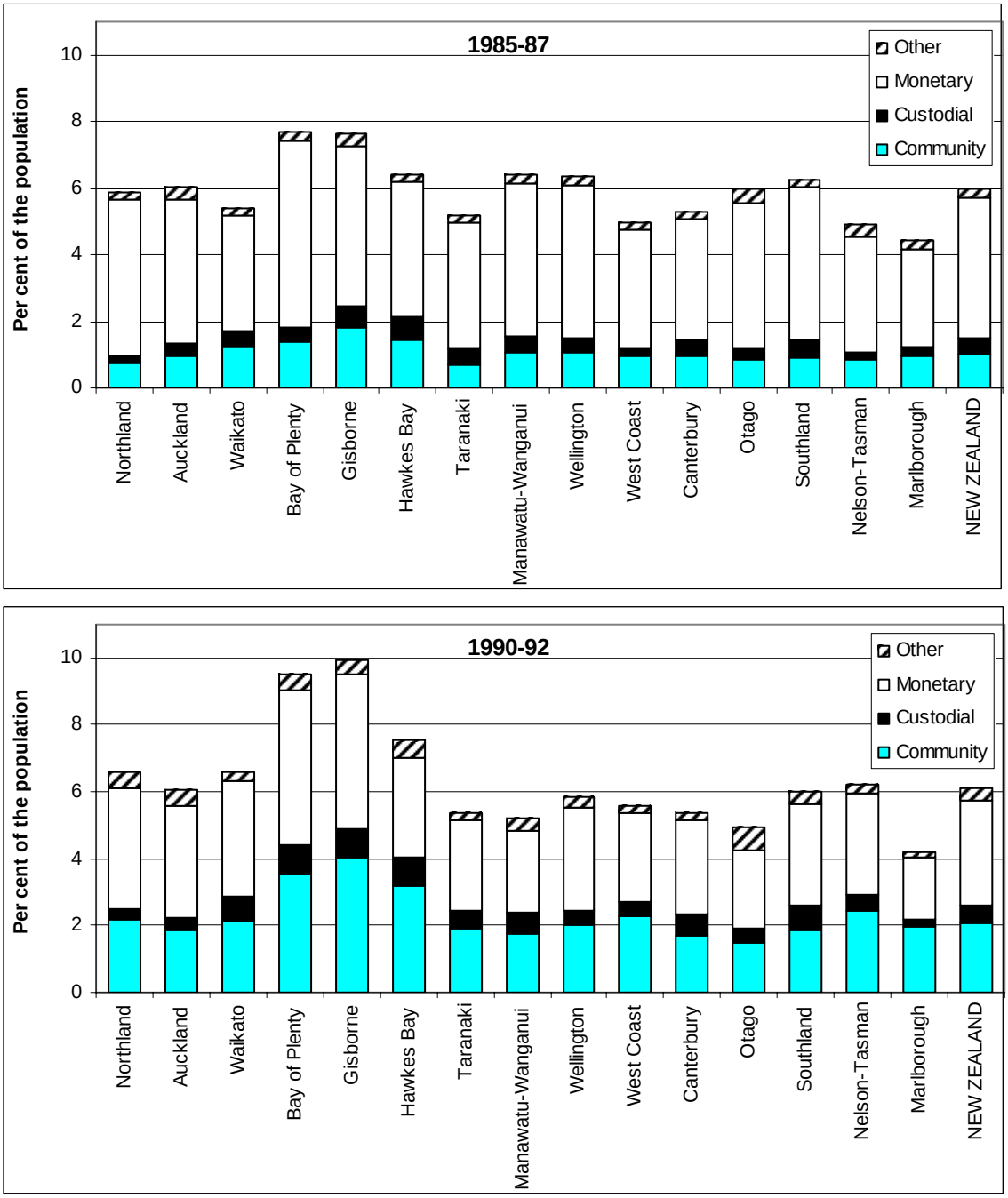
## 5. Dichotomisation: Court Processes

Dichotomisation extends into the patterns of sentencing that occur in New Zealand. In Figure 4 conviction rates are given for males for various types of sentence. Data on males is the focus here as the numbers of convictions for females are small. It is also important to note that the prevalence figure reported here could count people more than once.

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; this does not include infringement offences such as speeding or parking tickets), and other (including driver disqualification, deferred sentence, conviction and discharge). The court data used in this section were obtained from the Ministry of Justice for each "site" (ie. each court) then aggregated to regions. The courts were assigned by the Population Studies Centre to the region in which they are located, assuming people resident in that region are tried in their own courts[1]. There might be cases, especially for serious crimes when trials are held in another region and thus the convictions from such trials will be counted in another region's data.

[1] Generally people who commit a crime do it in the regions in which they are resident though there are exceptions. More serious crimes are moved out of a region because of High Court availability or because the community is too small to expect a fair trial. This could cause an underestimate in smaller regions like the West Coast.

**Figure 4: Conviction Rate (Percentage[1] of the Male Population) by Type of Sentence and Region, 1985-87 – 2000-02**

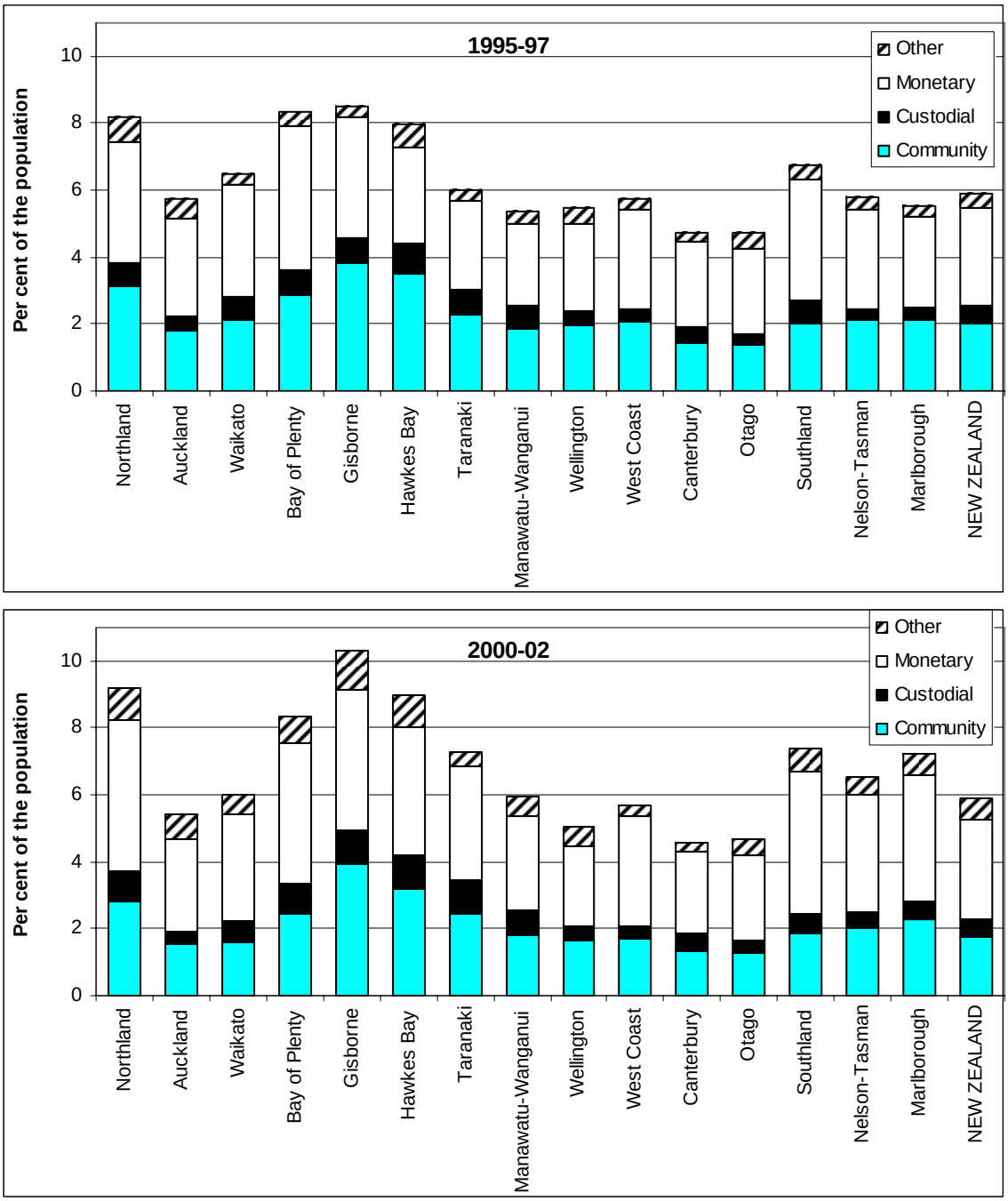






(continues on next page)

**Figure 4** (continued)




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

*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

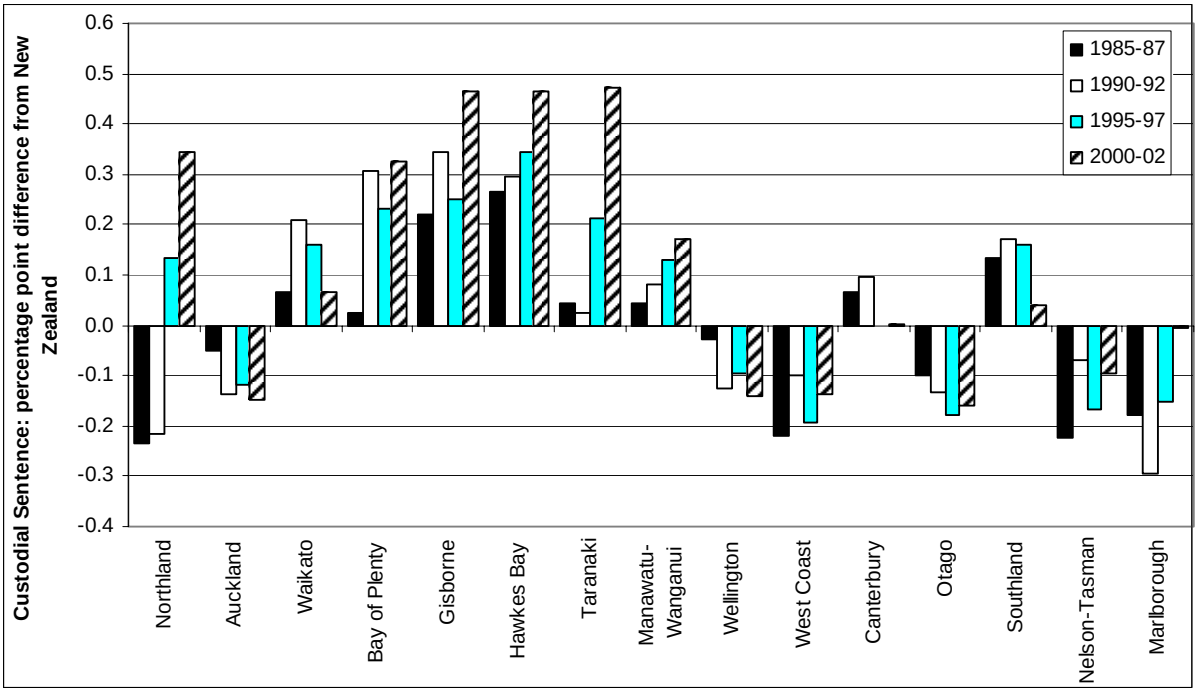
Policy changes, notably earlier increases in the application of community service sentences and recently the increases in sentencing severity, seem to cross-cut these results. Sentencing rates overall for New Zealand remains remarkably stable despite calls by the public for longer incarceration, but what is interesting are the fluctuations by region. Those regions that have been growth centres, and some of those with lower levels of unemployment, also remain stable. In contrast, the peripheral regions, and those identified earlier with higher levels of unemployment and lower incomes tend to increase. In the North Island these latter regions, say Northland, the Bay of Plenty, Gisborne and Hawke's Bay, also see relative growth in the rates of custodial sentencing. Finally, some regions had fluctuating levels, notably going up

around 1990 when restructuring was having its most marked impact, then going down, only to come up again around 2000 perhaps in response to calls by the populace and politicians for tougher sentences.

Northland is a fascinating case. It shows a relatively systematic increase that can probably be attributed ultimately to the downstream effects of restructuring in Auckland. We know that discouraged workers, mainly Māori, moved out of Auckland typically back to their home marae, where to obtain some sort of income they may have turned to an informal sector job, some of which may not have been legal.

Figure 5 takes this point a bit further, showing not only the Northland trend very clearly but also suggesting a wide difference between the North (except for Auckland and Wellington, thus supporting the notion of dichotomisation), and the South Island except for Southland. It should be noted that the numbers of custodial sentences are relatively low especially in the regions which are small (e.g. Gisborne, Nelson-Tasman, West Coast, Marlborough). To add to this, of course as is clear in Figure 4, custodial sentences are small but the most visible minority of the total punishments meted out by the courts and this raises problems of a statistical nature.

**Figure 5: Percentage Point Difference in Custodial Sentences Rates (%) (males)[1] between New Zealand and each Region, 1986-2001**




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

*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

The North Island regions that are economically disadvantaged, and that have higher levels of sentencing, also have Māori population concentrations (25-29 years-old males shown in Appendix 1). Māori are disproportionately more likely to be sentenced than are Pakeha for both custodial and community sentences (ie this is not just a function of the ability to be able

to pay a fine)[2]. The implications of this are, however, shown by comparing Māori and Pakeha (see Appendix Two). The differences are generally of the order of five-fold. Nationally, and in the North Island there is also an increase for custodial and community sentences for both Pakeha and Māori. A prima facie case thus exists for the argument that social and economic dichotomisation is reflected in higher rates of sentencing, that also reflect higher offending rates, and perhaps more effective policing as measured by higher completion rates[3]. This argument supports that of Papps and Winkelmann (2000), who have already demonstrated through the use of regression techniques that unemployment has significant effects on crime, and that this had both temporal and regional effects.

## 6. Dichotomisation: Imprisonment and its Co-Variates

Given the sentencing differences, not surprisingly imprisonment rates also differ. We have taken as a measure of this an estimate based on the average of the weekly prison musters for males. These were adjusted to estimate region of residence prior to imprisonment, and the age distribution of prisoners, by applying data on custodial sentencing by location of the court[4] weighted by duration of sentence (to obtain an annual population-based rate) (Pool et al forthcoming-b). One must reiterate that numbers per region are small, so that random statistical fluctuations may occur.

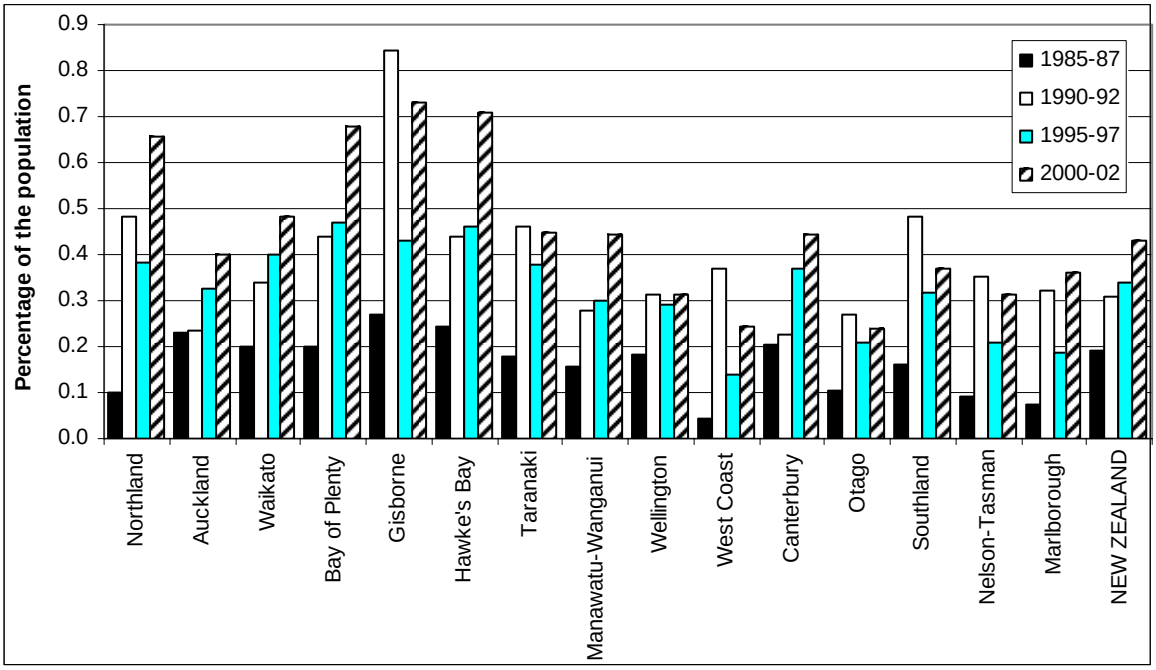
Nevertheless, the results, shown in Figure 6, are interesting. The four regions identified earlier as disadvantaged stand out as having higher rates – Northland, the Bay of Plenty, Gisborne and Hawke's Bay. The Waikato is the only other region significantly above the New Zealand level in 2001, while Taranaki, Manawatu-Wanganui and Canterbury are marginally so, and all other regions fall below. The age-group of 25-29 years will be used for our analysis (Appendix 1), as it is a critical age for employment, family formation and crime. This age group reached levels above New Zealand in 2001 in the regions previously noted with the exceptions of Taranaki and Canterbury.

[2] An inability to deal with this issue has wider implications, far beyond the scope of this paper, beyond the court system, and through to constitutional questions surrounding the Treaty of Waitangi (Williams 1999).

[3] Portal Consulting and Associates Ltd (Hamilton) in a 1999 study for the Mayors of Zone Two, Local Govt. New Zealand (Waikato-Bay of Plenty- Taupo-Gisborne) showed that crime rates in this region were higher than for New Zealand, but that completion rates for the police were also higher.

[4] This does not accord perfectly with the place of normal residence of the accused, especially where a higher level court sentences a more severe crime, but the effects of this disjunction are probably minor.

**Figure 6: Estimated Prison Muster as a Percentage[1] of the Population (males), by Region, 1985-87 – 2000-02**




(1) Standardised by age to Total New Zealand 1996.
*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings

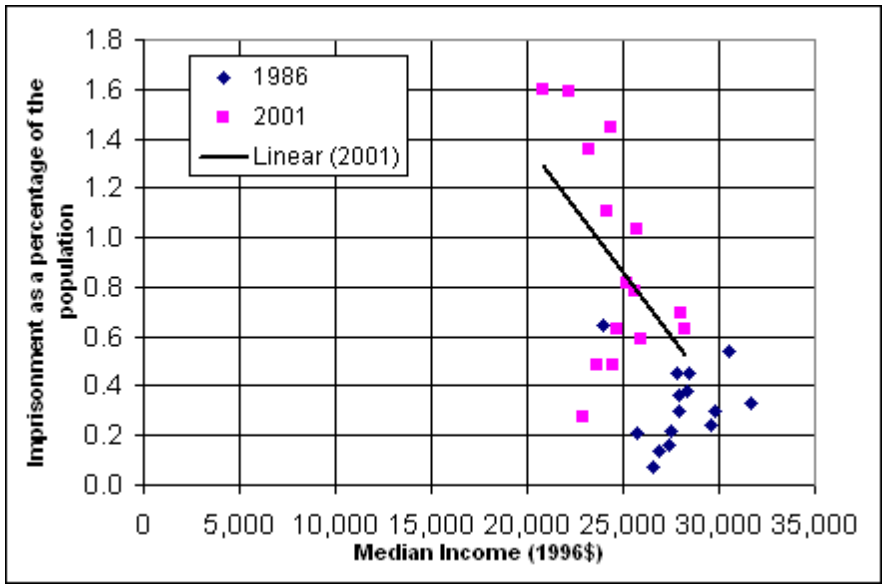
Imprisonment rates have gone up everywhere for the population overall, and in most regions at age group 25-29 years. It is notable that the most recent increases (1995-97 to 2000-02) in imprisonment often exceed those for the earlier period (1985-87 to 1995-97). Of concern must be the fact that this is most marked for Northland, the Bay of Plenty, Gisborne and Hawke's Bay, regions that in the 1990s were disadvantaged.

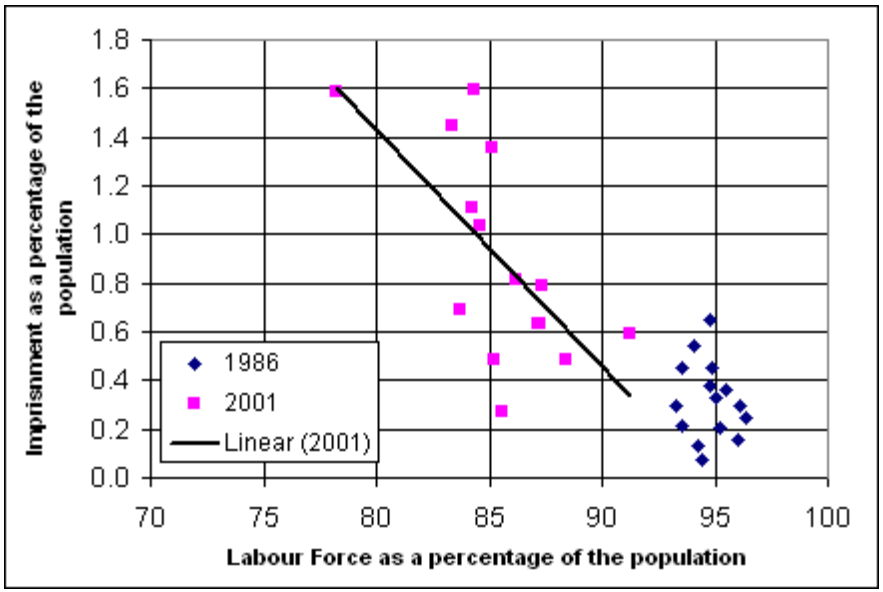
In order to look at the relationships between imprisonment and socio-economic co-variates scatter grams between imprisonment and four other variables (income; unemployment and labour force participation rates; and proportion Māori), for age group 25-29 years were graphed for each census year 1986-2001, along with the linear regression for 2001, and are presented in Figure 7[5]. To support this further and more robustly, we also analysed the pivotal age group 25-29 years for these variables and added in the per cent on a sickness/invalid benefit, applying two correlation techniques, one using ordinal and the other interval level measurement.

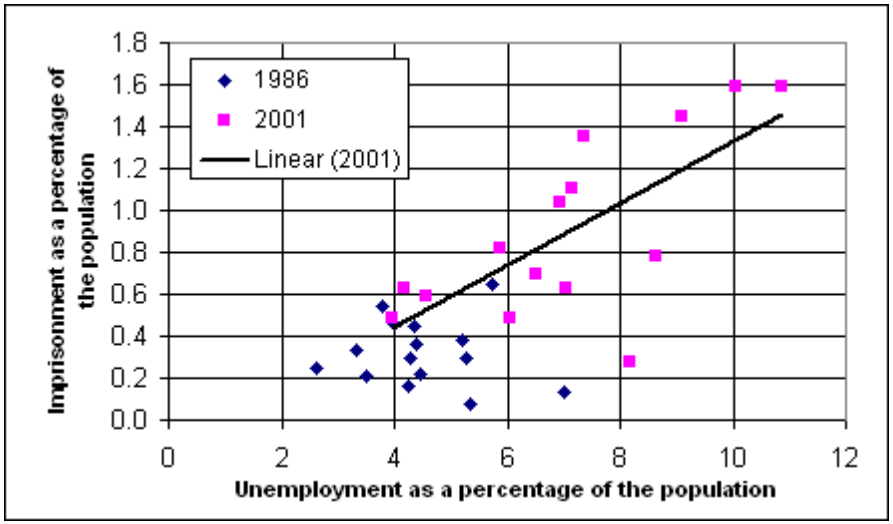
The correlations were often significant for 2001 (between labour force participation and unemployment rates, and proportion Māori, on the one hand, and imprisonment, on the other hand). In contrast in 1986 only the percent Maori was strongly correlated. This shift in patterns of correlation indicates how the growing socio-economic dichotomisation of New Zealand also affects factors of social cohesion such as crime.

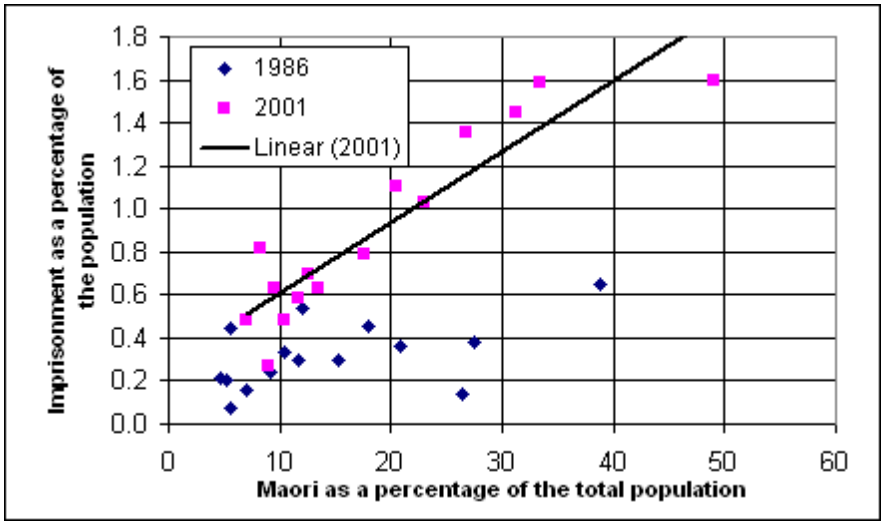
[5] The focus here is on comparison over time. Thus the underlying hypothesis to be tested is that in 1986 correlations will be weak, whereas by 2001 they will be stronger indicating growing regional divergence in social economic and health outcomes.

**Figure 7: Bivariate Relationship between Estimated Imprisonment and Various Factors for Males 25-29 years, by Region, 1986-2001**




Linear = Linear regression line, 2001

Sources: Customised data set, Department of Justice, Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

The scatter grams and the correlation analysis establish links between socio-economic factors and imprisonment. But there is yet another dimension to this. The age-group analysed is critical for the building of a region's human capital. Imprisonment effectively removes the persons concerned from the stock of available capital. Equally well, however, it disguises the true extent of unemployment, for many of the prisoners at these ages would probably have been unemployed had they not been in jail. Thus imprisonment is a measure not only of social cohesion but also of under-development. It might also be seen as a means of social control especially in regions where opportunities for gainful employment are limited (see also Papps & Winkelmann 2000).

## 7. Demographic Diversity

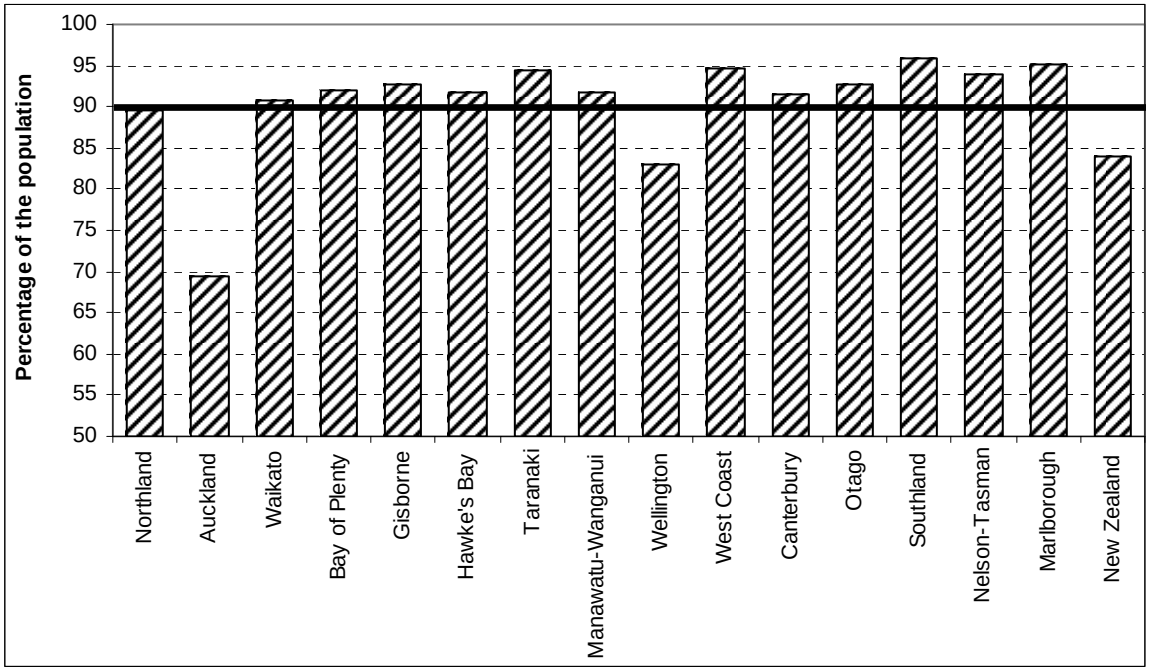
The last factor to be discussed here is the question of cultural diversity, which is definitely going to shape every aspect of our national life, and certainly the way we approach social policy. In public perceptions, diversity is a more manifest issue than dichotomisation discussed earlier, yet of the two factors the latter is probably the more important, especially for question of social cohesion, the concern that the justice system must mediate.

A visit to Auckland, to a lesser degree Wellington, to Waikato, and to others up and down the country, will show one how far diversification has gone. Asians and to a lesser degree Pacific Islanders are high profile populations. But many of the Asians are tourists or students here for a few months or perhaps a year or two.

More importantly, diversification is also a factor reinforcing dichotomisation. Firstly, the majority of foreign born are in the three main metropoli – 67 percent by 2001. Beyond this, however, the majority of Pacific Islanders and Asians are in Auckland.

In fact, diversification barely extends beyond Auckland and Wellington. In every other region 90 percent or more of the population in 2001 were either Māori or Pakeha. This is shown in Figure 8. The ethnic distribution for Auckland has, of course, a disproportionate effect on that for the whole of New Zealand.

**Figure 8: Diversity: Percentage of the Regional Population which is Pakeha and Māori, 2001**




*Note:* Scale does not start at zero.
*Source:* Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

## 8. Conclusion

What has been attempted in this paper is to set out what are some of the challenges facing planning and policy for the justice system over the next few years. Demographic patterns and trends give some broad indications of the populations the system will be servicing in the near future.

Equally well, however, these data also suggest that the justice system must respond to factors that are exogenous to its sphere of direct influence. The inexorable progress of disordered cohort flows across life-cycle stages will require changes in the profiles of services that must be provided by the system. Again, problems of demographic and geographic dichotomisation in the society are beyond the control of the courts, yet there is evidence here that these may have a bearing on regional differentials in sentencing and imprisonment. Finally, the justice system also has to respond to demands coming from the expectations of the general public as filtered through legislation.

Then one must look to the future (Rich 2000). The demographic factors discussed here are all highly dynamic, as is offending and conviction, as well as the workforce in the justice system. All these are inter-related and need to be built into planning and policy.

**References**


Papps, K. and Winkelmann, R. (2000) "Unemployment and Crime: New Evidence for an Old Question", New Zealand Economic Papers, 34, 1: 53-72

Pool, I. (1999) "People (=Population) and Public Policy in New Zealand", *New Zealand Population Review*, 25(1&2), 57-79.

Pool, I. (under editorial review) "Age-Structural Transitions in Industrialized Countries", *Conference of NUPRI and IUSSP, Population Ageing in the Industrialized Countries: Challenges and Responses*. Tokyo, 19-21 March 2001.

Pool, I, Baxendine, S., Bedford, R., Cochrane, W., Lidgard, J. and Lindop, J. (forthcoming-a) *Developing Underdevelopment and Geographical Disparities: A Social Demography of New Zealand Regions*, Population Studies Monograph Series, Hamilton, Population Studies Centre

Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. (forthcoming-b ). New Zealand Regions, 1986-2001: Dependency and Development of Social Capital, *Population Studies Centre Discussion Paper*. Hamilton: University of Waikato.

Rich, M. (2000) Population Trends Affecting Offender Numbers Until the Year 2013", *NZ Population Review*, 26 (1): 93-98

Statistics New Zealand (2005) *Demographic Trends 2004.* Wellington: Statistics New Zealand.

Westbrook, A., Cochrane, W., Baxendine, S. (2004). *New Zealand Regions, 1986-2001: The Context of Globalisation.* Hamilton: University of Waikato. Unpublished report commissioned as a background paper to a study of New Zealand regions by Pool et al (2005).

Williams, C. (1999) *The Too-Hard Basket: Māori and Criminal Justice Since 1980*, Wellington, IPS, VUW

**Appendix 1: Various Economic and Social Indicators for Males 25-29 years, by Region, 1986-2001**

| | | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|---|
| Median Income Inflation adjusted to 1996$ | Northland | 26,823 | 18,768 | 20,845 | 22,204 |
| | Auckland | 30,509 | 27,289 | 27,683 | 28,071 |
| | Waikato | 28,479 | 24,468 | 25,448 | 25,694 |
| | Bay of Plenty | 28,343 | 21,956 | 24,056 | 24,417 |
| | Gisborne | 24,010 | 19,155 | 20,324 | 20,835 |
| | Hawke's Bay | 27,870 | 22,113 | 23,269 | 23,242 |
| | Taranaki | 29,783 | 23,979 | 26,198 | 25,574 |
| | Manawatu-Wanganui | 27,906 | 23,696 | 24,218 | 24,151 |
| | Wellington | 31,705 | 29,697 | 28,156 | 28,246 |
| | West Coast | 26,613 | 21,678 | 23,591 | 22,926 |
| | Canterbury | 27,763 | 24,533 | 25,464 | 25,227 |
| | Otago | 27,468 | 23,109 | 23,890 | 23,666 |
| | Southland | 29,596 | 24,962 | 26,641 | 25,985 |
| | Nelson-Tasman | 25,679 | 22,012 | 24,688 | 24,677 |
| | Marlborough | 27,375 | 23,854 | 25,001 | 24,454 |
| | **New Zealand** | **29,134** | **25,142** | **26,010** | **26,006** |
| Prison Muster Estimated | Northland | 0.13 | 0.86 | 0.60 | 1.59 |
| | Auckland | 0.54 | 0.44 | 0.64 | 0.69 |
| | Waikato | 0.45 | 0.63 | 0.78 | 1.03 |
| | Bay of Plenty | 0.38 | 0.67 | 1.00 | 1.45 |
| | Gisborne | 0.65 | 0.94 | 0.86 | 1.59 |
| | Hawke's Bay | 0.36 | 0.69 | 0.93 | 1.35 |
| | Taranaki | 0.30 | 1.29 | 1.27 | 0.79 |
| | Manawatu-Wanganui | 0.30 | 0.69 | 0.73 | 1.11 |
| | Wellington | 0.33 | 0.71 | 0.52 | 0.63 |
| | West Coast | 0.07 | 0.75 | 0.27 | 0.27 |
| | Canterbury | 0.45 | 0.32 | 0.76 | 0.82 |
| | Otago | 0.22 | 0.57 | 0.45 | 0.49 |
| | Southland | 0.25 | 0.83 | 0.68 | 0.59 |
| | Nelson-Tasman | 0.21 | 0.60 | 0.47 | 0.63 |
| | Marlborough | 0.16 | 0.31 | 0.35 | 0.48 |
| | **New Zealand** | **0.40** | **0.58** | **0.69** | **0.84** |

**Appendix 1 (cont.)**

| | | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|---|
| Unemployment as a percentage of the population aged 25-29 years | Northland | 7.0 | 17.5 | 11.5 | 10.9 |
| | Auckland | 3.8 | 10.4 | 6.1 | 6.5 |
| | Waikato | 4.0 | 10.5 | 7.5 | 6.9 |
| | Bay of Plenty | 5.2 | 14.9 | 10.0 | 9.1 |
| | Gisborne | 5.7 | 15.4 | 11.4 | 10.0 |
| | Hawke's Bay | 4.4 | 11.2 | 8.3 | 7.4 |
| | Taranaki | 5.3 | 11.5 | 7.9 | 8.6 |
| | Manawatu-Wanganui | 4.3 | 10.1 | 6.9 | 7.1 |
| | Wellington | 3.3 | 8.8 | 6.6 | 7.1 |
| | West Coast | 5.4 | 11.1 | 7.6 | 8.2 |
| | Canterbury | 4.4 | 9.5 | 6.1 | 5.9 |
| | Otago | 4.5 | 9.2 | 6.2 | 6.1 |
| | Southland | 2.6 | 7.4 | 3.9 | 4.6 |
| | Nelson-Tasman | 3.5 | 8.1 | 4.3 | 4.2 |
| | Marlborough | 4.3 | 10.2 | 4.9 | 4.0 |
| | **New Zealand** | **4.2** | **10.5** | **6.8** | **6.8** |
| Sickness/Invalid Benefit as a percentage of the population aged 25-29 years | Northland | 2.5 | 3.8 | 4.9 | 5.8 |
| | Auckland | 2.5 | 2.7 | 2.9 | 3.1 |
| | Waikato | 3.1 | 3.1 | 4.4 | 3.6 |
| | Bay of Plenty | 2.5 | 3.3 | 4.5 | 4.6 |
| | Gisborne | 3.2 | 2.7 | 4.1 | 5.8 |
| | Hawke's Bay | 2.6 | 2.7 | 4.1 | 4.8 |
| | Taranaki | 2.0 | 2.7 | 4.1 | 4.6 |
| | Manawatu-Wanganui | 2.9 | 3.5 | 4.6 | 4.4 |
| | Wellington | 1.9 | 2.2 | 3.2 | 3.3 |
| | West Coast | 3.9 | 5.0 | 6.4 | 5.4 |
| | Canterbury | 3.0 | 3.7 | 4.8 | 4.7 |
| | Otago | 2.8 | 3.8 | 4.9 | 5.1 |
| | Southland | 2.1 | 2.1 | 3.4 | 4.5 |
| | Nelson-Tasman | 4.1 | 4.8 | 5.0 | 5.3 |
| | Marlborough | 2.6 | 3.1 | 4.5 | 4.2 |
| | **New Zealand** | **2.6** | **3.0** | **3.9** | **3.9** |

**Appendix 1 (cont.)**

| | | 1986 | 1991 | 1996 | 2001 |
|---|---|---|---|---|---|
| Labour Force participation rate as a percentage of the population aged 25-29 years | Northland | 94.2 | 81.9 | 79.0 | 78.3 |
| | Auckland | 94.1 | 86.7 | 85.4 | 83.7 |
| | Waikato | 94.9 | 87.6 | 85.7 | 84.6 |
| | Bay of Plenty | 94.7 | 85.0 | 83.7 | 83.4 |
| | Gisborne | 94.8 | 83.7 | 81.9 | 84.3 |
| | Hawke's Bay | 95.4 | 87.1 | 86.4 | 85.1 |
| | Taranaki | 96.1 | 89.3 | 89.4 | 87.4 |
| | Manawatu-Wanganui | 93.3 | 86.0 | 83.6 | 84.2 |
| | Wellington | 95.0 | 89.3 | 86.6 | 87.2 |
| | West Coast | 94.4 | 86.9 | 85.4 | 85.6 |
| | Canterbury | 93.5 | 88.5 | 86.6 | 86.2 |
| | Otago | 93.5 | 87.8 | 85.9 | 85.2 |
| | Southland | 96.4 | 92.7 | 91.9 | 91.2 |
| | Nelson-Tasman | 95.2 | 89.9 | 88.1 | 87.3 |
| | Marlborough | 96.0 | 90.3 | 89.9 | 88.4 |
| | **New Zealand** | **94.4** | **87.5** | **85.7** | **84.9** |
| Māori as percentage of the population aged 25-29 years | Northland | 26.3 | 33.0 | 32.4 | 33.4 |
| | Auckland | 12.1 | 12.1 | 12.9 | 12.5 |
| | Waikato | 18.0 | 19.2 | 21.7 | 23.1 |
| | Bay of Plenty | 27.4 | 30.4 | 31.2 | 31.3 |
| | Gisborne | 38.7 | 43.8 | 44.5 | 49.1 |
| | Hawke's Bay | 20.8 | 22.0 | 23.0 | 26.7 |
| | Taranaki | 11.7 | 13.9 | 14.9 | 17.6 |
| | Manawatu-Wanganui | 15.3 | 18.5 | 19.3 | 20.4 |
| | Wellington | 10.5 | 11.0 | 12.9 | 13.5 |
| | West Coast | 5.6 | 6.5 | 9.0 | 8.9 |
| | Canterbury | 5.6 | 6.2 | 8.0 | 8.2 |
| | Otago | 4.7 | 5.3 | 7.3 | 7.0 |
| | Southland | 9.1 | 9.2 | 10.7 | 11.6 |
| | Nelson-Tasman | 5.2 | 6.0 | 9.7 | 9.6 |
| | Marlborough | 7.1 | 8.6 | 12.2 | 10.5 |
| | **New Zealand** | **13.1** | **14.1** | **15.4** | **15.7** |

*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings

**Appendix 2: Percentage of the Population[1] Sentenced to Community and Custodial Sentences 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 |
| | **Community Sentences** | | | | | | | |
| 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 |
| Hawke's 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 |
| **New Zealand** | **0.58** | **1.11** | **1.19** | **1.08** | **2.96** | **5.61** | **5.79** | **5.16** |
| | **Custodial Sentences** | | | | | | | |
| 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 |
| Hawke's 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 |
| **New Zealand** | **0.23** | **0.29** | **0.30** | **0.32** | **1.49** | **1.76** | **1.81** | **1.97** |

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

*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings

**Appendix 3: Estimated Prison Muster as a Percentage[1] of the Population (males), by Region, 1985-87 – 2000-02**

| Region | 1985-87 | 1990-92 | 1995-97 | 2000-02 |
|---|---|---|---|---|
| Northland | 0.10 | 0.48 | 0.38 | 0.65 |
| Auckland | 0.23 | 0.23 | 0.33 | 0.40 |
| Waikato | 0.20 | 0.34 | 0.40 | 0.48 |
| Bay of Plenty | 0.20 | 0.44 | 0.47 | 0.68 |
| Gisborne | 0.27 | 0.84 | 0.43 | 0.73 |
| Hawke's Bay | 0.24 | 0.44 | 0.46 | 0.71 |
| Taranaki | 0.18 | 0.46 | 0.38 | 0.45 |
| Manawatu-Wanganui | 0.15 | 0.28 | 0.30 | 0.44 |
| Wellington | 0.18 | 0.32 | 0.29 | 0.31 |
| West Coast | 0.04 | 0.37 | 0.14 | 0.24 |
| Canterbury | 0.20 | 0.23 | 0.37 | 0.44 |
| Otago | 0.11 | 0.27 | 0.21 | 0.24 |
| Southland | 0.16 | 0.48 | 0.32 | 0.37 |
| Nelson-Tasman | 0.09 | 0.35 | 0.21 | 0.31 |
| Marlborough | 0.07 | 0.32 | 0.19 | 0.36 |
| **New Zealand** | **0.19** | **0.31** | **0.34** | **0.43** |

1) Standardised by age to Total New Zealand 1996.

*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings

**Appendix 4: Summary Statistics for Various Statistics[1] for Males aged 25-29 years, 1986 and 2001**

| | 1986 | 2001 |
|---|---|---|
| | **Spearman's Rank correlation with imprisonment** | |
| Median Income | 0.364 | -0.361 |
| Unemployment | -0.125 | **0.657** |
| Sickness/invalid benefit | 0.004 | 0.246 |
| Labour force participation | -0.139 | **-0.693** |
| % Māori | **0.529** | **0.846** |
| | **Pearson correlation with imprisonment** | |
| Median Income | 0.039 | -0.482 |
| Unemployment | -0.087 | **0.699** |
| Sickness/invalid benefit | -0.108 | 0.313 |
| Labour force participation | -0.152 | **-0.655** |
| % Māori | **0.515** | **0.915** |
| | **Range between highest and lowest region** | |
| Median Income | 7695 | 7411 |
| Imprisonment | 0.57 | 1.44 |
| Unemployment | 4.4 | 6.9 |
| Sickness/invalid benefit | 2.2 | 2.7 |
| Labour force participation | 3.1 | 12.9 |
| % Māori | 34.0 | 42.1 |
| | **New Zealand level** | |
| Median Income | 29,134 | 26,006 |
| Imprisonment | 0.40 | 0.86 |
| Unemployment | 4.2 | 6.8 |
| Sickness/invalid benefit | 2.6 | 3.9 |
| Labour force participation | 94.4 | 84.9 |
| % Māori | 13.1 | 15.7 |

(1) Using results in Appendix 1.
*Note:* Those **Bold** are significant at the 5% level.
*Sources:* Customised data set, Department of Justice.
Statistics New Zealand, 1986-2001 Census of Population and Dwellings.

***Population Studies Centre***
***Discussion Papers***

31 Hillcoat-Nallétamby, S., Dharmalingam, A., Koopman-Boyden, P. & Pool, I. *Family Solidarity and the 'Sandwich Generations' in New Zealand* February 1999

32 Joseph, Alun E. *Toward an Understanding of the Interrelated Dynamics of Change in Agriculture and Rural Communities*, March 1999

33 Marsault, Anyes, *Retirement Provision for New Zealand Women: The Relative Role of Demographic Influences,* August 1999

34 Ho, E., Bedford, R. & Bedford, C. *Migrants in their Family Contexts: Application of a Methodology,* June 2000

35 Martin, B. *Sub-National Income Differentials, 1986-1996,* July 2000

36 Bedford, R. *Perspectives on International Migration, Urban Social Transformation and the Research/Policy Interface,* October 2000

37 Bedford, R., Ho, E. & Lidgard, J. *International Migration in New Zealand: Context, Components and Policy Issues* October 2000

38 Bedford R., Lidgard, J. with Mclaughlin, B., Newell, J. *Demographic Change and Employment in the Central North Island, 1986-1996,* April 2001

39 Hutton, D. *Solo Parenting in New Zealand: who are the Children?* August 2001

40 Honey, J. *New Zealand Jobs, 1976-1996: A Demographic Accounting,* September 2001

41 Lidgard, H. & McLeay, C. *Researching Characteristics of People Moving Into and Out of the Western Bay of Plenty and Tauranga Districts: Some Methodological Issues,* April 2002

42 Pool, I. *Transfers of Capital and Shifts in New Zealand's Regional Population Distribution, 1840-1996.* June 2002

43 Pool, I. *Why Were New Zealand Levels of Life-Expectation so High at the Dawn of the Twentieth Century?* September 2002

44 Pool, I., Baxendine, S. & Cochrane, B. *Components of Regional Population Growth, 1986-2001* May 2004

45 Joseph, A., Lidgard, J. & Bedford R. *Rural Trajectories: Diversification and Farm-Community Linkages in Whakatane District, 1999-2003* July 2004

46 Hillcoat-Natéllamby, S. & Dharmalingam, A. *Solidarity across generations in New Zealand: factors influencing parental support for children within a three-generational context,* October 2004.

47 Longhi, S., Nijkamp P., Poot, J. *A Meta-Analytic Assessment of the Effect of Immigration on Wages*. December 2004.

48 Cochrane, B. & Poot, J. *Measuring the Economic Impact of Immigration: A Scoping Paper,* February 2005.

49 Hillcoat-Nallétamby, H & Baxendine, S. *The 'Ins and Outs' of Work – Diversity or Homogeneity in New Zealand Women's Employment Patterns?* March 2005.

50 Baxendine, S., Cochrane, B., Dharmalingam, A., Hillcoat-Nallétamby, S. & Poot, J. *The New Zealand Population: A Synopsis of Trends and Projections 1991 – 2016* May 2005.

51 Baxendine, S., Cochrane, B., Poot, J. *Demographic Change and Transport Needs in the Waikato Region.* September 2005.

52 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Population Dynamics.* September 2005.

53 Pool, I., Baxendine, S., Cochrane. W., & Lindop, J. *New Zealand Regions, 1986-2001: Population Structures.* October 2005.

54 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Population Geography.* October 2005.

55 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Households and Families and their Dwellings.* October 2005.

56 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Education and Qualifications.* October 2005.

57 Baxendine, S., Cochrane, B. & Poot, J. *Description and Spatial Analysis of Employment Change in New Zealand Regions 1986-2001*. November 2005.

58 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Incomes.* November 2005.

59 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Industries and Occupations.* December 2005.

60 Pool, I., Baxendine, S., Cochrane, W., & Lindop, J. *New Zealand Regions, 1986-2001: Labour Market Aspects of Human Capital.* February 2006.

61 Pool, I., & Baxendine, S. *Population Trends, Convictions and Imprisonment: Demographic Divergence, Dichotomy and Diversity.* February 2006.

Copies (if still in print) can be requested from the Administrative Secretary of the Population Studies Centre at the University of Waikato, Private Bag 3105 Hamilton, New Zealand. Email:pscadmin@waikato.ac.nz. Discussion Paper # 33 onwards can be downloaded at http://www.waikato.ac.nz/wfass/populationstudiescentre/discussion-papers.shtml

ISBN: 1-877149-6264-0