# Diversity and Change:

## REGIONAL POPULATIONS IN NEW ZEALAND

NEW ZEALAND
Planning Council
*Te Kaunihera Whakakaupapa Mo Aotearoa*

# DIVERSITY AND CHANGE:

## REGIONAL POPULATIONS IN NEW ZEALAND

Population Monitoring Group
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# Foreword

The Population Monitoring Group is charged with the responsibility of integrating demographic considerations into the process of planning and policy formulation, and keeping the Planning Council informed on demographic issues.

In its fifth report the Monitoring Group has focussed explicitly on population change in New Zealand's 22 local government regions, as these were defined in 1988. Devolution was one of the Planning Council's themes in the work programme for 1988/89, and in the light of this a regional focus on population trends was timely. Examination of regional population trends and their policy implications is also timely for another reason. The 1980s have seen considerable economic and social change in New Zealand and there is interest among planners, politicians and members of the public in the effects of economic restructuring on the populations of New Zealand's regions.

There is considerable diversity in New Zealand's regional economies and societies. The responses New Zealanders make to the challenges of decentralisation and devolution will vary across regions. Several population characteristics, including the distribution of people between rural and urban areas, the relative significance of children, adults and elderly people, the mix of ethnic groups, the size and composition of the labour force, and the role of migration in population growth, will have important impacts on regional responses to the reform of local government administration and to deregulation of the economy.

This report contains an analysis of the components of population change (fertility, mortality, and migration) and an assessment of their outcomes in terms of age-sex structure, labour force characteristics and future population growth. It is demonstrated that in an era of slow population growth at the national level, diversity in demographic characteristics and patterns of change at a sub-national level is increasing. In turn, this is producing more divergent patterns of demand for social services and economic opportunity in the regions - patterns which are not simply a reflection of national trends at a smaller scale. Variability in population trends at a regional level is likely to increase over the next 25 years. This will generate demand for more effective regionally-based capacities for formulating, implementing and monitoring social policy in ways which are sensitive to distinctive population structures and needs.

The report has been written collectively by the Population Monitoring Group. Special mention should be made of innovative research by Jeremy Lowe on migration flows to and from regions between 1976 and 1986, and the support which Theo Smits of the Client Services Section of the Department of Statistics, Christchurch, provided for this work. The maps and diagrams were prepared by Tony Shatford of the cartography section of the Department of Geography, University of Canterbury, and Linda Harrison of the same Department typed the manuscript of the report. Their assistance is acknowledged with appreciation.

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# Contents

# List of Tables

# List of Figures

SECTION A

# INTRODUCTION

The effect of economic restructuring on the regions of New Zealand has been the subject of considerable debate amongst planners, politicians and members of the public during the late 1980s. This report is about population change in New Zealand's 22 local government regions as these were defined in 1988. Regional differences in the specific components of population growth — fertility, mortality and migration — have been examined by the Department of Statistics (1984, 1985, 1986). However, there has been no comprehensive integrated assessment of population change, and the wider policy implications of growth and composition trends at the regional level, for over two decades.

As part of a major review of contemporary social, economic and environmental issues the New Zealand Planning Council decided that an explicit regional focus on population trends was timely. Local government administration is being restructured with a view to increasing efficiency and equity in policy formulation, service delivery and sub-national development. Decentralisation of the administration of social and economic policy and devolution of resources and power to implement policy are key strategies in this process.

There is considerable diversity in New Zealand's regional economies and societies, and this diversity appears to be increasing. The responses of New Zealanders to the challenges of decentralisation and devolution will vary across regions. A number of population characteristics will significantly affect regional responses to administrative reform and deregulation of the economy. These include the distribution of people between rural and urban areas; the relative significance of children, adults and elderly people; the mix of ethnic groups; the size and composition of the labour force; and the role of migration in population growth.

Planning and public administration are for people in places. This report examines the demographic processes which ultimately determine the numbers of people living in any place — births, deaths and population movement — within the framework of the administrative units which make up New Zealand's regions. These units, the local government regions, are unlikely to survive the current administrative restructuring in their present form. However, they provide the most suitable spatial framework for a survey of regional population trends in 1988 because the local government region has been a primary planning and statistical unit since the mid 1970s. The regions are identified in Figure 1, along with those cities and towns which, for statistical purposes, are termed 'main urban areas' (population over 30,000 people) and 'secondary urban areas' (population between 10,000 and 29,999).

Following this introductory review of national and regional population trends, the Section B contains an analysis of the components of population change (fertility, mortality, and migration) and an assessment of their outcomes in terms of age-sex structure, labour-force characteristics and future population growth. In Section C the focus of attention is on diversity in demographic characteristics and prospects for the 22 regions. Five major types of regions are identified and used as a basis for assessing some social policy implications of regional population trends.

## The National Setting

New Zealanders are becoming accustomed to the reality of slow growth in the nation's population. During the ten years March 1976 to March 1986 the total population grew by 5.7 percent, the smallest percentage increase recorded for any decade since the first national census in 1858. This pattern has continued since the last census; between March 1986 and March 1988 the average annual rate of population growth was around 0.6 percent per annum, below the annual rate estimated for the early 1980s (see Table 1).

FIGURE 1: LOCAL GOVERNMENT REGIONS AND THE MAJOR AND SECONDARY URBAN AREAS

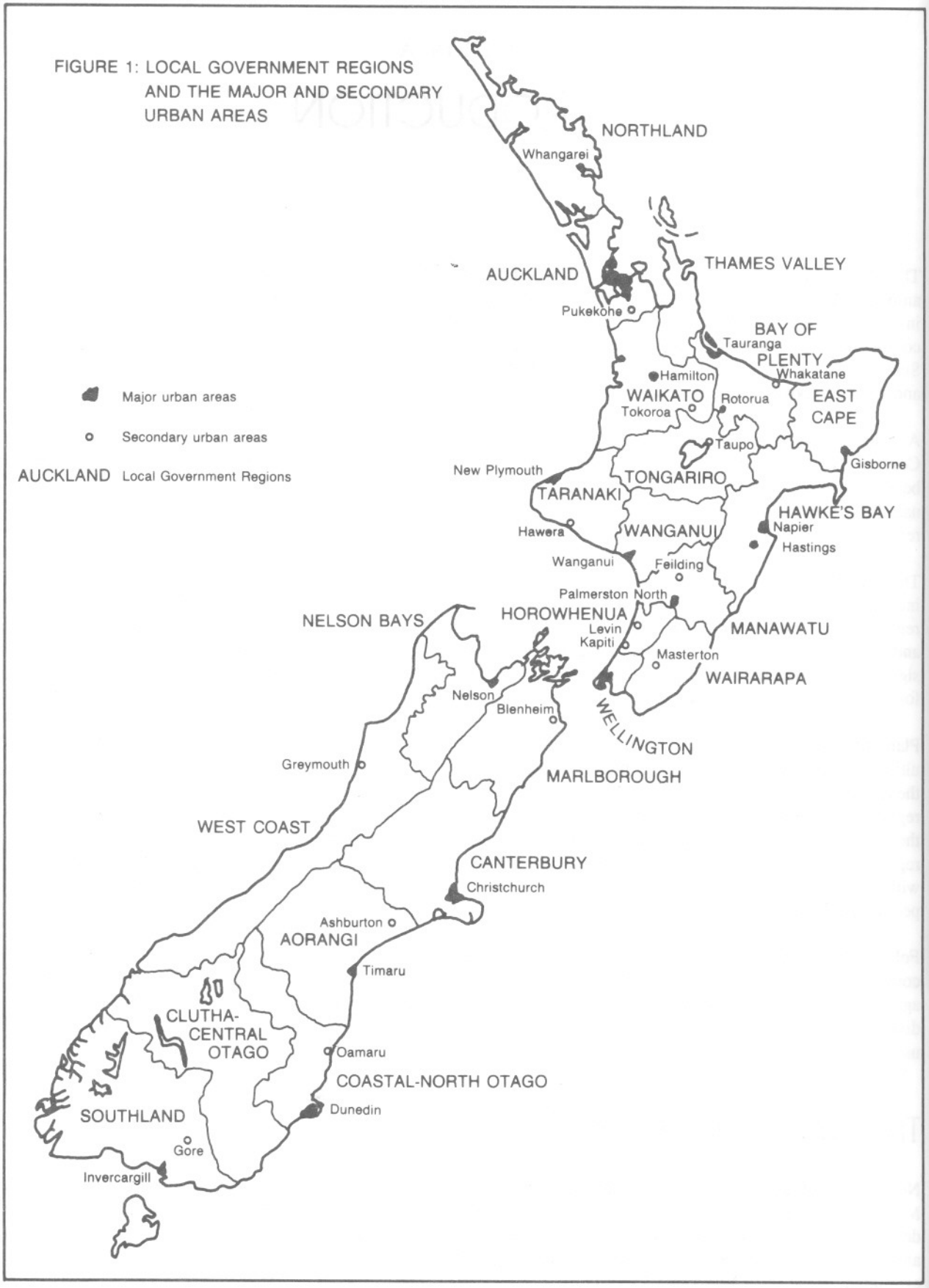


**TABLE 1: THE NEW ZEALAND POPULATION, 1976-1988**

| Year[a] | Total Population | Increase between censuses/estimate Number | % | AARG[b] (%) |
|---|---|---|---|---|
| 1976 (C) | 3,129,383 | | | |
| 1976-81 | | 46,354 | 1.5 | 0.29 |
| 1981 (C) | 3,1755,737 | | | |
| 1981-86 | | 131,346 | 4.1 | 0.81 |
| 1986 (C) | 3,307,083 | | | |
| 1986-88 | | 40,217 | 1.2 | 0.60 |
| 1988 (E) | 3,347,300 | | | |
| 1976-86 | | 177,700 | 5.7 | 0.55 |
| 1976-88 | | 217,917 | 6.9 | 0.56 |

a C - national census; E - Department of Statistics' estimate for year ended 31 March.

b AARG - Average annual rate of population growth.

*Sources:* 1) Census totals: Department of Statistics (1987), *Total Population Statistics,* Wellington.

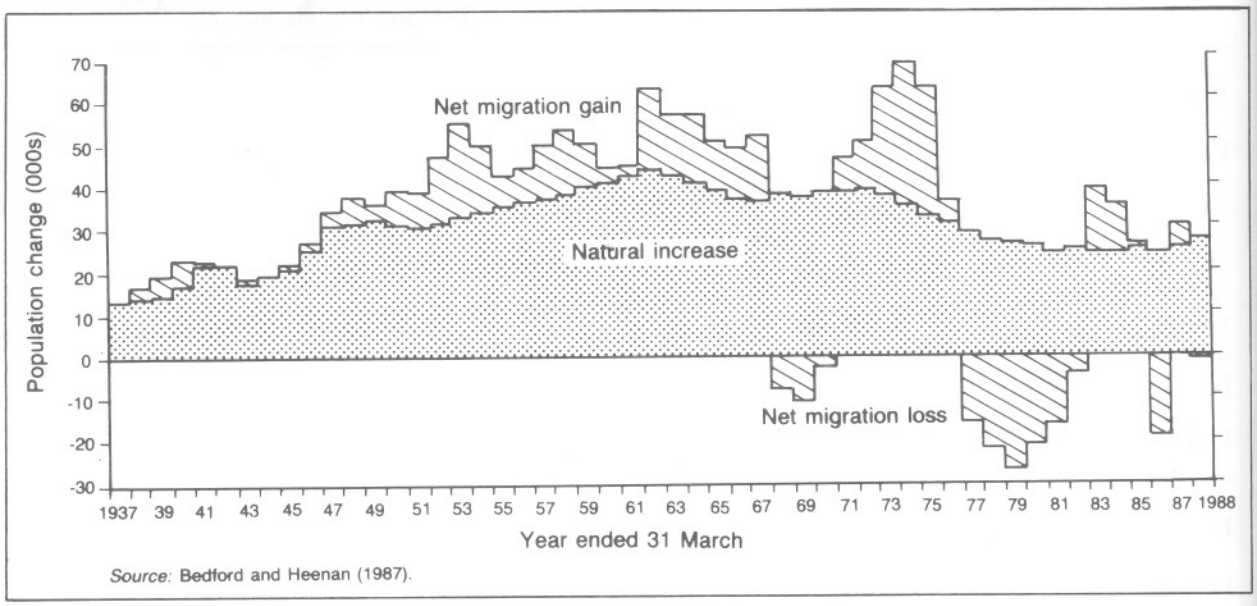
2) Estimate for 31 March 1988, Demographic Analysis Section, Department of Statistics.

The reasons for this slow growth are well known: low levels of fertility among the two main population components (people of European and Maori descent) coupled with a tendency since the mid 1970s for the numbers of people leaving New Zealand to exceed those arriving in the country. The effects of these two trends on natural increase (the balance of births over deaths) and net international migration (arrivals minus departures) are shown in Figure 2. After 25 years of increase between 1936 and 1961, birth rates began to fall again. Initially the effects of fertility decline on population growth were cushioned by net immigration, especially in the early 1960s and the early 1970s. However, since 1975 net emigration has had the effect of reducing the rate of population growth in most years (see Figure 2).

The level of natural increase has been rising slowly since 1985 but this should not be interpreted as signalling the beginning of a return to 'baby-boom' fertility levels; it is mostly a product of the age composition of the New Zealand population coupled with a trend towards later childbearing among women. The result is that fertility is moving back towards levels which will ensure replacement of the population in the future. Whether this is a short-term phenomenon or a long-term trend is uncertain.

New Zealand has experienced a sequential shift from low fertility in the 1920s and 1930s, to high birth rates through the 1950s, to sub-replacement fertility again by the late 1970s. This has generated significant irregularities in the age-sex structure of the New Zealand population (see Figure 3). These irregularities, which take the form of alternating broad and narrow bands in the population pyramid, are having a major impact on social and economic development. It is the changing age composition of New Zealand's population, rather than absolute growth in numbers of residents, which

FIGURE 2: COMPONENTS OF POPULATION GROWTH, 1936-1988.




*Source*: Bedford and Heenan (1987).

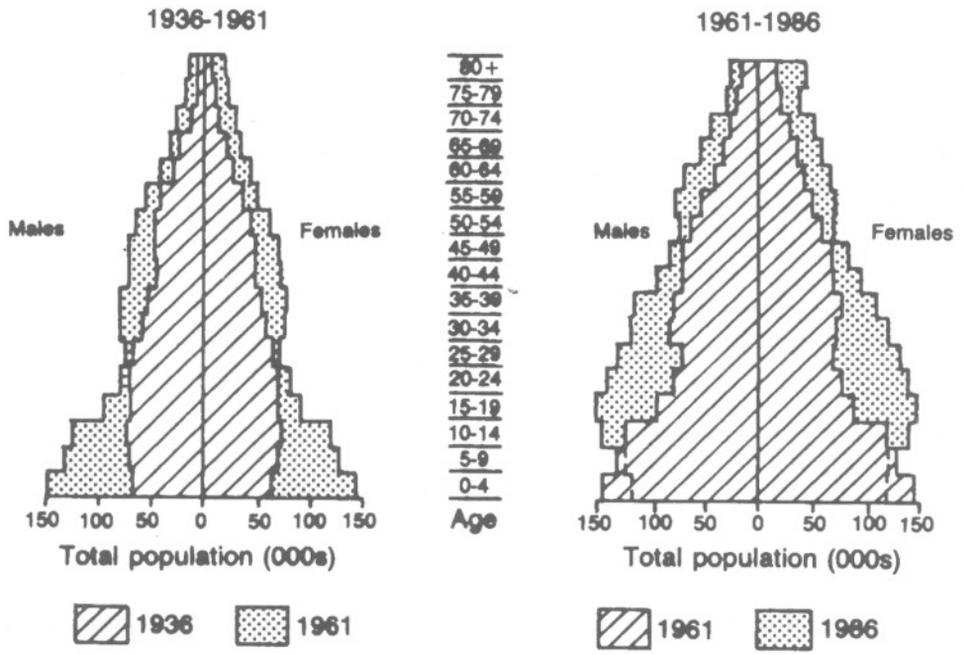
has important implications for social policy and planning in the late twentieth century (see Figure 3). The PMG addressed this issue in the context of national demographic trends in its report *The New Zealand Population: Change, Composition and Policy Implications* (1986).

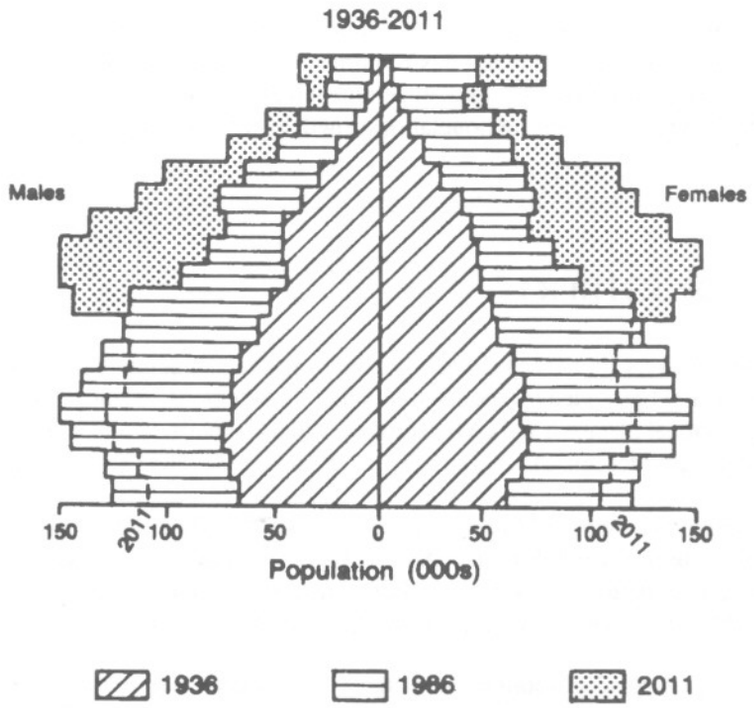
The recent increase in numbers of children being born is one demographic issue which has attracted considerable media comment. Another, and perhaps more significant factor for the short term, is the extensive net loss to New Zealand of people who are classed as 'permanent and long-term migrants'. International migration is a highly topical issue, both in New Zealand and in the major destination overseas for New Zealanders — Australia. The perceived problems are quite different in the two countries. In New Zealand the prospect of slow population growth for the rest of this century has prompted people in the business community especially to call for a more positive immigration policy. Across the Tasman, unprecedented levels of immigration, especially from Asian countries, have prompted calls for a more selective policy. The free exchange of people across the Tasman has not escaped notice of politicians and planners in Australia: the New Zealand government is now paying part of the costs of national superannuation for the thousands of New Zealanders who are retiring in Queensland especially.

Much of the recent media comment on international migration of New Zealanders has focused on the out-flow overseas. There is a substantial in-flow as well, both of foreigners and New Zealanders returning to live here. When the total migration flows are examined (the balance of all arrivals over all departures) for all years between 1 April 1981 and 31 March 1988 there has been a net gain rather than a net loss of people to New Zealand (see Table 2). The gain (6,400) is very small in relation to the 7.79 million arrivals and 7.78 million departures during this period, and it represents only 3.7 percent of the total population increase (171,500) during the seven years. When the time-frame is extended back to the mid 1960s, it is evident that the net population gain through international migration has been much larger (25,200). However, in proportionate terms it still comprises less than 4 percent of the total population growth (670,300) between the national census in 1966 and the Department of Statistics' estimate for 1988 (see Table 2). From these figures it is clear that natural increase continues to make the major contribution to population growth in New Zealand, despite declines in fertility since 1960.

International migration is subject to considerable annual fluctuations, and figures on net losses or gains to New Zealand's population over short periods must be interpreted with caution. This is particularly significant in the case of

**FIGURE 3: CHANGES IN POPULATION STRUCTURE, 1936-2011.**




*Source:* Bedford and Heenan (1987).

**TABLE 2: INTERNATIONAL MIGRATION AND POPULATION GROWTH IN NEW ZEALAND, 1966-1988**

| Population component | Period[a] 1981-88 | 1966-88 |
|---|---|---|
| Net migration gain[b] | 6,400 | 25,200 |
| Population increase[c] | 171,500 | 670,300 |
| Percentage of population increase accounted for by net migration | 3.7 | 3.8 |

a The periods refer to March years.

b Balance of all arrivals into New Zealand over all departures from New Zealand.

c The difference between population estimates at the beginning and end of each period.

*Sources:* 1) Net migration estimates: annual reports on international migration by the Department of Statistics.

2) Population increase estimates: census reports for 1966 and 1981, and the Department of Statistics' estimate for the total population at 31 March 1988 (see Table 1).

regional population dynamics where the effects of international migration tend to be ignored and attention is focused on internal migration. In this report an attempt has been made to deal explicitly with the impact of international migration on recent demographic trends in the local government regions, and the findings in Section B challenge some stereotypical views about the determinants of population growth in particular parts of New Zealand.

# The Regional Setting

The 22 local government regions are a recent creation in the New Zealand administrative and statistical record. The Local Government Act of 1974 provided for the constitution of these regions and their United Councils which have a mandatory function of regional planning and civil defence. United Councils, which now exist in all regions, act as a focus for regional policy in a wider sense than generally understood by statutory planning alone.

Although some local government regions have been in existence since the late 1960s, others, such as Aorangi, did not have administrative functions until the 1980s. In certain parts of the country the local government regions conform to long-recognised geographical regions — Northland, East Cape, Southland. In other places the boundaries seem to make little sense from the point of view of functional social and economic units.

Despite some limitations, the local government regions provide a convenient regional matrix for an analysis of population change in recent years for two reasons. First, most of the detailed tables in the 1981 and 1986 Censuses of Population and Dwellings include information at the local government region level. Secondly this administrative unit is a more satisfactory 'region' for the purposes of population analysis than the much larger Statistical Areas which were

introduced in the 1960s. The boundaries of some Statistical Areas have even less relevance for the contemporary geography and demography of New Zealand than the local government regions.

## Regional Populations

It must be appreciated at the outset that there are enormous variations in the sizes of the populations of the local government regions. The largest region in population terms had over 800,000 people in 1986 compared to the second largest of just over 340,000, and the smallest of around 33,000 (see Table 3). Population size is not necessarily a critical determinant of growth trends although the smaller the population the more likely it is to be affected by chance fluctuations. However, population size has important implications for the planning and development of welfare and economic infrastructure, and the cost- effective delivery of many services. Regions with populations of 30,000 or 40,000, for example, cannot develop the range of integrated service provision and delivery systems that can be established in planning units with populations of 100,000 or more.

It is possible to define the population living in particular parts of New Zealand in three ways using census data. The three population universes for each of the 22 regions in March 1986 are given in Table 3. The 'total' population refers to everybody, including overseas visitors, who were enumerated in the region on census night. This population is invariably the largest for each region, and in censuses before the 1970s most data tended to be presented for the total or 'de facto' population.

The second population universe, and the one used in most census tables in the 1980s, is the 'NZ resident' population — all people, excluding overseas visitors, who were enumerated in the region. The numbers of overseas visitors in New Zealand at the time when the census is taken have increased substantially since 1971 (16,632 in that year compared with 43,800 in 1986), reflecting the significant growth in tourist and business travel. These people are removed from census tables giving information on the 'NZ resident' populations in particular places.

The third type of population, and one which is used extensively in the study of migration, is the 'usually resident' population — all people in New Zealand who specified a place as their usual residential address, irrespective of their actual location in the country on census night. This is the closest approximation in the census to the people who belong to a particular place — the 'de jure' population. Excluded from all three population universes are New Zealanders who were temporarily overseas on census night.

In this report information on the 'total', 'NZ resident' and 'usually resident' populations are used. In the overview of regional population growth trends the relevant universe is the total or de facto population because comparisons are made between census data for the regions over a 40-year period. The discussion of the contemporary ethnic composition of regional populations refers to NZ residents rather than de facto populations. When recent internal and international migration trends are examined at the level of the local government region the usually resident or de jure population is the most appropriate. Where required, clarification is given of which population universe is being referred to in tables, diagrams or the text.

## Population Growth

Patterns of population growth in the regions since the mid 1940s are summarised in Figure 4. It is readily apparent that some regions have deviated consistently from the national trend in terms of average annual rates of population growth during different periods over the past 40 years. Auckland, Bay of Plenty and Horowhenua stand out as having rates of population growth above the national average in all periods. At the other extreme, West Coast was the only region which had a smaller population in March 1988 than it had at the time of the census in 1945.

While significant regional disparities in rates of population growth have been a characteristic of New Zealand's post-war demographic history, the late 1970s stand out as a period when these differences became more polarised (see Figure 4). Between 1976 and 1981 nine regions experienced absolute population decline, eight of them for the first time since 1945. Three of these were 'metropolitan' regions, namely the cities of Wellington, Christchurch and Dunedin. A

**TABLE 3: POPULATION UNIVERSES IN THE LOCAL GOVERNMENT REGIONS, 1986**

| Local Government Region | Population universe[a] | | |
|---|---|---|---|
| | Total | NZ Resident | Usually Resident |
| Northland | 126,999 | 124,503 | 122,397 |
| Auckland | 887,448 | 875,409 | 878,589 |
| Thames Valley | 58,665 | 58,062 | 56,277 |
| Bay of Plenty | 187,464 | 184,299 | 183,057 |
| Waikato | 228,303 | 226,629 | 226,989 |
| Tongariro | 40,791 | 39,801 | 38,313 |
| East Cape | 53,970 | 53,652 | 53,550 |
| Hawke's Bay | 140,709 | 139,614 | 139,065 |
| Taranaki | 107,598 | 106,968 | 108,336 |
| Wanganui | 69,441 | 68,898 | 68,670 |
| Manawatu | 115,500 | 114,849 | 115,155 |
| Horowhenua | 53,592 | 53,196 | 53,253 |
| Wellington | 328,164 | 324,462 | 324,369 |
| Wairarapa | 39,609 | 39,378 | 39,255 |
| Nelson | 69,648 | 68,409 | 67,050 |
| Marlborough | 38,226 | 37,386 | 36,648 |
| West Coast | 34,944 | 33,702 | 32,862 |
| Canterbury | 348,711 | 344,007 | 342,705 |
| Aorangi | 81,294 | 80,223 | 80,217 |
| Clutha-Central Otago | 48,771 | 46,188 | 44,442 |
| Coastal-North Otago | 137,394 | 136,110 | 135,939 |
| Southland | 104,619 | 102,894 | 103,479 |
| North Island[b] | 2,438,253 | 2,409,720 | 2,407,275 |
| South Island[b] | 863,607 | 848,919 | 843,342 |
| New Zealand[c] | 3,307,083 | 3,263,283 | 3,263,283 |

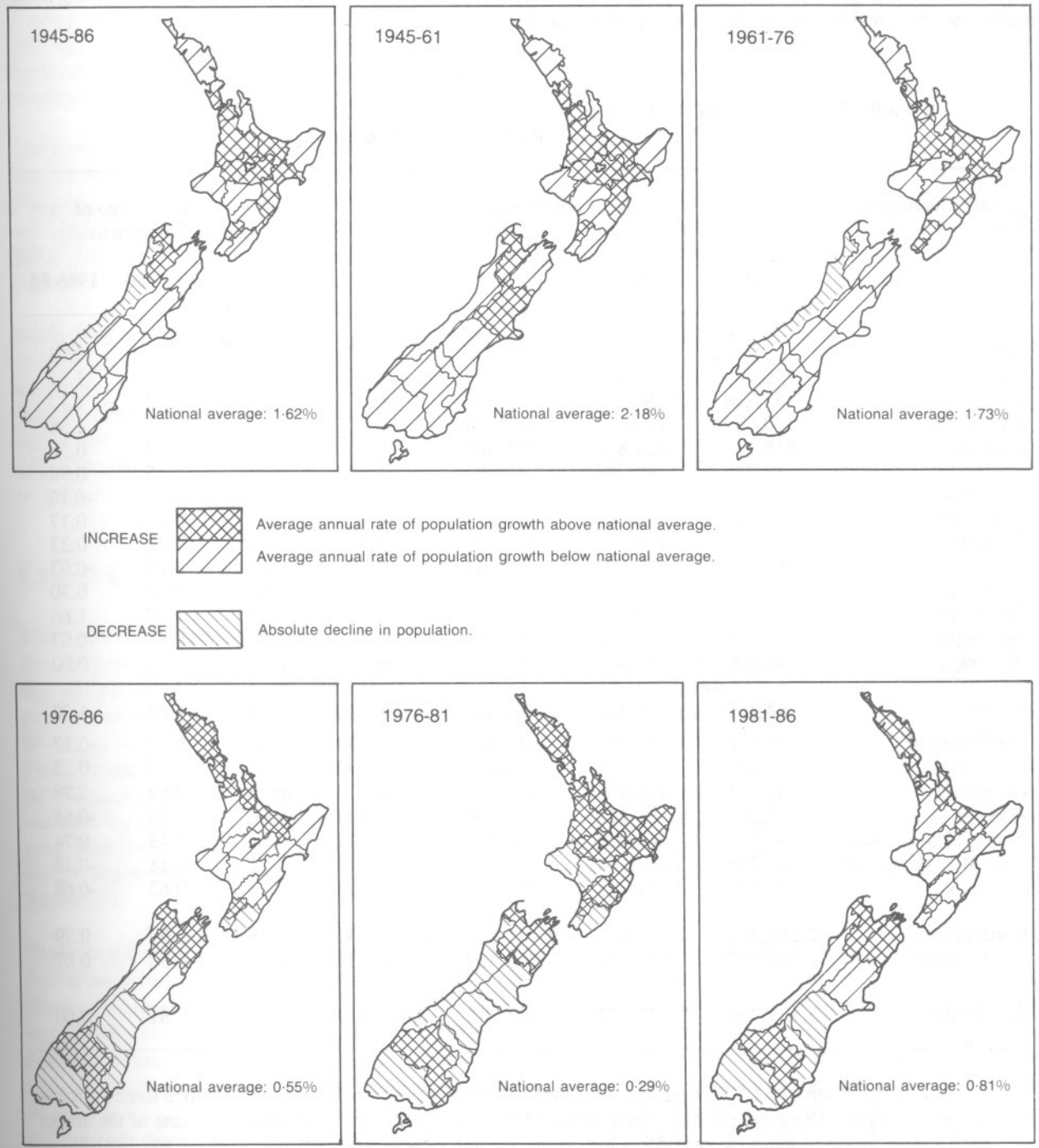
a The population universes are defined in the text. The difference in the New Zealand population for the "total" on the one hand, and the "NZ resident" and "usually resident" universes on the other, is due to the inclusion of temporary visitors (such as tourists) in the total population.

b Unless otherwise stated, the totals for the North Island and the South Island exclude the Chatham Islands, Great Barrier Island, extra-country islands, and shipping.

c The New Zealand totals include the Chatham Islands, Great Barrier Island, extra-county islands, and shipping. In the case of the Usually Resident population the total also includes 9,267 people who either had no fixed abode or did not specify an address of usual residence.

further three have economies dominated by agriculture (Wanganui, Wairarapa, and Southland); two were centres of major 'think-big' energy projects (Taranaki and Aorangi); and the remaining one was the West Coast with its history of slow absolute population decline since the early 1950s. Regions in both islands with quite diverse economic bases and demographic characteristics were affected by unprecedented net migration losses overseas between 1977 and 1982 (see Figure 2).

FIGURE 4: POPULATION GROWTH IN THE REGIONS, 1945-1986



By the early 1980s the more common post-war trend towards rates of population growth that were somewhat below the national average, rather than absolute declines in numbers of residents, had been re-established in most regions (see Figure 4; Table 4). Areas with higher-than-average population growth were not all concentrated in the northern half of the North Island, however; three were in the South Island (Nelson Bays, Marlborough and Clutha-Central Otago) and one in the southern North Island (Horowhenua). It is misleading to feature the northern North Island as the only population 'growth pole' in the 1980s, even if almost half of New Zealand's population (46 percent) was living in six regions north of, and including, Tongariro by 1986 (see Table 4).

**TABLE 4: THE TOTAL POPULATION OF NEW ZEALAND'S LOCAL GOVERNMENT REGIONS, 1976-1988**

| Local Government Region | Total population | | | | Average annual rate of population growth | | |
|---|---|---|---|---|---|---|---|
| | 1976 | 1981 | 1986 | 1988 | 1976-81 | 1981-86 | 1986-88 |
| Northland | 106,743 | 113,994 | 126,999 | 128,900 | 1.31 | 2.16 | 0.74 |
| Auckland | 796,506 | 824,408 | 887,448 | 911,700 | 0.69 | 1.47 | 1.35 |
| Thames Valley | 52,729 | 54,343 | 58,665 | 60,000 | 0.60 | 1.53 | 1.13 |
| Bay of Plenty | 160,357 | 172,480 | 187,464 | 192,700 | 1.46 | 1.67 | 1.38 |
| Waikato | 218,247 | 221,850 | 228,303 | 230,600 | 0.33 | 0.57 | 0.50 |
| Tongariro | 39,275 | 40,089 | 40,791 | 41,600 | 0.41 | 0.35 | 0.98 |
| East Cape | 52,472 | 53,295 | 53,970 | 53,800 | 0.31 | 0.25 | -0.16 |
| Hawke's Bay | 134,703 | 137,840 | 140,709 | 141,200 | 0.46 | 0.41 | 0.17 |
| Taranaki | 105,360 | 103,798 | 107,598 | 108,300 | -0.30 | 0.72 | 0.33 |
| Wanganui | 69,666 | 68,702 | 69,441 | 69,400 | -0.28 | 0.22 | -0.03 |
| Manawatu | 110,600 | 113,238 | 115,500 | 116,200 | 0.47 | 0.40 | 0.30 |
| Horowhenua | 48,300 | 49,296 | 53,592 | 55,400 | 0.41 | 1.67 | 1.66 |
| Wellington | 329,365 | 323,162 | 328,164 | 327,700 | -0.38 | 0.31 | -0.07 |
| Wairarapa | 41,009 | 39,689 | 39,609 | 39,600 | -0.65 | -0.40 | 0.00 |
| Nelson | 64,352 | 65,934 | 69,648 | 71,000 | 0.49 | 1.09 | 1.00 |
| Marlborough[a] | 35,220 | 36,172 | 38,226 | 38,100 | 0.53 | 1.10 | -0.17 |
| West Coast | 34,818 | 34,178 | 34,944 | 35,100 | -0.37 | 0.44 | 0.22 |
| Canterbury | 339,831 | 336,846 | 348,711 | 350,700 | -0.18 | 0.69 | 0.28 |
| Aorangi | 87,343 | 84,772 | 81,294 | 80,400 | -0.60 | -0.38 | -0.55 |
| Clutha-Central Otago | 43,540 | 45,402 | 48,771 | 49,500 | 0.84 | 1.43 | 0.74 |
| Coastal-North Otago | 145,348 | 138,164 | 137,394 | 136,900 | -1.01 | -0.11 | -0.18 |
| Southland | 108,632 | 107,905 | 104,619 | 103,200 | -0.13 | -0.62 | -0.68 |
| North Island | 2,268,393 | 2,322,989 | 2,441,615 | 2,480,700 | 0.48 | 0.99 | 0.79 |
| South Island | 860,990 | 852,748 | 865,469 | 866,600 | -0.19 | 0.30 | 0.07 |
| New Zealand[b] | 3,129,383 | 3,175,737 | 3,307,083 | 3,347,300 | 0.29 | 0.81 | 0.60 |

a In 1981 the Marlborough LGR population included 1,385 army personnel present on defence force exercises on census night. These people have been excluded from the LGR total in this table because of the impact such a large group of temporary residents has on the average growth rates between 1976-81 and 1981-86.

b Including Chatham Is, Great Barrier Is, extra-county islands and shipping.

Sub-national population estimates prepared by the Department of Statistics for the year ended 31 March 1988 suggest that average annual rates of population growth have fallen in most regions during the two years since the 1986 Census (see Table 4). In some, such as Northland, Marlborough and Clutha-Central Otago, growth rates are estimated to have declined by more than 50 percent. These declines have been influenced by factors such as the termination of major construction projects and economic restructuring. The agricultural and manufacturing sectors have been the subject of major rationalisation. Contributing to this process has been the removal of a wide range of subsidies and price-support mechanisms, high interest rates and lower returns for export products due to a high exchange rate. Regions such as Southland, Aorangi and Wairarapa, where the economy is heavily dependent on traditional pastoral farming, have been experiencing absolute declines in population numbers since the mid 1970s (see Table 4). This trend seems to have accelerated in the two South Island regions since the mid 1980s.

The significant structural changes in the New Zealand economy in recent years also are affecting population growth in three of the metropolitan regions. The Department of Statistics' estimates for March 1988 suggest that Coastal-North Otago in particular has experienced absolute population decline since the census in March 1986, and Canterbury's average annual growth rate has more than halved (see Table 4). Internal and international migration have undoubtedly had an important impact on differential regional population growth rates since 1986, especially in these metropolitan regions.

Another critical determinant of regional differences in population growth rates is the ethnic mix of people. The age-structure of the three major components of the New Zealand population — European, Maori and Pacific Island Polynesian — remain quite distinctive (see Figure 5). They have different 'growth' potentials and in regions where there are significant proportions of people of Maori or Pacific Island Polynesian descent, rates of natural increase are higher than in other regions. Where this higher natural increase also happens to coincide with substantial in-migration, both from other parts of New Zealand as well as from overseas as is the case in the Auckland region, then demographic as well as economic conditions favour above-average rates of population growth.

## Ethnic Composition

There is more diversity in the ethnic composition of New Zealand's regional populations than is often recognised. Auckland and Wellington are generally identified as having the most heterogeneous populations, while Northland, Bay of Plenty, Waikato, Tongariro and East Cape are acknowledged regions of Maori population concentration. These perspectives on the ethnic composition of regional populations are supported by the maps in Figure 6 which show deviations from the national average in proportions of each region's population in four ethnic groups: European, Maori, Pacific Island Polynesian, and other ethnic origins. Two summary statistics are given on each map to assist with interpretation of the patterns. The first is the percentage of New Zealand's population in the ethnic group (the national average). The second is the average of the deviations (differences) of the various regions' percentages of the ethnic group from the national average. These deviations have been 'weighted' by the region's share of the New Zealand resident population. A more detailed description of the statistical procedures involved in these calculations is given in Appendix 1.

The keys or legends to these maps show the percentages in each ethnic group in terms of numbers of deviation units from the national average. In the case of the population which was classified as 'European' in the 1986 Census, several South Island regions had higher proportions in this ethnic group than the national average (81 percent). The average weighted deviation was 7 percent. Regions with percentages of European residents which were above one deviation from the national average had more than 88 percent of their population in this ethnic group. In the case of Aorangi, the percentage of the population that was European was just over two deviations from the national average — that is, over 95 percent. All regions had more than 60 percent of their population in the European origin category, and it is change in this group which has most impact on population dynamics in every region.

The patterns revealed in Figure 6 indicate that all South Island regions have higher-than-average proportions of Europeans in their resident populations and correspondingly smaller proportions in the Maori descent, Pacific Island Polynesian descent, and 'other' ethnic categories. The Maori-descent population comprises significantly greater proportions (that is, more than two deviation units from the national average) of the residents in four regions: Northland (26 percent), Bay of Plenty (24 percent), Tongariro (33 percent) and East Cape (38 percent). The major urban regions in the North Island, Auckland and Wellington, have slightly lower proportions than the national average despite their sizeable Maori populations.

**FIGURE 5: POPULATION STRUCTURE 1976-1986**

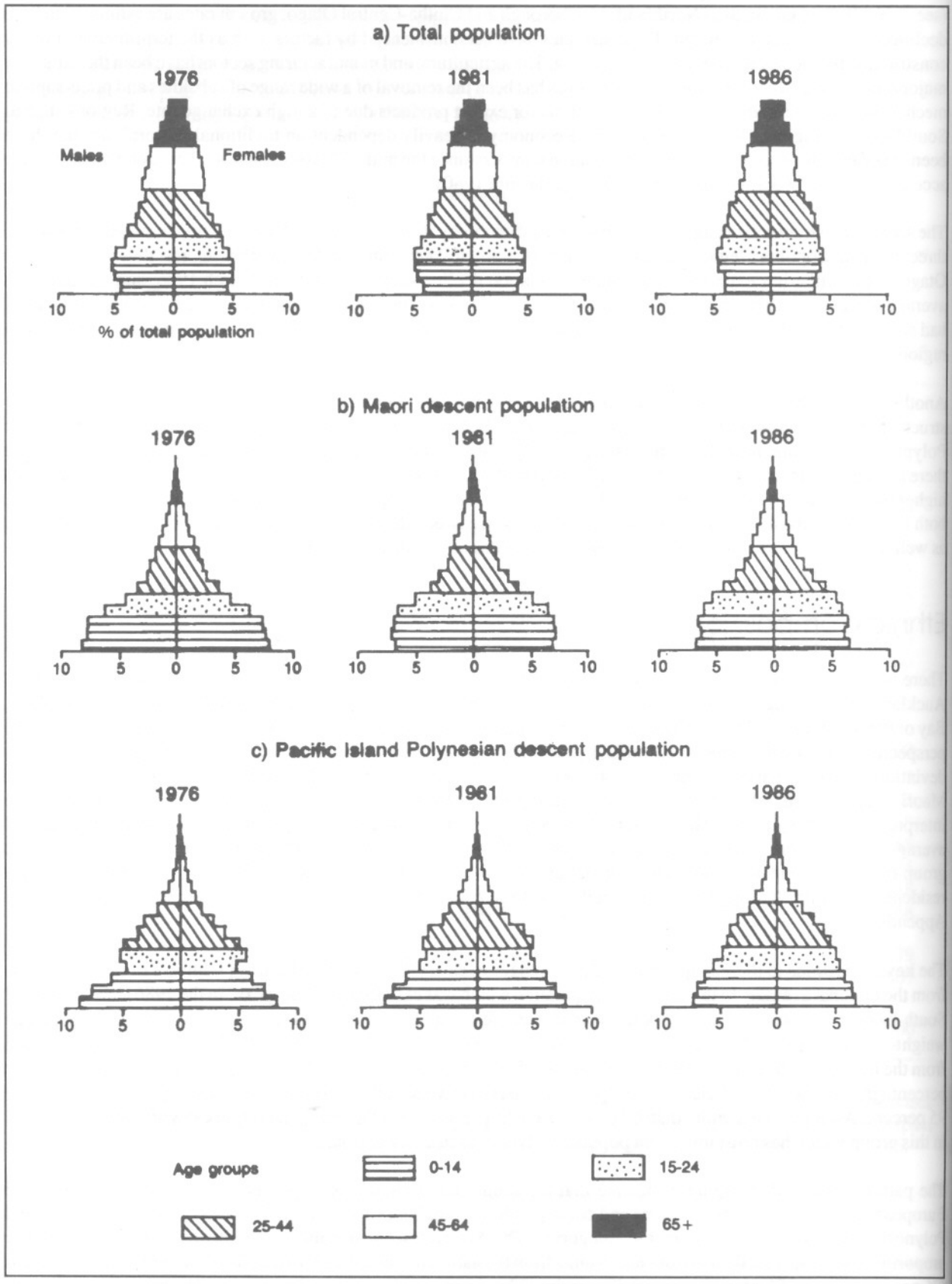
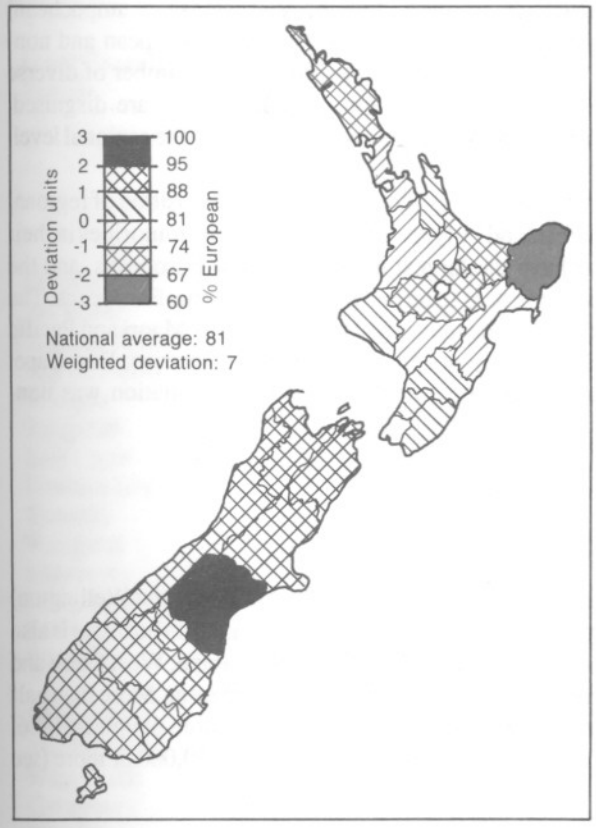
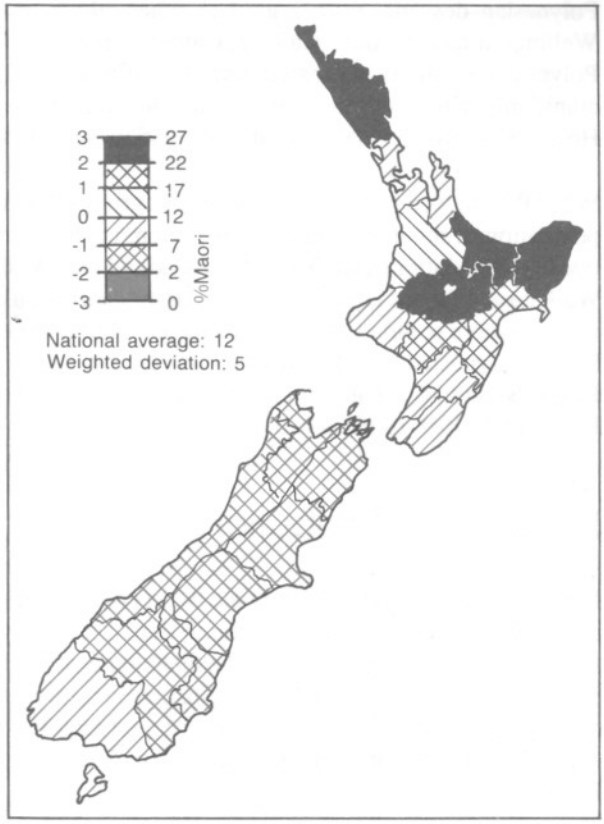


FIGURE 6: ETHNIC COMPOSITION OF REGIONAL POPULATIONS, 1986.

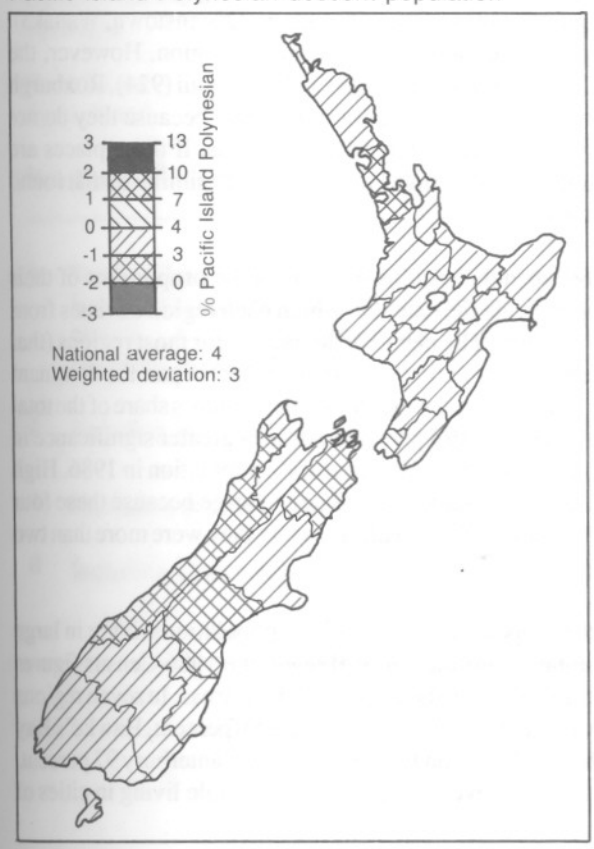
European population



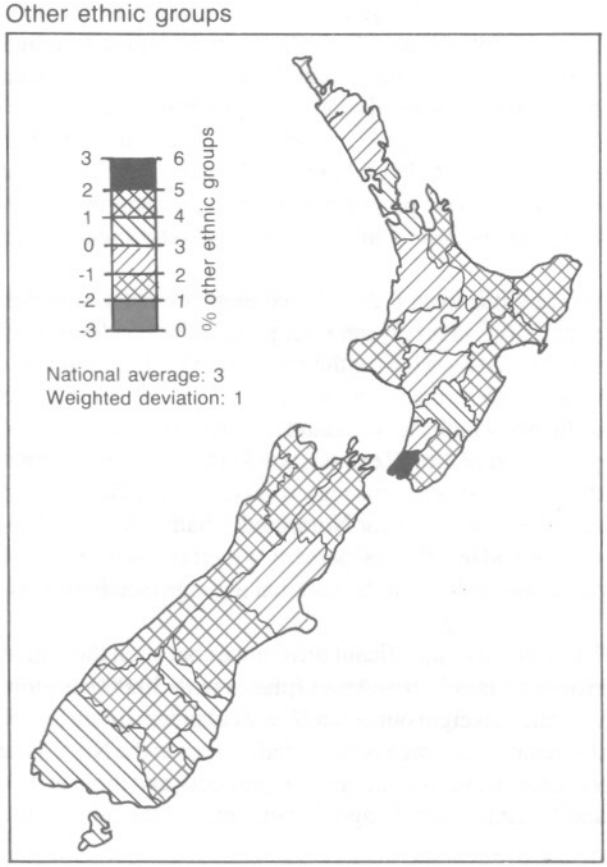

Maori descent population




Pacific Island Polynesian descent population




Other ethnic groups



In the case of Pacific Island Polynesians however, Auckland and Wellington have the only positive deviations from the national average; in 1986 these two areas were the places of residence for 81 percent of all people of Pacific Island Polynesian descent. With regard to other ethnic groups (such as Chinese, Indian, Vietnamese, Kampuchean) Wellington had the only major deviation; 5 percent of the population of this region is of non-European and non-Polynesian ethnicity compared with the national average of 2.7 percent. By aggregating a large number of diverse ethnic minorities into the 'other' category, regional variations in the distribution of some groups are disguised. However, in this report the specific population characteristics of such minorities are not examined at the regional level.

While the mapped patterns of major ethnic groups lend support to common perceptions of the composition of regional populations it should be noted that all regions have Maori, Pacific Island Polynesian and other ethnic minorities in their resident populations (see Table 5). Auckland and Wellington have the largest numbers of non-Europeans, and the Waikato and Bay of Plenty, with their large Maori populations, come next in terms of numbers of non-Europeans. The regions where population dynamics are most likely to be affected by the greater growth potential of Maori and Pacific Island Polynesian population structures are Northland, Auckland, Bay of Plenty, Waikato, Tongariro, East Cape, Hawke's Bay, Wanganui and Wellington. In these regions over 20 percent of the resident population was non-European in 1986 (see Table 5).

## Population Distribution

New Zealanders tend to differentiate between certain highly urbanised regions (especially Auckland and Wellington) and regions which are essentially 'rural' in character. Landscape is often responsible for this distinction but there is also a tendency to assume that most of the inhabitants of regions such as Northland, East Cape, Wairarapa, West Coast and Southland, for example, are living in dispersed rural communities. In fact the reality is rather different. More than half of the people in 21 of the 22 local government regions were enumerated in places with 1,000 or more people in 1986, and in 15 of the regions over 50 percent of their urban residents were in cities with populations of 30,000 or more (see Figure 7).

The divided circles in Figure 7 indicate the relative significance of urban and rural populations in each region. The only local government region where more than half the people were in places with fewer than 1,000 people in 1986 was Clutha-Central Otago — perhaps a rather surprising finding given the importance of tourism (Queenstown, Wanaka), retirement (Alexandra), and the Clutha power construction project (Cromwell, Clyde) in the region. However, the populations of several small towns such as Kaitangata (972), Clyde (960), Arrowtown (953), Tapanui (924), Roxburgh (721), Lawrence (552), Naseby (133) have been excluded from the urban total used in Figure 7 because they do not reach the threshold of 1,000 used by the Department of Statistics to define Minor Urban Areas. If these places are included then the proportion of urban residents in Clutha-Central Otago rises to 52 percent — very similar to that found in another region of small holiday and retirement towns, Thames Valley.

It is obvious from Figure 7 that there are marked variations between the regions in terms of the proportions of their populations in urban and rural places. The shadings on the map indicate the extent to which each region deviates from the national average for the proportion in cities and towns (84 percent). The negative deviations for most regions (that is, where the proportions of their populations in urban areas are below the national average) reflect in part the dominant influence which the Auckland region has on the pattern. As the deviations are weighted by the region's share of the total population of New Zealand, Auckland's high proportion in urban places (95 percent) assumes greater significance in the pattern because this region was also the place of residence for 27 percent of the country's population in 1986. High negative deviations for Northland, Thames Valley, West Coast and Clutha-Central Otago emerge because these four regions had less than 60 percent of their populations in urban places in 1986 — on this measure they were more than two deviation units from the national average (see Figure 7).

There are also significant differences between the regions in the proportions of their urban populations living in large cities or Main Urban Areas (places with 30,000 or more inhabitants). At the national level, the 1986 Census figures indicate that eight out of ten New Zealanders living in towns were resident in the 17 Main Urban Areas. In seven regions this national average is exceeded — four in the North Island (Auckland 97 percent, East Cape 90 percent, Hawke's Bay 91 percent, and Wellington 100 percent), and three in the South Island (Nelson Bays 84 percent, Canterbury 97 percent, and Coastal-North Otago 91 percent). At the other extreme, there are seven regions with no people living in cities of

## TABLE 5: NZ RESIDENT POPULATION IN LOCAL GOVERNMENT REGIONS BY MAJOR ETHNIC GROUP, 1986

| Local Government Region | Ethnic Group | | | | |
|---|---|---|---|---|---|
| | European[a] | Maori Descent[b] | Polynesian Descent[c] | Others | Percentage of resident population non-European |
| Northland | 90,729 | 30,657 | 912 | 2,205 | 27.1 |
| Auckland | 666,585 | 99,465 | 78,372 | 30,987 | 23.9 |
| Thames Valley | 50,556 | 6,327 | 303 | 876 | 12.9 |
| Bay of Plenty | 135,522 | 44,061 | 2,001 | 2,715 | 26.5 |
| Waikato | 177,270 | 40,329 | 4,548 | 4,482 | 21.8 |
| Tongariro | 27,249 | 11,301 | 474 | 777 | 31.5 |
| East Cape | 32,136 | 20,500 | 390 | 626 | 40.1 |
| Hawke's Bay | 107,967 | 27,561 | 2,004 | 2,082 | 22.7 |
| Taranaki | 93,042 | 12,039 | 432 | 1,455 | 13.0 |
| Wanganui | 54,243 | 12,537 | 642 | 1,476 | 21.7 |
| Manawatu | 98,721 | 11,892 | 1,149 | 3,087 | 14.0 |
| Horowhenua | 45,339 | 5,916 | 522 | 1,419 | 14.8 |
| Wellington | 254,937 | 33,939 | 19,488 | 16,098 | 21.4 |
| Wairarapa | 33,717 | 4,701 | 408 | 552 | 14.4 |
| Nelson Bays | 63,975 | 3,027 | 309 | 1,098 | 6.5 |
| Marlborough | 34,110 | 2,673 | 117 | 486 | 8.8 |
| West Coast | 31,137 | 1,911 | 99 | 555 | 7.6 |
| Canterbury | 314,508 | 16,929 | 4,164 | 8,406 | 8.6 |
| Aorangi | 76,347 | 2,610 | 222 | 1,044 | 4.8 |
| Clutha-Central Otago | 43,059 | 2,148 | 213 | 768 | 6.8 |
| Coastal-North Otago | 125,814 | 4,821 | 1,620 | 3,855 | 7.5 |
| Southland | 91,392 | 8,685 | 1,344 | 1,473 | 11.2 |
| North Island | 1,868,013 | 361,225 | 111,645 | 68,837 | 22.5 |
| South Island | 780,342 | 42,804 | 8,088 | 17,685 | 8.1 |
| New Zealand[d] | 2,651,379 | 404,775 | 119,763 | 87,367 | 18.8 |

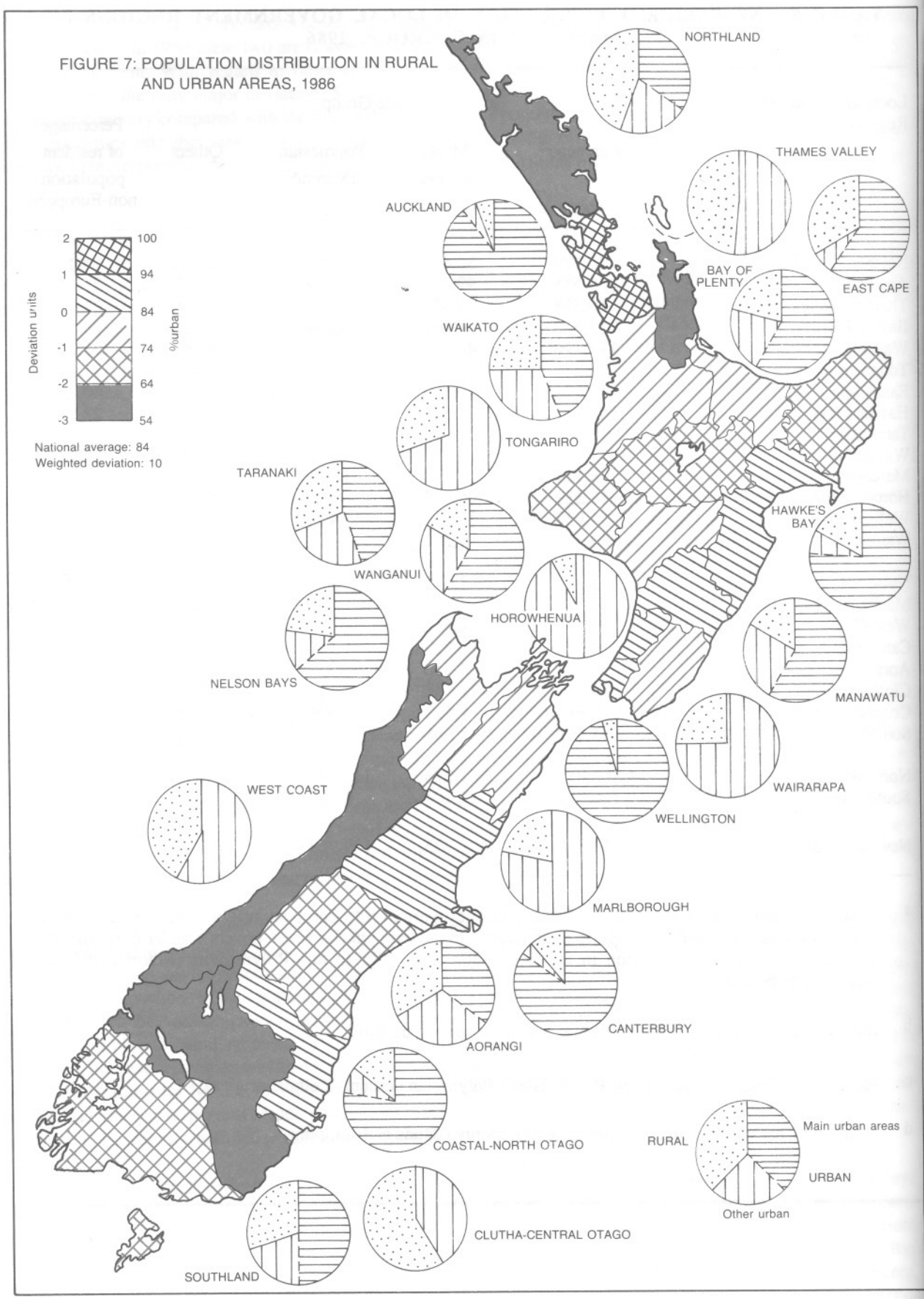
a People who indicated on the census schedule that they were of sole European origin. In this report the term European is used to refer to this group in preference to the term pakeha which covers a wider range of ethnic groups. A common convention in the late 1980s is to refer to non-Polynesians (Maori and Pacific Islanders) as pakeha.

b Including people of mixed Maori-Pacific Island Polynesian descent.

c Excluding people of mixed Maori-Pacific Island Polynesian descent (2 ethnic origins).

d Including Chatham Is., Great Barrier Is., extra-county islands and shipping.

FIGURE 7: POPULATION DISTRIBUTION IN RURAL AND URBAN AREAS, 1986



30,000 or more — four in the North Island (Thames Valley, Tongariro, Horowhenua, Wairarapa) and three in the South Island (Marlborough, West Coast, Clutha-Central Otago). Contrary to a common perception, the North Island has only a marginally higher proportion of its urban population (81 percent) in large cities than the South Island (78 percent).

The urban-rural distribution of New Zealand's population provides another matrix of places which could be used for an analysis of sub-national population trends (see Table 6). At times in this report differences between urban and rural places are highlighted because of important variations in demographic characteristics in the towns and the countryside. A comprehensive analysis of the populations of cities, towns and small rural communities is not attempted, however. The focus of attention in the remaining sections is on populations of the local government regions.

**TABLE 6: TOTAL POPULATION OF MAIN, SECONDARY, AND MINOR URBAN AREAS AND THE RURAL POPULATION, 1976-1986**

| Area | Total population | | | Average annual rate of population growth | |
|---|---|---|---|---|---|
| | 1976 | 1981 | 1986 | 1976-81 | 1981-86 |
| Main Urban Areas | | | | | |
| Whangarei | 39,069 | 40,212 | 44,043 | 0.58 | 1.82 |
| Auckland | 742,786 | 769,558 | 820,755 | 0.71 | 1.29 |
| Hamilton | 94,777 | 97,907 | 101,814 | 0.65 | 0.78 |
| Tauranga | 48,153 | 53,097 | 59,436 | 1.95 | 2.26 |
| Rotorua | 46,675 | 48,314 | 52,002 | 0.69 | 1.47 |
| Gisborne | 31,790 | 32,062 | 32,238 | 0.17 | 0.11 |
| Napier | 50,164 | 51,330 | 52,152 | 0.46 | 0.32 |
| Hastings | 50,814 | 52,563 | 54,909 | 0.68 | 0.87 |
| New Plymouth | 43,914 | 44,095 | 47,385 | 0.08 | 1.44 |
| Wanganui | 39,679 | 39,595 | 40,758 | -0.04 | 0.58 |
| Palmerston North | 63,873 | 66,691 | 67,404 | 0.86 | 0.21 |
| Wellington | 327,414 | 321,004 | 325,698 | -0.39 | 0.29 |
| Nelson | 42,433 | 43,121 | 44,592 | 0.32 | 0.67 |
| Christchurch | 295,296 | 289,959 | 299,373 | -0.36 | 0.64 |
| Timaru | 29,958 | 29,225 | 28,623 | -0.50 | -0.42 |
| Dunedin | 113,222 | 107,445 | 106,866 | -1.05 | -0.12 |
| Invercargill | 53,762 | 53,868 | 52,809 | 0.04 | -0.40 |
| Total Main Urban | 2,113,779 | 2,140,046 | 2,230,845 | 0.25 | 0.83 |
| Secondary Urban | 218,296 | 220,998 | 226,584 | 0.25 | 0.50 |
| Minor Urban | 282,044 | 289,860 | 310,974 | 0.55 | 1.41 |
| Rural | 511,004 | 520,487 | 535,311 | 0.37 | 0.56 |
| New Zealand[a] | 3,129,383 | 3,175,737 | 3,307,086 | 0.29 | 0.81 |

[a] Including Great Barrier Is, Chatham Is, extra county islands and shipping.

SECTION B

# DYNAMICS OF REGIONAL POPULATION CHANGE

Population change at a sub-national level is usually analysed in terms of increases or decreases in total numbers of people over specific time periods. Differences in rates of regional population growth are explained mainly with reference to the effects of internal migration. It is generally assumed that levels of mortality and fertility do not vary much from one region to another, and thus that rates of natural increase are roughly comparable across the country. In this section we examine the specific components of regional population change — natural increase, net migration — and then, in detail, the processes of fertility, mortality, and migration. Both internal and overseas migration are considered in this analysis.

Regional population change during a particular time is a product of the interaction of the three demographic processes (fertility, mortality and migration) and the age-sex structure of the population. In the following pages characteristics of regional population structures are examined, especially with reference to the ageing of the total population and some distinctive characteristics of Maori and Pacific Island age-sex distributions. A major sub- group in the population, the labour force, is then reviewed in terms of factors influencing the supply and employment of potential workers. Levels of unemployment are an issue which has attracted considerable public and political comment in the 1980s. Variations in unemployment between regions as well as between ethnic groups are reviewed.

This section concludes with some comments on sub-national population projections to the year 2011 prepared by the Department of Statistics. Particular attention is focused on changes in regional age-sex structures arising from the progression through the population pyramid of birth cohorts of different sizes. With the aid of these projections, estimates of population growth in the local government regions over the 25 years between 1986 and 2011 can be made and compared with the experience of the 25 years from 1961 to 1986.

## Components of Population Growth

Estimates of natural increase and net migration are shown for each region for the two intercensal periods, 1976-81 and 1981-86, in Tables 7 and 8. These estimates refer to the people usually resident in each region, as distinct from the total population or the New Zealand resident population (see Table 3), and the procedures used to derive the figures are explained in Appendix 2.

### Natural Increase

The balance of births over deaths in the late 1970s and early 1980s is shown in Table 7. It is evident that there have been some marked variations in the percentage change in absolute levels of natural increase during the two five-year periods, with most regions experiencing a decline in the surplus of births over deaths. Only four regions had increases: Northland (12 percent), East Cape (6 percent), Wanganui (1 percent), and Nelson Bays (3 percent). In all cases this was due to a higher number of births in those regions between 1981 and 1986 than in the late 1970s. The decline in levels of natural increase in most regions reflects a fall in numbers of births, especially in Aorangi, Wairarapa, West Coast, Coastal-North Otago and Southland. This in turn can be explained in large measure by progressive changes in age structures, especially the trend towards older populations, accentuated by the net migration loss of young adults and a resultant decline in the productive and reproductive groups in the population. In the cases of Bay of Plenty, Horowhenua and Marlborough, the percentage declines in natural increase reflect increases in the numbers of deaths in

**TABLE 7: NATURAL INCREASE IN THE LOCAL GOVERNMENT REGIONS, 1976-81 AND 1981-86**

| Local Government Region | Natural increase 1976-81 | 1981-86 | Percentage change 1976-81 to 1981-86 |
|---|---|---|---|
| Northland | 5,210 | 5,920 | 12.0 |
| Auckland[a] | 35,120 | 33,850 | -3.6 |
| Thames Valley | 2,150 | 2,060 | -4.2 |
| Bay of Plenty | 9,470 | 8,500 | -10.2 |
| Waikato | 13,280 | 12,280 | -7.5 |
| Tongariro | 2,530 | 2,260 | -10.7 |
| East Cape | 2,600 | 2,750 | 5.7 |
| Hawke's Bay | 6,180 | 5,790 | -6.3 |
| Taranaki | 5,120 | 4,950 | -3.3 |
| Wanganui | 2,860 | 2,900 | 1.4 |
| Manawatu | 4,520 | 4,390 | -2.9 |
| Horowhenua | 1,060 | 630 | -40.6 |
| Wellington | 16,020 | 14,510 | -9.4 |
| Wairarapa | 1,860 | 1,630 | -12.4 |
| Nelson Bays | 1,660 | 1,710 | 3.0 |
| Marlborough | 1,370 | 1,080 | -21.2 |
| West Coast | 930 | 820 | -11.8 |
| Canterbury | 8,540 | 8,430 | -1.3 |
| Aorangi | 2,900 | 1,850 | -36.2 |
| Clutha-Central Otago | 1,980 | 1,810 | -8.6 |
| Coastal-North Otago | 2,910 | 2,530 | -13.1 |
| Southland | 5,760 | 4,920 | -14.6 |
| North Island | 107,980 | 102,400 | -4.4 |
| South Island | 26,050 | 23,150 | -11.1 |
| New Zealand[b] | 134,110 | 125,670 | -6.3 |

a Including Great Barrier Is, 1976-81

b Including Chatham Is, extra county islands and shipping, 1976-86 and Great Barrier Is, 1981-86.

the early 1980s compared with the late 1970s (see Table 7). Contributing to these absolute increases in deaths is the retirement migration of older people to these regions.

These changes in levels of natural increase are much more variable than might be expected on the basis of regional differences in birth and death rates which are examined below. Natural increase is not just a function of birth and death rates; it is also affected significantly by the age composition of the population and changes over time in the distribution of people by age in the regions.

**TABLE 8: NET MIGRATION AND POPULATION CHANGE IN THE LOCAL GOVERNMENT REGIONS, 1976-81 AND 1981-86**

| Local Government Region | Net migration[a] | | Population change[b] | |
|---|---|---|---|---|
| | 1976-81 | 1981-86 | 1976-81 | 1981-86 |
| Northland | 150 | 6,440 | 5,360 | 12,360 |
| Auckland[c] | -7,210 | 24,970 | 27,910 | 58,810 |
| Thames Valley | -1,080 | 880 | 1,070 | 2,940 |
| Bay of Plenty | 1,920 | 5,580 | 11,390 | 14,080 |
| Waikato | -10,710 | -4,900 | 2,570 | 7,380 |
| Tongariro | -2,160 | -2,070 | 370 | 180 |
| East Cape | -2,010 | -2,320 | 590 | 430 |
| Hawke's Bay | -4,050 | -2,950 | 2,130 | 2,840 |
| Taranaki | -6,860 | -390 | -1,740 | 4,560 |
| Wanganui | -3,810 | -2,120 | -940 | 780 |
| Manawatu | -2,690 | -1,010 | 1,830 | 3,380 |
| Horowhenua | -210 | 3,460 | 850 | 4,090 |
| Wellington | -24,980 | -10,550 | -8,960 | 3,960 |
| Wairarapa | -3,410 | -1,520 | -1,550 | 110 |
| Nelson Bays | 320 | 1,330 | 1,980 | 3,040 |
| Marlborough | -650 | 520 | 710 | 1,610 |
| West Coast | -1,900 | -520 | -970 | 290 |
| Canterbury | -12,840 | 1,430 | -4,300 | 9,860 |
| Aorangi | -5,410 | -6,070 | -2,510 | -4,220 |
| Clutha-Central Otago | -170 | 570 | 1,810 | 2,380 |
| Coastal-North Otago | -11,410 | -1,970 | -8,500 | 550 |
| Southland | -6,800 | -8,040 | -1,040 | -3,120 |
| North Island | -67,120 | 13,490 | 40,880 | 115,890 |
| South Island | -38,870 | -12,750 | -12,820 | 10,400 |
| New Zealand[d] | -105,700 | 2,330 | 28,420 | 128,000 |

a The balance of internal as well as overseas in-migration to and out-migration from each region. Includes persons born between the censuses (see Appendix 2).

b The sum of natural increase and net migration.

c Including Great Barrier Is. 1976-81.

d Including Chatham Is, extra county islands and shipping, 1976-86, and Great Barrier Is, 1981-86.

## Net Migration

The net migration component of regional population change in the two intercensal periods is shown in Table 8. Net migration offers much more variation across regions and between periods than does natural increase. In most regions the effect of migration into and out of the regions between 1976 and 1981 was negative, and in nine regions (four in the North Island and five in the South Island) the net losses through population movement exceeded the contributions made to growth by natural increase. This is shown in Table 8 by a minus sign in the third column of figures: Taranaki, Wanganui, Wellington, Wairarapa, West Coast, Canterbury, Aorangi, Coastal-North Otago and Southland all

experienced absolute declines in the usually resident population. The net effect for the country as a whole was a loss of just over 100,000 people to overseas destinations between 1976 and 1981. When this loss is deducted from the total natural increase from 1976 to 1981 (134,100) population growth during the period is reduced to 28,400. This is the smallest change recorded for any intercensal period since the 1850s.

As was noted in the Introduction, the net population losses through emigration overseas in the late 1970s were exceptional. During the first half of the 1980s most regions in the North Island (nine out of 14) and half of those in the South Island (four out of eight) had further net migration losses, but only in the cases of East Cape, Aorangi and Southland did these exceed levels for the late 1970s (see Table 8). In the other nine regions there were net gains to the population through migration. According to these estimates the natural increase for New Zealand as a whole (around 126,000) was augmented by a small net international migration gain (2,330) to give an overall population growth which, while much larger than in the previous intercensal period, was still significantly below that recorded for any period of similar duration between the mid 1940s and the mid 1970s.

The impact of migration on population growth in the early 1980s varied markedly from region to region. In the case of Auckland, the net gain of almost 25,000 was equivalent to 42 percent of the total population change (58,800) between 1981 and 1986. While Wellington experienced a natural increase of 14,500, population growth was reduced to 4,000 by net emigration of 10,500 to overseas destinations and other regions in New Zealand. In Aorangi net out-migration of 6,000 accounted for the entire natural increase of around 1,850 and reduced the existing population in 1981 by a further 4,000.

Despite this variability, however, only Aorangi and Southland experienced absolute declines in their usually resident populations. More than half of Aorangi's population decrease between 1981 and 1986 was directly attributable to the winding-down of hydro-construction work and this had a major impact on Twizel. In Southland a significant decline in manufacturing employment contributed to the decline. Both of these regions have also been severely affected by the rural 'crisis' that has accompanied recent economic restructuring.

The contributions of natural increase and net migration to population change in the regions since 1976 have been more variable than usually recognised. To account for this variation it is necessary to examine some indicators of fertility and mortality for local government regions, and to isolate the specific in-migration and out-migration flows that combine to produce the net migration gains and losses. It can be noted here that there has been a tendency in recent decades for migration to become relatively more important in determining regional population change. A recent study covering the period 1956-86 found that net migration was equivalent to more than half the natural increase in more than two regions out of three between 1981 and 1986 (Lowe 1988(a)). This was the case in only two regions out of four in the 1960s, and of fewer still in the 1950s. Because of this tendency for migration to exacerbate regional differences in population growth, considerable attention is given to migration trends in this report.

# Fertility and Mortality

Regional variations in fertility and mortality are examined with special reference to the period 1985-87. Instead of using crude birth and death rates, which are generally affected by differences in age-sex structure, refined demographic indices have been employed. For fertility, the age-specific fertility rates and their aggregate index, the total fertility rate (TFR) are used. The TFR gives the average number of births a group of women would have during their lifetime if they were exposed to the age-specific fertility rates experienced in a specified year or period. For mortality, two refined summary measures are adopted here, namely the standardised or age-adjusted death rate and life expectancy at birth. In order to avoid chance fluctuations arising from small population size, data on fertility and mortality for a three-year period (January 1985 to December 1987) have been used. The 1986 Census provided information on the age and sex composition of the usually resident populations which was required to calculate the various rates.

## Fertility Differentials

The national background to fertility change in the 1980s is one of a 5.9 percent rise in births between 1980-82 and 1985-87. This has resulted partly from an increase in the number of prospective mothers, caused by the ageing of the baby-boom cohorts, and partly from higher reproduction among women in their thirties, presumably reflecting the making-up of deferred childbearing. A detailed discussion of the demographic, social and economic circumstances which conditioned these developments is beyond the scope of this report. It is important to note, however, that the direction and magnitude of changes in birth numbers during the 1980s has varied substantially from region to region (see Table 9).

**TABLE 9: LIVE BIRTHS AND TOTAL FERTILITY RATES, LOCAL GOVERNMENT REGIONS, 1985-87**

| Local Government Region | Live births | | Total fertility rate | |
|---|---|---|---|---|
| | Number 1985-87 | Percent increase between 1980-82 and 1985-87[a] | Rate[b] | Index (NZ = 100) |
| Northland | 6,852 | 21.7 | 2.5 | 125 |
| Auckland | 43,844 | 11.8 | 2.0 | 100 |
| Thames Valley | 2,796 | 6.0 | 2.3 | 115 |
| Bay of Plenty | 9,678 | 9.7 | 2.2 | 110 |
| Waikato | 12,148 | 4.1 | 2.1 | 105 |
| Tongariro | 2,171 | -0.1 | 2.4 | 120 |
| East Cape | 3,121 | 4.1 | 2.5 | 125 |
| Hawke's Bay | 7,166 | 2.1 | 2.2 | 110 |
| Taranaki | 5,708 | 7.8 | 2.2 | 110 |
| Wanganui | 3,868 | 8.0 | 2.3 | 115 |
| Manawatu | 5,560 | 4.5 | 1.9 | 95 |
| Horowhenua | 2,204 | 8.8 | 2.1 | 105 |
| Wellington | 15,985 | 0.6 | 1.8 | 90 |
| Wairarapa | 1,872 | -8.7 | 2.2 | 110 |
| Nelson Bays | 2,919 | 7.3 | 1.9 | 95 |
| Marlborough | 1,636 | -0.2 | 2.1 | 105 |
| West Coast | 1,575 | 10.7 | 2.1 | 105 |
| Canterbury | 14,457 | 5.6 | 1.7 | 85 |
| Aorangi | 3,296 | -11.5 | 1.9 | 95 |
| Clutha-Central Otago | 1,933 | -4.7 | 1.8 | 90 |
| Coastal-North Otago | 5,548 | -4.0 | 1.7 | 85 |
| Southland | 5,251 | -6.6 | 2.1 | 105 |
| North Island | 122,973 | 7.6 | 2.1 | 105 |
| South Island | 36,615 | -0.02 | 1.8 | 90 |
| New Zealand[c] | 159,876 | 5.9 | 2.0 | 100 |

[a] A minus (-) sign indicates a decrease.

[b] Number of births per woman.

[c] Includes Great Barrier Is, Chatham Is, extra county islands, shipping, not specified and no fixed abode.

Of the eight South Island regions, five recorded a drop in births between 1980-82 and 1985-87, with Southland and Aorangi recording decreases of over 6.5 percent. Only two regions (Nelson Bays and West Coast) experienced above-average increases. In contrast all North Island regions except two had more births in 1985-87 than in 1980-82. Two regions, Northland (22 percent) and Auckland (12 percent) experienced large increases which exceeded twice the national average.

The total fertility rate for the New Zealand population during 1985-87 averaged 2.0 births per woman, which was fractionally below the notional replacement level of 2.1 births per woman. The regional values for the total fertility rate varied from 1.7 (15 percent below the national rate) to 2.5 per woman (25 percent above the national rate) with strong north-south differences (see Table 9). Sub-replacement fertility dominated in the South Island with five of the eight regions recording fertility rates ranging between 1.7 and 1.9 births per woman. The remaining three (Marlborough, West Coast and Southland) had replacement-level fertility.

This contrasts with the situation in the North Island where all but three regions recorded total fertility rates of 2.1 per woman or more (see Table 9). The exceptions were the highly urbanised regions of Auckland and Wellington, and Manawatu with TFR between 1.8 and 2.0 births per woman. High rates of 2.4 births per woman or over were typically found in Northland, Tongariro and East Cape, which have 25 percent or more of their populations of Maori descent. The combined total fertility rate for the North Island regions (2.1 per woman) was 14 percent higher than for the South Island regions (1.8 per woman) (see Table 9).

## Childbearing Patterns

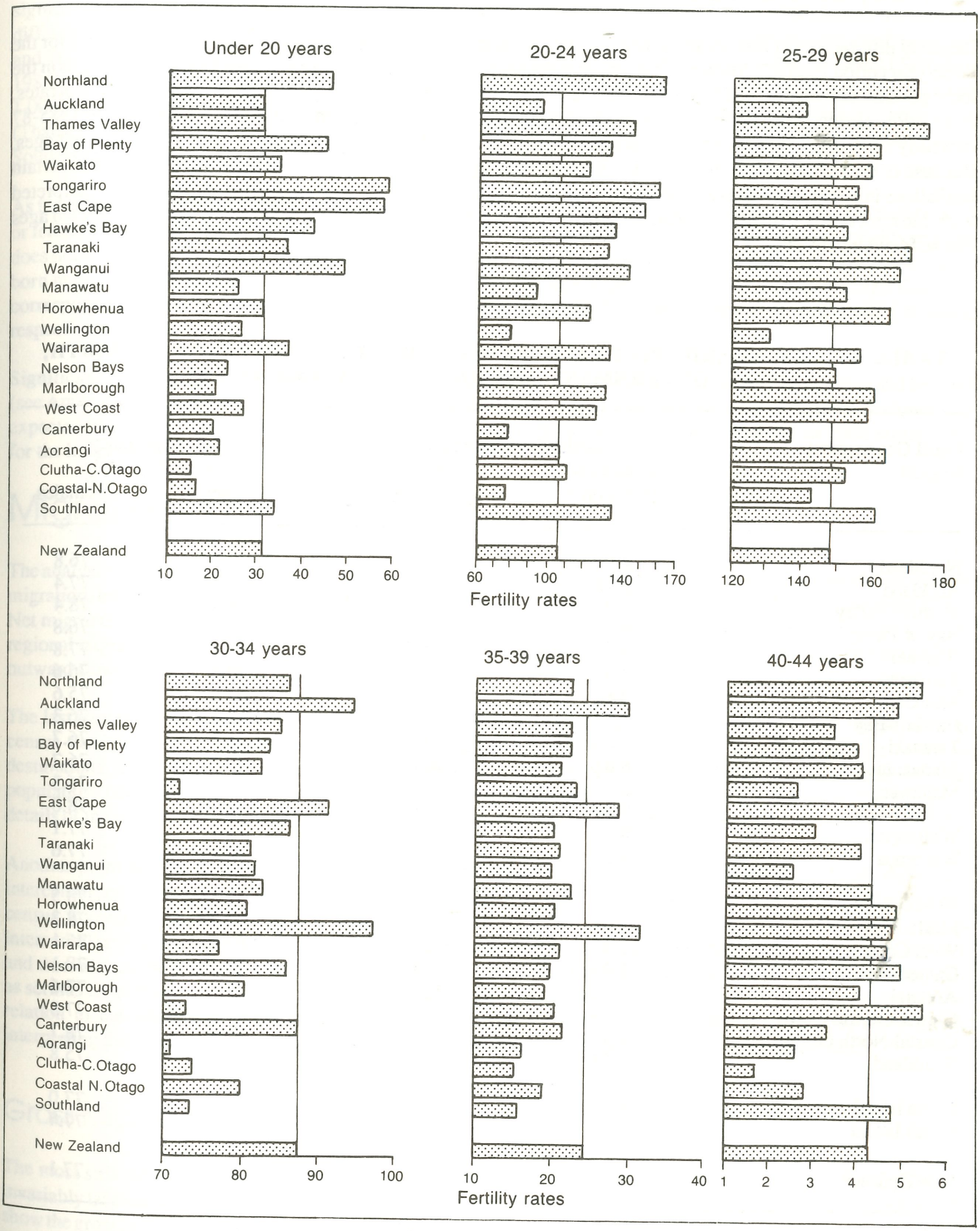
These regional differences are partly a function of diverse childbearing patterns, which in turn reflect varied socio-demographic circumstances such as ethnic composition, degree of urbanisation, general economic situation, and family-formation norms. Age-of-mother specific fertility rates for the 22 local government regions are plotted in Figure 8 and these indicate significant differences in childbearing patterns between the North and South Island regions and between the highly urbanised and less urbanised regions.

The variation in fertility rate is most pronounced at the lower end of the reproductive span, and decreases significantly with age. The impact of early childbearing is especially marked in Tongariro and East Cape. These regions, with their large proportions of Maori, support high fertility rates of 58.0 and 59.3 births per 1,000 women respectively for women below 20 years. These are over three-and-a-half times the lowest rates of 15.1 and 16.7 per 1,000 for the two Otago regions. Low teenage fertility is also found in other South Island regions (except Southland) and in Manawatu and Wellington. The overall South Island rate (21.5 per 1,000) is about 40 percent lower than the North Island rate (34.9 per 1,000).

At ages 20-24 years, the highest rates (160 and over per 1,000) for Northland and Tongariro are still over twice the lowest rate (78 per 1,000 or less) for the highly urbanised regions of Wellington, Canterbury and Coastal-North Otago. In contrast to the youngest age group, the fertility rate for Auckland region at ages 20-24 years (95.1 per 1,000) is 10 percent below the national rate (104.6 per 1,000). The South Island rate (93.5 per 1,000) is about 15 percent lower than the North Island rate (109.4 per 1,000). However, in the next childbearing age group (25-29 years), the two islands support almost the same rate of reproduction.

High-fertility regions like Northland, Tongariro and East Cape show a broad peak pattern, with the age groups 20-24 years and 25-29 years being almost equally popular for childbearing, and the fertility rates at ages below 25 years at least 50 percent higher than the corresponding national rates. In contrast, in Auckland, Wellington, Canterbury and Coastal-North Otago, which contain established and larger urban centres, more childbearing takes place at ages 25-29 years than at ages 20-24 years, and the fertility rates at ages below 30 years are lower than the national rates. However, the situation changes dramatically after age 30 years, as the making-up of deferred childbearing in the larger urban centres boosts the fertility rates at ages 30-34 years above the national average. Given the magnitude of these structural divergences, it is imperative to assess regional fertility characteristics in terms of both the overall level and age pattern of childbearing.

FIGURE 8: AGE-SPECIFIC FERTILITY RATES, LOCAL GOVERNMENT REGIONS, 1985-1987.



## Mortality Differentials

Regional differentials in New Zealand mortality are examined using standardised (or age-adjusted) death rates for the three-year period 1985-87. These rates are independent of differences in the age-sex composition of populations in the local government regions, and give a more realistic assessment of the prevailing conditions than the crude death rates. In addition, abridged life tables have been constructed for the 22 local government regions, based on the 1985-87 mortality experience. These translate mortality experience into life expectancy values at birth and at selected ages. Because of the small number of deaths, involved in some age groups in regions with small populations, and certain limitations inherent in the life-table methodology, the life-table results are only suggestive and should be interpreted with due reservation. The life expectancy values at birth are given in Table 10; the schedule of values at selected ages can be found in Appendix 3.

**TABLE 10: STANDARDISED DEATH RATES AND LIFE EXPECTANCY AT BIRTH, LOCAL GOVERNMENT REGIONS, 1976-81 AND 1981-86**

| Local Government Region | Standardised death rate | | Life expectancy at birth (years) | |
|---|---|---|---|---|
| | Deaths per 1000 pop.[a] | Index (NZ = 100) | Males | Females |
| Northland | 8.51 | 102 | 70.4 | 76.8 |
| Auckland | 8.14 | 97 | 71.5 | 77.4 |
| Thames Valley | 7.74 | 93 | 71.9 | 78.4 |
| Bay of Plenty | 8.37 | 100 | 71.2 | 76.8 |
| Waikato | 8.38 | 100 | 70.8 | 77.8 |
| Tongariro | 8.62 | 103 | 70.5 | 76.6 |
| East Cape | 9.44 | 113 | 69.2 | 75.6 |
| Hawke's Bay | 8.73 | 105 | 70.8 | 76.3 |
| Taranaki | 8.66 | 104 | 71.3 | 76.7 |
| Wanganui | 8.81 | 105 | 70.1 | 76.7 |
| Manawatu | 8.73 | 104 | 70.9 | 76.3 |
| Horowhenua | 8.09 | 97 | 70.9 | 78.0 |
| Wellington | 8.44 | 101 | 71.4 | 77.1 |
| Wairarapa | 8.39 | 100 | 70.9 | 77.6 |
| Nelson Bays | 7.73 | 93 | 72.1 | 78.5 |
| Marlborough | 7.91 | 95 | 72.9 | 78.3 |
| West Coast | 10.27 | 123 | 67.9 | 75.1 |
| Canterbury | 7.93 | 95 | 71.8 | 78.1 |
| Aorangi | 8.40 | 101 | 71.3 | 77.6 |
| Clutha-Central Otago | 7.58 | 91 | 70.4 | 77.3 |
| Coastal-North Otago | 8.81 | 106 | 72.8 | 78.7 |
| Southland | 9.11 | 109 | 70.3 | 75.8 |
| North Island | 8.36 | 100 | 71.1 | 77.0 |
| South Island | 8.32 | 100 | 71.2 | 77.4 |
| New Zealand[a] | 8.35 | 100 | 71.1 | 77.1 |

[a] The total New Zealand population by age and sex as enumerated at the 1986 Census of Population was taken as the standard.

In general, the regional mortality differentials are less pronounced than the fertility differentials, and there are no significant north-south variations. The standardised death rate for the North Island (8.36 per 1,000) is only fractionally different from that for the South Island (8.32 per 1,000). In terms of high mortality in 1985-87, two regions (East Cape and West Coast) stand out, just as they did previously in the 1980-82 demographic analyses (Department of Statistics 1986). Their standardised death rates are 13 percent and 23 percent respectively above the national rate (8.35 per 1,000). On the other end of the mortality scale, there are no regions with a distinct advantage, although five regions (Thames Valley in the North Island, and Marlborough, Nelson Bays, Canterbury and Clutha-Central Otago in the South Island) had standardised death rates at least 5 percent lower than the national level in 1985-87.

As far as life expectancy is concerned, the great majority of regions had values for expectation of life at birth for males or females within one year of the corresponding national values. The advantage of the so-called low mortality regions does not amount to more than 1.8 years for males or females. On the other hand, the life expectancy at birth for a new-born male baby in West Coast is about 3.2 years lower than for New Zealand as a whole, and for the East Cape the corresponding figure is 1.9 years. For new-born female babies, this disadvantage amounts to 2.0 and 1.5 years, respectively.

Significantly, a major part of these differentials are attributable to excess mortality at older working ages and beyond (see Appendix 3). On the West Coast, occupation-related mortality is an important factor accounting for the lower life expectancies at birth, while in the East Cape region higher mortality among Maori than Pakeha is the main explanation for the lower values.

# Migration Patterns

The analysis of migration so far has been limited to considering net gains or losses to the local government regions. Net migration, however, is simply the numerical difference between much larger flows of inward and outward migrants. Net migrants cannot be identified and studied as individuals. To obtain a more complete assessment of the nature of regional migration it is necessary to examine total, or gross (as against net) migration — that is both the inward and the outward flows and their various components.

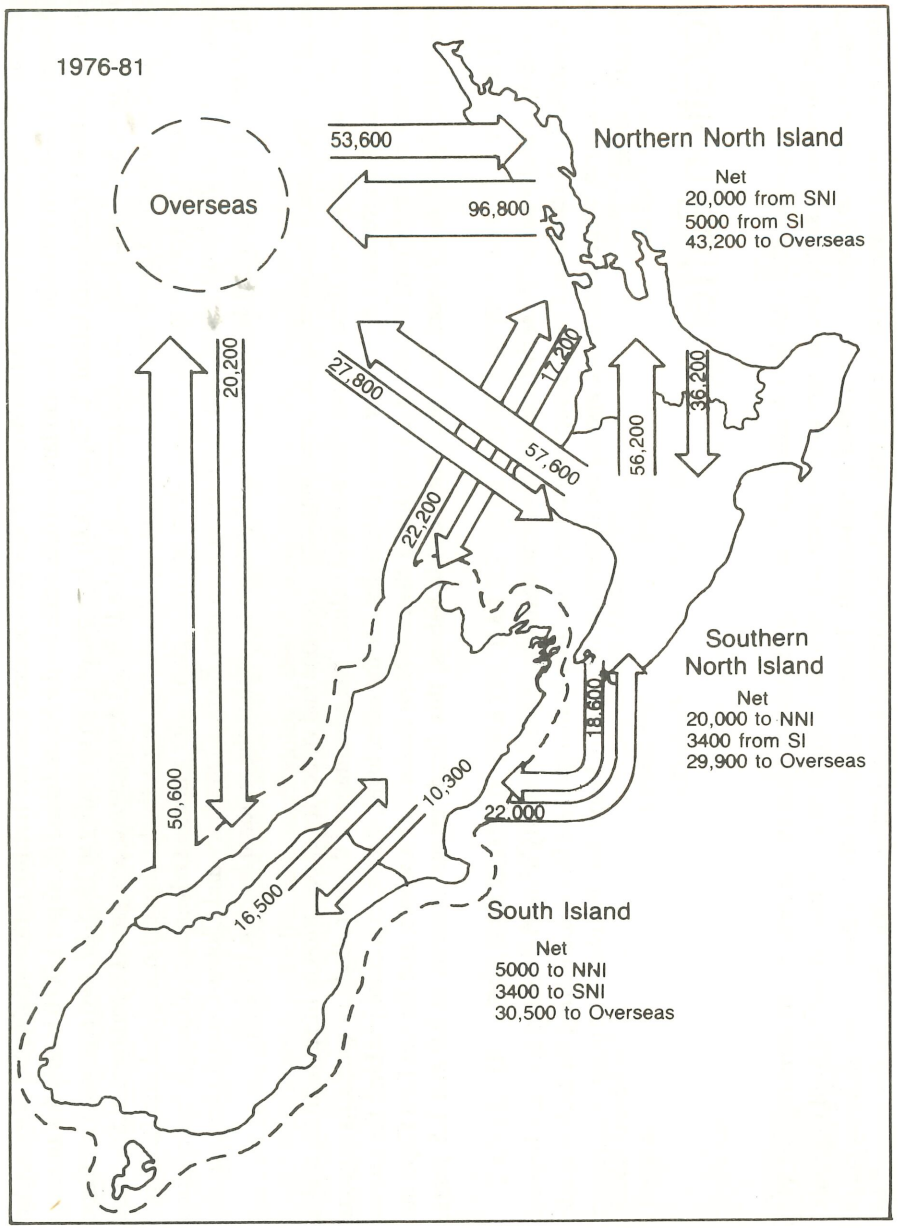
The last four population censuses provide a lot of information on gross as well as net migration, but the population census data need to be supplemented with additional estimates to cover migrants who have left for overseas destinations. These people do not complete a census return, yet they are an important component of total regional population change. Estimates of overseas out-migration from each region have been made for this report. The technical details of these estimates and modifications made to the census data are contained in Appendix 2.

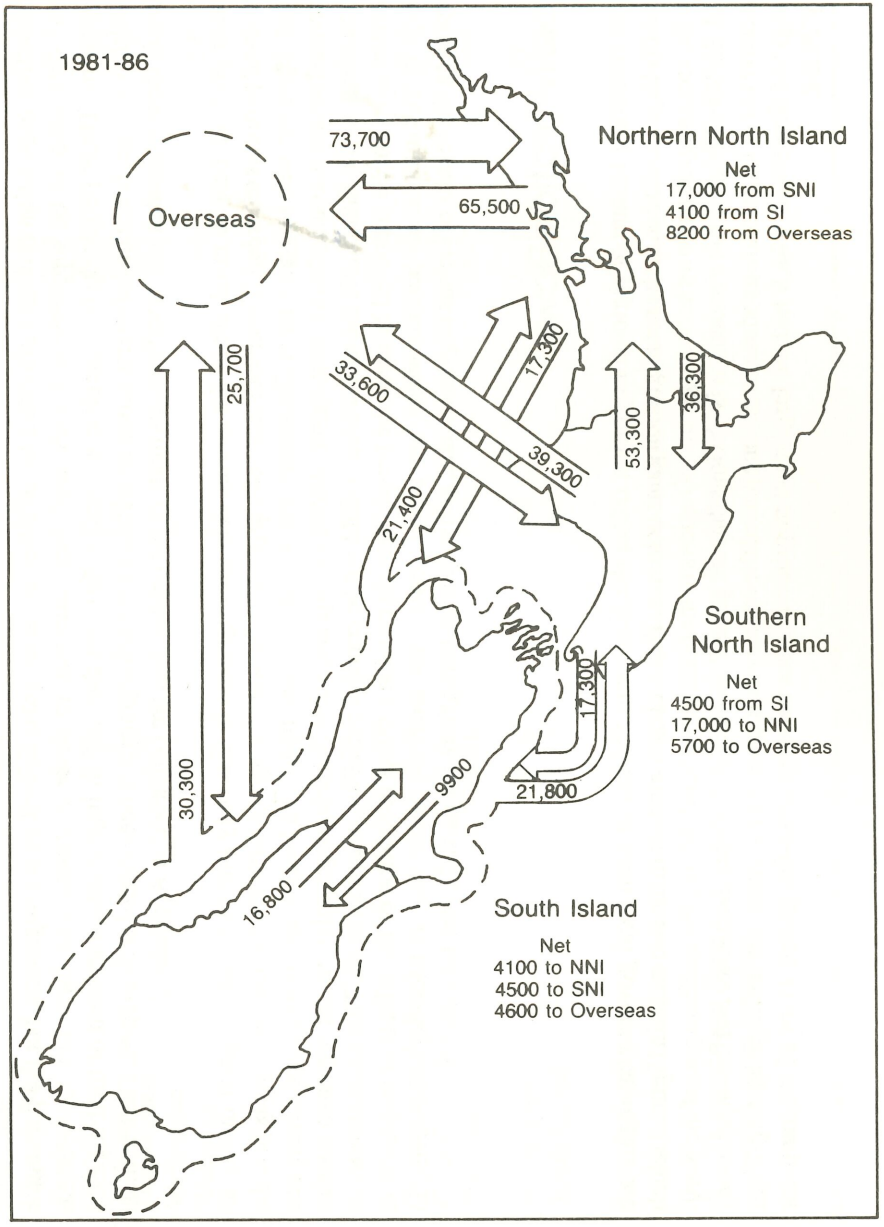
Another point to bear in mind about the census data on migration is that only one move per migrant during an intercensal period is recorded. The census data refer to people who were living in a different region five years before the census. Someone who migrated from Christchurch to Wellington, and then from Wellington to Auckland during one intercensal period is counted as a Christchurch-Auckland migrant. Someone who migrated from one region to another and then back to the first before the next census would not be counted as having migrated at all. This limitation is not as serious as might be supposed because the census data do provide a direct indication of the effects of migration in relation to the intercensal periods which are useful periods for analysis. Some care is necessary, however, in interpreting the results of census migration data, and in extrapolating from the partial to the total picture.

## Gross Migration Flows

The most striking feature of regional migration is that the flows into and out of each local government region are invariably large in relation to the net migration gains or losses. This is clearly evident in the two maps in Figure 9 which show the gross migration flows between groups of regions in the north of the North Island, the southern part of the North Island, the South Island, and overseas. It is obvious that the gross flows largely balance each other and the impressions often conveyed of large-scale exoduses from one part of the country to another (or overseas) are quite misleading. Even Aorangi and Southland, which had the largest net migration losses between 1981-86, gained 11 or 12 migrants for every 20 lost.

*FIGURE 9: GROSS AND NET MIGRATION BY REGIONAL ZONES.*



The large counterflows of migrants have implications for regional policy. Inter-regional migration does have an important redistribution effect on the population, but most of the effect is to maintain the existing broad pattern — a point noted by the Department of Statistics (1986) and Rowland (1976) in the context of migration flows in the late 1960s and 1970s. As noted earlier, there has been a tendency for migration to become increasingly significant when explaining regional differences in population change, but it is not true to assume from this that the total volume of migration has been increasing. Analysis of key migration totals over the last four intercensal periods suggests that this does not appear to be the case as far as the population as a whole is concerned. Table 11 provides a longer-term context for the 1976-86 migration analysis.

The figures in Table 11 relate to three sets of regional definitions and, while not directly comparable, these data are closely linked. It is apparent from both the unadjusted census data and the estimates that while there was some increase in internal migration between the late 1960s and early 1970s, there does not appear to have been an increase in the volume of internal migration since then. Overall the total volume of internal migration between local government regions has been static or at most experienced a very slight increase, taking account of limitations of the data. The decrease in total migration between 1976-81 and 1981-86 is largely due to a reduction in overseas out-migration. The lack of increase in internal migration reflects the changing age-structure of the population. The migration patterns of different age groups in the population are examined later in this section.

## Overseas and Internal Migration

Estimates of the levels of overseas and internal migration into and out of the regions in the late 1970s and the first half of the 1980s are given in Tables 12 and 13. Migration between local government regions accounted for around three-quarters of all moves into and out of the regions between 1981 and 1986, and a slightly higher proportion of inward moves between 1976 and 1981. In the case of out-migration in the late 1970s, movement to overseas destinations accounted for 35 percent of all outward moves — a result of the high levels of emigration from New Zealand during this period.

The major variations in migration flows during the two intercensal periods are to be found in the overseas components. All regions except Southland experienced an increase in the volume of overseas inward migration between 1981 and 1986 compared with the previous five years. Only Northland and Horowhenua had sizeable increases in the volume of internal in-migration; in 13 regions it is estimated that numbers of internal in-migrants actually fell during the period 1981-86 (see Table 12). In the case of out-migration flows, emigration declined in most regions between 1981 and 1986, especially from the metropolitan centres, while internal out-migration did not change so much (see Table 13).

The relative significance of overseas and internal migration in the inward and outward population flows for each region for the period 1981-86 is shown in Figure 10. Auckland stands out as a special case in terms of the significance of overseas sources for in-migrants and destinations for out-migrants (see Figure 10). Just under 45 percent of the people who were usually resident in Auckland in 1986 and had been living somewhere else in 1981, gave an overseas address as their former residence. An estimated 42 percent of the out-migrants from Auckland during the intercensal period had left the country.

In most regions more than 80 percent of the in-migrants had come from other regions in New Zealand (see Figure 10). Wellington (66 percent), Canterbury (72 percent), Taranaki (75 percent) and Nelson Bays (79 percent) were the only exceptions aside from Auckland (56 percent). In the case of Taranaki, migration of skilled labour from overseas to work on the large-scale energy projects in the early 1980s could account for the lower-than-average proportion of immigrants from local sources. The Nelson Bays case is not so easy to account for, although part of the explanation may lie with seasonal labour flows and New Zealanders returning from overseas to retire. The lower-than-average proportions of in-migrants from other parts of New Zealand in Canterbury and Wellington reflects the long-established metropolitan bias in destinations for overseas immigrants. The metropolitan regions have consistently absorbed large shares of the total overseas inward migrants over a long period (see Table 14).

Overseas countries as destinations tended to account for a higher proportion of the total out-migration flows from most regions between 1976 and 1986 than was the case with overseas countries as sources for in-migration flows (see Figure 10). The major exception is the West Coast where only 10 percent of all out-migrants between 1981 and 1986 are estimated to have gone overseas. The three major urban regions had the highest proportions of overseas emigrants in

**TABLE 11: MIGRATION COMPONENTS, NEW ZEALAND 1966-1986**

| Migration component | | Migration (000s) | | | |
|---|---|---|---|---|---|
| | | 1966-71 | 1971-76 | 1976-81 | 1981-86 |
| **Unadjusted census data** | | | | | |
| Internal[c] | 13 SAs[a] | 259.1 | 304.3 | 307.3 | 295.0 |
| | 22 LGRs[b] | – | 373.9 | 372.6 | 366.6 |
| Overseas inward | | 95.3 | 161.0 | 98.6 | 130.0 |
| Total inward | 13 SAs | 354.4 | 465.3 | 405.9 | 425.0 |
| | 22 LGRs | – | 534.9 | 471.2 | 496.6 |
| **Estimates[d]** | | | | | |
| Internal[c] | 13 SAs | – | 321.4 | 316.7 | – |
| | 22 LGRs | – | – | 386.2 | 382.4 |
| Overseas | inward | – | 169.3 | 101.8 | 134.8 |
| | outward | – | 73.5 | 205.0 | 135.0 |
| | total | – | 242.8 | 306.8 | 269.8 |
| Total in | 13 SAs | – | 490.6 | 420.3 | – |
| | 22 LGRs | – | – | 487.9 | 517.2 |
| Total out | 13 SAs | – | 394.8 | 523.5 | – |
| | 22 LGRs | – | – | 591.1 | 517.4 |
| Total movements[e] | 13 SAs | – | 885.5 | 943.8 | – |
| | 22 LGRs | – | – | 1,079.0 | 1,034.6 |
| Total individual migrants[c] | 13 SAs | – | 564.1 | 627.1 | – |
| | 22 LGRs | – | – | 692.9 | 652.2 |

a The thirteen Statistical Areas.

b Local Government Regions excluding persons resident on offshore islands and ships between 1971 and 1976, and including such persons, 1976-86.

c Individual migrants. At the national level the internal inward and internal outward migrants are the same.

d Estimates allow for persons resident on offshore islands and shipping, migrant deaths between censuses, non-specification of residence and census undercounting (see Appendix 2). Persons born between censuses are excluded.

e Total movements; internal migrants are counted twice.

their out-migration flows (see Figure 10). Auckland in particular, is a significant link in an international migration system which includes cities on the east coast of Australia and islands in Polynesia as important destinations for New Zealand residents.

Because the net internal migration values are commonly positive while net overseas migration is generally negative, it is difficult to compare directly their contributions to total net migration beyond noting that the latter has counterbalanced the former in many instances. However, in cases where direct comparisons are possible there are several instances where net overseas migration formed large percentages of the total during the two intercensal periods. The overseas component constituted more than a quarter of North Island net migration gain between 1981 and 1986 and one-third of the South Island net loss. A quarter of Auckland's total net increase during this period came from overseas migration, while in Tongariro, Waikato and Manawatu roughly 50, 60 and 76 percent respectively of the total net losses were to overseas destinations.

**TABLE 12: ESTIMATES OF MIGRATION INTO THE LOCAL GOVERNMENT REGIONS, 1976-81 AND 1981-86**

| Local Government Region | Migration into region from | | | |
|---|---|---|---|---|
| | Other parts of New Zealand | | Overseas countries | |
| | 1976-81 | 1981-86 | 1976-81 | 1981-86 |
| Northland | 17,820 | 20,530 | 2,620 | 5,020 |
| Auckland[a] | 68,140 | 65,930 | 39,430 | 52,640 |
| Thames Valley | 10,910 | 11,530 | 950 | 1,540 |
| Bay of Plenty | 30,680 | 30,120 | 4,260 | 6,120 |
| Waikato | 32,560 | 31,110 | 5,550 | 7,300 |
| Tongariro | 9,240 | 8,610 | 840 | 1,140 |
| East Cape | 7,300 | 7,010 | 950 | 1,140 |
| Hawke's Bay | 16,940 | 15,090 | 2,760 | 3,500 |
| Taranaki | 10,460 | 11,400 | 2,200 | 3,750 |
| Wanganui | 11,500 | 11,200 | 1,500 | 1,790 |
| Manawatu | 19,680 | 19,520 | 3,080 | 3,640 |
| Horowhenua | 10,350 | 12,050 | 1,050 | 1,670 |
| Wellington | 36,850 | 35,240 | 15,650 | 18,120 |
| Wairarapa | 5,440 | 5,510 | 630 | 820 |
| Nelson Bays | 9,900 | 9,560 | 1,770 | 2,560 |
| Marlborough | 6,500 | 6,890 | 670 | 920 |
| West Coast | 4,830 | 5,160 | 440 | 680 |
| Canterbury | 33,160 | 32,570 | 10,140 | 12,810 |
| Aorangi | 9,980 | 8,410 | 1,240 | 1,630 |
| Clutha-Central Otago | 8,700 | 9,240 | 930 | 1,230 |
| Coastal-North Otago | 15,020 | 16,250 | 3,110 | 4,160 |
| Southland | 9,710 | 8,230 | 1,910 | 1,740 |
| North Island | 287,840 | 284,850 | 81,450 | 108,180 |
| South Island | 97,820 | 96,310 | 20,200 | 25,730 |
| New Zealand[b] | 386,150 | 382,420 | 101,760 | 134,770 |

a Including Great Barrier Is, 1976-81.

b Including Chatham Is, extra county islands and shipping, 1976-86, and Great Barrier Is, 1981-86.

**TABLE 13: ESTIMATES OF MIGRATION FROM THE LOCAL GOVERNMENT REGIONS, 1976-81 AND 1981-86**

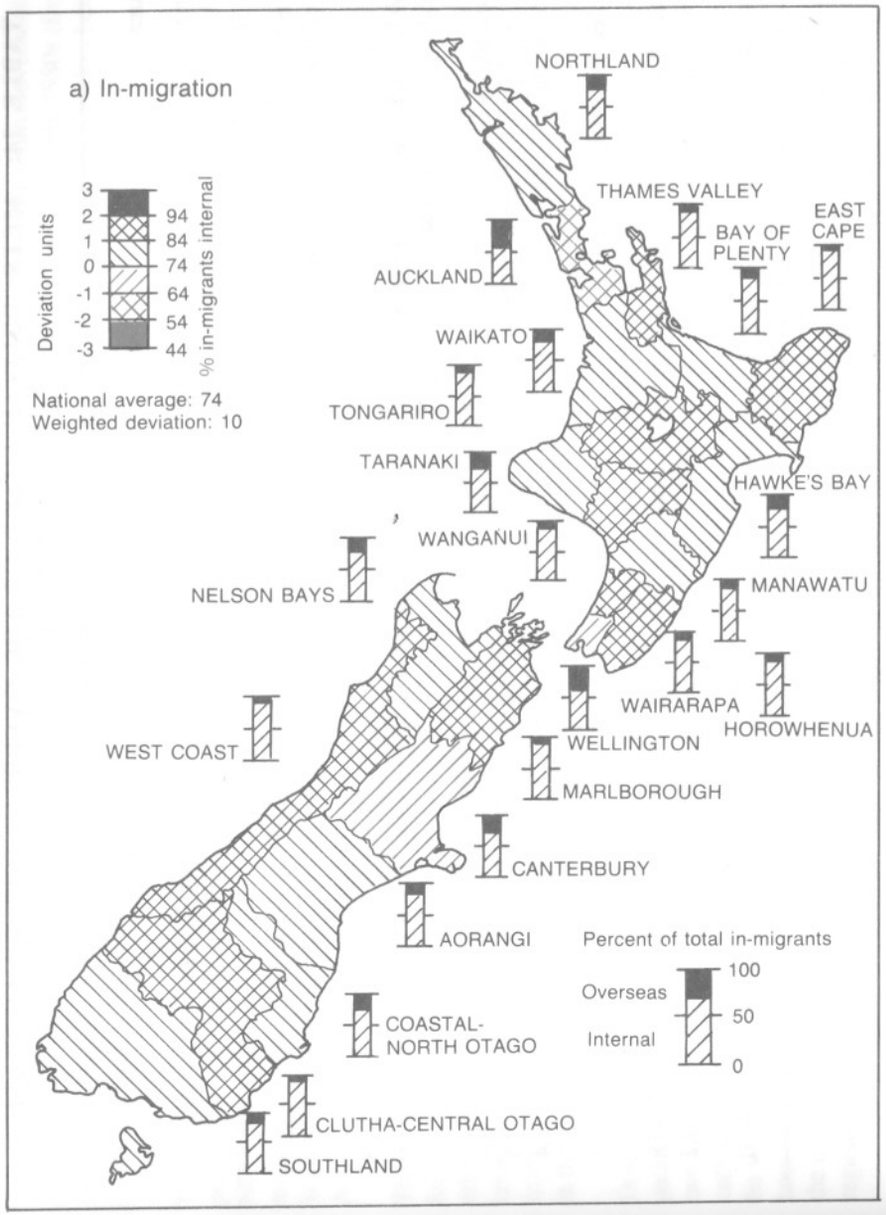
| Local Government Region | Migration from region to | | | |
|---|---|---|---|---|
| | Other parts of New Zealand | | Overseas countries | |
| | 1976-81 | 1981-86 | 1976-81 | 1981-86 |
| Northland | 15,320 | 14,890 | 5,540 | 4,740 |
| Auckland[a] | 51,000 | 53,900 | 61,810 | 39,440 |
| Thames Valley | 10,630 | 10,820 | 2,420 | 1,610 |
| Bay of Plenty | 23,020 | 24,130 | 10,350 | 7,190 |
| Waikato | 34,590 | 33,300 | 14,140 | 10,320 |
| Tongariro | 9,780 | 9,770 | 2,580 | 2,230 |
| East Cape | 8,560 | 8,640 | 1,800 | 1,910 |
| Hawke's Bay | 16,700 | 16,890 | 7,170 | 4,800 |
| Taranaki | 12,950 | 11,890 | 6,610 | 3,750 |
| Wanganui | 13,540 | 12,660 | 3,170 | 2,450 |
| Manawatu | 19,590 | 19,790 | 5,760 | 4,500 |
| Horowhenua | 9,180 | 8,650 | 2,500 | 2,010 |
| Wellington | 46,820 | 44,390 | 28,880 | 18,640 |
| Wairarapa | 7,620 | 6,780 | 1,780 | 1,210 |
| Nelson Bays | 8,170 | 8,400 | 3,300 | 2,560 |
| Marlborough | 6,140 | 6,380 | 1,760 | 1,030 |
| West Coast | 5,910 | 5,850 | 1,250 | 640 |
| Canterbury | 32,500 | 30,880 | 24,090 | 13,430 |
| Aorangi | 12,420 | 13,080 | 4,080 | 3,000 |
| Clutha-Central Otago | 8,080 | 8,160 | 2,000 | 1,920 |
| Coastal-North Otago | 19,680 | 18,420 | 9,360 | 3,970 |
| Southland | 13,450 | 14,010 | 4,860 | 3,810 |
| North Island | 279,280 | 276,490 | 154,500 | 104,790 |
| South Island | 106,340 | 105,160 | 50,700 | 30,370 |
| New Zealand[b] | 386,150 | 382,420 | 204,990 | 134,980 |

a Including Great Barrier Is, 1976-81.

b Including Chatham Is, extra county islands and shipping, 1976-86, and Great Barrier Is, 1981-86.

It is important to appreciate that overseas migration may work strongly against, or strongly in support of, net internal migration. During the period 1976-81 half of the regions gained population from internal migration but this was decisively cancelled out by net losses overseas in nearly every case. In the period 1981-86, on the other hand, when there was relatively little change in internal migration, nine of the regions had net migration gains because of a modest increase in immigration, and the halving of emigration nationally.

FIGURE 10: INTERNAL AND OVERSEAS MIGRATION TO AND FROM THE REGIONS, 1981-1986



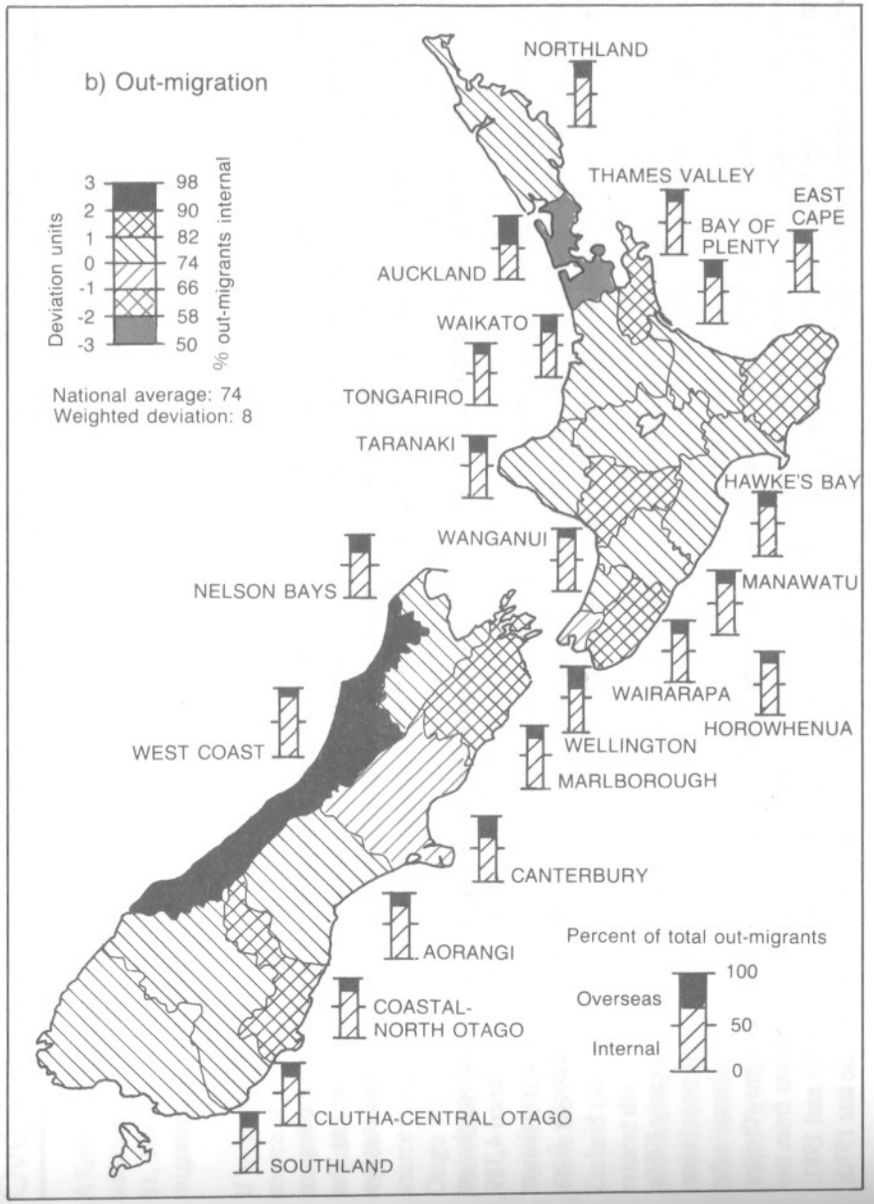



**TABLE 14: METROPOLITAN SHARE OF THE OVERSEAS INWARD MIGRATION, 1966-1986**

| Area | Intercensal period[a] | | | |
|---|---|---|---|---|
| | 1966-71 | 1971-76 | 1976-81 | 1981-86 |
| Auckland LGR | – | -- | 38.6 | 38.7 |
| Auckland Statistical Division | 38.7 | 41.0 | 38.6 | 38.8 |
| Wellington LGR | -- | -- | 15.3 | 13.3 |
| Wellington Statistical Division | – | 15.5 | 15.9 | 14.0 |
| Wellington Urban Area | 17.3 | 14.7 | 15.2 | 13.3 |
| Canterbury LGR | – | -- | 9.9 | 9.4 |
| Christchurch Statistical Division | – | 9.8 | 9.7 | 9.3 |
| Christchurch Urban Area | 9.1 | 9.1 | 8.8 | 8.4 |
| Three metropolitan areasa | 65.1 | 64.9 | 62.8 | 60.5 |
| North Island | 79.4 | 80.9 | 80.1 | 80.8 |
| South Island | 20.6 | 19.1 | 19.9 | 19.2 |
| New Zealand | 100.0 | 100.0 | 100.0 | 100.0 |

a Derived from unadjusted census data (see Appendix 2).

b The Auckland Statistical Division plus the Wellington and Christchurch Urban Areas.

## Internal Migration Flows

The population exchanges which occur between places during intercensal periods produce a much more complex pattern of flows into and out of the local government regions than is commonly appreciated. Expressions such as 'the drift north' and 'the increasing concentration of population in the Auckland region' obscure the fact that there is some migration between all pairs of regions in the country (see Appendix 4).

The flows between the main metropolitan regions serve as an illustration of the complexity of inter-regional population exchanges. Between 1981 and 1986 Auckland gained 10,167 migrants from Wellington which in turn gained 4,389 from Canterbury. Over the same period, however, Auckland contributed 6,030 migrants to Wellington's population which, in its turn, contributed 3,204 to Canterbury. In addition Auckland gained 5,427 migrants directly from Canterbury while 3,939 moved from Auckland to Canterbury over the same period.

The figures show that a degree of northward movement in the population did occur during the 1970s and early 1980s but, as noted earlier in relation to Figure 9, it is easy to exaggerate the scale and significance of a south-north population redistribution. The more rapid growth of population in the North Island does not result from any large imbalance in the north-south and south-north migration flows. Much more important in explaining variations in population growth rates between the two islands are differences in natural increase and overseas migration. The flow of migrants from the South Island to the North Island was actually smaller between 1981 and 1986 than it was between 1976 and 1981. However, the net movement to the North Island of 8,230 in the early 1980s was about 200 greater than in the late 1970s

because the flow from the North Island to the South Island also decreased (see Figure 9). The north-south movement of population across Cook Strait has decreased by about 10 percent between the early 1970s and the early 1980s (from 38,000 to 33,000), while the south-north flow has been remarkably stable at around 42,000 with the 1981-86 flow being the lowest since at least the late 1960s.

The principal conclusion that must be drawn from the inter-regional flows is that a large share of each region's population exchanges is with adjacent regions. For example, it can be seen from Appendix 4 that nearly half of Northland's outward migrants went to Auckland between 1981 and 1986, and a similar proportion of its inward migrants came from Auckland. Thames Valley exchanges large proportions of its migrants with Auckland, the Waikato and Bay of Plenty. The major exchanges in the case of Hawke's Bay are with Manawatu, Wellington and Auckland. Aorangi exchanges large numbers of migrants with Canterbury and Coastal-North Otago.

These more localised population movements between neighbouring regions are often overlooked when attention is focused on the growth of Auckland's population. It is important to appreciate that most migration to Auckland is from other northern North Island regions which, in combination, contributed many more migrants to Auckland's population between 1981 and 1986 than did the southern North Island, and almost as many as three times the number that came from the South Island. Northland alone contributed nearly as many migrants to Auckland as did the South Island both in the early 1970s and the late 1970s, and contributed a greater number between 1981 and 1986.

Despite the many changes that have occurred in regional populations and regional economies in recent years, the pattern of inter-regional migration flows appears to show a considerable degree of stability. This is demonstrated in two further matrices in Appendix 4 which show changes in the magnitude of inward and outward migration flows to each region between pairs of intercensal periods since 1971. A significant proportion of the changes are so small as to lie within the range of census random-rounding discrepancies, or to represent the product of moves by very few households per year. It would be unwise to extrapolate this observation too far into the future, but it further strengthens the interpretation that some of the public comment about recent increases in population re-distribution between some regions is exaggerated.

## Overseas Sources and Return Migration

A further dimension to the analysis of inter-regional migration can be added by including overseas sources as a notional additional region. In the case of in-migration to the local government regions in the last two intercensal periods (1976-81, 1981-86) data are available to isolate the sources of overseas migration and to assess the significance of return migration of New Zealanders from abroad in these movements.

If 'overseas' is treated as a notional 23rd region then between 1976 and 1981 it would have constituted the largest single source of migrants in the case of five regions (Auckland, Taranaki, Wellington, Canterbury, Coastal-North Otago), the second-largest in another nine regions, and the third-largest source in a further four regions. Because overseas migration formed a larger share of total population flows into all regions between 1981 and 1986, the overseas notional region assumes even greater significance in inter-regional flows. In the early 1980s overseas was the largest single source for ten regions, second-largest for a further eight and third-largest for three more (see Table 15). Clutha-Central Otago was the only region where three source regions within New Zealand contributed more in-migrants in the intercensal period than overseas sources (see Table 15).

Between 1981 and 1986 Australia was the main source of overseas in- migrants for all regions except Wellington, where the United Kingdom and Ireland contributed the largest share of migrants from a particular region outside New Zealand (see Table 16). Comparing Australia as a source of inward migrants with regions within New Zealand it is evident that it is the largest source for two regions (Auckland and Canterbury), and the second-largest for three more (Northland, Taranaki, and Nelson Bays). When the Pacific Islands and the United Kingdom and Ireland are taken into consideration as separate overseas sources as well, the ranking of in-migrant flows into Auckland between 1981 and 1986 becomes: Australia (13,812), United Kingdom and Ireland (11,667), Pacific Islands (11,124), Wellington (10,167), Waikato (9,501), Northland (7,557) and so on (see Table 16 and Appendix 4a).

**TABLE 15: MAJOR IN-MIGRANT FLOWS TO LOCAL GOVERNMENT REGIONS, 1981-86**

| Local Government | Overseas in-migration[a] | | Three largest flows from New Zealand source regions[b] | | |
|---|---|---|---|---|---|
| | No. | Rank order source | Largest | Second | Third |
| Northland | 4,800 | 2 | 9,258 | 2,058 | 1,161 |
| Auckland | 50,328 | 1 | 10,167 | 9,501 | 7,557 |
| Thames Valley | 1,476 | 3 | 3,360 | 3,171 | 1,356 |
| Bay of Plenty | 5,970 | 2 | 6,108 | 5,901 | 3,084 |
| Waikato | 7,002 | 2 | 7,032 | 4,500 | 3,432 |
| Tongariro | 1,089 | 3 | 1,413 | 1,329 | 816 |
| East Cape | 1,095 | 3 | 1,158 | 1,107 | 918 |
| Hawke's Bay | 3,357 | 1 | 2,550 | 1,911 | 1,809 |
| Taranaki | 3,618 | 1 | 1,878 | 1,419 | 1,416 |
| Wanganui | 1,707 | 1 | 1,599 | 1,503 | 1,500 |
| Manawatu | 3,492 | 1 | 3,003 | 2,070 | 2,058 |
| Horowhenua | 1,599 | 2 | 6,177 | 1,374 | 684 |
| Wellington | 17,340 | 1 | 6,030 | 4,389 | 2,778 |
| Wairarapa | 777 | 2 | 2,094 | 612 | 399 |
| Nelson Bays | 2,454 | 1 | 1,854 | 972 | 927 |
| Marlborough | 885 | 2 | 1,806 | 621 | 555 |
| West Coast | 633 | 2 | 1,758 | 570 | 378 |
| Canterbury | 12,261 | 1 | 4,509 | 3,939 | 3,522 |
| Aorangi | 1,572 | 2 | 2,562 | 1,386 | 957 |
| Clutha-Central Otago | 1,167 | 4 | 2,520 | 2,337 | 1,188 |
| Coastal-North Otago | 3,993 | 1 | 2,715 | 2,319 | 2,181 |
| Southland | 1,671 | 1 | 1,632 | 1,278 | 1,230 |

[a] Derived from unpublished census tables. Data subject to census random rounding discrepancies, and no adjustment has been made for migrant deaths or non-specification of residence.

[b] For details of the particular source regions see Appendix 4a.

Return migration of New Zealanders from abroad comprises a substantial proportion of the total overseas inward migration in recent years. Of the people living in New Zealand in 1981 who usually lived overseas in 1976, 37 percent had been born in New Zealand; in some South Island regions the proportion exceeded 50 percent. The importance of this return migration takes on added significance when it is appreciated that most of these New Zealanders had already left the country before the heavy net emigration of the late 1970s. One can therefore anticipate return migration of many who left between 1977 and 1981, but this will not appear in the statistics until the next intercensal period.

In fact there was an up-swing in return migration of New Zealanders during the early 1980s when 44 percent of all overseas in-migrants had been born in this country. In ten of the regions over 55 percent of the overseas inward migrants were New Zealand-born; in the East Cape the proportion reached 60 percent. If the return migration of New Zealanders who had been born in other countries were added, together with dependents born between the two censuses, the proportion of people with some ties to New Zealand going into all regions between 1981 and 1986 from overseas sources would be even higher. This could mean either that New Zealanders are returning to regions that they previously lived in, or alternatively are more ready to settle in one of the non-metropolitan regions than are 'new' immigrants.

**TABLE 16: OVERSEAS SOURCES OF IN-MIGRANTS TO THE LOCAL GOVERNMENT REGIONS, 1981-86**

| Local Government Region | Overseas source region[a] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Australia | | Pacific Islands | | UK and Ireland | | Other overseas | |
| Northland | 2,139 | *(67)* | 291 | *(62)* | 1,116 | *(27)* | 1,251 | *(33)* |
| Auckland | 13,812 | *(66)* | 11,124 | *(16)* | 11,667 | *(34)* | 13,725 | *(30)* |
| Thames Valley | 726 | *(74)* | 102 | *(71)* | 222 | *(43)* | 423 | *(32)* |
| Bay of Plenty | 2,769 | *(75)* | 501 | *(63)* | 1,215 | *(39)* | 1,482 | *(39)* |
| Waikato | 2,580 | *(73)* | 624 | *(41)* | 1,671 | *(36)* | 2,136 | *(33)* |
| Tongariro | 507 | *(70)* | 69 | *(52)* | 228 | *(41)* | 294 | *(47)* |
| East Cape | 498 | *(78)* | 123 | *(49)* | 231 | *(51)* | 243 | *(41)* |
| Hawke's Bay | 1,488 | *(77)* | 261 | *(46)* | 816 | *(45)* | 795 | *(36)* |
| Taranaki | 1,455 | *(76)* | 171 | *(63)* | 975 | *(34)* | 1,011 | *(33)* |
| Wanganui | 732 | *(71)* | 105 | *(46)* | 408 | *(39)* | 456 | *(57)* |
| Manawatu | 1,110 | *(70)* | 288 | *(35)* | 768 | *(38)* | 1,317 | *(31)* |
| Horowhenua | 507 | *(75)* | 144 | *(56)* | 516 | *(26)* | 429 | *(36)* |
| Wellington | 3,408 | *(67)* | 2,625 | *(22)* | 4,581 | *(38)* | 6,735 | *(28)* |
| Wairarapa | 330 | *(76)* | 42 | *(50)* | 189 | *(40)* | 222 | *(34)* |
| Nelson Bays | 1,050 | *(70)* | 132 | *(59)* | 474 | *(37)* | 813 | *(29)* |
| Marlborough | 444 | *(74)* | 42 | *(64)* | 198 | *(42)* | 207 | *(41)* |
| West Coast | 369 | *(68)* | 27 | *(78)* | 81 | *(44)* | 153 | *(35)* |
| Canterbury | 4,566 | *(71)* | 906 | *(35)* | 2,562 | *(43)* | 4,227 | *(33)* |
| Aorangi | 717 | *(75)* | 75 | *(56)* | 378 | *(45)* | 408 | *(43)* |
| Clutha-Central Otago | 510 | *(67)* | 75 | *(72)* | 237 | *(51)* | 342 | *(41)* |
| Coastal-North Otago | 1,281 | *(70)* | 348 | *(28)* | 1,035 | *(42)* | 1,326 | *(29)* |
| Southland | 666 | *(71)* | 165 | *(40)* | 429 | *(43)* | 402 | *(35)* |
| New Zealand[b] | 42,123 | *(70)* | 18,336 | *(24)* | 30,240 | *(37)* | 39,297 | *(31)* |

[a] Derived from unpublished census tables. Data subject to census random rounding discrepancies, and no adjustment has been made for migrant deaths or non-specification of residence. The figures given in italics in brackets are percentages born in New Zealand.

[b] Including Great Barrier Island, Chatham Islands, extra county islands, shipping and place of residence not specified.

Evidently Auckland and Wellington not only remain the regions of principal interest to overseas migrants in general, but this is even more the case with migrants born overseas (see Table 17). The mix of overseas-born immigrants and returning New Zealanders varies quite markedly across the regions, and this has implications for population growth trends.

It is interesting to note that when Australia as a source of inward migrants is considered separately, 70 percent of all people who were living in New Zealand in 1986 but were usually resident in Australia in 1981, had been born in New Zealand. Indeed less than 20 percent of the migrants from Australia were actually born there, and many of these were likely to be children of New Zealand-born parents (Bedford and Brown 1988). Even in the case of migrants from the Pacific Islands, nearly 25 percent had been born in New Zealand. While most of the Pacific Islanders born overseas tend to congregate in the larger metropolitan centres, this is less true of those who have previously lived in New Zealand. The latter either return to other regions in which they have previously lived, or are more ready (and able) to

settle in non-metropolitan regions because of their previous experience and possibly greater integration into the local communities through processes such as inter-marriage.

The significant flows of New Zealand-born people back into the country from overseas destinations in Australia and the Pacific Islands especially adds support to a suggestion that overseas-source regions have the potential to be stepping stones in sequences of internal migration. Thus emigration of a person or family from Coastal-North Otago to Australia in one period may become immigration into Auckland from Australia in another period. This sort of step-wise migration via overseas destinations may provide part of the explanation for the popular exaggeration of the 'drift north'. It is more likely, however, that most of this exaggeration results from insufficient recognition of the magnitude of counterbalancing flows, and from a simple attribution of all regional growth differentials to internal migration. As was pointed out earlier, this is not the case.

**TABLE 17: BIRTHPLACES OF OVERSEAS INWARD MIGRANTS, LOCAL GOVERNMENT REGIONS, 1981-86**

| Local Government Region | Proportion of in-migrants in each region | | | | |
|---|---|---|---|---|---|
| | Total in-migrants | NZ born | Aust. born | Born elswhere migrated from Pacific Is. | Born elswhere migrated from other countries |
| Northland | 3.7 | 4.1 | 5.3 | 0.7 | 3.8 |
| Auckland | 38.7 | 33.2 | 33.8 | 67.7 | 37.9 |
| Thames Valley | 1.1 | 1.5 | 1.5 | 0.2 | 1.0 |
| Bay of Plenty | 4.6 | 6.0 | 5.5 | 1.3 | 3.7 |
| Waikato | 5.4 | 6.0 | 6.0 | 2.6 | 5.3 |
| Tongariro | 0.8 | 1.1 | 1.3 | 0.2 | 0.6 |
| East Cape | 0.8 | 1.2 | 1.1 | 0.4 | 0.6 |
| Hawke's Bay | 2.6 | 3.3 | 2.9 | 1.0 | 2.1 |
| Taranaki | 2.8 | 3.3 | 2.9 | 0.4 | 2.8 |
| Wanganui | 1.3 | 1.7 | 1.8 | 0.4 | 1.0 |
| Manawatu | 2.7 | 2.8 | 2.9 | 1.3 | 3.0 |
| Horowhenua | 1.2 | 1.3 | 1.2 | 0.4 | 1.4 |
| Wellington | 13.3 | 11.2 | 9.5 | 14.8 | 16.0 |
| Wairarapa | 0.6 | 0.7 | 0.6 | 0.2 | 0.6 |
| Nelson Bays | 1.9 | 2.1 | 2.5 | 0.4 | 1.9 |
| Marlborough | 0.7 | 0.9 | 0.9 | 0.1 | 0.6 |
| West Coast | 0.5 | 0.6 | 1.0 | 0.0 | 0.3 |
| Canterbury | 9.4 | 10.6 | 10.7 | 4.2 | 9.3 |
| Aorangi | 1.2 | 1.6 | 1.5 | 0.2 | 1.0 |
| Clutha-Central Otago | 0.9 | 1.1 | 1.5 | 0.2 | 0.7 |
| Coastal-North Otago | 3.1 | 3.2 | 3.1 | 1.8 | 3.3 |
| Southland | 1.3 | 1.5 | 1.8 | 0.7 | 1.1 |
| Total NZ residents[a] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Total number | 129,990 | 57,360 | 8,991 | 13,746 | 49,893 |

[a] Including offshore islands, shipboard and unspecified residence.

## Migrant Age Profiles

Migrant populations tend to be characterised by distinctive age structures. Compared with residents, migrants tend to be concentrated in the youthful working-age groups, especially between 15 and 24 years old. Internal and international population flows between 1981 and 1986 are no exception: Table 18 shows that whereas 18 percent of the national population in 1981 was in this age group, 30 percent of all in-migrants and 35 percent of all out-migrants were aged between 15 and 24 years. The proportions of migrants at ages above 45 years were correspondingly much lower than the proportion in the resident population. The overseas outward migration component had a particularly high concentration in the late teens/early twenties age group: 47 percent of out-migrants between 1981 and 1986 were aged 15-24 compared with 30 percent of overseas inward migrants and 18 percent in the resident population.

**TABLE 18: AGE COMPOSITION OF MIGRANT POPULATIONS, 1981-86 AND THE POPULATION RESIDENT IN NEW ZEALAND, 1981**

| Population | Age group[a] (percentages) | | | | |
|---|---|---|---|---|---|
| | 0-14 | 15-24 | 25-44 | 45-64 | 65+ |
| **Residents, 1981** | | | | | |
| NZ population | 26.7 | 18.3 | 26.6 | 18.4 | 10.0 |
| **Estimated Migrants 1981-86** | | | | | |
| Internal[b] | 29.6 | 30.0 | 26.6 | 9.9 | 3.8 |
| Overseas inwards | 23.7 | 30.0 | 37.1 | 6.4 | 1.9 |
| Overseas outwards | 21.5 | 47.6 | 25.6 | 3.5 | 1.7 |
| Total inwards | 28.1 | 30.3 | 29.4 | 9.0 | 3.3 |
| Total outwards | 27.5 | 34.6 | 26.4 | 8.3 | 3.3 |

[a] The age groups for the resident population the migrants refer to age in 1981.

[b] Both inward and outward migrants - at the national level these are the same people.

Internal and international migration thus selectively modify regional population structures. The age composition of migrant flows into and out of the regions is more variable than is often appreciated. It is known that some regions are attracting elderly people for settlement after retirement while others are centres of attraction for youthful migrants seeking work. Table 19 illustrates the regional variations in the proportions of in-migrants and out-migrants aged 55 years and over, and between 15 and 24 years. The older population group includes those aged 55-59 because these people reached the qualifying age for national superannuation between 1981 and 1986.

The most conspicuous anomaly is Horowhenua where both in- and out- migration of older people is much more significant than the national average of 7 percent. Other regions with lower-than-average proportions of in-migrants in the youthful age group and higher proportions aged 55 years and over are Thames Valley, Bay of Plenty, Tongariro, Marlborough, and Aorangi. Regions with significantly higher-than-average proportions of their out-migrants aged 15-24 years are Manawatu (41 percent), Canterbury (41 percent) and Coastal-North Otago (41 percent). These are also regions where university students comprise a significant component of the migrant population.

**TABLE 19: ESTIMATED IN-MIGRANTS AND OUT-MIGRANTS AGED 15-24 AND 55+, LOCAL GOVERNMENT REGIONS, 1981-86**

| Local Government Region | Percentages of totals aged in 1981[a] | | | |
|---|---|---|---|---|
| | 15-24 | | 55+ | |
| | In-migrants | Out-migrants | In-migrants | Out-migrants |
| Northland | 25 | 32 | 8 | 9 |
| Auckland | 31 | 36 | 7 | 7 |
| Thames Valley | 24 | 29 | 13 | 10 |
| Bay of Plenty | 25 | 33 | 12 | 7 |
| Waikato | 31 | 34 | 7 | 6 |
| Tongariro | 28 | 28 | 10 | 7 |
| East Cape | 31 | 35 | 6 | 5 |
| Hawke's Bay | 29 | 35 | 8 | 6 |
| Taranaki | 31 | 33 | 5 | 6 |
| Wanganui | 32 | 33 | 6 | 5 |
| Manawatu | 33 | 41 | 6 | 6 |
| Horowhenua | 19 | 28 | 23 | 13 |
| Wellington | 36 | 32 | 4 | 10 |
| Wairarapa | 26 | 32 | 9 | 7 |
| Nelson Bays | 27 | 37 | 9 | 7 |
| Marlborough | 25 | 33 | 11 | 7 |
| West Coast | 30 | 29 | 6 | 8 |
| Canterbury | 32 | 41 | 6 | 6 |
| Aorangi | 28 | 32 | 10 | 5 |
| Clutha-Central Otago | 31 | 30 | 7 | 7 |
| Coastal-North Otago | 33 | 41 | 5 | 7 |
| Southland | 33 | 32 | 5 | 6 |
| North Island | 30 | 34 | 8 | 7 |
| South Island | 31 | 37 | 7 | 6 |
| New Zealand[b] | 30 | 35 | 7 | 7 |

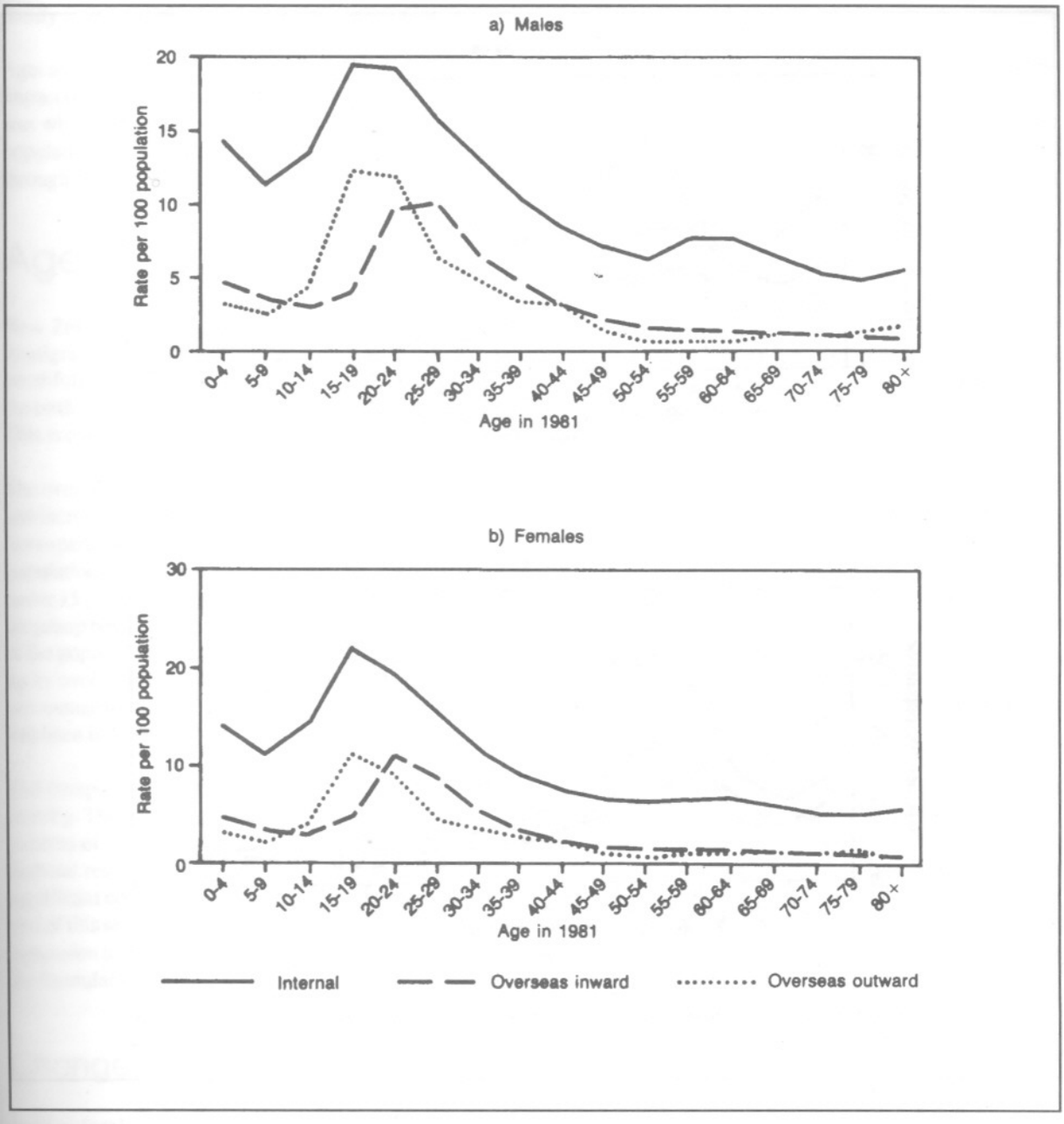
[a] Age groups refer to ages of migrants at the 1981 census. By 1986 the respective age groups were 20-29 years and 60+ years

[b] Including Great Barrier Is, Chatham Is, extra-country islands and shipping.

To establish more precisely the actual propensity of people to migrate it is necessary to examine migration rates by age and sex for the different migrant groups. The method by which these rates were calculated is explained in Appendix 2. There are distinct contrasts between the age-sex structures of different migration streams (see Figure 11). Inwards and outwards overseas migration is even more concentrated in the young-adult age groups than is internal migration. Otherwise the overseas migration profiles follow a similar shape to the internal migrants. The overseas outward profile has the same peak around ages 15-19 as the internal migrants, whereas the overseas inwards migration profile has a later peak around ages 20-24 years. A particular explanation is suggested for this difference: a significant proportion of the overseas inwards migrants between 1981 and 1986 is likely to be the overseas outwards migrants of the late 1970s.

The migrant age-sex profiles for individual regions follow broadly similar shapes to the national pattern, although there are some significant regional variations. Profiles for a selection of regions have been compiled and these are reproduced in graphical form in Appendix 5. A composite picture of the internal migration flows into four regions is

**FIGURE 11: MIGRATION RATES BY AGE, INTERNAL AND OVERSEAS MIGRANTS, NEW ZEALAND 1981-1986.**




given in Figure 12 to illustrate the sorts of variations that can be found. The most variable age-specific patterns emerge for internal inward flows, especially in the case of regions which are the destinations for retirement migrants. The four regions are:

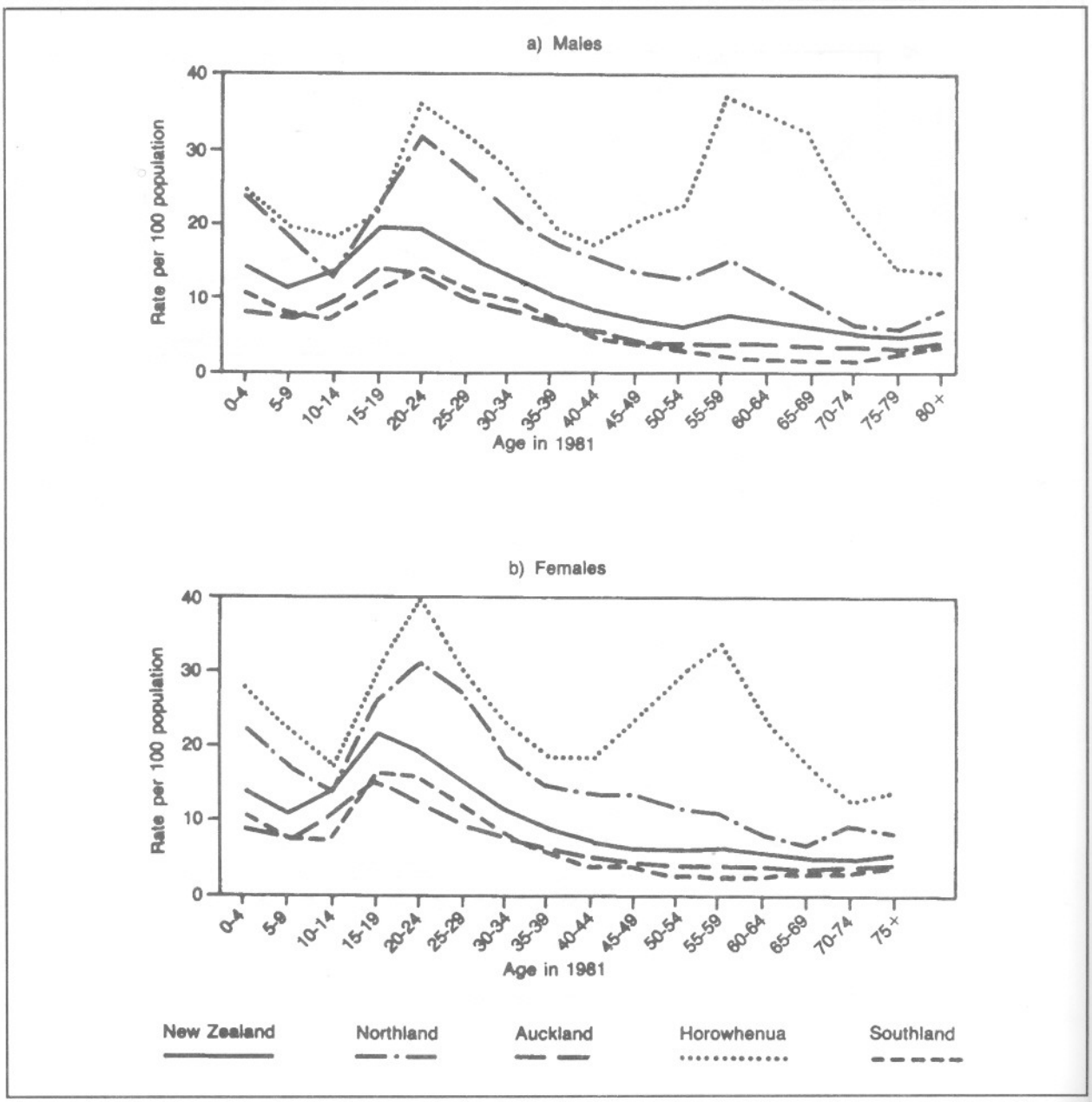
a) Horowhenua, with the highest positive net migration rate between 1981 and 1986, and characterised by particularly high retirement migration

b) Northland, with the second-highest positive net migration rate between 1981 and 1986

c) Auckland, with the largest regional population and the largest internal and overseas migration flows

d) Southland, with the highest negative net migration rate between 1981 and 1986.

**FIGURE 12: INTERNAL INWARDS MIGRATION RATES BY AGE, FOUR REGIONS COMPARED 1981-1986.**




When interpreting graphs showing migration rates by age and sex it should be kept in mind that the patterns reflect a common sequence of life-cycle changes. The relatively higher incidence of migration in late-teenage and young-adult age groups reflects the prevalence of people leaving their parental homes in search of education and employment, followed by household and family formation. Migration rates decline in middle and older working-age groups, falling to their lowest levels after a minor secondary peak around the most common workforce retirement age. A less marked retirement-age peak is shown in the migration rates for women because it is commonly the male spouse's retirement that is decisive, and females show a wider spread of ages at this stage.

The migration rates of intermediate- and secondary-age children are conspicuously lower than those for pre-school children on the one hand and late- teenage children on the other. It is common to hear parents rationalise decisions not

to move house in order to avoid disruption to their children's schooling. It should also be noted that the period when children are at primary and secondary school is also often the stage when a parent's career is consolidating, and the family is more settled in a particular community.

Age- and sex-selective migration will obviously have an impact on the age-sex structures of regional populations. The impact of migration on population composition in the regions is even more significant in an era of low fertility than it was when birth rates were high. Thus, while natural increase generally contributes the largest share of growth in population in all regions, migration either supplements this through net gains, or reduces the impact of natural increase through net migration losses.

# Age-Sex Composition

New Zealand has long had a relatively young population compared with most developed countries. Large-scale immigration of young adults and a high birth rate through most of its modern history have combined to maintain this youthfulness. A decrease in the size and consistency of net gains from migration, however, and a persistent decline in the birth rate since the early 1960s, have produced unmistakable signs of incipient long-term ageing of the population. This is consistent with the experience of most countries of Western Europe and North America.

The overall impact of these changes is apparent in a falling proportion of the population which is under 15 years of age, and increases at older ages. From 1976 the impact of ageing has been most conspicuous in the child population which has experienced both a relative and an absolute reduction in its share of the total. In 1976 30 percent of the New Zealand population was under 15 years of age. By 1986 this proportion had fallen to 24 percent. Actual numbers of people aged under 15 years actually fell by almost 132,000 during this decade. Increases in the working-age population, especially the group between 25 to 44 years of age, offset these declines in the child share of the total. In 1976 just under 25 percent of the population was in the 25 to 44 year age group; by 1986 the proportion had risen to 29 percent and numbers were up by over 150,000. The proportion of elderly people in the population (65 years and over) did not increase much in percentage terms over the decade (9 percent to 10.6 percent) but numbers were almost 67,000 higher by 1986 than they had been in 1976.

The composition of the New Zealand population is the sum of many different age-sex structures throughout the country. The age composition of populations in the local government regions is examined here in two contexts. First, patterns of change between 1981 and 1986 are identified and several indices of age-sex structure for the 1986 New Zealand resident population in the regions are reviewed. Where Maori and Pacific Island Polynesians comprise a significant component of a region's population, the age-sex composition is likely to be more youthful. In the second part of this section, selected characteristics of the age-sex structure of these two ethnic groups are assessed. The ethnic dimension to population composition at the regional level has significance both for future demographic change and for the formulation of relevant social policy.

## Changes in Age Composition

In every local government region there has been a trend towards an older population since 1981, but the shifts have been uneven. Table 20 summarises the major percentage changes between 1981 and 1986 in five broad functional age groups: youthful dependents (0-14 years), workforce-entrant cohorts (15-24 years), the adult labour force (two age groups: 24-44 and 45-64 years), and the elderly population (65 years and over).

The two most striking trends are the absolute decline in numbers of children in all regions except Northland and the significant increases in numbers aged 25-44 years in most of the local government regions. In the case of the child component in the population, three regions experienced declines by over 10 percent: Tongariro, Aorangi and Southland. In all three, falling fertility was augmented by significant net emigration of young families. Indirect evidence for the latter comes from the fact that these three regions also had the smallest percentage increases in population aged between 25 and 44 years. While there was an increase of just under 13 percent in the national population in this age group, in Tongariro the increase was 6.8 percent, in Aorangi 0.8 percent and in Southland 2.9 percent (see Table 20).

**TABLE 20: CHANGES IN AGE COMPOSITION, LOCAL GOVERNMENT REGIONS, 1981-86**

| Local Government Region | Percentage change in numbers in age group | | | | |
|---|---|---|---|---|---|
| | 0-14 | 15-24 | 25-44 | 45-64 | 65+ |
| Northland | 0.9 | 5.4 | 21.2 | 9.3 | 8.7 |
| Auckland | -4.6 | 6.5 | 14.2 | 5.2 | 8.8 |
| Thames Valley | -1.2 | 0.3 | 14.6 | 9.5 | 13.8 |
| Bay of Plenty | -3.6 | 2.5 | 15.2 | 8.6 | 21.3 |
| Waikato | -7.7 | -1.6 | 9.9 | 3.6 | 12.0 |
| Tongariro | -10.6 | -8.4 | 6.8 | 6.1 | 15.9 |
| East Cape | -5.6 | -6.6 | 11.5 | 0.7 | 5.9 |
| Hawke's Bay | -6.6 | -2.9 | 10.5 | 2.5 | 6.3 |
| Taranaki | -4.2 | 0.1 | 14.5 | -0.8 | 6.7 |
| Wanganui | -6.1 | -5.2 | 10.5 | -0.9 | 4.3 |
| Manawatu | -5.7 | -3.3 | 10.7 | 1.3 | 7.1 |
| Horowhenua | -2.1 | 4.0 | 14.3 | 9.5 | 17.2 |
| Wellington | -8.7 | 0.8 | 9.6 | -1.1 | 2.9 |
| Wairarapa | -6.7 | -9.9 | 7.5 | 0.7 | 9.0 |
| Nelson Bays | -6.4 | 0.4 | 14.5 | 2.0 | 9.8 |
| Marlborough | -7.0 | -12.8 | 7.4 | 2.9 | 9.5 |
| West Coast | -9.5 | -3.6 | 9.5 | -4.8 | -0.5 |
| Canterbury | -8.3 | -0.7 | 11.6 | 0.8 | 9.6 |
| Aorangi | -15.7 | -9.7 | 0.8 | -3.2 | 7.0 |
| Clutha-Central Otago | -7.6 | -0.4 | 12.4 | 3.4 | -1.9 |
| Coastal-North Otago | -8.7 | -4.1 | 9.3 | -5.0 | 0.6 |
| Southland | -10.6 | -9.3 | 2.9 | -4.3 | 0.6 |
| North Island | -5.4 | 1.9 | 12.8 | 3.9 | 9.2 |
| South Island | -9.3 | -3.7 | 9.0 | -1.1 | 5.8 |
| New Zealand[a] | -6.3 | 0.4 | 11.8 | 2.5 | 8.2 |

[a] Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

The labour-force-entrant cohorts aged 15 to 24 years experienced their greatest declines in Marlborough and Wairarapa. In the case of Marlborough, the short-term residence of armed forces personnel in 1981 explains most of the fall in numbers. It is worth noting that in all South Island regions except Nelson Bays there was an absolute decline in numbers aged between 15 and 24. Aorangi and Southland both experienced falls by over nine percent, and Tongariro was not far behind (8.4 percent) (see Table 20). The major growth in size of this component occurred in Auckland and Northland, with smaller increases in Bay of Plenty and Waikato.

As far as the population aged 45 years and over is concerned, Thames Valley (23 percent), Bay of Plenty (30 percent), Tongariro (22 percent) and Horowhenua (27 percent) are the only regions where numbers increased by more than 20 percent over the 1981 total. These four regions are all recognised retirement centres, and the greater part of their increases came from people aged 65 years and over (see Table 20). In two regions the absolute number of old people actually declined: Aorangi and West Coast, both areas with histories of extensive net emigration.

In summary it can be noted that the only region to experience absolute increases in numbers in all five age groups between 1981 and 1986 was Northland, and the growth in the child population was very small (see Table 20). At the other extreme, the West Coast was the only region to experience declines in numbers in four of the five age groups; the increase was in the post-war baby-boom cohorts aged 25-44 years (see Table 20). Aorangi, Coastal-North Otago and Southland came close to replicating the West Coast pattern. There is a clear division between those regions in the southern part of the South Island and those north of Tongariro (plus Horowhenua) in the patterns of change in age-sex composition. These inter-regional variations will increase as time progresses, largely because of the impact of age-sex specific migration between the regions.

## Characteristics of Age Structure 1986

A useful summary measure of age composition is provided by the median age of the population. In 1986 all the regions of the South Island, except Southland, had populations with higher median ages than that of the country as a whole (see Table 21). In the case of Southland, immigrant Maori and Pacific Island Polynesian workers at Bluff and in the meat-processing industry had reduced the median age to a level more commonly found in the North Island. In general, North Island regions had younger median ages, especially in Waikato, East Cape and Manawatu. However, it is evident from Table 21 that the oldest regional population, Horowhenua, was also in the North Island. Retirement migration has had a significant impact on the median age in this region as well as in Thames Valley.

There is usually a close relationship between median age and the proportion of the population which is in the age group 0-14 years, the children. Thus, in 1986 the older South Island populations, other than Southland, had less than 25 percent of their populations in this child category (see Table 21). Four of the five regions with major metropolitan centres also had lower-than-average proportions of children in their populations; only Waikato had more than 25 percent in the 0-14 age group, again largely a function of the relative significance of the Maori component in this region. The child component was largest in those regions with either a high proportion of Maori (Northland, East Cape, Tongariro), or where migration to other regions (or overseas) had distorted the age-sex structure (Wairarapa).

The greatest concentrations of working-age adults (15-64 years of age) occur in Auckland, Wellington and Canterbury (see Table 22). Almost half of the country's working-age adults (48 percent) live in these three metropolitan local government regions. When Coastal-North Otago and Waikato are included, the proportion of the New Zealand population aged 15-64 years resident in the metropolitan regions rises to 60 percent. This compares with a 58 percent share of New Zealand's total population, and a 56 percent share of the country's children. By contrast, a large part of the central North Island and Northland had shares of working-age adults below the national average of 65.2, with Thames Valley (61.9), Wairarapa (61.6) and Horowhenua (59.2) having the smallest proportions of all regions (Table 22). These differences were mainly due to either augmentation of the older age group (65 years and over) through retirement migration into Thames Valley and Horowhenua, or to out-migration of adults (Wairarapa).

Within the working-age population there are some important regional differences in the relative concentrations in particular age groups (see Table 22). For example, the large proportion of the population aged 15-24 in Wellington comprises higher proportions of young (15-24) and middle order (25-44) age groups than either Auckland or Canterbury. Canterbury has a greater concentration at the 45-64 year age group than any of the other metropolitan regions. Coastal-North Otago and Waikato have the highest proportions of young adults (15-24) for the metropolitan regions, mainly as a result of the relative significance of students in tertiary institutions in Dunedin and Hamilton (see Table 22). Manawatu also stands out because of the impact of the student population at Massey University on the proportion of this region's population aged 15-24. By contrast, many of the regions which have substantial elderly populations also have disproportionate numbers at the older working ages (45-64), notably Thames Valley, Horowhenua, Nelson Bays, Marlborough and Aorangi.

The region with the largest proportion of elderly (people 65 years and over) in its resident population is Horowhenua (see Table 23). The significance of retirement migration has already been mentioned several times; in addition to Horowhenua, Aorangi and Thames Valley, Nelson Bays and Marlborough also had over 12 percent of their residents aged 65 years and over. The only other region in this category was Coastal-North Otago, and the higher-than-average elderly component was due, in large measure, to out-migration of people in the working age groups. Although three of the five metropolitan regions were relatively under-represented in terms of proportions aged 65 years and over, these regions were the home of 57 percent of the country's aged population. Horowhenua, Aorangi and Thames Valley, with

**TABLE 21: MEDIAN AGE AND THE CHILD COMPONENT OF REGIONAL POPULATIONS, 1986**

| Local Government Region | Median age[a] | Percentage of population aged 0-14 |
|---|---|---|
| Northland | 29.5 | 27.2 |
| Auckland | 30.0 | 23.5 |
| Thames Valley | 31.5 | 25.8 |
| Bay of Plenty | 29.5 | 26.4 |
| Waikato | 27.3 | 26.8 |
| Tongariro | 28.4 | 27.4 |
| East Cape | 28.2 | 28.2 |
| Hawke's Bay | 29.3 | 26.9 |
| Taranaki | 28.9 | 26.6 |
| Wanganui | 28.7 | 25.9 |
| Manawatu | 28.1 | 24.2 |
| Horowhenua | 34.5 | 23.9 |
| Wellington | 29.1 | 23.1 |
| Wairarapa | 29.5 | 27.8 |
| Nelson Bays | 32.0 | 22.9 |
| Marlborough | 32.1 | 23.7 |
| West Coast | 31.2 | 23.6 |
| Canterbury | 31.3 | 21.6 |
| Aorangi | 32.3 | 23.7 |
| Clutha-Central Otago | 30.3 | 24.8 |
| Coastal-North Otago | 30.5 | 21.8 |
| Southland | 28.7 | 26.5 |
| North Island | 29.4 | 24.9 |
| South Island | 30.9 | 22.9 |
| New Zealand[b] | 29.8 | 24.4 |

[a] Age at which the population is split into two equal groups, with half above the median age and half below the median.

[b] Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

disproportionately large shares of elderly in their age structures, were the locations of only 8 percent of New Zealand's population aged 65 years and over.

## Dependency Ratios and Ageing

Age structure has important implications for social and economic planning at the regional level. One useful indicator in this regard is the ratio of children and elderly people in the population to those in the working-age groups (usually defined as 15 to 64 years of age). This 'demographic dependency' ratio does not provide a precise measure of dependency in a population because some of the people in the working-age groups are not economically active and some of the elderly, especially those between 60 and 70 years of age, are still working. However, the ratio does provide a crude index of the potential dependency burden as it occurs, region by region, throughout the country. The actual ratio

**TABLE 22: THE WORKING AGE COMPONENTS OF REGIONAL POPULATIONS, 1986**

| Local Government Region | Percentage of population aged 15-24 | 25-44 | 45-64 | 15-64 |
|---|---|---|---|---|
| Northland | 15.8 | 28.6 | 18.9 | 63.3 |
| Auckland | 18.3 | 29.8 | 18.2 | 66.3 |
| Thames Valley | 14.5 | 27.3 | 20.1 | 61.9 |
| Bay of Plenty | 16.5 | 28.0 | 18.7 | 63.2 |
| Waikato | 19.5 | 28.7 | 16.8 | 64.9 |
| Tongariro | 16.8 | 29.5 | 18.0 | 64.4 |
| East Cape | 16.6 | 27.8 | 17.8 | 62.2 |
| Hawke's Bay | 16.5 | 28.0 | 18.0 | 62.5 |
| Taranaki | 17.0 | 28.4 | 17.4 | 62.8 |
| Wanganui | 17.7 | 27.5 | 17.5 | 62.7 |
| Manawatu | 20.7 | 27.5 | 17.3 | 65.4 |
| Horowhenua | 14.1 | 24.8 | 20.3 | 59.2 |
| Wellington | 19.4 | 30.9 | 17.9 | 68.2 |
| Wairarapa | 15.4 | 27.8 | 18.4 | 61.6 |
| Nelson Bays | 16.6 | 28.9 | 19.4 | 64.9 |
| Marlborough | 15.6 | 28.5 | 20.1 | 64.2 |
| West Coast | 16.2 | 29.9 | 19.0 | 65.1 |
| Canterbury | 18.4 | 28.7 | 19.4 | 66.5 |
| Aorangi | 15.6 | 27.6 | 20.1 | 63.2 |
| Clutha-Central Otago | 16.0 | 30.1 | 18.6 | 65.7 |
| Coastal-North Otago | 19.6 | 27.1 | 18.8 | 65.5 |
| Southland | 17.2 | 28.8 | 18.0 | 64.0 |
| North Island | 17.9 | 29.1 | 18.0 | 65.1 |
| South Island | 17.7 | 28.5 | 19.2 | 65.4 |
| New Zealand[a] | 17.9 | 28.9 | 18.4 | 65.2 |

[a] Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

of non-working to the working population (economic dependency) is discussed in the section on labour supply and employment.

Regions of high demographic dependency are concentrated in the North Island (see Table 23). Those with the highest dependency ratios (Horowhenua, Wairarapa and Thames Valley) not only have marked concentrations in the child and elderly age groups, but also a substantial deficit of working-age adults. This combination accentuates the imbalance in age composition. Other North Island regions with high ratios are East Cape, Hawke's Bay, Wanganui and Taranaki. No region in the South Island has a dependency ratio as high as those cited above, although five of the eight South Island regions have ratios above the national average (see Table 23).

The low dependency ratios are found in Auckland, Wellington (the lowest) and Canterbury. This is mainly a reflection of the large working populations in the three main metropolitan areas which provide job opportunities, especially for younger adults. Wellington appears as an exception on most measures of age composition because Horowhenua fulfils a complementary role by attracting large numbers of older people, often on retirement, from the city. A combination of the two regions, in which the much larger Wellington population inevitably predominates, produces a more balanced age structure. However, the dependency ratio (494 per thousand working-age adults) for the combined region is still clearly below the national average of 535.

**TABLE 23: THE ELDERLY POPULATION AND MEASURES OF DEPENDENCY AND AGEING, LOCAL GOVERNMENT REGIONS, 1986**

| Local Government Region | Percentage of population aged 65 yrs and over | Demographic Dependency ratio[a] (per 1000) | Index of ageing[b] (per 1000) |
|---|---|---|---|
| Northland | 9.5 | 579 | 348 |
| Auckland | 10.3 | 509 | 436 |
| Thames Valley | 12.3 | 615 | 475 |
| Bay of Plenty | 10.4 | 584 | 394 |
| Waikato | 8.3 | 540 | 309 |
| Tongariro | 8.3 | 554 | 303 |
| East Cape | 9.6 | 608 | 340 |
| Hawke's Bay | 10.6 | 600 | 396 |
| Taranaki | 10.6 | 592 | 396 |
| Wanganui | 11.3 | 594 | 437 |
| Manawatu | 10.4 | 529 | 428 |
| Horowhenua | 16.8 | 688 | 704 |
| Wellington | 8.7 | 466 | 377 |
| Wairarapa | 10.7 | 624 | 383 |
| Nelson Bays | 12.2 | 542 | 534 |
| Marlborough | 12.2 | 559 | 514 |
| West Coast | 11.4 | 538 | 484 |
| Canterbury | 11.9 | 503 | 552 |
| Aorangi | 13.1 | 584 | 553 |
| Clutha-Central Otago | 9.5 | 522 | 386 |
| Coastal-North Otago | 12.7 | 527 | 580 |
| Southland | 9.5 | 563 | 360 |
| North Island | 10.1 | 537 | 404 |
| South Island | 11.7 | 529 | 513 |
| New Zealand[c] | 10.5 | 535 | 430 |

a The number of children (0-14) and elderly people (65+) per 1000 people aged 15-64 years.

b The number of elderly people (65+) per 1000 children (0-14).

c Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

The nature of demographic dependency is identified using another simple index which expresses the number of people aged 65 years or more per 1000 children in the population. This index of ageing takes no account of the size of the working-age groups. It must be recognised that throughout New Zealand children comprise the majority of dependents and that on average there are fewer than 500 elderly people for every 1000 children (see Table 23). Even in the most extreme case on the scale of the local government regions there are still only just over 700 elderly people for every 1000 children.

Examination of the index of ageing by region reveals that the high dependency ratios in the North Island are the result of widely differing combinations of aged and children in the population. Horowhenua has a quite exceptional concentration of the elderly with 704 aged persons for every thousand children (see Table 23). Thames Valley also has

a larger elderly dependency component than the national average, but the dependency ratios for the East Cape, Hawke's Bay and Wairarapa are high because of the large child component.

The index of ageing is equally informative for regions where the overall dependency ratio is unexceptional because it indicates whether youthful or elderly components are predominant. For example, dependency ratios in the South Island, although above the national average, are not exceptionally high (see Table 23). However, in all regions except Clutha-Central Otago and Southland, indices of ageing exceeded not only the national average, but also the relevant index for every region except Horowhenua in the North Island. This is significant because public costs of support for the aged are generally substantially higher than those of children, and aged populations make notably different demands on social services, voluntary workers and public amenities.

Regional variations in the index of ageing in 1986 are mapped in Figure 13 in association with the population pyramids for the local government regions. Three regions stand out as having indices of ageing which are at least two deviation units from the national average: Horowhenua, Aorangi and Coastal-North Otago. Most of the North Island regions, together with Clutha-Central Otago and Southland, have indices which are below the national average; their populations of children are more numerous in relation to the older age groups.

The population pyramids in Figure 13 encapsulate most of the points already made about regional population structures. The relative significance of five functional age groups in each region's population is clearly indicated. Youthful dependents (0-14 years) are much more significant in proportional terms in those regions with low indices of ageing. The ages 15-24 cover three major groups of people: those at secondary school; those attending tertiary education institutions, or the workforce-entry cohorts. This age group is especially prominent in the metropolitan regions with their concentrations of employment opportunities and universities, and Manawatu where tertiary students largely account for the bulge. In the case of the adult labour force (two groups, 25-44 and 45-64) there is usually a bulge in the young group whose members were born in the late 1950s at the peak of the post-war baby boom. The only region where this is conspicuously absent in the pyramid is Horowhenua. The older workforce cohorts (45-64) comprise a relatively uniform group across the pyramids. Again the main exception is Horowhenua where there is a definite bulge around ages 55-64 (see Figure 13).

## Age Composition and Ethnicity

The population composition of the Maori helps to explain some of the variation in dependency ratios, the index of ageing and the population pyramids shown in Figure 13. Figure 14 portrays the pyramids for this population by region and the associated index of ageing. It is quite obvious from the shape of the pyramids that where Maori comprise a significant share of a region's population, the age composition for the New Zealand resident total in the region will be younger, and the index of ageing lower. The Pacific Island Polynesian population, which also has a youthful age structure, has a much less obvious impact on regional population composition because this component is usually very small in proportional terms.

The most obvious characteristic of Maori and Pacific Island Polynesian populations is their youthful age structures. In 1986 almost 40 percent of the relevant descent populations were under 15 years of age for both groups, compared with 24 percent for the New Zealand resident population (see Table 24). Higher proportions are also in the labour-force-entrant cohorts between 15 and 24 years of age, especially in the five regions with metropolitan centres. The elderly population, on the other hand, is proportionately much smaller for both Maori and Pacific Island Polynesians than for the total New Zealand resident population (see Table 24). The net effect of the high proportions of children and small elderly components is to produce larger dependency ratios and much lower indices of ageing than are found in the national population.

The significance of the youthful Maori (and Pacific Island Polynesian) population for demographic change in the regions is that this component will grow much more rapidly over the next 30 years than the non-Maori population. While they vary somewhat in detail, the Maori population pyramids for all regions have high growth potential (see Figure 14). However, only in a few regions in the North Island will this growth have much impact on the composition of the total population. In 15 of the 22 local government regions less than 12.4 percent of the resident population is Maori (the national average), and only in four (Northland, Bay of Plenty, Tongariro and East Cape) does the proportion of Maori exceed 20 percent. The most important determinant of change in population composition in all regions will be ageing of the Pakeha population. Other factors, however, such as empowerment of iwi as planning and service delivery

**TABLE 24: SOME INDICES OF AGE STRUCTURE, MAORI DESCENT POPULATION, 1986**

| Local Government Region | Percentage of population aged | | | Demographic dependency ratio[a] (per 1000) | Index of ageing[b] (per 1000) | Percentage of region's population Maori descent |
|---|---|---|---|---|---|---|
| | 0-14 | 15-24 | 65+ | | | |
| Northland | 38.7 | 20.0 | 4.1 | 748 | 105 | 24.6 |
| Auckland | 38.4 | 24.9 | 1.7 | 669 | 45 | 11.4 |
| Thames Valley | 40.6 | 20.2 | 3.0 | 774 | 75 | 10.9 |
| Bay of Plenty | 39.1 | 21.6 | 2.6 | 716 | 67 | 23.9 |
| Waikato | 39.7 | 23.0 | 2.1 | 718 | 53 | 17.8 |
| Tongariro | 39.0 | 22.4 | 2.3 | 704 | 59 | 28.4 |
| East Cape | 36.9 | 20.9 | 4.0 | 693 | 108 | 38.2 |
| Hawke's Bay | 40.8 | 21.5 | 2.5 | 763 | 61 | 19.7 |
| Taranaki | 40.0 | 22.4 | 2.9 | 749 | 72 | 11.3 |
| Wanganui | 39.7 | 22.8 | 2.6 | 732 | 66 | 18.2 |
| Manawatu | 41.0 | 25.0 | 1.8 | 749 | 44 | 10.4 |
| Horowhenua | 40.3 | 21.9 | 3.0 | 765 | 76 | 11.1 |
| Wellington | 37.7 | 25.4 | 1.3 | 641 | 36 | 10.5 |
| Wairarapa | 41.9 | 22.0 | 2.2 | 789 | 52 | 11.9 |
| Nelson Bays | 37.7 | 25.3 | 2.3 | 665 | 61 | 4.4 |
| Marlborough | 39.8 | 22.6 | 2.8 | 744 | 70 | 7.2 |
| West Coast | 38.0 | 24.3 | 2.7 | 685 | 70 | 5.7 |
| Canterbury | 38.7 | 24.9 | 1.8 | 680 | 46 | 4.9 |
| Aorangi | 40.3 | 22.3 | 2.9 | 761 | 71 | 3.3 |
| Clutha-Central Otago | 37.0 | 25.6 | 1.3 | 620 | 34 | 4.7 |
| Coastal-North Otago | 37.7 | 26.9 | 2.5 | 674 | 66 | 3.5 |
| Southland | 41.1 | 22.3 | 1.7 | 748 | 40 | 8.4 |
| North Island | 39.0 | 23.1 | 2.4 | 705 | 61 | 15.0 |
| South Island | 39.0 | 24.3 | 2.0 | 694 | 51 | 5.0 |
| New Zealand Maori[c] | 39.0 | 23.2 | 2.3 | 704 | 60 | 12.4 |
| Pacific Island Polynesian | 39.9 | 20.8 | 1.7 | 712 | 42 | NA[d] |
| Total | 24.4 | 17.9 | 10.5 | 535 | 430 | NA |

a The number of children (0-14) and elderly people (65+) per 1000 people aged 15-64 years.

b The number of elderly people (65+) per 1000 children (0-14).

c Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

d Not applicable.

agencies will ensure that the distinctive Maori population composition is important for making and implementing social policy. This is discussed further in the final section of the report.

It will be recalled from Section 1 that between 1976 and 1986 eight regions experienced above-average population growth: Northland, Auckland, Thames Valley, Bay of Plenty, Horowhenua, Nelson Bays, Marlborough, and Clutha-Central Otago. Four broad patterns of age structure reflect the major reasons for expansion in numbers of residents in

these regions. Northland and Bay of Plenty gained population of all ages, especially children under 15 years of age. The contribution of Maori natural increase in association with in-migration of people of all ages is particularly significant in these two regions. Thames Valley and Horowhenua are characterised by their substantial elderly populations and relative deficit of people in working ages; their comparatively high median age does not reflect a major absence of children (see Figure 13). By contrast, Nelson Bays and Marlborough, which also have older populations overall, achieve this through moderately high concentrations of both working-age and elderly adults, with a tendency (particularly marked in Nelson Bays) towards smaller proportions of children. Auckland and Clutha-Central Otago, despite their contrasting economic bases, have both attracted adults of working ages, although this is somewhat more marked for younger adults in the Auckland case which consequently has a younger median age overall.

Population composition is changing rapidly as cohorts representing eras of higher and lower fertility progressively age. Regional diversity in age-sex structure is increasing, partly as a result of migration trends but also because of the differences in Maori and Pakeha population composition. Later in this section some recent projections of regional populations to 2011 are reviewed with respect to age-sex structure. Composition-driven demographic change is likely to have a much more significant impact on social planning in most regions over the next 25 years than absolute growth (or decline) in numbers of residents.

# Labour Supply and Employment

The supply of labour in any region, and in the nation as a whole, depends on the size and composition of the working-age population and the recorded availability of this population for work, measured by labour-force participation rates. While the statistical definition of work traditionally only encompasses activities for which a remuneration can be expected in the form of pay or profit, it is obvious that a significant proportion of work with a value to society takes place outside the market place. This can be in the form of domestic duties, childrearing and care for other relatives, work in and around the home or unpaid voluntary work. For example, at the time of the 1986 Census 16.5 percent of the working-age population was involved in some type of unpaid voluntary work, although two-thirds of those carried out such duties for less than five hours per week. Interestingly, the number of men involved in unpaid voluntary work equals the number of women, while in the paid workforce they outnumber women by ten to seven. There are also regional variations in the proportion of the population involved in unpaid voluntary work: in the rural regions with a large primary sector but little manufacturing (Wairarapa, Aorangi and Clutha-Central Otago) more than 19 percent of the working-age population was in this category in 1986. In the metropolitan centres, in particular Auckland, a smaller proportion (less than 15 percent) were doing unpaid voluntary work. It is expected that this type of work will become more important in the future as the population ages, as people tend to work less hours per week and as welfare services are increasingly decentralised and privatised. However, there may be less acceptance of community work without remuneration in a more market-led economy. Hence, some voluntary work may shift to the formal economy, counteracting the increasing participation in unpaid work (Royal Commission on Social Policy 1988).

Yet there would be few people who would not be seeking paid work at some stage of their lives, even if without this employment they would command sufficient income to satisfy their material needs. The inability to find work brings with it costs to both the individual involved and society as a whole. Full employment, or that state of the labour market in which any mismatch between available jobs and job seekers is merely due to people being between jobs ('frictional unemployment'), should therefore be an important goal of both economic policy and social policy, as has been confirmed by the recent report of the Royal Commission on Social Policy (1988).

## A National Perspective

It is useful to commence with a brief summary of the national situation with respect to labour supply as a reference point. A recent snapshot of the New Zealand population aged 15 and over is given in Figure 15. Figure 15 shows that the current size of the labour force is 1.6 million persons, and this means that the equivalent of about two-thirds of the population aged 15 and over is employed or seeking work. Census statistics show that the total labour force has grown at an average compound-growth-rate of 1.7 percent per annum. It is also well known that male labour-force participation has been declining, while female participation is increasing (Population Monitoring Group 1985, 1986). One-fifth of those employed work part time (29 hours or less per week), and only 2.2 percent of these part-time workers

FIGURE 13: AGE-SEX STRUCTURE AND INDEX OF AGEING, NEW ZEALAND RESIDENT POPULATION, 1986

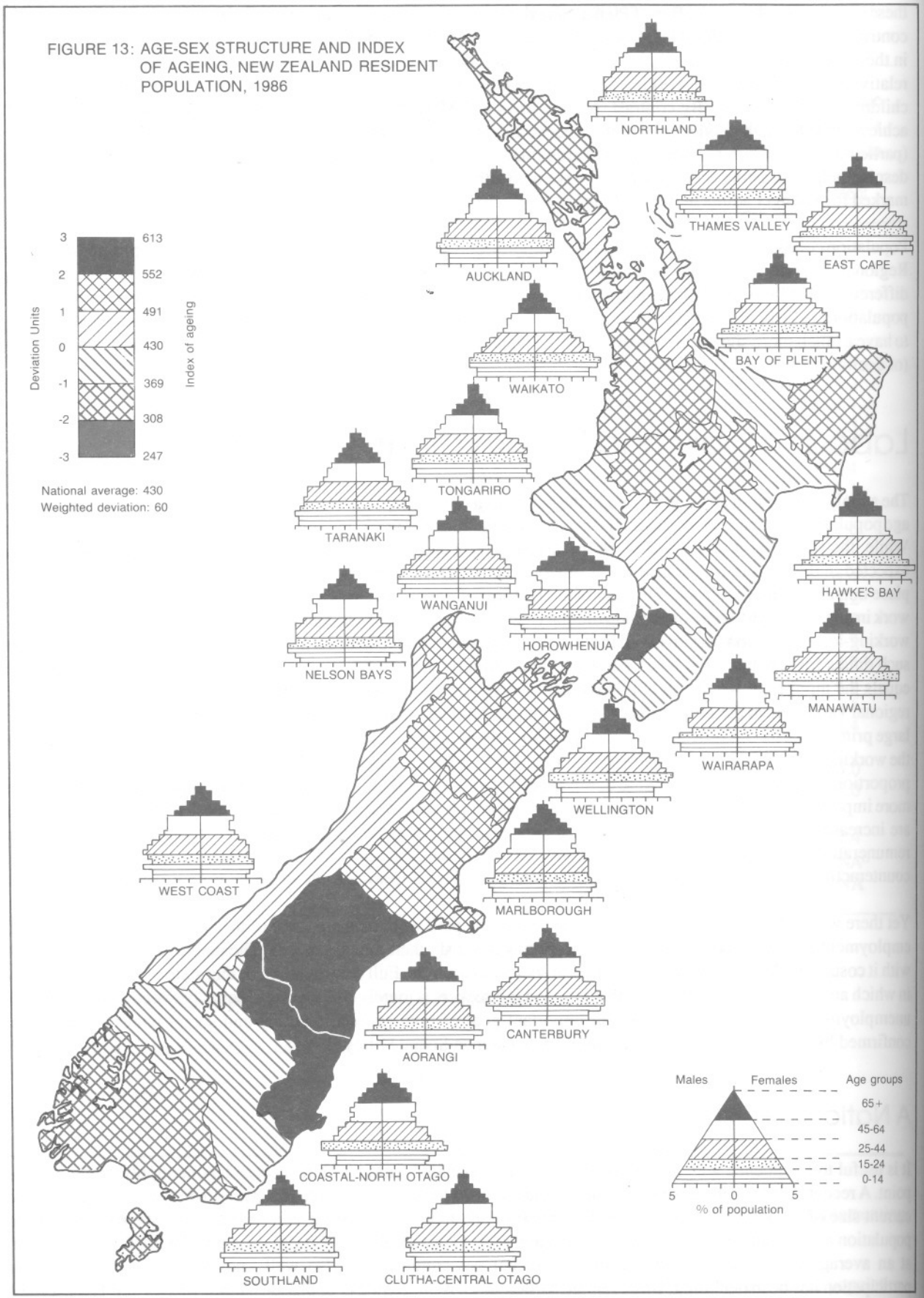
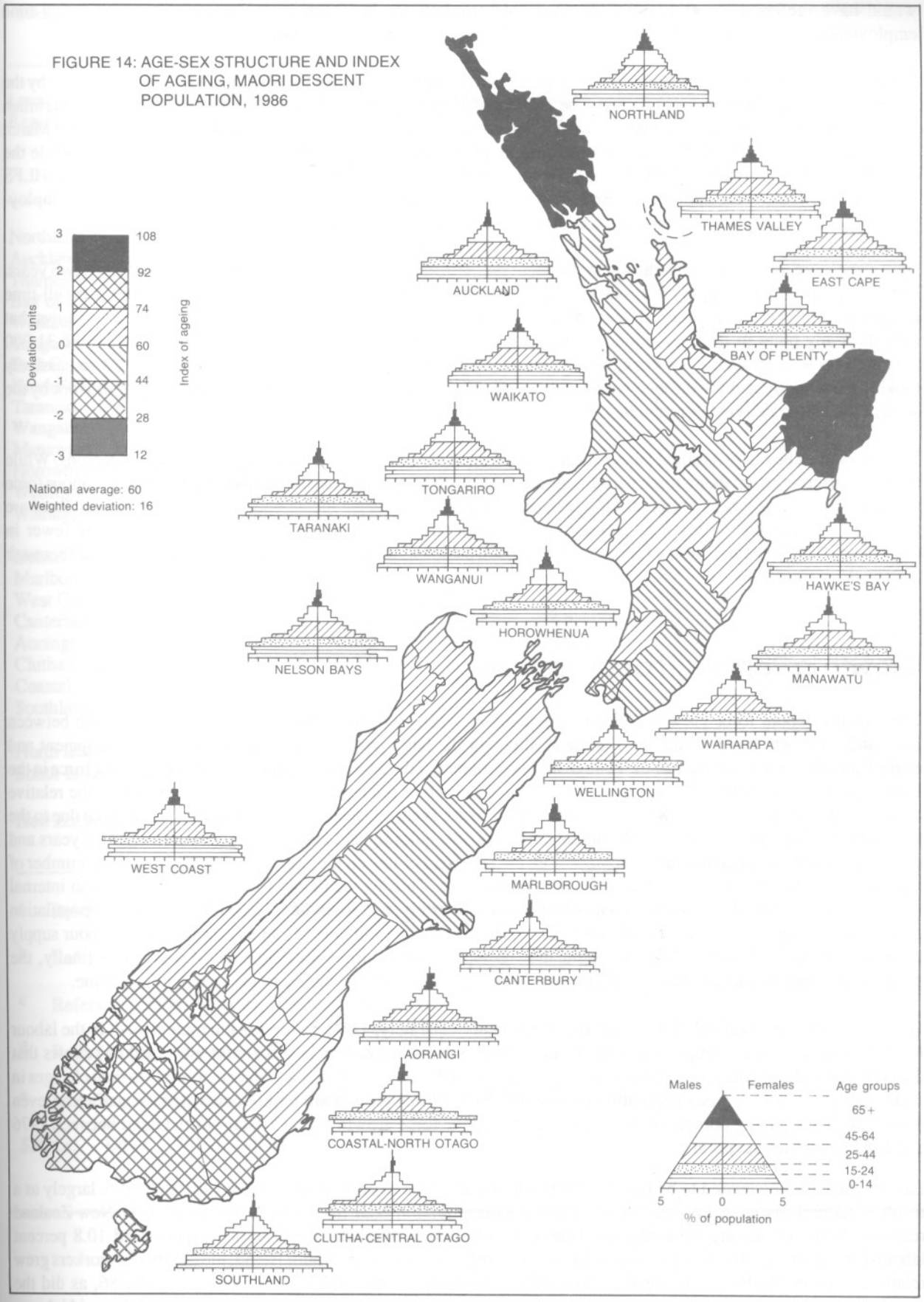


FIGURE 14: AGE-SEX STRUCTURE AND INDEX OF AGEING, MAORI DESCENT POPULATION, 1986



would have preferred to work full time. Part-time employment has been growing much faster than full-time employment.

Figure 15 shows a national unemployment rate of 5.0 percent as an average for the March quarter 1988 measured by the Household Labour Force Survey (HLFS). The number of unemployed measured by the HLFS survey (80,600) is much less than the widely publicised registered number of unemployed which was about 100,000 persons during the March quarter 1988. However, the two sources of information on unemployment are not directly comparable, while the population census provides a third, and again somewhat different, measure. It must be noted, though, that the HLFS unemployment rate is the appropriate measure to use for international comparisons, and on this basis the unemployment rate is still lower than in countries such as Australia or the United Kingdom.

By any measure it is obvious that the unemployment problem has become much more severe during the last two years. Three-quarters of the unemployed are seeking full-time work which is particularly disturbing when growth in full-time employment has been very sluggish and only concentrated in certain sectors and regions. Figure 15 also shows that there is at any point in time some hidden unemployment among those not in the labour force. Among the 31,000 persons who were available for work, but not actively seeking work, there were 7,900 persons who were passively looking for work by seeking through newspapers, while 8,800 persons were discouraged from looking for work by the state of the labour market (Department of Statistics 1988).

Table 25 shows how this national labour force is made up of labour supply in the 22 local government regions. While there are differences in labour-force participation, which are discussed below, the number of people in the labour force reflects clearly the respective population sizes of each region. Thus, in the most populous region, Auckland, there are about 447,000 persons working or seeking work, compared with 175,000 in Wellington and not many fewer in Canterbury. The very small labour forces, 16,000-20,000 persons, can be found in Tongariro, Wairarapa, Marlborough and the West Coast.

## Growth in Regional Labour Forces

The full-time labour force grew 4.7 percent nationally between 1976 and 1981 (see Table 25). The growth between 1981 and 1986 was much faster, 11.1 percent, although the latter percentage includes part-time employment and exaggerates the growth because of the change in measurement of the unemployed component of the labour force in the 1986 Census (Lowe 1987). Growth in the labour force in each of the regions is due to five factors with the relative contribution of each varying between regions. The first factor is natural increase: change in the labour force due to the impact of fertility and mortality trends on numbers of people entering and leaving the population aged 15 years and over. The second factor is international migration: the net effect of this on the size of the labour force is the number of immigrant workers minus the number of workers emigrating. Thirdly, the labour force also changes due to internal migration, or the exchange of workers with other regions. Fourthly, as a result of the first three factors, the population composition by age, ethnic origin, and types of households changes and thus has an impact on overall labour supply because there are differences between population groups in labour-force participation. Fifthly, and finally, the propensity of individuals and households in the region to participate in the labour market changes over time.

While no figures are available for each of the components separately, Table 25 reports the total growth in the labour force in each region. A comparison with population growth figures earlier in this report (see Table 4) shows that differences in labour-force growth between regions are more due to natural increase and net migration than changes in participation: in most regions population growth and labour-force growth are highly correlated. Nonetheless, even regions with a declining population have had positive labour-force growth, with Coastal-North Otago between 1976 and 1981 being the exception.

Labour-force growth tended to be faster in the northern half of the North Island between 1981 and 1986, largely as a result of natural increase, but reinforced by net inward migration both from abroad and from other New Zealand regions. However, among these regions there were differences. Waikato, for example, experienced 10.8 percent labour-force growth, while having substantial net outward migration. In the South Island, the number of workers grew relatively fast in Marlborough, Nelson Bays and Clutha-Central Otago during the five years 1981-86, as did the population in these regions. However, there are also regions with little population growth but relatively rapid labour-force growth, such as Tongariro, East Cape and Southland between 1976 and 1981 and, as noted above, Waikato between 1981 and 1986.

**TABLE 25: GROWTH IN LABOUR SUPPLY, EMPLOYMENT AND UNEMPLOYMENT IN THE LOCAL GOVERNMENT REGIONS, 1976-1986**

| Local Government Region | Labour force in 1986[b] | Labour force growth 1976-81[a] | Labour force growth 1981-86[b] | Employm. growth 1976-81[c] | Employm. growth 1981-86[d] | Relative unempl. growth 1976-81 | Relative unempl. growth 1981-86 |
|---|---|---|---|---|---|---|---|
| Northland | 58,227 | 11.7 | 20.9 | 7.9 | 19.5 | 0.796 | 0.489 |
| Auckland | 446,931 | 6.2 | 15.3 | 3.2 | 13.6 | 0.976 | 0.594 |
| Thames Valley | 26,193 | 6.4 | 13.3 | 3.5 | 11.2 | 1.070 | 0.718 |
| Bay of Plenty | 87,468 | 12.8 | 17.7 | 10.0 | 14.7 | 0.725 | 0.891 |
| Waikato | 110,784 | 6.7 | 10.8 | 4.0 | 7.3 | 0.914 | 1.032 |
| Tongariro | 19,113 | 14.4 | 6.3 | 11.7 | 2.9 | 0.965 | 0.993 |
| East Cape | 24,909 | 13.4 | 8.2 | 10.8 | 4.6 | 0.655 | 0.903 |
| Hawke's Bay | 66,009 | 8.2 | 9.4 | 5.4 | 5.4 | 1.211 | 1.288 |
| Taranaki | 51,309 | 1.9 | 10.9 | -0.2 | 6.8 | 0.920 | 1.456 |
| Wanganui | 31,803 | 4.3 | 5.1 | 1.7 | 1.8 | 1.143 | 1.027 |
| Manawatu | 55,950 | 6.3 | 7.9 | 4.1 | 2.6 | 1.120 | 1.976 |
| Horowhenua | 22,689 | 3.3 | 15.2 | 1.0 | 11.5 | 1.000 | 1.489 |
| Wellington | 174,999 | 0.3 | 6.7 | -1.6 | 4.0 | 1.038 | 1.099 |
| Wairarapa | 18,180 | 1.7 | 2.9 | -0.8 | -0.1 | 1.447 | 1.021 |
| Nelson Bays | 33,375 | 4.6 | 14.3 | 2.8 | 11.2 | 0.938 | 1.465 |
| Marlborough | 17,787 | 3.2 | 15.7 | 1.0 | 11.9 | 0.811 | 1.368 |
| West Coast | 16,272 | 1.0 | 8.1 | -1.1 | 4.9 | 0.904 | 1.189 |
| Canterbury | 167,943 | 0.2 | 9.8 | -2.8 | 6.3 | 1.388 | 1.043 |
| Aorangi | 37,650 | 1.1 | 3.5 | -0.9 | -0.1 | 1.394 | 1.525 |
| Clutha Central Otago | 23,484 | 5.2 | 17.3 | 4.7 | 14.0 | 0.307 | 2.678 |
| Coastal-North Otago | 63,795 | -2.8 | 4.8 | -5.1 | -1.2 | 1.611 | 2.466 |
| Southland | 50,442 | 6.7 | 1.0 | 5.7 | -2.6 | 0.639 | 2.353 |
| North Island | 1,194,933 | 6.0 | 12.3 | 3.3 | 9.6 | 0.954 | 0.872 |
| South Island | 411,204 | 1.8 | 7.8 | -0.5 | 3.9 | 1.197 | 1.474 |
| New Zealand[e] | 1,608,612 | 4.7 | 11.1 | 2.0 | 8.1 | 1.000 (129%) | 1.000 (81%) |

[a] Refers to persons working 20 hours or more per week, or seeking work

[b] Refers to persons working 1 hour or more per week, or seeking work

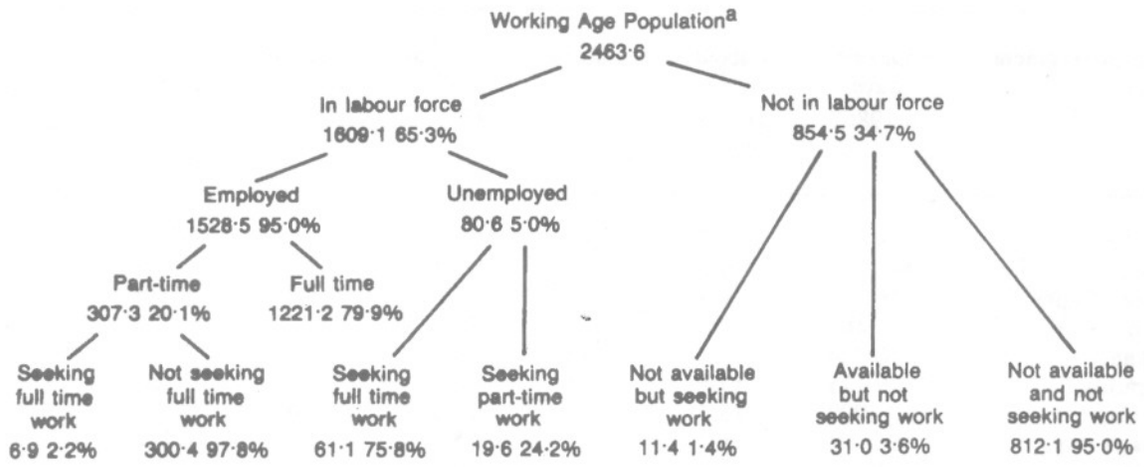
[c] Refers to persons working 20 hours or more per week

[d] Refers to persons working 1 hour or more per week

[e] Including Great Barrier Is, Chatham Is, extra-county islands and shipping.

*Source:* Lowe (1988b), Tables 5.2, 5.3 and 5.4.

**FIGURE 15: THE NEW ZEALAND LABOUR FORCE, MARCH QUARTER, 1988.**




[a]People aged 15 years and over. Population figures in 000s.

Source: Department of Statistics, 1988.

## Unemployment 1976-1986

In no region of New Zealand has employment kept pace with the growth in labour supply (see Table 25). It must be noted, however, that growth in unemployment levels between 1981 and 1986 has been exaggerated in the census data, because many people seeking part-time work were not counted as unemployed in the 1981 Census. The number of persons employed full-time declined between 1976 and 1981 in a large number of South Island regions, in Taranaki and in Wellington. Between 1981 and 1986 employment losses (including part-time jobs) were confined to Wairarapa, Aorangi, Coastal-North Otago and Southland.

Unemployment has been increasing in all regions. On a national basis, unemployment grew by 129 percent between 1976-81 and by 81 percent between 1981-86. Table 25 reports the growth in the number of unemployed in each region, relative to the national changes. These very substantial increases in unemployment show that an increase in the census unemployment rate from 1.9 percent in 1976 to 4.2 percent in 1981 and 6.8 percent in 1986 has had a massive impact on the number of unemployed. In general, growth in unemployment has been much faster in the South Island than in the North Island. The number of full-time jobs in the South Island declined by 0.5 percent between 1976 and 1981, whereas there was some positive growth in the North Island. Between 1981 and 1986 the positive employment growth in the South Island was still less than one- half of the growth in the North Island. The Household Labour Force Survey has shown that since 1986 unemployment has increased even further in all regions, particularly in recent months, and the current economic recession is likely to generate further unemployment growth in the short term.

Table 25 shows a very clear geographic pattern with respect to the increase in unemployment from 1981 to 1986. In the north (Northland, Auckland, Thames Valley and Bay of Plenty) unemployment has risen at a much lower rate than the national average and this may be partially explained by the fact that unemployment rates in these regions were already relatively high at the beginning of the period. However, further south unemployment has been increasing faster, with the number of unemployed increasing by twice or more than the national average in Manawatu, Otago and Southland. Between 1976 and 1981 unemployment grew considerably faster than the national average in Wairarapa, Canterbury and Coastal-North Otago, although the diversity in unemployment growth between regions was not as much over this period as over the five years 1981-86.

It must be stressed that regions with the fastest growth in the number of unemployed are not necessarily the regions with the highest rates of unemployment. This can be seen by comparing Table 25 with Table 26, which reports rates of unemployment in 1976, 1981 and 1986. The figures in brackets show how many deviation units the observed unemployment rates are from the national unemployment rate. The situation in 1976 was one in which high unemployment rates were only recorded in the northern half of the North Island, with Northland having the highest unemployment rate of 4.0 percent (3.4 deviation units above the national average). The lowest unemployment rate in 1976 was recorded in Coastal-North Otago, which was 1.8 deviation units below the national figure (see Table 26).

An interesting shift in the regional dimension of unemployment half-way through the 1976-86 decade is shown in Table 26. Growth in unemployment during the first half of the decade tended to be particularly pronounced in the North Island regions where unemployment rates were already high in 1976. Hence, the distribution of unemployment experience across regions became more dispersed. However, since unemployment in the second half of the decade grew much faster in South Island regions, by 1986 the dispersion around the national average of 6.8 percent became somewhat less.

## Labour Supply and Unemployment

It is tempting to suggest that the high unemployment rates in the north in 1976 and also in 1981 can be explained by relatively depressed regional economies, but this is not the case: job growth was also fast in these regions. The high unemployment rates are likely to have been the result of a number of factors.

The first of these is high levels of population growth and in-migration which generate labour turnover through which a relatively large proportion of the workers are at any point in time between jobs and thus counted as unemployed. Their spells out of work may be much shorter than those of unemployed workers in a region in which the unemployment rate is lower but where a core of unemployed cannot obtain suitable work and remain out of work for long periods of time. A second reason is that the composition of the labour force may contribute to higher unemployment. For example, unemployment rates for Maori are much higher than for Pakeha, contributing to the higher unemployment rates in Northland, East Cape and Bay of Plenty. Another example is regions such as Auckland and Waikato which had relatively large populations aged 15-29, an age group with relatively high unemployment rates. Thirdly, despite a growth in labour demand in the northern regions, unemployment may have emerged both through a mismatch of the skills required and those offered by the labour-force entrants as well as through one effect of labour shedding, the removal of blocks of jobs requiring certain types of skills. These jobs have not been replaced.

Although an in-depth discussion of regional variations in unemployment rates requires a formal econometric model which is beyond the scope of this descriptive account, it is nonetheless straightforward to identify the influence of the main socio-demographic composition effects through a regression analysis using 1986 Census data. The male unemployment rate and the female unemployment rate in each region were regressed on the following factors: youthfulness of the labour force (measured by the proportion of the population aged 15-64 who are aged 15-24), the proportion of the full-time labour force who were Maori, the proportion employed in the services sector, and the proportion with a post-secondary educational qualification. As expected, both age composition and ethnic composition had a significant positive effect on regional variations in unemployment rates (with the ethnic effect stronger than the age effect), while the level of education of the workforce had a negative effect. Surprisingly, employment in the services sector had no influence. In general, though, the statistical fit of the model was bad. The composition effects included in the model were insufficient to explain unemployment rates in the South Island. For example, the unemployment rate in Coastal-North Otago is much higher than the composition effects suggest, while Southland's unemployment rate is lower. A more refined analysis, which is beyond the scope of this report, is warranted.

It is often suggested that deterioration of the unemployment problem in the 1980s has affected Auckland and Wellington less than other cities and rural areas in New Zealand. This is confirmed to some extent by Figure 16 which compares unemployment rates in the Auckland, Wellington and Christchurch employment districts with the rate in the remaining districts. While unemployment in the other districts equalled the national rate in 1976, by 1986 it exceeded the latter by 0.4 percentage points. The Household Labour Force Survey data confirm that the gap in the unemployment rate between the main metropolitan and other districts has increased since March 1986 (see Figure 16).

## TABLE 26: REGIONAL UNEMPLOYMENT RATES: 1976, 1981 AND 1986

| Local Government Region | Census year 1976 Rate[a] | 1976 Deviation[c] | 1981 Rate[a] | 1981 Deviation[c] | 1986 Rate[b] | 1986 Deviation[c] |
|---|---|---|---|---|---|---|
| Northland | 4.0 | (+3.4) | 7.3 | (+3.0) | 7.8 | (+1.3) |
| Auckland | 2.5 | (+0.8) | 5.4 | (+0.9) | 6.3 | (-0.6) |
| Thames Valley | 2.2 | (+0.2) | 4.9 | (+0.4) | 6.3 | (-0.6) |
| Bay of Plenty | 3.3 | (+2.2) | 5.7 | (+1.3) | 7.7 | (+1.2) |
| Waikato | 2.4 | (+0.6) | 4.9 | (+0.4) | 7.5 | (+0.9) |
| Tongariro | 2.5 | (+0.6) | 4.8 | (+0.3) | 7.5 | (+0.9) |
| East Cape | 3.5 | (+2.6) | 5.8 | (+1.4) | 8.6 | (+2.2) |
| Hawke's Bay | 1.9 | (-0.3) | 4.4 | (-0.1) | 7.6 | (+1.0) |
| Taranaki | 1.8 | (-0.4) | 3.9 | (-0.6) | 7.1 | (+0.4) |
| Wanganui | 1.8 | (-0.4) | 4.3 | (-0.2) | 6.9 | (+0.1) |
| Manawatu | 1.6 | (-0.8) | 3.7 | (-0.9) | 8.1 | (+1.7) |
| Horowhenua | 1.6 | (-0.8) | 3.8 | (-0.8) | 6.5 | (-0.3) |
| Wellington | 1.4 | (-1.1) | 3.4 | (-1.3) | 5.5 | (-1.6) |
| Wairarapa | 1.4 | (-1.2) | 3.9 | (-0.7) | 6.4 | (-0.5) |
| Nelson Bays | 1.5 | (-0.1) | 3.2 | (-1.5) | 5.5 | (-1.6) |
| Marlborough | 2.1 | (+0.1) | 3.8 | (-0.7) | 7.0 | (+0.3) |
| West Coast | 1.8 | (-0.4) | 3.9 | (-0.7) | 6.5 | (-0.4) |
| Canterbury | 1.7 | (-0.6) | 4.8 | (+0.3) | 7.3 | (+0.7) |
| Aorangi | 1.2 | (-1.6) | 3.3 | (-1.4) | 6.3 | (-0.6) |
| Clutha-Central Otago | 1.3 | (-1.3) | 1.8 | (-3.0) | 4.4 | (-3.0) |
| Coastal-North Otago | 1.1 | (-1.8) | 3.4 | (-1.3) | 8.7 | (+2.4) |
| Southland | 1.2 | (-1.5) | 2.1 | (-2.7) | 5.5 | (-1.7) |
| North Island | 2.3 | (+0.3) | 4.8 | (+0.4) | 6.8 | (-0.0) |
| South Island | 1.5 | (-1.1) | 3.7 | (-0.9) | 6.9 | (+0.1) |
| New Zealand[d] | 2.1 | (0.0) | 4.5 | (0.0) | 6.8 | (0.0) |

[a] All persons unemployed and seeking work as a percentage of the fulltime labour force (excluding employment status not specified).

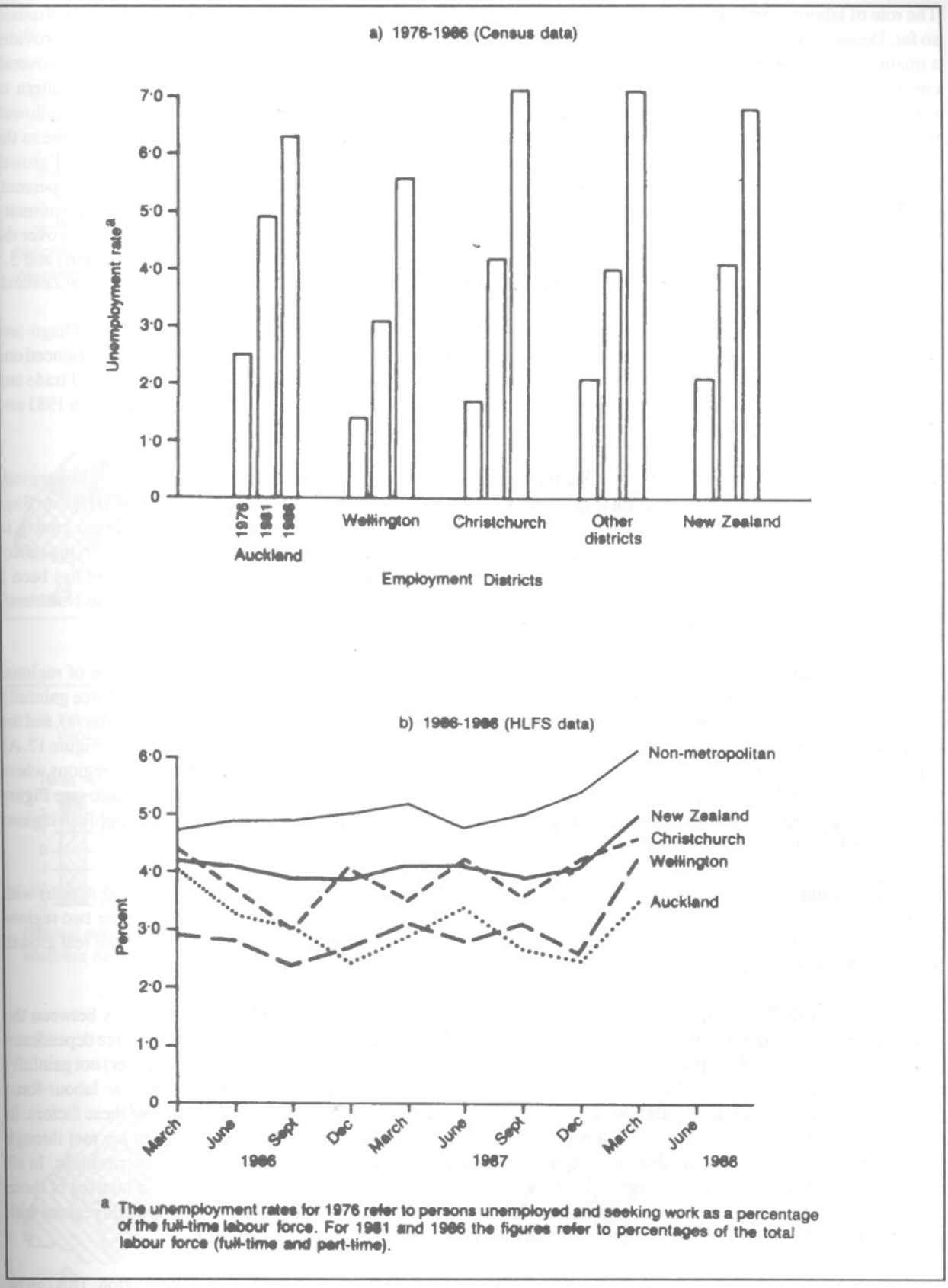
[b] All persons unemployed and seeking work as a percentage of the total labour force (including employment status not specified).

[c] Number of deviation units from the national average. The deviation units are: 1976 0.6%; 1881 0.9%; 1986 0.8%. (See Appendix 1).

[d] Including Geat Barrier Is, Chatham Is, extra-county islands and shipping.

*Sources:* Lowe (1988b), Tables 5.2 and 5.3.

**FIGURE 16: UNEMPLOYMENT RATES IN AUCKLAND, WELLINGTON, CHRISTCHURCH AND OTHER EMPLOYMENT DISTRICTS.**




[a] The unemployment rates for 1976 refer to persons unemployed and seeking work as a percentage of the full-time labour force. For 1981 and 1986 the figures refer to percentages of the total labour force (full-time and part-time).

## Demand for Labour and Labour-Force Characteristics

The role of labour-supply factors in explaining inter-regional variations in unemployment rates has been emphasised so far. Demand factors, however, are equally important and an indication of these is given in Table 27, which provides a qualitative shift-share analysis of employment by region and industry. The table indicates how changes in overall employment in a region are made up of changes in employment by industry relative to the national pattern of restructuring. A zero in the table implies that change in employment in a particular industry has more or less followed the national trend. Plusses (double plusses) refer to positive (strongly positive) employment growth relative to the national trend for the industry, while minusses (double minusses) refer to the negative (strongly negative) growth relative to the national trend. Thus, we can see that the high level of employment growth in Northland (19.5 percent) can be explained by an increase in employment in manufacturing, construction, transportation and community services. In Northland employment growth in these industries was much stronger than the national increases over the five years of 1.2 percent (manufacturing), 19.0 percent (building and construction), 1.8 percent (transport) and 3.3 percent (services). It should be noted that these industries account for up to 60 percent of employment in New Zealand.

Table 27 also shows that the decline in overall employment in Wairarapa, Aorangi, Coastal-North Otago and Southland is due to job losses or slow growth in all sectors relative to all other regions. Only Southland experienced one offsetting factor and this was growth above the national average in employment in the wholesale and retail trade and restaurants. This sector is small in Southland, however, and the percentage increase in employment between 1981 and 1986 did not involve a large number of workers.

The complexity of a regional dimension to the process of economic change is evident from Table 27. No two regions experienced the same shifts in the distribution of employment by industry. For example, Horowhenua and Nelson Bays have the same overall change in employment of around 11 percent. In the former region above-average growth in employment in community, social and personal services is a major factor; the plusses for mining and quarrying reflect growth in a very small sector in Horowhenua. In Nelson Bays, growth in manufacturing employment has been a contributing factor. The employment effect of the 'think- big' projects of the early 1980s on regions such as Northland, Taranaki and Clutha-Central Otago is also quite clear.

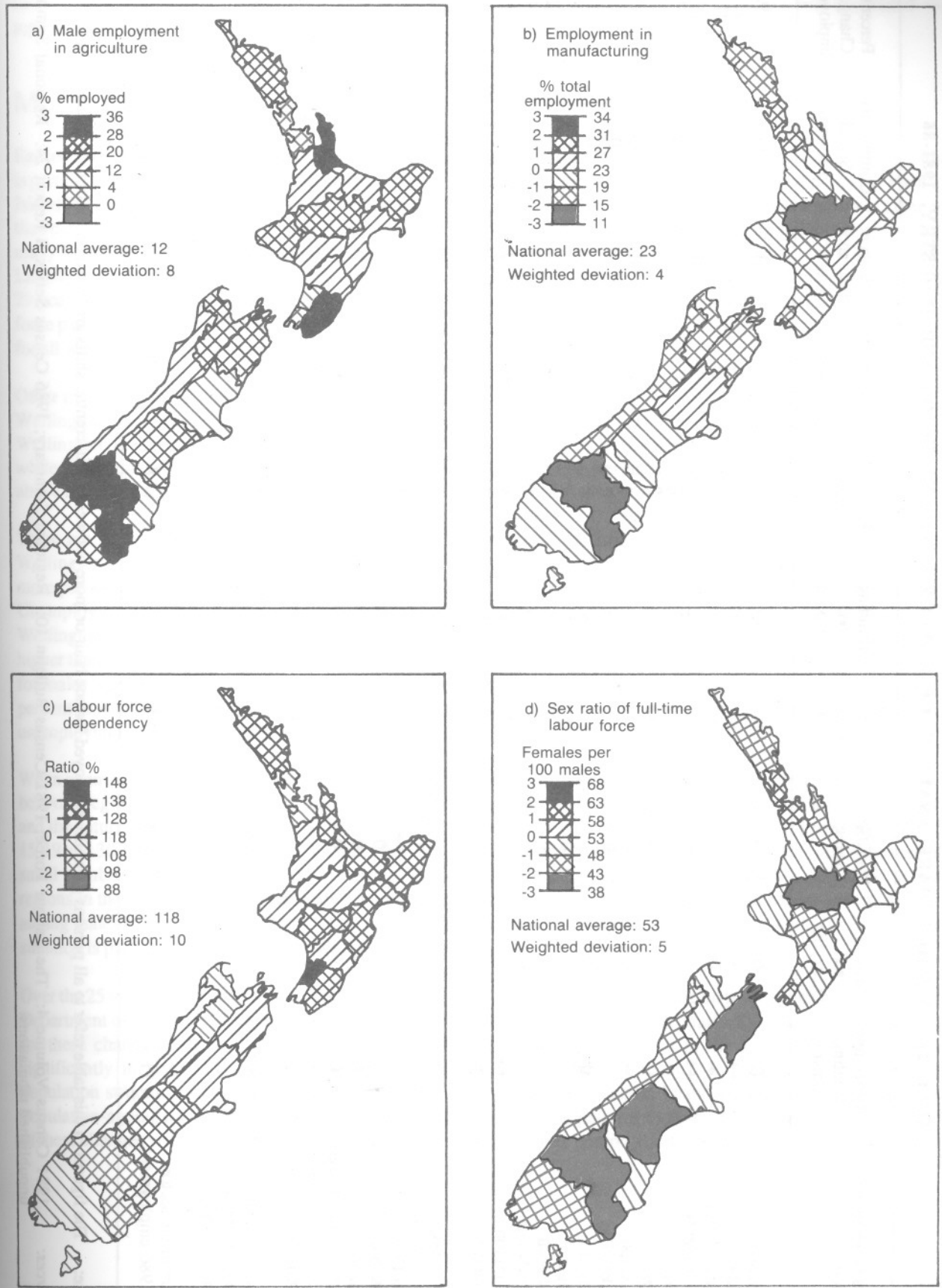
Regional differences in patterns of demand for labour reflect quite marked variations in the structure of regional economies. Two simple indicators of this diversity are the proportion of males in the full-time labour force gainfully employed in primary production (agricultural, animal husbandry and forestry workers, fishermen and hunters), and the proportion of total employment in a region that is in manufacturing industries. These indices are shown in Figure 17. As expected the proportion of males in primary-sector employment is well above the national average in regions where there are few sizeable urban centres — Thames Valley, East Cape, Wairarapa, and Clutha-Central Otago (see Figure 17a). Not surprisingly, significant short-falls in proportions in this employment are in four of the metropolitan regions — Auckland, Wellington, Canterbury and Coastal-North Otago.

In the case of employment in manufacturing only Auckland, Hawke's Bay and Canterbury stand out as regions with proportions above the national average, and Auckland's deviation is significantly higher than the other two regions (see Figure 17b). Almost 30 percent of employment in Auckland is in manufacturing and much of the real growth between 1981 and 1986 (1.2 percent) in this sector was in the Auckland region (see Table 27).

In addition to regional variations in employment-by-sector there were also considerable differences between the regions in terms of labour-force dependency at the time of the 1986 Census (see Figure 17c). Labour-force dependency is measured as the ratio of the population aged 0-14 years plus the working population (15 years and over) not gainfully employed per 100 of the number of employed persons. High values for this ratio indicate low labour-force participation, a very youthful population, a relatively large number of retired people, or a mixture of these factors. In such situations it is likely that the income needs of a relatively large proportion of the population are met through redistribution of income generated in the region, or through public and private transfers from other regions. In all regions except Wellington the number of people who were not economically active exceeded the number of those gainfully employed. Horowhenua was the region with the highest labour-force dependency ratio, while regions with low ratios have the large cities and high levels of labour-force participation (see Figure 17c).

Employment of women in the full-time labour force is much more significant in Auckland and Wellington. This can be seen in the sex ratios for the full-time workforce shown in Figure 17d. In the two main urban regions there are about 6 women in the full-time labour force for every 10 men (when part-time workers are included the ratio in these two

FIGURE 17: REGIONAL LABOUR FORCE CHARACTERISTICS, 1986.



## TABLE 27: A SHIFT-SHARE ANALYSIS OF EMPLOYMENT BY REGION AND INDUSTRY, 1981-86

| Local Government Region | Agriculture Hunting Forestry | Mining and Quarrying | Manufac-turing | Electricity Gas and Water | Building and Construc. | Wholesale Retail Restaur. | Transport Storage Comm. | Finance Insurance Property | Community Social Personal | Percentage Change in Employment |
|---|---|---|---|---|---|---|---|---|---|---|
| Northland | 0 | 0 | ++ | 0 | ++ | 0 | ++ | 0 | ++ | 19.5 |
| Auckland | ++ | + | 0 | 0 | + | + | + | ++ | 0 | 13.6 |
| Thames Valley | + | 0 | 0 | + | 0 | + | 0 | – | + | 11.2 |
| Bay of Plenty | ++ | -- | ++ | + | 0 | 0 | 0 | 0 | + | 14.7 |
| Waikato | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 7.3 |
| Tongariro | 0 | ++ | ++ | ++ | – | 0 | – | + | -- | 2.9 |
| East Cape | -- | ++ | -- | – | - | - | 0 | 0 | ++ | 4.6 |
| Hawke's Bay | -- | 0 | 0 | - | 0 | - | – | – | 0 | 5.4 |
| Taranaki | 0 | 0 | - | ++ | 0 | - | 0 | - | 0 | 6.8 |
| Wanganui | -- | + | 0 | + | 0 | -- | – | – | 0 | 1.8 |
| Manawatu | - | - | 0 | - | 0 | 0 | + | – | -- | 2.6 |
| Horowhenua | - | ++ | + | - | 0 | 0 | - | 0 | ++ | 11.5 |
| Wellington | ++ | 0 | -- | 0 | 0 | 0 | - | 0 | 0 | 4.0 |
| Wairarapa | -- | 0 | – | - | 0 | - | - | – | -- | -0.1 |
| Nelson Bays | + | + | ++ | – | 0 | 0 | + | 0 | 0 | 11.2 |
| Marlborough | - | 0 | + | - | - | 0 | – | -- | ++ | 11.9 |
| West Coast | 0 | - | ++ | 0 | - | 0 | – | – | 0 | 4.9 |
| Canterbury | 0 | -- | 0 | – | 0 | 0 | 0 | - | 0 | 6.3 |
| Aorangi | 0 | -- | 0 | 0 | – | -- | – | – | - | -0.1 |
| Clutha-Central Otago | 0 | - | 0 | - | + | + | ++ | ++ | 0 | 14.0 |
| Coastal-North Otago | -- | -- | - | 0 | - | -- | – | – | -- | -1.2 |
| Southland | 0 | 0 | -- | + | – | ++ | – | – | - | -2.6 |
| New Zealand % change in employ-ment 1981-86 | 8.2 | 29.4 | 1.2 | 4.1 | 19.0 | 18.6 | 1.8 | 28.1 | 3.3 | 8.1 |
| Share of the sector in 1986 employment | 11.0 | 0.4 | 21.4 | 1.1 | 6.9 | 19.8 | 7.5 | 8.3 | 24.4 | 100.0 |

Note: The figures in this table refer to all persons gainfully employed for one hour or more per week. Differential shifts are based on figures for fulltime employment.

*Sources:* 1981 Census Volume 4: The Labour Force; 1981 Census Bulletin 10: Regional Summary; 1986 Census Series B Report 24: Regional Summary and unpublished tabulations.

regions increases to almost to 8 women for every 10 men). The lowest ratio can be found in Aorangi where the ratio of female to male full-time workers is no more than 4 to 10. Other regions with low ratios of females to males in the labour force in 1986 included Tongariro, Wanganui, Marlborough, West Coast, Clutha-Central Otago and Southland — regions dominated by primary-sector employment (see Figure 17d).

## Maori and Pacific Island Polynesian Labour-Force Participation

Earlier it was suggested that ethnic origin is an important factor in the analysis of some regional labour markets. This is particularly so in Auckland and Wellington, the two regions where there are significant numbers of people of Pacific Island Polynesian descent. Full-time labour-force participation of Pacific Island Polynesian males is lower at all ages than participation for males in the total population. The reverse is true for part-time participation, and this suggests that many Pacific Island Polynesians are employed in casual work which employ them for less than 30 hours per week. Largely because of a tendency for childbearing at younger ages, Pacific Island Polynesian women aged between 15 and 29 years have lower full-time participation rates than women at these ages in the total population. Part-time labour-force participation is significantly less for Pacific Island Polynesian females, compared with the level of participation for all women in the labour force.

Other regional effects are that full-time participation for Maori and Pacific Island Polynesians tends to be higher in Wellington than Auckland for most age groups. This undoubtedly reflects the lower unemployment rates in Wellington. In the case of part-time participation, rates for males are generally lower in Wellington than Auckland, while for females there is no clear pattern except that Pacific Island Polynesian women in Wellington at ages 30 and above are much more likely to work part time (or seek part-time work) than in Auckland.

There are significant differences in unemployment rates between the sexes and ethnic groups in Auckland and Wellington (see Table 28). Unemployment is measured here as the number of persons seeking work for one hour or more per week at the time of the 1986 Census of Population and Dwellings, as a percentage of the total labour force. Unemployment rates for all age-sex groups in the different ethnic categories are higher in Auckland than in Wellington, except for Pacific Island Polynesian males aged between 15 and 24 years. Female unemployment rates are higher than male rates, and the propensity to be unemployed declines rapidly with age. The highest unemployment rate for males was found for Pacific Island Polynesians aged between 15 and 19 years (27 percent in Wellington and 26 percent in Auckland), ignoring the very high unemployment rate for the small group aged 65 and over. For females unemployment rates tend to be higher for Maori than Pacific Island Polynesians.

When unemployment rates are compared across all regions, it is apparent that there is considerable variation in levels between regions and ethnic groups. Maori unemployment rates are always higher than rates for the total population, and the nature of regional variations is demonstrated in Table 29 which reports unemployment rates for persons aged 15-19 and 30-34 for all regions. Pacific Island Polynesians have not been identified separately in this table because of small numbers of workers in all regions except Auckland and Wellington. Taking into account variations across regions in the proportion of the population which is of Maori descent, Table 29 confirms that Maori unemployment among males in the age group 30-34 years is extremely serious in Northland and East Cape, while for females the situation is particularly serious in the Waikato.

Over the 25 years between 1986 and 2011, the period covered by sub-national population projections prepared by the Department of Statistics, the age composition of regional labour forces will change markedly. The main explanation for these changes will be the progressive ageing of birth cohorts (people born in the same year) which differ significantly in size. This process, often termed 'peristalsis', will be complicated by ageing of the distinctive population structures of particular ethnic groups, especially Maori and Pacific Island Polynesians. The impact of population-ageing on regional labour forces will also be influenced by patterns of migration. Over time the net effect of these changes will be increasing diversity in the age, sex and ethnic compositions of regional labour forces.

## TABLE 28: UNEMPLOYMENT RATES BY ETHNIC GROUP AND AGE, AUCKLAND AND WELLINGTON LOCAL GOVERNMENT REGIONS, 1986

### a) Auckland

| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Age | Total | Maori | Pacific Is. | Total | Maori | Pacific Is. |
| 15-19 | 17.4 | 25.4 | 26.3 | 18.5 | 28.2 | 26.6 |
| 20-24 | 7.1 | 12.8 | 9.4 | 9.0 | 20.1 | 13.8 |
| 25-29 | 4.1 | 8.8 | 7.7 | 8.4 | 17.8 | 14.8 |
| 30-34 | 2.8 | 7.1 | 5.9 | 8.0 | 14.7 | 12.1 |
| 35-39 | 2.1 | 5.2 | 5.7 | 6.1 | 10.6 | 9.9 |
| 40-44 | 1.8 | 4.9 | 5.8 | 4.7 | 8.6 | 7.5 |
| 45-49 | 1.9 | 4.2 | 7.9 | 4.5 | 6.7 | 9.9 |
| 50-54 | 2.2 | 5.1 | 8.8 | 4.6 | 7.7 | 8.2 |
| 55-59 | 2.9 | 6.0 | 8.8 | 4.7 | 7.7 | 14.3 |
| 60-64 | 3.0 | 5.3 | 4.5 | 4.6 | 5.1 | 9.7 |
| 65+ | 5.1 | 11.1 | 13.3 | 6.0 | 18.2 | 28.6 |

### b) Wellington

| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Age | Total | Maori | Pacific Is. | Total | Maori | Pacific Is. |
| 15-19 | 16.9 | 23.9 | 27.2 | 18.3 | 26.3 | 24.5 |
| 20-24 | 6.6 | 11.5 | 11.2 | 7.9 | 14.7 | 12.6 |
| 25-29 | 3.5 | 8.4 | 7.6 | 6.8 | 14.3 | 14.9 |
| 30-34 | 2.3 | 5.2 | 6.5 | 7.0 | 9.4 | 9.3 |
| 35-39 | 1.8 | 3.8 | 6.3 | 4.9 | 9.0 | 8.1 |
| 40-44 | 1.5 | 3.6 | 3.1 | 3.9 | 6.3 | 5.3 |
| 45-49 | 1.3 | 4.2 | 3.1 | 3.0 | 5.0 | 4.6 |
| 50-54 | 1.7 | 3.4 | 6.4 | 3.3 | 4.7 | 6.7 |
| 55-59 | 2.2 | 5.1 | 5.0 | 3.1 | 5.2 | 7.1 |
| 60-64 | 3.4 | 8.7 | 7.1 | 3.6 | 0.0 | 14.3 |
| 65+ | 4.8 | 12.5 | 33.3 | 5.5 | 12.5 | 50.0 |

*Source:* Unpublished tables, 1986 Census of Population and Dwellings.

**TABLE 29: UNEMPLOYMENT RATES IN THE REGIONS FOR THE TOTAL AND MAORI DESCENT POPULATIONS AGED 15-19 AND 30-34, 1986**

| Local Government Region | 15-19 years | | | | 30-34 years | | | |
|---|---|---|---|---|---|---|---|---|
| | Males | | Females | | Males | | Females | |
| | Total | Maori | Total | Maori | Total | Maori | Total | Maori |
| Northland | 18.8 | 28.9 | 21.1 | 33.2 | 4.7 | 12.2 | 9.5 | 18.8 |
| Auckland | 17.4 | 25.4 | 18.5 | 28.2 | 2.8 | 7.1 | 8.0 | 14.7 |
| Thames Valley | 15.9 | 23.8 | 19.8 | 34.3 | 2.7 | 7.0 | 9.1 | 20.5 |
| Bay of Plenty | 20.1 | 29.1 | 24.1 | 34.9 | 2.8 | 6.3 | 10.0 | 17.5 |
| Waikato | 19.8 | 30.4 | 24.3 | 36.2 | 2.7 | 7.1 | 10.3 | 22.0 |
| Tongariro | 18.5 | 25.0 | 22.9 | 37.6 | 4.1 | 8.4 | 9.9 | 18.9 |
| East Cape | 21.5 | 28.1 | 27.1 | 36.0 | 4.2 | 9.2 | 9.8 | 13.6 |
| Hawke's Bay | 20.4 | 32.7 | 24.3 | 36.3 | 2.7 | 6.8 | 10.2 | 18.3 |
| Taranaki | 19.5 | 39.3 | 21.4 | 33.9 | 3.1 | 8.9 | 9.0 | 20.6 |
| Wanganui | 15.5 | 27.8 | 22.1 | 36.8 | 2.9 | 6.3 | 9.0 | 13.8 |
| Manawatu | 21.5 | 30.1 | 27.6 | 40.8 | 3.2 | 5.4 | 8.9 | 13.9 |
| Horowhenua | 17.5 | 26.7 | 18.6 | 28.6 | 4.1 | 7.3 | 9.1 | 11.1 |
| Wellington | 16.9 | 23.9 | 18.3 | 26.3 | 2.3 | 5.2 | 7.0 | 9.4 |
| Wairarapa | 19.8 | 34.5 | 20.5 | 36.7 | 4.0 | 6.1 | 8.7 | 18.5 |
| Nelson Bays | 14.9 | 19.0 | 18.7 | 26.7 | 2.4 | 3.7 | 6.6 | 4.3 |
| Marlborough | 18.4 | 24.3 | 22.9 | 24.2 | 3.8 | 10.7 | 10.4 | 31.3 |
| West Coast | 20.1 | 25.0 | 18.9 | 27.3 | 4.5 | 9.5 | 7.1 | 18.2 |
| Canterbury | 18.5 | 23.6 | 22.1 | 28.3 | 3.5 | 8.8 | 9.2 | 15.7 |
| Aorangi | 18.1 | 21.6 | 25.1 | 35.1 | 1.7 | 6.3 | 9.6 | 14.3 |
| Clutha-Central Otago | 12.3 | 15.8 | 18.5 | 28.6 | 1.2 | 0.0 | 6.7 | 13.3 |
| Coastal-North Otago | 23.8 | 33.3 | 26.4 | 32.9 | 3.7 | 8.5 | 8.6 | 17.9 |
| Southland | 16.5 | 21.1 | 19.8 | 28.3 | 2.0 | 5.7 | 7.6 | 13.5 |

*Source:* Unpublished tables, 1986 Census of Population and Dwellings.

# Projected Trends 1986-2011

Population trends in the regions over the next 25 years will be largely determined by the national trend towards very slow growth unless there are marked unforeseen changes in fertility patterns and levels of immigration. At a regional as well as at a national level, there should be a shift of emphasis in social policy — a shift away from responses to growth-driven change towards responses to composition-driven change.

The need for such a shift in policy formulation at the national level has been argued by the Population Monitoring Group (1986) and the New Zealand Demographic Society (Crothers and Bedford 1988). At the regional level, the situation is complicated by diversity in population size, age composition, ethnicity, and rural-urban distribution. This means that the demographic prognosis for each region will vary. Appropriate social policy responses to population trends at the national level will not necessarily be appropriate or relevant in all regions. Projected population characteristics and growth trends vary from region to region, and this diversity must be appreciated by policy-makers who seek to respond sensitively to demographic change.

## Assumptions and Interpretation

It must be stated at the outset that population projections are not predictions. At best they indicate some of the broad changes in patterns of growth and composition that might be expected on the basis of selective assumptions related to recent demographic trends. Factors such as sudden shifts in immigration policy at the national level, or implementation of a large public works project in a particular region, may affect future population trends in ways which cannot be foreseen.

Sub-national population projections are more difficult to prepare than national projections, partly because of differences in the sizes of regional populations (projections of small populations should be interpreted very cautiously), and partly because of variations between places in fertility, mortality and especially migration. Such variations have been demonstrated clearly for local government regions in previous sections; it is important to keep this in mind when assessing the assumptions which underlie sub-national projections.

To provide a scenario for regional population trends, the Population Monitoring Group has selected one of several recent sub-national projections which have been prepared by the Department of Statistics. The PMG has not been able to cross-check trends in every local government region to verify which particular assumptions about fertility, mortality and migration are valid. The 'medium' projection variant produced by the Department of Statistics has been taken as the standard for all regions, despite the fact that detailed analysis of data from particular places shows that there are significant differences between projected estimates of fertility and migration and observed trends in these processes over the past few years. There is nothing particularly novel in this; it is precisely for such a reason that the Department of Statistics closely monitors population trends at the national and sub-national levels, and frequently up-dates their projections series in the light of new data on births, deaths and migration.

A limitation of the medium fertility assumption became evident during the preparation of this report. Nationwide there has been an upsurge in age-specific fertility rates and these have produced a minor increase in the total fertility rate (TFR). As a result, recent TFRs observed vary from the TFRs used in the medium population projections. However, the variation is not all in the same direction. Table 30 shows that the observed TFRs exceed the TFRs used in the medium fertility assumption in 13 of the local government regions (mainly in the North Island), they are the same in seven regions (all in the South Island except Wellington and Wairarapa), and are below the assumed fertility level in two southern regions of the South Island. If a comparison is made with the TFRs assumed under the 'high' fertility variant, the observed TFR between 1985 and 1987 exceeds the high variant for Northland and the West Coast, is the same for eight North Island regions and Marlborough, and is below it for most of the southern North Island regions and all but two South Island regions (see Table 30).

The differences between observed and assumed fertility in the late 1980s reflect the complexity of regional fertility patterns which was discussed earlier in this section of the report. It is therefore possible that there could be greater regional variation in fertility in the future than has been assumed. The range of values for the observed TFRs (1.7 to 2.5) is larger than that for the assumed rates (1.7 to 2.3, medium variant). The observed TFRs for the period 1985-87 range from the lowest rate under the medium fertility assumption to the highest rate under the high fertility assumption (see Table 30).

The most difficult variable to assess in terms of likely future levels is regional net migration gains and losses. The 'high', 'medium' and 'low' net migration assumptions for regions during the periods 1986-91 and 1996-2001 are shown in Table 31. The figures for the medium assumption in the late 1980s are based in part on trends between 1981 and 1986; the estimates for the late 1990s are levels assumed to apply for each five-year period through to the end of the projection period in 2011. The range of values is enormous both at the regional and the national levels. For example, between 1986 and 1991 it is assumed that Auckland would have net gains ranging from 36,650 (high) to 3,150 (low), while Wellington had net losses between -4,050 (high) to -14,500 (low). For New Zealand as a whole the range was between a gain of 54,400 people during the five years (high) to a loss of -70,400 people (low).

The basis for these migration assumptions cannot be examined in detail here. However, the projected levels must be mentioned because they highlight two important points which should be borne in mind when interpreting population projections. The first is the determination of net migration gains and losses for each region during successive five-year periods in the future. It is evident from Table 31 that the effect of migration on regional population growth over the next 25 years will vary markedly reflecting, in large measure, a projection forward of trends in population movement since

**TABLE 30: HIGH AND MEDIUM FERTILITY ASSUMPTIONS FOR 1986-1991, AND THE OBSERVED FERTILITY 1985-87**

| Local Government Region | Total Fertility Rate | | | |
|---|---|---|---|---|
| | Assumption | | Observed TFR | Difference |
| | High | Medium | | Obs-Medium |
| Northland | 2.4 | 2.3 | 2.5 | +0.2 |
| Auckland | 2.0 | 1.9 | 2.0 | +0.1 |
| Thames Valley | 2.3 | 2.2 | 2.3 | +0.1 |
| Bay of Plenty | 2.2 | 2.1 | 2.2 | +0.1 |
| Waikato | 2.1 | 2.0 | 2.1 | +0.1 |
| Tongariro | 2.4 | 2.3 | 2.4 | +0.1 |
| East Cape | 2.5 | 2.3 | 2.5 | +0.2 |
| Hawke's Bay | 2.3 | 2.1 | 2.2 | +0.1 |
| Taranaki | 2.3 | 2.2 | 2.2 | Same |
| Wanganui | 2.3 | 2.2 | 2.3 | +0.1 |
| Manawatu | 2.0 | 1.8 | 1.9 | +0.1 |
| Horowhenua | 2.1 | 2.0 | 2.1 | +0.1 |
| Wellington | 1.9 | 1.8 | 1.8 | Same |
| Wairarapa | 2.3 | 2.2 | 2.2 | Same |
| Nelson Bays | 2.0 | 1.9 | 1.9 | Same |
| Marlborough | 2.1 | 2.0 | 2.1 | +0.1 |
| West Coast | 2.0 | 1.9 | 2.1 | +0.2 |
| Canterbury | 1.8 | 1.7 | 1.7 | Same |
| Aorangi | 2.0 | 1.9 | 1.9 | Same |
| Clutha-Central Otago | 2.0 | 2.0 | 1.8 | -0.2 |
| Coastal-North Otago | 1.8 | 1.7 | 1.7 | Same |
| Southland | 2.2 | 2.2 | 2.1 | -0.1 |

*Sources:* High and medium assumptions: Department of Statistics, Demographic Projections Section. Observed TFR: Table 9 in this report.

the mid 1970s. Obviously it is not possible for anyone to forecast accurately what will be the economic and social situations in the 22 local government regions in the early twentyfirst century, and consequently the levels of migration assumed for the 1990s and beyond should not be taken too literally.

The second point about the projection methodology which must be appreciated when interpreting estimates of population size and age-sex composition in 2011 is the assumption of constant levels of fertility, mortality and migration after 1996. This is not really a problem in the case of mortality because levels are already low, and changes in death rates in most age groups will be small. However, in the case of fertility an assumption of constant rates is unlikely to reflect reality given the tendency for fluctuations in birth rates over time. In the case of migration, such an assumption is highly unrealistic given that net population gains and losses to each region reflect a host of economic and social factors locally, at the national level and internationally, especially in Australia.

The fact that assumptions underlying population projections cannot all be realistic does not invalidate their usefulness when examining patterns of change in regional populations. The majority of people who will be alive in the year 2011 in New Zealand are already born, and fluctuations in fertility rates over the next 25 years will not affect numbers in the population aged 25 years and over. The current age-sex structure of regional populations, coupled with assumptions about migration of people aged 15 years and over, will largely determine the composition of the labour-force and

**TABLE 31: HIGH, MEDIUM AND LOW MIGRATION ASSUMPTIONS, 1986-1991 AND 1996-2001**

| Local Government Region | Net migration gains and losses | | | | | |
|---|---|---|---|---|---|---|
| | 1986-1991 | | | 1996-2001[a] | | |
| | High | Medium | Low | High | Medium | Low |
| Northland | 3,950 | 1,500 | -950 | 5,510 | 2,800 | 450 |
| Auckland | 36,650 | 19,900 | 3,150 | 26,850 | 11,100 | -4,650 |
| Thames Valley | 1,900 | 450 | -1,000 | 2,600 | 1,150 | -300 |
| Bay of Plenty | 7,800 | 3,200 | -1,400 | 9,900 | 5,300 | 700 |
| Waikato | 400 | -3,900 | -8,200 | 2,900 | -1,350 | -5,600 |
| Tongariro | 600 | -650 | -1,900 | 1,500 | 250 | -1,000 |
| East Cape | -1,000 | -1,950 | -2,900 | 700 | -250 | -1,200 |
| Hawke's Bay | 300 | -1,900 | -4,100 | 2,000 | -200 | -2,400 |
| Taranaki | 100 | -2,250 | -4,600 | 2,400 | 50 | -2,300 |
| Wanganui | -850 | -2,350 | -3,850 | 1,000 | -500 | -2,000 |
| Manawatu | 950 | -1,150 | -3,250 | 2,450 | 350 | -1,750 |
| Horowhenua | 3,450 | 2,350 | 1,250 | 3,200 | 2,350 | 1,500 |
| Wellington | -4,050 | -9,300 | -14,550 | 3,050 | -2,200 | -7,450 |
| Wairarapa | -500 | -1,300 | -2,100 | 500 | -300 | -1,100 |
| Nelson Bays | 1,500 | 700 | -100 | 1,400 | 600 | -200 |
| Marlborough | 800 | 200 | -400 | 700 | 100 | -500 |
| West Coast | 100 | -700 | -1,500 | 400 | -400 | -1,200 |
| Canterbury | 4,030 | -900 | -5,830 | 4,030 | -700 | -5,430 |
| Aorangi | -950 | -2,500 | -4,050 | -100 | -1,650 | -3,200 |
| Clutha-Central Otago | 2,670 | 700 | -1,270 | 620 | -750 | -2,120 |
| Coastal-North Otago | -300 | -2,850 | -5,400 | -200 | -2,750 | -5,300 |
| Southland | -3,500 | -5,500 | -7,500 | -1,200 | -3,200 | -5,200 |
| North Island | 50,000 | 2,850 | -44,300 | 64,500 | 18,750 | -27,000 |
| South Island | 4,400 | -10,850 | -26,100 | 5,700 | -8,750 | -23,200 |
| New Zealand | 54,400 | -8,000 | -70,400 | 70,200 | 10,000 | -50,200 |

[a] These levels are assumed to apply to the two successive projection periods, 2001-2006 and 2006-2011, as well.

*Source:* Department of Statistics, Demographic Profiles, unpublished user-requested population projections for Local Government Regions.

elderly components of the population. As these two components are projected to grow much more rapidly in numbers than the population under 25 years between 1986 and 2011, significant policy issues associated with demographic change will relate to the ageing of regional populations.

A final point to bear in mind when interpreting the projections is that where constant levels of net out-migration are assumed for particular regions, as is the case from 1996 to 2011 under the medium projection variant in all of the South Island (except Nelson Bays and Marlborough and in five North Island regions (including Waikato and Wellington), then the effect over time is to produce an increased impact of migration on population growth. In other words, a constant net loss, especially in regions with low population growth, progressively depletes the population base and means that the rate of out-migration increases steadily over time. The effect of a combination of low levels of

population growth in the 1980s, coupled with high, constant levels of net out-migration over the next 25 years, is to produce very depressing population prospects for regions such as West Coast, Aorangi, Coastal-North Otago and Southland especially. This type of demographic scenario for a metropolitan region such as Coastal-North Otago could be unduly pessimistic; it reflects more about the assumptions concerning migration than any calculated assessment of prospects for economic and social development in the southern South Island.

## Growth Prospects

A medium projection variant would produce a New Zealand population of 3,759,000 for the year ended 31 March 2011. This compares with the usually-resident total of 3,263,283 recorded in the 1986 Census (see Table 3). The projected total- usually-resident population for 2011 is 15 percent larger than the population in 1986, a much smaller percentage increase than was recorded for the 25-year period before the 1986 enumeration (see Table 32). Between 1961 and 1986 the New Zealand population increased by 37 percent, at an average annual growth rate of 2.1 percent. Over the next 25 years the annual rate of population growth averages out at less than 1.0 percent under the medium projection variant; less than half that of the preceding period.

At the regional level there is considerable variation in the overall percentage population change and the average annual rates of growth between 1986 and 2011 (see Table 32). The largest proportional increases are recorded for Northland, Bay of Plenty and Auckland (28.7, 28.5 and 24.0 percent respectively). The only other regions with a growth rate above the national average are Horowhenua (19.8 percent), Tongariro (19.7 percent) and Thames Valley (17 percent). In all cases these are regions of net in-migration after 1991 under the medium migration assumption, and the five non-metropolitan regions are areas which are becoming retirement zones. In the cases of Northland, Bay of Plenty and Tongariro their proportionately large Maori populations also contribute to greater-than-average population growth over the next 25 years.

The anticipated faster growth in the Maori population is not sufficient on its own to cause higher-than-average proportional increases in regional populations between 1986 and 2011. This is evident in the percentage increase envisaged for East Cape — the region with the highest proportion of Maori-descent residents. Between 1986 and 2011 the medium projection variant anticipates a 10 percent increase in the population of East Cape, well below the national average of 15 percent. Continued net emigration from this region throughout the projection period more than offsets the assumed higher fertility (see Tables 30, 31 and 32). However, East Cape is one of only four regions (including Taranaki, Wanganui and West Coast) which are projected to have a larger percentage population increase over the next 25 years than they had between 1961 and 1986. This is because the increases during the latter period were very small. In most regions the projected percentage population change between 1986 and 2011 is much lower than it was between 1961 and 1986 (see Table 32).

In the South Island only Nelson Bays and Clutha-Central Otago, both favoured for retirement, have projected population increases of over 10 percent. Indeed, three regions experience absolute population decline under this scenario — Aorangi (-9.2 percent), Southland (-3.6 percent) and Coastal-North Otago (-3.2 percent). The population of the South Island as a whole is projected to grow by only 3 percent between 1986 and 2011 compared with just under 19 percent over the previous 25 years.

While the patterns of actual population growth experienced since 1961 and projected population prospects after 1986 are quite complex in detail, it is evident from Table 32 that the difference between faster growth in the northern half of the North Island and slower growth elsewhere becomes sharper under the medium projection variant. The only region south of Tongariro with an average annual growth rate of over 1.0 percent per annum between 1986 and 2011 is Horowhenua (see Table 32). All the others have annual growth rates below the national average. Between 1961 and 1986 there was much greater variability in average annual rates of growth, reflecting quite marked differences in percentage increase in the regional populations. Such variation may well emerge over the next 25 years as well; projections inevitably 'smooth out' some of the place-specific irregularities in population growth experience. Nevertheless it is evident that a division of population growth prospects between three broad regional groupings could strengthen over the next 25 years:

a) the northern North Island plus Horowhenua — population growth rate above the national average

**TABLE 32: PROJECTED USUALLY RESIDENT POPULATION, 1986-2011**

| Local Government Region | Population ('000s) | | Percentage change | | Average annual rate of population growth (%) | |
|---|---|---|---|---|---|---|
| | 1986 | 2011[a] | 1986-2011[b] | 1961-86[c] | 1986-2011 | 1961-86 |
| Northland | 123 | 158 | 28.7 | 47.1 | 1.7 | 2.6 |
| Auckland | 881 | 1,094 | 24.0 | 73.9 | 1.4 | 3.7 |
| Thames Valley | 56 | 66 | 17.0 | 25.0 | 1.1 | 1.5 |
| Bay of Plenty | 184 | 236 | 28.5 | 80.2 | 1.7 | 3.9 |
| Waikato | 228 | 265 | 16.4 | 37.7 | 1.0 | 2.1 |
| Tongariro | 38 | 46 | 19.7 | 20.8 | 1.3 | 1.3 |
| East Cape | 54 | 59 | 9.9 | 5.6 | 0.6 | 0.4 |
| Hawke's Bay | 139 | 157 | 12.6 | 36.3 | 0.8 | 2.1 |
| Taranaki | 109 | 123 | 13.2 | 11.8 | 0.8 | 0.7 |
| Wanganui | 69 | 74 | 7.5 | 3.3 | 0.5 | 0.2 |
| Manawatu | 115 | 133 | 15.2 | 23.9 | 0.9 | 1.4 |
| Horowhenua | 53 | 64 | 19.8 | 78.1 | 1.3 | 3.8 |
| Wellington | 325 | 368 | 13.1 | 29.7 | 0.8 | 1.7 |
| Wairarapa | 39 | 42 | 6.7 | 8.1 | 0.5 | 0.5 |
| Nelson Bays | 67 | 75 | 11.5 | 39.3 | 0.8 | 2.2 |
| Marlborough | 37 | 40 | 8.8 | 36.7 | 0.5 | 2.1 |
| West Coast | 33 | 33 | 0.2 | -6.6 | 0.0 | -0.5 |
| Canterbury | 344 | 368 | 7.1 | 30.4 | 0.4 | 1.8 |
| Aorangi | 80 | 73 | -9.2 | 7.2 | -0.4 | 0.5 |
| Clutha-Central Otago | 45 | 50 | 11.0 | 29.7 | 0.7 | 1.7 |
| Coastal-North Otago | 136 | 132 | -3.2 | -0.7 | -0.2 | -0.4 |
| Southland | 104 | 100 | -3.6 | 11.9 | -0.3 | 0.7 |
| North Island | 2,415 | 2,886 | 19.5 | 45.3 | 1.2 | 2.5 |
| South Island | 847 | 873 | 3.1 | 18.6 | 0.2 | 1.1 |
| New Zealand | 3,263 | 3,759 | 15.2 | 36.9 | 0.9 | 2.1 |

[a] Projected population based on "medium" fertility and "medium" migration assumptions.

[b] Percentage change in usually resident (de jure) populations in the regions.

[c] Percentage change in total (de facto) populations in the regions.

*Sources:* Lowe (1988b), and Department of Statistics, Demographic Profiles, unpublished user-requested population projections for Local Government Regions.

b) the rest of the North Island plus Nelson Bays, Marlborough, Canterbury and Clutha-Central Otago — an average annual growth rate of at least 0.4 percent per annum

c) West Coast, Aorangi, Coastal-North Otago and Southland — no growth or population decline.

## Changes in Population Structure

Changes in age-sex structure are of critical importance in explaining variations in rates of population growth in the local government regions over the next 25 years. This can be illustrated initially with reference to three broad functional age groups: the youthful population (0-14 years), the labour force (15-64 years) and the elderly (65 years and over). Percentage changes in each group, as projected under the medium fertility and migration assumptions, are detailed in Table 33. The resultant patterns are mapped in terms of deviations from national averages for change in each age group in Figure 18.

**TABLE 33: PROJECTED CHANGE IN THE YOUTHFUL, LABOUR FORCE AND ELDERLY POPULATIONS, 1986-2011**

| Local Government Region | Percentage change in usually resident population aged[a] | | |
|---|---|---|---|
| | 0-14 | 15-64 | 65+ |
| Northland | 0.2 | 34.5 | 77.8 |
| Auckland | -0.4 | 27.6 | 56.9 |
| Thames Valley | -11.9 | 20.3 | 61.2 |
| Bay of Plenty | -2.3 | 33.0 | 80.9 |
| Waikato | -9.6 | 21.3 | 63.0 |
| Tongariro | -9.6 | 23.8 | 99.9 |
| East Cape | -15.8 | 17.1 | 27.4 |
| Hawke's Bay | -12.4 | 18.3 | 45.1 |
| Taranaki | -10.9 | 20.3 | 32.2 |
| Wanganui | -11.9 | 12.1 | 18.1 |
| Manawatu | -8.3 | 20.0 | 40.0 |
| Horowhenua | -6.6 | 21.3 | 51.5 |
| Wellington | -7.6 | 17.2 | 35.5 |
| Wairarapa | -14.4 | 9.9 | 39.9 |
| Nelson Bays | -12.1 | 15.1 | 39.3 |
| Marlborough | -16.2 | 11.7 | 47.7 |
| West Coast | -18.9 | 7.0 | 10.3 |
| Canterbury | -14.3 | 8.4 | 37.3 |
| Aorangi | -30.6 | -5.9 | 17.4 |
| Clutha-Central Otago | -14.4 | 14.4 | 67.5 |
| Coastal-North Otago | -21.2 | 2.0 | -1.2 |
| Southland | -27.4 | 0.3 | 37.2 |
| North Island | -5.5 | 23.9 | 53.2 |
| South Island | -18.9 | 6.1 | 29.1 |
| New Zealand | -8.8 | 19.1 | 46.3 |

[a] Based on "medium" fertility and migration assumptions.

*Source:* Department of Statistics, Demographic Profiles, unpublished user-requested population projections for Local Government Regions.

The most striking demographic developments projected for the next 25 years are a smaller number of children in the population by the year 2011, ageing of the labour force, and very substantial increases in the numbers of elderly people. The decline in the youthful population will be much more significant in the South Island than the North Island, and in one region — Aorangi — numbers of children are projected to fall by 30 percent (see Table 33). In the case of the population aged 65 years and over, the projected increase for the country as a whole is 46 percent, but in five regions in the North Island and one in the South Island numbers of elderly are projected to be over 60 percent greater in 2011 than they were in 1986 (see Table 33). These broad structural changes have been anticipated at the national level for some time; what is not always appreciated is that there will be considerable regional variation in the projected growth or decline in the sizes of the youthful, labour-force and elderly populations.

The only region which ends up with a larger child population in 2011 under the medium projection variant is Northland, and the increase — 0.2 percent — over the 1986 population aged 0-14 years is very small. Three regions (Northland, Auckland and Bay of Plenty) have percentage changes in their youthful populations which are more than one deviation unit above the national average (see Figure 18a). These three are also distinguished in that they are the only regions where the labour-force age group is projected to grow by more than 25 percent (see Figure 18b). The other 'growth' regions identified earlier (Thames Valley, Waikato, Tongariro and Horowhenua) all have larger decreases in their child population and smaller increases in the labour-force component (see Table 33 and Figure 18). Growth in the size of the population over 65 years is especially significant in most of these regions: Tongariro, Bay of Plenty and Northland have projected increases of over 75 percent for the elderly population, while in Waikato, Thames Valley and Horowhenua this component grows by more than 50 percent. The only other regions in this category are Auckland and Clutha-Central Otago (see Table 33 and Figure 18c).

Underlying the differential patterns of increase in the youthful, labour-force and elderly populations in these 'high growth' regions are a range of economic and social factors. It is tempting to assume that the percentage increases in the labour-force and elderly components of Northland, Bay of Plenty and Tongariro arise, in part, from older people moving to retirement zones in these regions and needing an attendant service population of working ages. In-migration of younger adults with their children could augment both the youthful and labour-force components. Equally well, however, the clustering of these three regions in terms of population growth may reflect more the presence of sizeable Maori-descent populations with younger age structures. In regions favoured as destinations by elderly migrants which have small Maori populations (Thames Valley, Horowhenua) projected growth in the youthful and working-age components is somewhat lower. In Auckland and Waikato growth in the labour-force-age population is aided by the presence of a large Maori-descent component with its younger age structure and, in Auckland, the sizeable Pacific Island Polynesian community.

The overall growth in regional populations between 1986 and 2011, which is summarised in Figure 18d, is thus produced by quite diverse patterns of change in the age structures of local government regions. The elderly are a particularly significant component of the population increase in many regions, both as a result of ageing of their residents as well as in- (or out-) migration for retirement. The populations of Northland, Bay of Plenty, Tongariro, Horowhenua and Clutha-Central Otago are expected to be augmented by net in-migration of older people. In Marlborough and Nelson Bays, two other regions often mentioned in the context of retirement migration, projected increases are much smaller (see Table 33). This reflects, in part, the fact that these regions, in common with much of the rest of the South Island (and Horowhenua), already have higher-than-average proportions of elderly people in the usually resident population. In addition the continued out-migration of people in the labour force-age groups, which is projected for most South Island regions, will have the effect of reducing the potential for growth in the numbers of residents aged 65 years and over by 2011.

Five South Island regions (West Coast, Canterbury, Aorangi, Coastal-North Otago and Southland) are projected to have percentage increases in the population of labour-force ages which are less than half the national average of 19 percent between 1986 and 2011. Indeed, under the medium projection assumptions Aorangi's labour force declines by almost 6 percent (see Table 33). For the South Island as a whole projected growth in both the labour-force and the elderly age groups is well below the national average, reflecting both a direct and an indirect impact of migration. The direct impact is removal of people aged 15 years and over and their relocation elsewhere in the country and overseas. The indirect impact is the loss of reproductive potential in the region which is represented by net migration losses of men and women aged between 20 and 39 years in particular.

Two inter-related themes, both having social and economic policy implications, emerge from this overview of structural changes in regional populations. The first, which has implications for economic growth, is changes in the age composition of the labour force. The second is the shift from a situation of child-dominated dependency to one where elderly people comprise a much more significant component of the population that is not within the labour-force ages of 15 to 64 years. These are explored below in the broader context of population ageing between 1986 and 2011.

## Changes in the Labour Force

The age composition of the labour force will change markedly over the next two decades. It was noted earlier that the usually resident population in New Zealand aged between 15 and 64 years could increase by 19 percent between 1986 and 2011 under assumptions used in the medium projection variant. Within this broad age group there are significant differences in projected increases for the labour-force-entrant population (15-24 years), the younger working population (25-44 years) and the older labour force (45-64 years). These changes are detailed in Table 34 and Figure 19.

If fertility remains at relatively low levels by 2011 the labour-force-entrant age groups in all regions could be smaller than they were in 1986. The size of this component of the population is determined by the interaction between existing age structures and the assumptions concerning fertility, mortality and migration in the projections. It should be kept in mind that all of the people aged between 15 and 24 years in 2011 were born after 1986; the size of this population is entirely dependent on the projection assumptions. The net effect of fertility, mortality and migration assumptions in the medium projection variant is to produce an overall decline by 12 percent in the number of people aged 15 to 24 years in the New Zealand population (see Table 34).

There are significant regional variations in this decline, reflecting the effects of differences in fertility levels (which, in turn, are related to ethnic composition) and the effects of age-specific migration rates which are at their highest levels in most regions for people aged between 15 and 24 years. All regions in the South Island have declines which are greater than the national average, and in five (Marlborough, West Coast, Aorangi, Coastal-North Otago and Southland) their labour-force-entrant cohorts are projected to be reduced by more than 20 percent. In this age group only Clutha-Central Otago is forecast to have growth which is close to the national average (see Table 33 and Figure 19). It is possible that the projected retirement migration to Central Otago could generate more service-related employment than would be expected through ageing of the region's usually resident population. A more important contributor to the lower level of decline in the 15-24 year old age groups is likely to be employment in the region's growing tourist industry.

Most North Island regions experience decreases in their labour-force-entrant cohorts which are smaller than the national average (see Table 34 and Figure 19a). Northland, Auckland and Bay of Plenty are again distinctive with decreases which are less than half of the figure for the national population. A combination of factors related to job markets, ethnic composition of the population and retirement migration contribute to this situation. The other major retirement regions — Thames Valley, Tongariro and Horowhenua — all have projected declines in the population aged 15-24 years which are close to the national average. Employment related to servicing an older population which has been augmented by retirement migration is likely to encourage some in-migration of younger people to these regions.

Patterns of change for the population aged between 25 and 44 years show two distinctive trends. All regions in the North Island are projected to have larger populations in this age group in 2011 than were resident in 1986 (see Table 34). In the South Island all regions except for Clutha-Central Otago will have smaller populations in the younger working ages than were present in 1986. The growth which is projected for Clutha-Central Otago is very small (0.2 percent) and is well below the projected change (9 percent) for the age group at the national level. As is evident from Figure 19b, all regions in the South Island have percentage changes which are one or more deviations below the national average. The major explanation for this situation is net migration losses to regions in the North Island or to overseas destinations.

There is considerable variation in the projected changes in the size of the younger working population in the North Island regions. Increases by more than 20 percent are produced for Northland and Bay of Plenty, and this reinforces a trend apparent between 1981 and 1986 when these two regions had the largest percentage increases in both the 25 to 44 year age group as well as the 15 to 24 year age group (see Table 20). Tongariro and Auckland follow with percentage

increases of 17 and 16 percent respectively, well above the remaining North Island regions. The combination of employment opportunity and ethnic diversity is again important in explaining the tendency for this group of regions to cluster on the basis of projected population growth. The 'low growth' regions of the North Island, in terms of percentage changes in their younger working-age populations, are Wanganui and Wairarapa; two regions dominated by a pastoral economy which is shedding labour rather than generating new employment opportunities.

The older working-age population (45 to 64 years) is projected to grow by almost two-thirds between 1986 and 2011 (see Table 34). Patterns of change across the two islands are more variable than is the case with the younger working-age population, with two regions in the North Island (Wanganui and Wairarapa) projected to have smaller increases than most of the regions in the South Island (see Figure 19c). Northland, Auckland, and Bay of Plenty have increases of 80 percent or more in their older working populations, with Waikato and Tongariro forming a distinctive duo on 70 percent. The interesting anomaly in terms of growth in particular components of the labour force is East Cape. The older working-age population is projected to increase by 66 percent between 1986 and 2011 — the only group in the region's population which grows at more than the national average. The younger working-age population in East Cape is projected to increase by 8 percent (compared with an average of 14 percent for the North Island as a whole), while the labour-force-entrant group declines by 19 percent according to the medium projection variant (see Table 34).

A useful summary measure of the changing structure of the population at labour- force ages is the ratio of new entrants (15-24) to those at older ages (45-64 years). This ratio is shown for the usually resident population in 1986 and the projected population in 2011 in Table 34, and the mapped pattern for the ratio in the latter year is contained in Figure 19d. At a national level the ratio almost halves over the 25 years from 97 new entrants per 100 older people in 1986 to 52 per 100 in 2011. Regions with markedly higher-than-average percentages in the younger age group in 2011 are Waikato, Manawatu, Wellington and Coastal-North Otago where the ratio is weighted by the presence of significant numbers of tertiary students, and Wanganui where heavy out-migration of older people has produced a situation where the younger working population is still larger in proportional terms than the national average. The other distinctive group of regions in 2011 in terms of this ratio includes Thames Valley, Horowhenua, Nelson Bays and Marlborough — regions which are all known for their attractiveness to older migrants (see Figure 19d). According to the medium projection variant these regions, along with Aorangi, will have the highest levels of aged dependency by 2011.

## Demographic Dependency

Patterns of change in the sizes of particular age groups between 1986 and 2011 clearly indicate that New Zealand's population will get progressively older. The ratio of elderly people to those in labour-force age groups, or the aged dependency ratio, is projected to rise in all regions, and the proportion of all dependents (children plus elderly) who are aged 65 years and over will increase from 30 to 40 percent by 2011 under the assumptions of the medium projection variant (see Table 35). Over the same period youth dependents (0-14 years of age) will become proportionately less significant, although it should be noted that in all regions except Horowhenua children will still outnumber the elderly in the population. In Horowhenua 55 percent of those people who are not in the labour-force age group (15-64 years) are projected to be aged 65 years and over. Aorangi, Canterbury and Thames Valley could also have proportions close to 50 percent by this stage as well, and over the succeeding decade the older component of demographic dependency would become predominant in most regions.

The regional patterns of youth and aged dependency are shown in Figure 20. Youth dependency ratios are higher in the North Island than the South Island, reflecting the combination of fertility, ethnicity, and migration factors mentioned several times already (see Figure 20a). The highest ratios in 1986 were in East Cape (457 children per 1000 in the labour-force age group), Tongariro (444),Wairarapa (441) and Northland (434) (see Table 35). By 2011 the same regions remain prominent on this measure of population structure, although the order changes slightly (Wairarapa 343; East Cape 328; Northland 323; Tongariro 321). In the cases of East Cape, Northland and Tongariro the proportionately large Maori-descent populations contribute significantly to ratios which are higher than the national average. In Wairarapa it is out-migration of people in the labour-force age groups which has the effect of heightening the significance of the youthful component in the population.

Over the 25 years the range in values for youth dependency across the regions is projected to become narrower. In 1986 the difference between the largest (444, Tongariro) and smallest (324, Canterbury) ratios was 120; by 2011 it had fallen to 89, the difference between ratios of 343 (Wairarapa) and 245 (Coastal-North Otago). The fertility assumptions in the projections have the effect of dampening regional variation in this measure of demographic dependency.

FIGURE 18: PROJECTED CHANGES IN AGE GROUPS, 1986-2011.

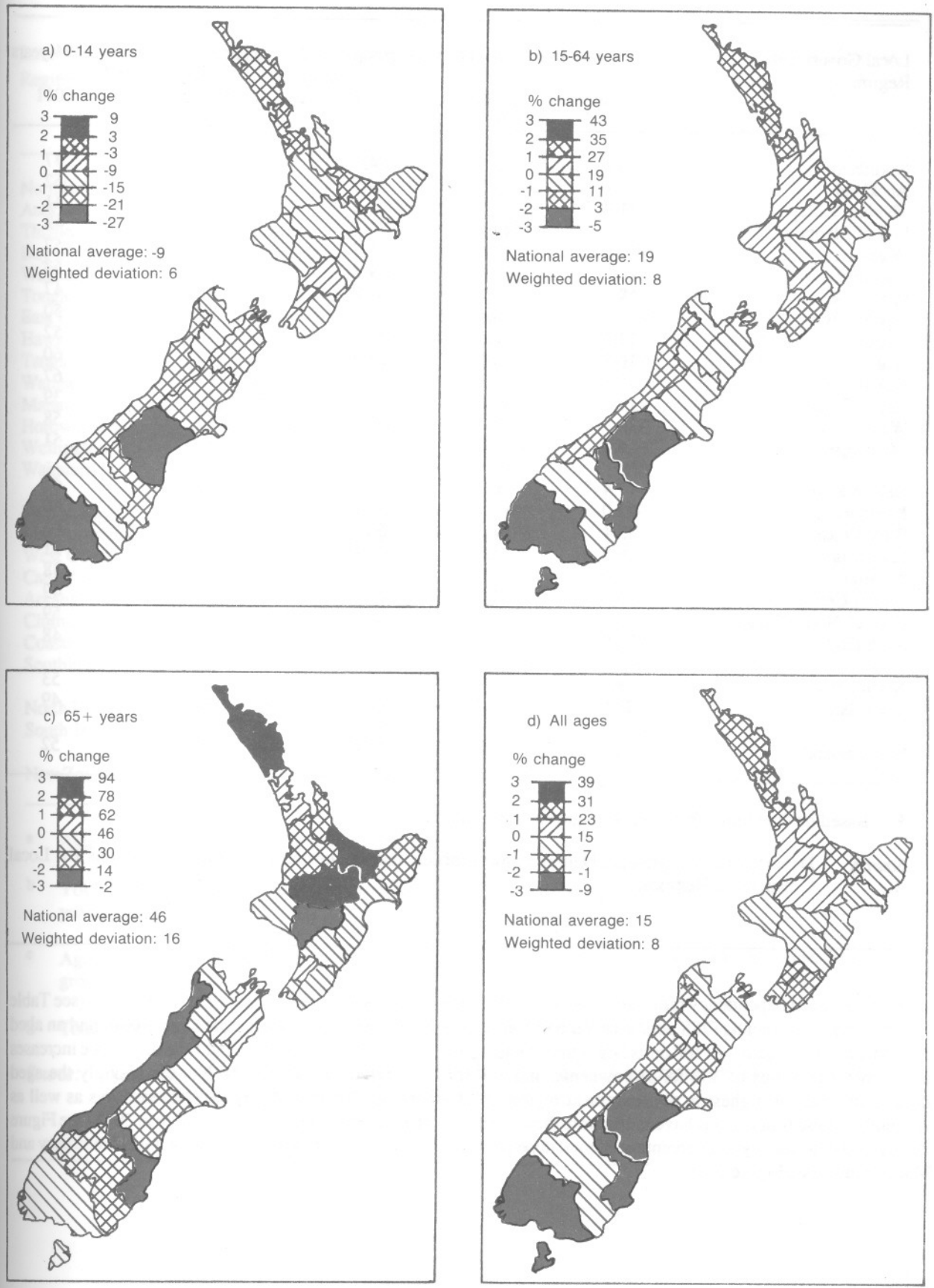


**TABLE 34: PROJECTED POPULATION CHANGE IN THE LABOUR FORCE AGE GROUPS, 1986-2011[a]**

| Local Government Region | Percentage change in age group | | | Ratio of population 15-24 years per 100 45-64 years | |
|---|---|---|---|---|---|
| | 15-24 | 25-44 | 45-64 | 1986 | 2011 |
| Northland | -0.4 | 21.5 | 84.3 | 86 | 47 |
| Auckland | -5.9 | 16.3 | 79.5 | 99 | 52 |
| Thames Valley | -11.9 | 7.9 | 61.8 | 76 | 41 |
| Bay of Plenty | -5.0 | 24.1 | 81.2 | 92 | 48 |
| Waikato | -12.0 | 13.6 | 71.7 | 112 | 57 |
| Tongariro | -10.6 | 17.4 | 69.2 | 100 | 53 |
| East Cape | -19.0 | 8.1 | 66.0 | 98 | 47 |
| Hawke's Bay | -13.5 | 10.4 | 60.0 | 93 | 50 |
| Taranaki | -12.2 | 12.6 | 64.7 | 98 | 52 |
| Wanganui | -10.8 | 3.4 | 48.7 | 100 | 60 |
| Manawatu | -8.5 | 12.3 | 66.3 | 119 | 67 |
| Horowhenua | -11.7 | 11.6 | 56.0 | 69 | 39 |
| Wellington | -11.9 | 8.5 | 63.2 | 107 | 58 |
| Wairarapa | -14.0 | 3.3 | 39.7 | 83 | 51 |
| Nelson Bays | -17.4 | -0.3 | 65.7 | 85 | 42 |
| Marlborough | -22.0 | -1.7 | 58.6 | 82 | 40 |
| West Coast | -22.4 | -7.0 | 56.7 | 90 | 45 |
| Canterbury | -18.3 | -3.6 | 51.4 | 94 | 51 |
| Aorangi | -36.4 | -16.0 | 31.9 | 79 | 38 |
| Clutha-Central Otago | -13.1 | 0.2 | 63.6 | 91 | 49 |
| Coastal-North Otago | -21.3 | -5.9 | 37.4 | 103 | 59 |
| Southland | -27.9 | -9.5 | 43.1 | 96 | 48 |
| North Island | -8.7 | 14.2 | 71.7 | 99 | 53 |
| South Island | -21.6 | -5.2 | 48.8 | 93 | 49 |
| New Zealand | -12.1 | 9.1 | 65.4 | 97 | 52 |

[a] Based on "medium" fertility and migration assumptions.

*Source:* Department of Statistics, Demographic Profiles, user-requested population projections for Local Government Regions.

As far as the aged dependency ratios are concerned, the range of values is projected to get greater by 2011 (see Table 35). In 1986 Horowhenua (288 persons aged 65 years and over per 1000 in the labour-force age group) had an aged dependency ratio which was 168 units larger than the lowest ratio in Tongariro (120). By 2011 the difference increases to 211 between ratios of 360 for Horowhenua and 149 for Wellington (see Table 35). Not surprisingly the aged dependency ratio is highest in the retirement regions of Horowhenua, Thames Valley and Nelson Bays as well as Aorangi — these four regions have ratios more than two deviation units above the national average in 2011 (see Figure 20b). Aged dependency as a percentage of total dependency is also largest in these regions, along with Canterbury and Marlborough (see Figure 20c).

## TABLE 35: YOUTH AND AGED DEPENDENCY IN THE LOCAL GOVERNMENT REGIONS, 1986 AND 2011[a]

| Local Government Region | Youth dependency[b] | | Aged dependency[c] | | Aged dependency as % of total dependency[d] | |
|---|---|---|---|---|---|---|
| | 1986 | 2011 | 1986 | 2011 | 1986 | 2011 |
| Northland | 434 | 323 | 149 | 197 | 25.6 | 37.9 |
| Auckland | 352 | 275 | 156 | 191 | 30.7 | 41.0 |
| Thames Valley | 414 | 303 | 195 | 261 | 25.6 | 46.3 |
| Bay of Plenty | 421 | 310 | 161 | 218 | 27.7 | 41.3 |
| Waikato | 414 | 308 | 128 | 172 | 23.6 | 35.8 |
| Tongariro | 444 | 321 | 120 | 193 | 21.4 | 37.5 |
| East Cape | 457 | 328 | 156 | 169 | 25.5 | 34.0 |
| Hawke's Bay | 426 | 316 | 170 | 209 | 28.5 | 39.8 |
| Taranaki | 420 | 311 | 168 | 185 | 28.6 | 37.3 |
| Wanganui | 409 | 321 | 180 | 189 | 30.6 | 37.1 |
| Manawatu | 370 | 283 | 159 | 185 | 30.1 | 39.5 |
| Horowhenua | 390 | 301 | 288 | 360 | 42.4 | 54.5 |
| Wellington | 342 | 270 | 129 | 149 | 27.4 | 35.6 |
| Wairarapa | 441 | 343 | 173 | 220 | 28.2 | 39.1 |
| Nelson Bays | 356 | 271 | 190 | 230 | 34.9 | 45.9 |
| Marlborough | 381 | 286 | 185 | 244 | 32.7 | 45.9 |
| West Coast | 378 | 289 | 175 | 181 | 31.6 | 38.8 |
| Canterbury | 324 | 256 | 179 | 227 | 35.7 | 47.1 |
| Aorangi | 373 | 276 | 201 | 257 | 34.7 | 48.3 |
| Clutha-Central Otago | 395 | 300 | 140 | 205 | 26.2 | 41.0 |
| Coastal-North Otago | 330 | 254 | 196 | 190 | 37.3 | 42.8 |
| Southland | 416 | 301 | 148 | 203 | 26.2 | 40.3 |
| North Island | 382 | 292 | 155 | 191 | 28.9 | 39.5 |
| South Island | 351 | 268 | 179 | 218 | 33.8 | 44.9 |
| New Zealand | 374 | 286 | 161 | 198 | 30.1 | 40.9 |

[a] Based on "medium" fertility and migration assumptions.

[b] Youth dependency is the ratio of children (0-14 years) per 1000 people in the labour force age group (15-64 years).

[c] Aged dependency is the ratio of elderly people (65 years and over) per 1000 people in the labour force age group (15-64 years).

[d] Total dependency is the sum of youth dependency plus aged dependency.

*Source:* Calculated from data obtained from Department of Statistics, Demographic Profiles, user-requested population projections for Local Government Regions.

FIGURE 19: PROJECTED CHANGES IN LABOUR FORCE AGE GROUPS, 1986-2011.

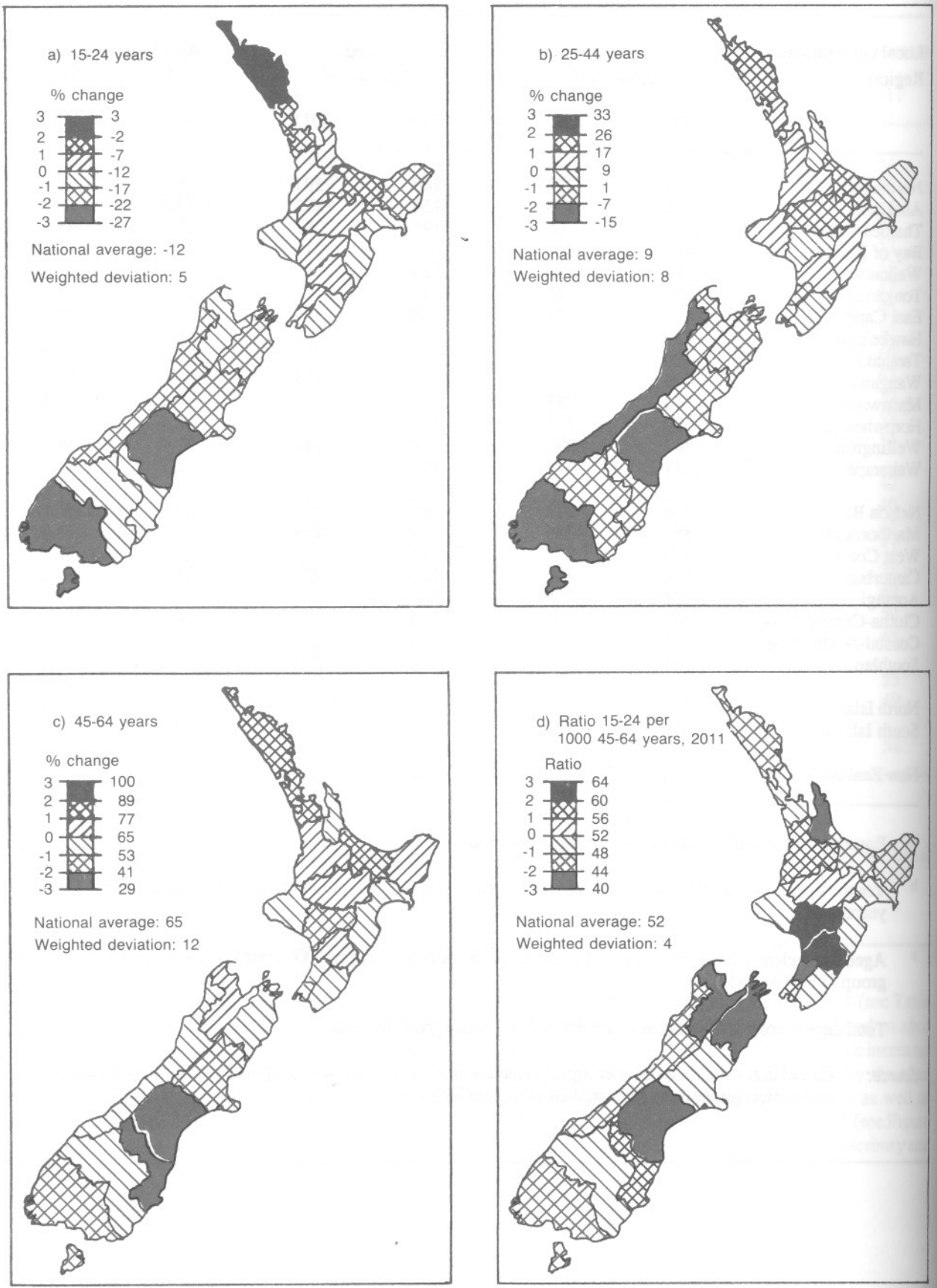
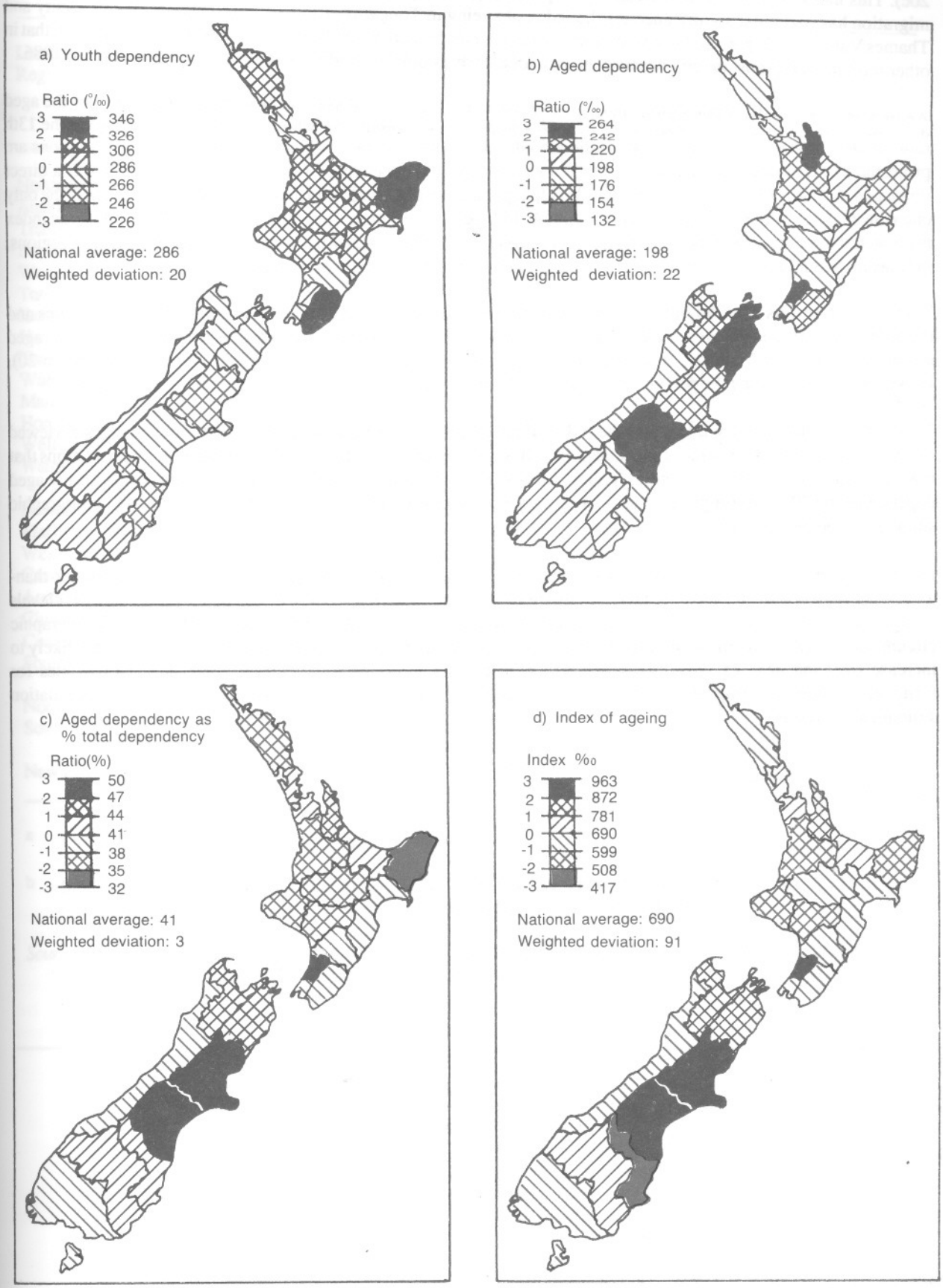


FIGURE 20: *MEASURES OF DEMOGRAPHIC DEPENDENCY, 2011.*



Similar patterns emerge for the index of ageing, or the ratio of the elderly population to youthful dependents (see Figure 20c). This index is projected to increase by 60 percent nationally and by over 100 percent in Tongariro. Retirement migration has particular significance for the index of ageing in Tongariro, Clutha-Central Otago, Bay of Plenty and Thames Valley (see Figure 20d). In Horowhenua the percentage increase in the index is considerably lower than that in other retirement regions, mainly because the ratio of elderly people to children was already at a high level in 1986.

An important anomaly in the various measures of population ageing is Coastal-North Otago. In the case of the aged dependency ratio, this region is projected to have a shift in rank from the third-highest ratio in 1986 (196) to the 13th ratio in 2011 (190) (see Table 35). The ratio actually declines by 3 percent during a period when most regions are projected to experience increases of 20 percent or more in aged dependency (see Table 36). This trend has a direct impact on the index of ageing for the usually resident population of Coastal-North Otago in 2011: the region is the only one with an index which is more than two deviation units below the national average (see Figure 20d). While the index is projected to increase by more than 60 percent in 13 of the 22 regions, and by over 30 percent in a further 8 regions, in Coastal-North Otago a decline by 25 percent is produced by the medium projection variant.

This situation results from migration assumptions which progressively deplete both the labour-force age groups and the elderly population resident in Coastal-North Otago. Similar migration scenarios affect changes in the aged dependency ratios and indexes of ageing for West Coast, Wanganui and East Cape (see Table 36 and Figure 20). However in these regions the percentage changes in the measures of ageing are positive rather than negative.

These shifts in dependency ratios and the index of ageing, in combination with the labour-force changes reviewed earlier, have several implications for social policy. It is quite evident from the sub-national population projections that regions such as Horowhenua, Thames Valley, Marlborough and Aorangi are likely to have particularly heavy aged dependency by 2011. Appropriate social policy responses will be required to cope with a very different demographic situation to the one in 1986.

In other regions, such as Northland, Bay of Plenty, and Tongariro, which are projected to have much higher-than-average growth in the sizes of their elderly populations, more complex age-composition changes produce lower levels of aged dependency by 2011. In these regions a wider range of policy responses to changing demographic circumstances will be required. Finally, it appears that variability in age composition at the regional level is likely to increase over the next 25 years. This will generate demand for more effective regionally-based capacities for formulating, implementing and monitoring social policy in ways which are sensitive to distinctive population structures and needs.

## TABLE 36: PROJECTED CHANGES IN MEASURES OF DEMOGRAPHIC DEPENDENCY AND AGEING, 1986-2011[a]

| Local Government Region | Percentage change between 1986 and 2011 | | | |
|---|---|---|---|---|
| | Youth dependency | Aged dependency | Total dependency | Index of ageing[b] |
| Northland | -25.6 | 32.2 | -10.7 | 77.3 |
| Auckland | -21.9 | 22.4 | -8.3 | 57.5 |
| Thames Valley | -26.8 | 33.8 | -7.4 | 82.8 |
| Bay of Plenty | -26.4 | 35.4 | -9.3 | 85.0 |
| Waikato | -25.6 | 34.4 | -11.4 | 80.6 |
| Tongariro | -27.7 | 60.8 | -8.0 | 121.3 |
| East Cape | -28.2 | 8.3 | -18.8 | 51.3 |
| Hawke's Bay | -25.8 | 22.9 | -12.1 | 65.8 |
| Taranaki | -25.9 | 10.1 | -15.6 | 48.5 |
| Wanganui | -21.5 | 5.0 | -13.3 | 34.1 |
| Manawatu | -23.5 | 16.4 | -11.5 | 52.6 |
| Horowhenua | -22.8 | 25.0 | -2.7 | 62.1 |
| Wellington | -21.1 | 15.5 | -11.0 | 46.5 |
| Wairarapa | -22.2 | 27.2 | -8.2 | 63.5 |
| Nelson Bays | -23.9 | 21.1 | -8.1 | 58.7 |
| Marlborough | -24.9 | 31.9 | -6.2 | 76.2 |
| West Coast | -23.5 | 3.4 | -15.6 | 36.3 |
| Canterbury | -20.9 | 26.8 | -3.9 | 60.2 |
| Aorangi | -26.0 | 27.9 | -8.1 | 69.1 |
| Clutha-Central Otago | -24.1 | 46.4 | -6.5 | 95.5 |
| Coastal-North Otago | -23.0 | -3.1 | -15.4 | -25.0 |
| Southland | -27.6 | 37.2 | -10.6 | 89.1 |
| North Island | -23.6 | 23.2 | -10.1 | 62.4 |
| South Island | -23.6 | 21.8 | -8.3 | 59.1 |
| New Zealand | -23.6 | 23.0 | -9.5 | 60.5 |

[a] Based on "medium" fertility and migration assumptions.

[b] Index of ageing is the ratio of elderly people (65 years and over) per 1000 children (0-14 years). The figures presented here refer to the percentage change in this index between 1986 and 2011.

*Source:* Calculated from data obtained from Department of Statistics, Demographic Profiles, user-requested population projections for Local Government Regions.

SECTION C

# POLICY IMPLICATIONS IN REGIONAL CONTEXT

The population trends and issues identified in this report provide demographic support for the restructuring of public administration and policy formulation at a sub-national level. Of particular significance in this regard are the reform of territorial administration, the rationalisation of regional health delivery systems, and devolution of resources and accountability to communities and iwi. The final outcomes of recent proposals for reform — made by Alan Gibbs on health services, by the Department of Maori Affairs on devolution, by Brian Picot and Gary Hawke on education, and by the Local Government Commission on regional administration — are still unknown. However, the findings of this report support the basic philosophy of empowering particular populations to provide more sensitively for their needs.

A recurrent theme in previous sections of this report has been the diversity in population structures, ethnic composition, growth rates and prospects. In an era of composition-driven population change at both national and sub-national levels, diversity in demographic characteristics and change is increasing. In turn, this is producing more divergent patterns of demand for social services and economic opportunity in the regions — patterns which are not simply a reflection of national trends on a smaller scale. Variation between places in population composition and growth is not a new phenomenon in New Zealand, but the experience of continued growth in numbers resident in most parts of the country through until the mid 1970s tended to mask some of the regional differences. The recent era of low fertility and fluctuating net gains and losses from international migration have made differences in regional populations more obvious, and of greater interest to agencies responsible for sub-national planning.

This section begins with a brief review of some population-based themes which are relevant to the current debate about decentralisation and devolution. A classification of local government regions is introduced in order to facilitate discussion of significant social policy issues. Some general issues are then identified with particular reference to population composition, regional labour forces, and Maori social development.

## A Debate

It is often stated that moves towards effective devolution of power and responsibility are hampered in two ways. First, by a highly centralised administrative structure and secondly, by a bewildering variety of territorial and ad hoc local authorities, which operate independently of each other within geographic boundaries unique to their area of service provision. Depending on the type of service being administered, local authorities may have no adequate tax base and little real power to initiate or direct developments. They often merely administer policies which are planned, initiated and funded by central government. As a result, sub-national planning and policy development tends to suffer from three serious constraints:

i) the resources, structures, and incentives necessary for refined sub-national policy formulation have not always been available, and this has resulted in ineffective policy implementation

ii) lack of integration between the functions and areas of responsibility of local authorities has contributed to inefficiencies and has not permitted the achievement of economies through co-operation and rationalisation

iii) there has been insufficient appreciation at central government level of the particular needs of populations in different regions, and a tendency to regard regional policy as a simple disaggregation of national policy has produced inequities.

All policy initiatives, regardless of whether they are directed at social, economic, environmental, cultural, regional or national issues, ultimately affect people. Many of the outcomes of policies can be assessed in terms of their effects on particular populations. For this reason policy analysis must be conducted within a framework which ensures that people count. The sort of information on regional populations presented in previous sections of this report is an important input into any framework for policy analysis which recognises people's needs and demands at a sub-national level.

Where regional development policies have been formulated to correct apparent inequities, the tendency has been to base analysis on a narrow range of economic and infrastructure variables, most often employment and public works. Subsequent policy formulation and monitoring has suffered from this narrow focus. There was often little attempt to link supply aspects of policy, such as the creation of employment, with demand, as represented by the present and future needs of the particular population.

Local government administration is currently being restructured, with the objectives of increasing efficiency and, one might hope, effectiveness and equity. There is a need to address the demand aspects of policy as part of this process. To this end, population trends and patterns should be considered carefully when devising sectoral policy initiatives to be implemented in the newly defined regions. In defining boundaries for new local government regions there is a need to pay careful attention to sub-national population characteristics and to issues of concern to communities. The use of catchment boundaries as regional boundaries does not always take into account the principle that planning and public administration are for people in places, not for places per se.

Increasing diversity in sub-national population trends requires that more attention is paid to regional monitoring of both demand and supply factors. In turn this should lead to more sensitive policy formulation within a context of population needs and resource constraints. This can be illustrated with reference to housing. Each region has a distinctive demographic profile, producing differences in household structures (related to differentials in strategies of family formation) and in the number of households. Because of changes in the composition of the population, the demand for housing will vary, not just in terms of total housing stock, but also in the availability of housing appropriate to people's needs. The stock available on the regional housing markets may be inappropriate for emerging demands.

A decentralised housing administration would, ideally, provide adequate monitoring of these demand and supply differentials. At the same time national standards would be maintained to ensure that inequities do not develop. In the 1970s some local authorities moved into the housing area, by constructing and renting pensioner flats and other accommodation. In some cases, for example Palmerston North, central government, local government, and voluntary agencies were already co-operating in regionally-based policy initiatives. Changes to health service and hospital board administration — using a population-based formula for funding, and a shift to area health boards — are other examples of decentralisation which were initiated in the 1970s and have gained considerable momentum in the 1980s.

A more recent development is an attempt to ensure that Maori needs are identified and met, through devolution of authority and power. The rationale for this is both reasonable and understandable: the needs of minorities are at risk of being diluted within general policy formulation and implementation, even at a regional level. A further element is that the meeting of these needs is being linked to resources — often under-utilised — which are available to Maori. Identification of need and available resources are iwi-based, rather than purely regionally-based, so devolution is to these iwi units. Each iwi has its own traditional territory, but many members live far beyond its boundaries. Certain issues, such as the return of discouraged urban workers to their home marae in the Hokianga or to Tairawhiti, have importance not just for Maori trust boards and marae communities, but also for regional policy in general.

Social policy concerns must be viewed in several dimensions. This report clearly establishes some demographic determinants: growth and composition, and within composition, uneven cohort size (peristalsis), and ageing. A critical factor for regional planning is that all of these may be operating simultaneously as driving forces for population change and, by implication, creating demands for services. This contrasts with the situation at the national level where composition-driven change is now much more significant than population growth per se. Another dimension concerns social policy issues which arise from universal patterns of demographic behaviour such as declining birth rates, improving life expectancy, changing patterns of household formation, and ageing. The regional manifestations of these general demographic trends can be very different, producing quite distinctive problems for policy makers. The relevance of this theme of regional diversity for social policy formulation is illustrated in the following reference to a simple classification of local government regions in terms of population characteristics and trends.

# A Classification

Reference is often made to 'two New Zealands' when contemporary development is being discussed: one from Lake Taupo north, incorporating the local government regions of Northland, Auckland, Thames Valley, Bay of Plenty, Waikato and Tongariro; the other comprising the rest of the country. The mapped patterns of several indices of population growth and composition lend some support to this simple dichotomy. However, it is also apparent from the patterns of regional variation in indices of demographic change, that such a division masks a diversity which has relevance for policy formulation and planning. A more refined classification of regions, in terms of recent and projected population characteristics and trends, is required if this diversity is to be given adequate recognition.

## Premises

The classification outlined below is based on three premises. The first is that despite obvious variations in recent demographic and economic trends in the 22 local government regions, there are identifiable 'clusters' of regions with similarities in recent population changes and future prospects. Secondly, the existing pattern of regional diversity in population characteristics will not change suddenly, irrespective of economic restructuring, because of the inbuilt dynamic of the age composition of the population. Thirdly, corporatisation and privatisation of state-owned enterprises, and the continuing restructuring of farming and manufacturing sectors in particular, will tend to sharpen rather than reduce existing economic and demographic differences between regions.

In devising the classification, attention has been focused on 19 indices of population composition and change. Six of these refer to aspects of population change between 1976 and 1986, five to characteristics of regional populations in 1986, five to projected changes between 1986 and 2011, and three to characteristics of population structure and distribution in 2011. Although a wide range of population attributes has been taken into consideration, it should be stressed that the classification represents a qualitative assessment of regional population prospects.

Any classification of New Zealand's local government regions, in terms of demographic trends and prospects, must acknowledge at the outset the significance of the major metropolitan centres. As has been stressed several times in the preceding sections of this report, the New Zealand population is highly urbanised, and over 80 percent of residents live in towns or cities with populations of 1,000 or more. In fact, just under 60 percent of the resident population in 1986 were living in the five regions containing metropolitan centres — cities of 100,000 people or more: Auckland, Waikato (Hamilton), Wellington, Canterbury (Christchurch), and Coastal-North Otago (Dunedin). The metropolitan regions provide one component of the classification system used in this regional synthesis. Three types of metropolitan region are identified: expanding (Auckland, Waikato), established (Wellington, Canterbury), and contracting (Coastal-North Otago) (see Figure 21).

The remaining 17 regions, which together accounted for 32 percent of the country's population in 1986, can be grouped into four 'clusters' of non-metropolitan regions, and are labelled respectively: growth, stability, uncertainty and outliers (see Figure 21). The regions included in these clusters are as follows:

i) growth: Northland, Thames Valley, Bay of Plenty, Horowhenua, Nelson Bays, Marlborough, Clutha-Central Otago

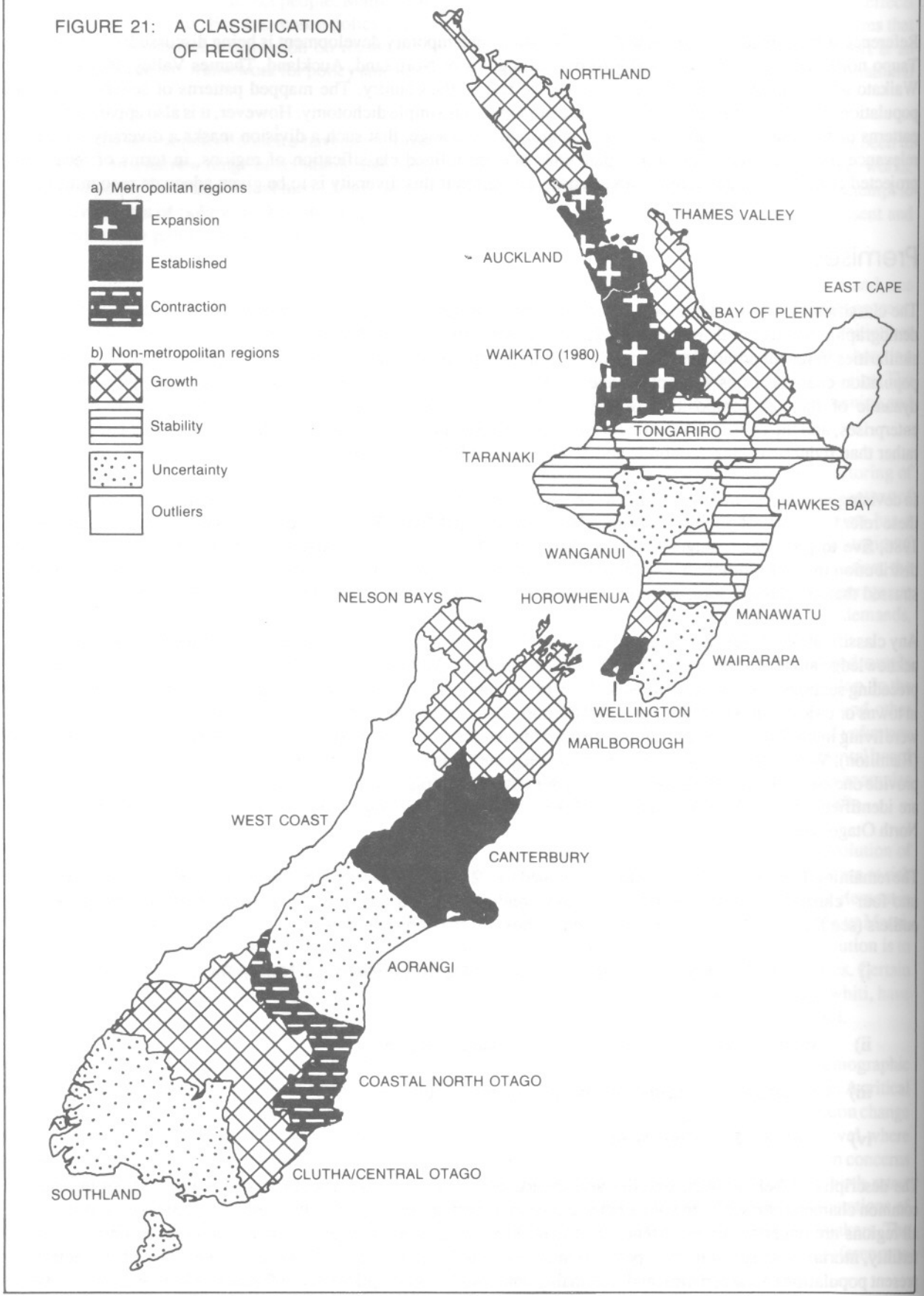
ii) stability: Tongariro, Hawke's Bay, Taranaki, Manawatu

iii) uncertainty: Wanganui, Wairarapa, Aorangi, Southland

iv) outliers: East Cape, West Coast.

The descriptive labels growth, stability and uncertainty are used to identify clusters of regions which have some common characteristics in terms of recent and projected demographic trends. Obviously the population prospects for all regions are uncertain to the extent that it is impossible to forecast accurately what the precise contributions of fertility, mortality and migration to population growth will be in the future. However, on the basis of recent trends, present population characteristics, and reasonably conservative assumptions about future levels of fertility, mortality

FIGURE 21: A CLASSIFICATION OF REGIONS.



and migration, certain regions are much more likely to experience population growth, or decline, than others.

Those regions where the ethnic composition of the population and/or levels of net in-migration, seem likely to influence increases in numbers of residents have been labelled growth. The label stability is used for regions which have had and, on the basis of the projection assumptions used, are likely to have relatively little overall growth in their resident populations. The age compositions of these populations will continue to change, and the term stability is not meant to imply that there will be no population change. All populations are unstable in the sense that they are changed continuously by the addition of births and in-migrants, and the subtraction of deaths and out-migrants.

The regions with uncertainty are those where populations have declined absolutely in recent years, or where numbers of residents are projected to fall between 1986 and 2011. The label outliers is used for two non-metropolitan regions which have quite distinctive demographic characteristics. In the case of East Cape, the ethnic composition of the population, coupled with relative physical isolation, has considerable relevance for patterns of present and future population change. In the case of the West Coast, a long history of population decline coupled with a particular kind of regional economy and resource base is of significance for future demographic trends.

## The Metropolitan Regions

The metropolitan regions have very diverse recent demographic histories and future prospects (see Table 37). The more rapid population growth in Auckland and Waikato must be contrasted sharply with the stagnation of Coastal-North Otago, the slow growth of Canterbury, and the high level of population turnover in Wellington. On most of the indices listed in Table 37, Auckland and Waikato score higher values than the other metropolitan regions. In 1986 the total fertility rate (TFR) was higher, reflecting both the age composition and the ethnic mix of populations in the two northern regions. The proportional increase in numbers employed in full-time or part-time work between 1976 and 1986 had been significantly greater in Auckland and Waikato than in the other metropolitan regions. The percentage changes in usually resident populations over this decade, as well as those projected for the period 1986 to 2011, were also much larger.

The well-established trend towards concentration of population in the northern metropolitan regions is likely to continue over the next 25 years. Whereas 27 percent of New Zealand's population was usually resident in the Auckland region in 1986, 47 percent of the country's population increase over the preceding decade had occurred in Auckland, and 42 percent of the total projected increase between 1986 and 2011 was expected to be concentrated in this region (see Table 37).

The situation in the southernmost metropolitan region is quite different. Coastal-North Otago had negative signs on all but two of the measures of population change over the periods 1976-86 and 1986-2011. The positive indices referred to first, the crude rate of natural increase between 1976 and 1986 (3.9 per 100, less than half the rate recorded for Auckland, and almost three times lower than Waikato's rate) and secondly, the percentage change between 1986 and 2011 anticipated for numbers aged 65 years and over. While the numbers of older people in Coastal-North Otago are forecast to increase in absolute terms, the region's share of the national total of elderly will decline. The index of ageing in 2011 is projected to be lower than it was in 1976. This pattern of change for Coastal-North Otago arises from the assumption in the medium variant projection of high levels of net out-migration at all ages. A very different situation would exist by the year 2011 if this net out-migration was reduced significantly or reversed.

The attractiveness of metropolitan regions for migrants will depend in large part on the generation of employment opportunities. Obviously Auckland, with its diverse industrial infrastructure, major port and international airport, headquarters of most of the country's major companies and central location in relation to the national economy is well placed to experience a much greater increase in employment than say, Coastal-North Otago which is poorly located in relation to serving nationwide markets, and is heavily dependent on the service sector, especially the University of Otago. Between 1976 and 1986, however, Coastal-North Otago had no overall increase in population. In fact numbers went down by three percent; in addition this was the only region in the country to experience an absolute decline in the total number of people employed (see Table 37).

The regions of Wellington and Canterbury have very different demographic characteristics (see Table 37). On several measures of population structure it is evident that Canterbury has an older population than Wellington, and that this is likely to remain the case over the next 25 years. In fact Canterbury had the highest proportion of usual residents aged

**TABLE 37: METROPOLITAN REGIONS: INDICES OF POPULATION COMPOSITION AND CHANGE, 1976-2011**

| Index | Local Government Region | | | | |
|---|---|---|---|---|---|
| | Auckland | Waikato | Wellington | Canterbury | Coastal-North Otago |
| **Population composition**[a] | | | | | |
| 1986 - TFR | 2.0 | 2.1 | 1.8 | 1.7 | 1.7 |
| 1986 - % pop. Maori descent | 11.3 | 17.8 | 10.5 | 4.9 | 3.5 |
| 1986 - % pop. 65 yrs+ | 10.3 | 8.3 | 8.7 | 11.9 | 12.7 |
| 2011 - % pop. 65 yrs+ | 13.0 | 11.6 | 10.5 | 15.3 | 13.1 |
| 1986 - Index of ageing (per 100) | 44.2 | 30.9 | 37.6 | 55.3 | 59.5 |
| 2011 - Index of ageing (per 100) | 69.6 | 55.8 | 55.1 | 88.6 | 44.6 |
| **Population change**[b] | | | | | |
| 1976-86 - crude rate nat. incr. (per 100) | 8.2 | 11.4 | 9.3 | 5.0 | 3.9 |
| 1976-86 net migration rate (per 100) | 2.1 | -6.9 | -10.8 | -3.3 | -9.6 |
| 1976-86 - % change total employt | 20.3 | 13.9 | 3.7 | 6.5 | -3.3 |
| 1976-86 % pop. change | 10.7 | 4.5 | -1.5 | 1.7 | -5.4 |
| 1986-2011 % pop. change | 24.0 | 16.4 | 13.1 | 7.1 | -3.2 |
| 1986-2011 % change 25-44 | 16.3 | 13.6 | 8.5 | -3.6 | -5.9 |
| 1986-2011 % change 65+ | 13.0 | 11.6 | 10.5 | 15.3 | 13.1 |
| **Proportion of NZ total**[c] | | | | | |
| 1986 Us. res. population | 26.9 | 7.0 | 9.9 | 10.5 | 4.2 |
| 2011 Us. res. population | 29.1 | 7.0 | 9.8 | 9.8 | 3.5 |
| 1976-86 % gain in total pop. | 47.4 | 5.7 | 0 | 3.6 | 0 |
| 1986-2011 % gain in total pop. | 41.6 | 7.3 | 8.3 | 4.8 | 0 |
| 1976-86 % gain total employt | 39.4 | 7.0 | 3.2 | 5.2 | 0 |
| 1986-2011 % gain pop. 65+ | 32.7 | 7.5 | 6.4 | 9.6 | -0.1 |

[a] The index "TFR" refers to Total Fertility Rate.

[b] The index "% change total employt" refers to the change in the sum of full-time plus part-time employment between 1976 and 1986.

[c] The index "Us. res. Population" refers to the percentage of the total New Zealand usually resident population which is in each region.

65 years and over of all metropolitan regions in 1986. Canterbury is also forecast to experience the highest proportional increase in the elderly component of the population between 1986 and 2011 (see Table 37).

In the Wellington region, on the other hand, there is a much higher proportion of people of Maori and Pacific Island Polynesian descent, and this contributes to Wellington experiencing a larger proportional increase in both the total population and the population aged 25-44 years than is forecast for Canterbury. These projected increases, which show a reversal of recent trends in the two regions, are supported by forecasts for employment in different sectors of the economy. The National Sectoral Programme argues that growth in service-based employment will be much more

significant over the next decade, than employment growth in primary production or manufacturing industries (*Prospects: National and Sectoral Trends to 1997*, New Zealand Planning Council 1988). However, restructuring of the state sector, and implementation of policies favouring devolution could lead to a reduction of public sector employment opportunities in Wellington.

In terms of social planning, the relevance of these differences is that the metropolitan regions already have, and will continue to have, quite distinctive demographic attributes. Coping with ethnic diversity will obviously be a much more important issue for planners in Auckland, than for metropolitan regions in the South Island. The critical planning issues and resource needs of the more youthful Maori and Pacific Island Polynesian populations are quite different to those associated with the ageing Pakeha population. Within the Auckland region there are major variations between areas in both the ethnic composition and the age structure of the resident population, and sensitivity among planners to intra-regional diversity will become increasingly important if overall growth in the population remains slow.

The issue of intra-regional diversity is important everywhere. In the cases of Waikato, Canterbury and Coastal-North Otago the metropolitan centres comprise only a small part of the total land areas of the regions. Rural hinterlands, where populations are coping with major changes in the structures of both their economic livelihood and the social services available in small country towns, have some distinctive population problems. There is a tendency for these to be ignored if attention is directed solely at characteristics of, and change in, regional population aggregates. It must always be appreciated that the regional populations are simply the sum of a large number of smaller populations.

In summary, the Auckland and Waikato regions, with their more youthful age structures, sizeable Maori populations, and more diverse urban and rural economies, will have demographic futures characterised by growth in relation to the other metropolitan regions. This could have the effect of diluting the impact of demographic ageing as a social policy concern. In the southern regions the need to plan for much older populations is already much more obvious than in the north where the needs of different ethnic groups will demand greater attention from policy makers. Divergent demographic trends in the country's main urban centres are likely to increase regional variations in both priorities for, and the practice of, social policy making.

## Non-metropolitan Regions with Growth

Population growth between 1976 and 1986 in Northland and Bay of Plenty was proportionately greater than in any other region (including Auckland), and is expected to be larger in percentage terms over the subsequent 25 years than increases in the other regions (see Table 38). Between 1986 and 2011 the populations of these two regions are projected to increase by almost 30 percent, compared with growth of 24 percent in the numbers resident in Auckland. Sizeable youthful Maori populations in these two regions contribute to high rates of natural increase and the highest percentage changes projected for the population aged 25-44 years between 1986 and 2011. Both regions also had positive net migration rates between 1976 and 1986, and both are envisaged to have a larger share of the total New Zealand population in residence by 2011 than they had in 1986 (see Table 38).

The demographic prospects for Northland and Bay of Plenty are also influenced by retirement migration. These regions had relatively low indices of ageing in 1986, largely because of the impact of the more youthful Maori component on the size of the population aged under 15 years. Between 1986 and 2011, however, percentage increases in the numbers aged 65 years and over are projected to be higher than any other region except Tongariro (see Table 38).

There are two quite distinctive demographic trends influencing patterns of population change in these regions: high levels of natural increase coupled with some in-migration of people aged 25-44 years (especially people of Maori descent); Pakeha retirement migration; and population ageing. Both regions have a serious problem of youth unemployment, especially in the northern part of Northland and the eastern Bay of Plenty. Return migration of discouraged urban workers is believed to be exacerbating the problem of unemployment, which is taxing social planners in all parts of the country. At the same time, ageing resident and immigrant Pakeha populations are placing demands of a very different kind on services and accommodation in selected areas in the two regions, and are generating a different set of priorities for social policy.

**TABLE 38: NON-METROPOLITAN REGIONS WITH GROWTH: INDICES OF POPULATION COMPOSITION AND CHANGE, 1976-2011**

| Index | Local Government Region | | | | | | |
|---|---|---|---|---|---|---|---|
| | Northland | Thames Valley | Bay of Plenty | Horo whenua | Nelson | Marlborough | Clutha-Central Otago |
| **Population composition** | | | | | | | |
| 1986 - TFR | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 | 2.1 | 1.8 |
| 1986 - % pop. Maori descent | 24.6 | 10.9 | 23.9 | 11.1 | 4.4 | 7.1 | 4.7 |
| 1986 - % pop. 65 yrs+ | 9.5 | 12.2 | 10.4 | 16.8 | 12.2 | 12.2 | 9.5 |
| 2011 - % pop. 65 yrs+ | 13.0 | 16.7 | 14.3 | 21.7 | 15.3 | 16.0 | 13.6 |
| 1986 - Index of ageing (per 100) | 34.3 | 47.0 | 38.1 | 73.9 | 53.3 | 48.4 | 35.5 |
| 2011 - Index of ageing (per 100) | 60.8 | 85.9 | 70.5 | 119.8 | 84.6 | 85.3 | 69.4 |
| **Population change** | | | | | | | |
| 1976-86 - crude rate nat. incr. (per 100) | 9.8 | 7.7 | 10.4 | 3.3 | 5.1 | 6.8 | 8.8 |
| 1976-86 net migration rate (per 100) | 5.8 | -0.4 | 4.3 | 6.4 | 2.5 | -0.4 | 0.9 |
| 1976-86 - % change total employt | 31.4 | 15.5 | 31.1 | 14.7 | 20.7 | 18.6 | 32.6 |
| 1976-86 % pop. change | 16.6 | 7.5 | 15.8 | 10.0 | 7.9 | 6.6 | 10.2 |
| 1986-2011 % pop. change | 28.7 | 17.0 | 28.5 | 19.8 | 11.5 | 8.8 | 11.0 |
| 1986-2011 % change 25-44 | 21.5 | 7.9 | 24.1 | 11.6 | -0.3 | -1.7 | 0.2 |
| 1986-2011 % change 65+ | 77.8 | 61.2 | 80.9 | 51.5 | 39.3 | 47.7 | 67.5 |
| **Proportion of NZ total** | | | | | | | |
| 1986 Us. res. population | 3.8 | 1.7 | 5.6 | 1.6 | 2.1 | 1.1 | 1.4 |
| 2011 Us. res. population | 4.2 | 1.8 | 6.3 | 1.7 | 2.0 | 1.1 | 1.3 |
| 1976-86 % gain in total pop. | 9.6 | 2.2 | 13.8 | 2.7 | 2.8 | 1.3 | 2.3 |
| 1986-2011 % gain in total pop. | 6.9 | 1.9 | 10.3 | 2.1 | 1.5 | 0.6 | 1.1 |
| 1976-86 % gain total employt | 6.9 | 1.8 | 10.5 | 1.5 | 2.9 | 1.4 | 2.9 |
| 1986-2011 % gain pop. 65+ | 5.7 | 2.6 | 9.5 | 3.0 | 2.1 | 1.3 | 1.7 |

Population change in Clutha-Central Otago has also been influenced by two distinctive trends in recent years. On the one hand, the Clyde dam construction project has generated significant growth in employment which has attracted many people in the labour-force age groups (see Table 38). On the other hand retirement to towns such as Alexandra, Queenstown and Wanaka has increased growth in the elderly population.

Over the period 1986-2011, the population of Clutha-Central Otago is more likely to be affected by retirement migration than by significant increases in the younger workforce. Indeed, projections for the population aged 25-44 years suggest that this region will have an increase in numbers of less than one percent, compared with increases of over 20 percent in Northland and Bay of Plenty (see Table 38). Growth in the region's significant tourist industry could generate a demand for younger workers; this industry more than any other single economic development has the potential to influence population trends upwards in Clutha-Central Otago.

Retirement migration into four other regions — Thames Valley, Horowhenua, Nelson Bays, and Marlborough — is generating population flows which are likely to increase over the next 25 years. Recent and projected population growth in these regions is much smaller than in Northland and Bay of Plenty. However, these four regions all had high indices of ageing in 1986 and the proportion of New Zealand's total increase in the population aged 65 years and over, which will occur in Thames Valley, Horowhenua, Nelson Bays and Marlborough, is larger than the regional shares

forecast for the total resident population (see Table 38). This is a different 'growth' situation to that found in Northland and Bay of Plenty. The effects of retirement migration on population change in the four regions are not masked to the same extent by ethnic diversity and associated variations in population structure and patterns of growth.

While Thames Valley, Nelson Bays, and Marlborough are attracting migrants from a wide range of regions in New Zealand, Horowhenua is best viewed as an extension of Wellington. Migration into Horowhenua is dominated by flows from Wellington, especially into the southern part of the region which borders the metropolitan area. The migrants comprise both elderly people retiring out of the city, and members of the urban workforce. As noted earlier, Horowhenua performs a 'dormitory' function for Wellington, which is similar to that provided for Auckland by the Whangaparaoa Peninsula and the northern coastal periphery of the Auckland metropolitan region.

Although population ageing is the most obvious demographic trend in these regions, and provides the main focus for social policy and planning, it should also be noted that a younger immigrant population, providing services for the elderly, is also a component of contemporary migration streams, especially into Thames Valley. This population, together with the commuters in Horowhenua, and the people seeking an alternative lifestyle in parts of Nelson Bays and Thames Valley, will have different needs to those of the elderly residents. Again it must be emphasised that composition changes are more complex than is sometimes assumed, particularly in regions where population growth remains a significant driving force for demographic development.

## Non-metropolitan Regions with Stability

The North Island regions of Tongariro, Hawke's Bay, Taranaki, and Manawatu had much smaller population increases between 1976 and 1986 than the non-metropolitan regions with growth (see Table 39). These four regions all had negative net migration rates over the decade, and generally lower percentage increases in total employment. Population change over the next 25 years is projected to be greater than 10 percent for both the age group 25-44 years and for the total resident population in these four regions. The elderly component is increasing in all these regions, but only in Tongariro, where the number of persons aged 65 years and over is projected to double between 1986 and 2011, is this increase very significant (see Table 39).

Retirement migration is expected to increase Tongariro's population of those aged 65 years and over, although the impact of this on the index of ageing will be muted by natural increase and population growth among the large Maori component. In Tongariro, as in Northland and Bay of Plenty, almost 30 percent of residents in 1986 were of Maori descent (see Table 39). In Hawke's Bay, Taranaki, and Manawatu retirement migration is not expected to be a significant contributor to population growth, although ageing of resident populations will produce higher aged/child ratios.

The economies of these four regions are dominated by primary production — farming, forestry, oil and natural gas extraction. It was noted earlier that employment growth is not expected to be as rapid in most of these industries as in the service sector. Consequently these regions are more likely to have population trends totally dominated by composition-led change. The university in Palmerston North will have an impact on the age structure of Manawatu, by tending to keep the population somewhat younger than might otherwise have been the case. The main issues confronting social planners are likely to be urban and rural unemployment, servicing a dispersed rural population (especially in the more remote hill country areas), and coping with the ageing of a workforce either currently or previously employed in primary production.

## Non-metropolitan Regions with Uncertainty

Recent population trends in two North Island and two South Island regions are suggestive of uncertain future demographic prospects. Wanganui, Wairarapa, Aorangi and Southland had smaller populations in 1986 than were resident in 1976 (see Table 40). Projected population change to 2011 in the North Island regions suggests there will be a return to slow growth in numbers of residents, while in Aorangi and Southland absolute population decline is forecast to continue.

**TABLE 39: NON-METROPOLITAN REGIONS WITH STABILITY: INDICES OF POPULATION COMPOSITION AND CHANGE, 1976-2011**

| Index | Local Government Region | | | |
|---|---|---|---|---|
| | Tongariro | Hawke's Bay | Taranaki | Manawatu |
| **Population composition** | | | | |
| 1986 - TFR | 2.4 | 2.2 | 2.2 | 1.9 |
| 1986 - % pop. Maori descent | 28.4 | 19.7 | 11.0 | 10.4 |
| 1986 - % pop. 65 yrs+ | 8.3 | 10.6 | 10.6 | 10.4 |
| 2011 - % pop. 65 yrs+ | 12.8 | 13.8 | 12.4 | 12.6 |
| 1986 - Index of ageing (per 100) | 27.2 | 40.0 | 40.0 | 43.0 |
| 2011 - Index of ageing (per 100) | 60.2 | 66.3 | 59.4 | 65.6 |
| **Population change** | | | | |
| 1976-86 - crude rate nat. incr. (per 100) | 12.3 | 8.6 | 9.4 | 8.4 |
| 1976-86 net migration rate (per 100) | -10.9 | -5.0 | -6.8 | -3.9 |
| 1976-86 - % change total employt | 14.8 | 13.4 | 10.3 | 9.8 |
| 1976-86 % pop. change | 1.4 | 3.7 | 2.7 | 4.7 |
| 1986-2011 % pop. change | 19.7 | 12.6 | 13.2 | 15.2 |
| 1986-2011 % change 25-44 | 17.4 | 10.4 | 12.6 | 12.3 |
| 1986-2011 % change 65+ | 99.9 | 45.1 | 32.2 | 40.0 |
| **Proportion of NZ total** | | | | |
| 1986 Us. res. population | 1.2 | 4.3 | 3.3 | 3.5 |
| 2011 Us. res. population | 1.2 | 4.2 | 3.3 | 3.5 |
| 1976-86 % gain in total pop. | 0.4 | 2.9 | 1.7 | 3.0 |
| 1986-2011 % gain in total pop. | 1.5 | 3.4 | 2.8 | 3.4 |
| 1976-86 % gain total employt | 1.2 | 4.0 | 2.5 | 2.6 |
| 1986-2011 % gain pop. 65+ | 1.9 | 4.2 | 2.3 | 3.0 |

A fairly large Maori-descent component in the population of Wanganui (18 percent of the total) will undoubtedly have some impact on future trends. This region has the highest TFR of the four, the smallest fall in population between 1976 and 1986, and the largest percentage increases in numbers aged 25-44 and in the total resident population between 1986 and 2011 (see Table 40). However, all four regions are projected to have proportionately smaller shares of the country's usually resident population in 2011 than they had in 1986.

It is anticipated that the proportion of elderly people in the populations of these regions will rise between 1986 and 2011. However, the percentage increases in numbers of elderly are quite variable (see Table 40). In Wanganui and Aorangi this component of the population is projected to increase by less than 20 percent, which is below the percentage change forecast for regions with growth, and regions with stability. All four regions will have a share of the growth in New Zealand's elderly population which is lower than their share of the country's usually resident population in 1986 and 2011 (see Table 40).

The economies of these regions are dominated by pastoral farming. Prospects for significant increases in employment in this type of agriculture are poor; the farming industry is shedding labour rather than absorbing larger numbers of workers. Net out-migration from these regions will continue both among younger people and among the elderly. Ageing of the resident population will be the main process which will have relevance for social policy, especially the

**TABLE 40: NON-METROPOLITAN REGIONS WITH UNCERTAINTY: INDICES OF POPULATION COMPOSITION AND CHANGE, 1976-2011**

| Index | Local Government Region | | | |
|---|---|---|---|---|
| | Wanganui | Wairarapa | Aorangi | Southland |
| **Population composition** | | | | |
| 1986 - TFR | 2.3 | 2.2 | 1.9 | 2.1 |
| 1986 - % pop. Maori descent | 18.2 | 11.9 | 3.3 | 8.4 |
| 1986 - % pop. 65 yrs+ | 11.3 | 10.7 | 13.1 | 9.5 |
| 2011 - % pop. 65 yrs+ | 12.4 | 14.0 | 16.8 | 13.5 |
| 1986 - Index of ageing (per 100) | 44.0 | 39.2 | 55.1 | 35.7 |
| 2011 - Index of ageing (per 100) | 59.0 | 64.1 | 93.2 | 67.5 |
| **Population change** | | | | |
| 1976-86 - crude rate nat. incr. (per 100) | 8.3 | 8.7 | 5.6 | 9.9 |
| 1976-86 net migration rate (per 100) | -8.5 | -12.3 | -13.4 | -13.8 |
| 1976-86 - % change total employt | 7.5 | 1.6 | 3.1 | 7.0 |
| 1976-86 % pop. change | -0.2 | -3.5 | -7.5 | -3.8 |
| 1986-2011 % pop. change | 7.5 | 6.7 | -9.2 | -3.6 |
| 1986-2011 % change 25-44 | 3.4 | 3.3 | -16.0 | -9.5 |
| 1986-2011 % change 65+ | 18.1 | 39.9 | 17.4 | 37.2 |
| **Proportion of NZ total** | | | | |
| 1986 Us. res. population | 2.1 | 1.2 | 2.5 | 3.2 |
| 2011 Us. res. population | 1.9 | 1.1 | 1.9 | 2.7 |
| 1976-86 % gain in total pop. | 0.1 | 0 | 0 | 0 |
| 1986-2011 % gain in total pop. | 1.0 | 0.5 | 0 | 0 |
| 1976-86 % gain total employt | 1.2 | 0.1 | 0.6 | 1.7 |
| 1986-2011 % gain pop. 65+ | 0.9 | 1.1 | 1.2 | 2.3 |

ageing of a long-established farming population which may find it impossible to get access to services in neighbouring small towns.

The service sector throughout rural New Zealand has been profoundly affected by rationalisation of postal, banking, medical, and education facilities in recent years. In the more isolated parts of regions, such as Wanganui and Southland, post offices, banks and schools sometimes no longer exist in local communities. For all groups in the population this is making residence in small rural communities more difficult and stressful. Limited prospects for significant economic development which will generate new employment opportunities means that the demographic future must be uncertain for these four regions.

## The Outliers

East Cape and West Coast qualify for inclusion in the cluster of regions labelled with uncertainty, on the basis of population trends between 1976 and 1986 (see Table 41). They are considered separately here because particular region-specific factors have the potential to affect population trends. In East Cape almost 40 percent of the resident population is of Maori descent. The region has the highest total fertility rate, and there is the demographic potential

**TABLE 41: NON-METROPOLITAN REGIONS - THE OUTLIERS: INDICES OF POPULATION COMPOSITION AND CHANGE, 1976-2011**

| Index | Local Government Region | |
|---|---|---|
| | East Cape | West Coast |
| **Population composition** | | |
| 1986 - TFR | 2.5 | 2.1 |
| 1986 - % pop. Maori descent | 38.2 | 5.7 |
| 1986 - % pop. 65 yrs+ | 9.6 | 11.4 |
| 2011 - % pop. 65 yrs+ | 11.2 | 12.4 |
| 1986 - Index of ageing (per 100) | 34.1 | 46.3 |
| 2011 - Index of ageing (per 100) | 51.6 | 63.1 |
| **Population change** | | |
| 1976-86 - crude rate nat. incr. (per 100) | 9.9 | 5.2 |
| 1976-86 net migration rate (per 100) | -8.0 | -7.2 |
| 1976-86 - % change total employt | 16.2 | 8.9 |
| 1976-86 % pop. change | 1.9 | -1.9 |
| 1986-2011 % pop. change | 9.9 | 0.2 |
| 1986-2011 % change 25-44 | 8.1 | -7.0 |
| 1986-2011 % change 65+ | 27.4 | 10.3 |
| **Proportion of NZ total** | | |
| 1986 Us. res. population | 1.6 | 1.0 |
| 2011 Us. res. population | 1.6 | 0.9 |
| 1976-86 % gain in total pop. | 0.6 | 0 |
| 1986-2011 % gain in total pop. | 1.0 | 0.01 |
| 1976-86 % gain total employt | 1.7 | 0.7 |
| 1986-2011 % gain pop. 65+ | 0.9 | 0.2 |

for considerable increases in numbers if out-migration of young adults in particular can be stemmed. The prospects for substantial economic diversification and creation of new employment opportunities are not good, although empowerment of iwi, and greater investment in rural development may result in more East Cape Maori staying in the region.

The main contemporary social policy concern is how to cope with high levels of unemployment among youth and the more mature workforce. This problem may be exacerbated by return migration of discouraged workers from urban areas, especially Wellington. Other population policy issues are related to Maori mortality, providing adequate education and social services to dispersed rural communities and, in the longer term, coping with an ageing population.

On the West Coast the demographic situation is very different. As has already been pointed out in the first section of this report, this region has experienced absolute population decline in most intercensal periods since the early 1950s. In 1986 numbers of residents were smaller than they had been in 1976, and over the next 25 years projected trends indicate that there will be further declines in the population aged 25-44 years, and the smallest percentage increase in the elderly component of any non-metropolitan region (see Table 41). The scenario provided by recent trends and the medium projection variant is one of demographic uncertainty.

Unlike some other regions which have recently experienced population decline, the West Coast does have a resource base in its minerals and forests, which could provide opportunities for economic expansion and growth in employment. However, stimulating economic development in this region has long been a goal of local politicians and planners and some national governments. Regional development through the 1960s and 1970s did little to reduce the trend towards slow population decline. Policy issues in the 1990s are more likely to focus on provision of services for a small, ageing and essentially Pakeha population.

# A Synthesis

Three issues emerged as recurrent themes in the classification of local government regions in terms of recent and projected population trends. First, is the transformation in age structure which has accompanied the shift from high to low levels of fertility. The changing age composition of the total and Maori- descent populations at the national level are examined in some detail by the Population Monitoring Group in an earlier report (*The New Zealand Population: Change, Composition and Policy Implications* 1986). The general policy implications reviewed in that report will not be repeated here. Instead, an attempt is made to amplify the regional dimension as a significant additional consideration in the formulation of social policy which is sensitive to changing population structures.

The second issue is unemployment. Of particular concern to the PMG is the relationship between unemployment and the changing size of the labour force. In no single region of New Zealand has employment growth matched the increase in labour supply, and the rise in unemployment is probably the most difficult economic and social problem facing the nation at present. However, deterioration of the labour market has not affected all regions equally, and this requires policy responses which take into account differences in the nature and composition of unemployment across the regions.

The third issue is the role of the Maori-descent population in regional population dynamics. This has been stressed several times in relation to rates of population growth, changes in age composition, and the extent to which different ethnic groups are represented in the unemployed component of the labour force. Some general points about Maori population dynamics in the context of particular policy issues are raised in the conclusion to this report. They form a preface to a more substantial analysis of the regional dimension to Maori population change, which the PMG intends to address during 1989.

## Population Composition

Social responsibilities and economic opportunities are determined to a considerable degree, by demographic characteristics such as the distribution of people by age and sex. As indicated elsewhere in this report, a decline in fertility especially, has produced a situation whereby the age composition of the population will alter significantly from one decade to the next as birth cohorts (groups of people born in the same period) of different sizes pass through the lifecycle. In this section, a case is made for considerable flexibility in policy formulation and implementation to cope with evolving regional age structures, in the context of the movement of key cohorts of quite different sizes through the ageing process. The Social Monitoring Group (1985, 1989) has examined social and economic policy issues at different stages in the lifecycle.

The critical problem for planners is that large cohorts, at some stages in their lifecycle, will produce demands which could well dominate social life and policy concerns, perhaps to the detriment of the needs of smaller cohorts. Within a short span of time, however, the needs specific to one lifecycle stage will be supplanted by those characteristic of other stages as the same large cohort gets older. At the same time, equally important and rapid shifts in policy may be needed for small sub-populations which draw heavily on services. A good example is the population aged 75 years and over which is going to remain a small minority, but which will increase numerically at a very rapid rate.

Between 1986 and 2011 it is projected that the population aged 75 years and over could increase from 132,100 to 217,200 — an increase of almost two-thirds (see Table 42). There will be considerable variation within and between regions in the growth of this component of the population, and pressure for services to meet the needs of the very old will vary among regions. In Northland, Bay of Plenty, Tongariro, and Clutha-Central Otago the medium variant

**TABLE 42: COMPOSITION OF THE ELDERLY POPULATION, 1986 AND 2011**

| Local Government Region | Percentage increase 1986-2011 | | Percentage of total growth in population 1986-2011 | |
|---|---|---|---|---|
| | 65+ | 75+ | 65+ | 75+ |
| Northland | 77.8 | 105.5 | 5.7 | 5.2 |
| Auckland | 56.9 | 66.7 | 32.7 | 28.1 |
| Thames Valley | 61.2 | 94.9 | 2.6 | 2.7 |
| Bay of Plenty | 80.9 | 124.6 | 9.5 | 9.6 |
| Waikato | 63.0 | 83.8 | 7.5 | 6.9 |
| Tongariro | 99.9 | 158.8 | 1.9 | 1.8 |
| East Cape | 27.4 | 51.0 | 0.9 | 1.2 |
| Hawke's Bay | 45.1 | 65.7 | 4.2 | 4.4 |
| Taranaki | 32.2 | 51.8 | 2.3 | 2.8 |
| Wanganui | 18.1 | 33.1 | 0.9 | 1.2 |
| Manawatu | 40.0 | 53.5 | 3.0 | 3.0 |
| Horowhenua | 51.5 | 77.8 | 3.0 | 3.3 |
| Wellington | 35.5 | 45.8 | 6.4 | 6.1 |
| Wairarapa | 39.9 | 70.1 | 1.1 | 1.3 |
| Nelson Bays | 39.3 | 56.0 | 2.1 | 2.1 |
| Marlborough | 47.7 | 68.3 | 1.3 | 1.2 |
| West Coast | 10.3 | 17.7 | 0.2 | 0.3 |
| Canterbury | 37.3 | 62.9 | 9.6 | 11.8 |
| Aorangi | 17.4 | 41.0 | 1.2 | 1.9 |
| Clutha-Central Otago | 67.5 | 107.9 | 1.7 | 1.9 |
| Coastal-North Otago | -1.2 | 8.4 | -0.1 | 0.7 |
| Southland | 37.2 | 147.1 | 2.3 | 2.6 |
| North Island | 53.2 | 70.5 | 81.7 | 77.6 |
| South Island | 29.1 | 49.1 | 18.3 | 22.4 |
| New Zealand | 46.3 | 64.4 | 100.0 | 100.0 |

projection produces increases of over 100 percent in numbers of people aged over 75 years. This contrasts with the much smaller percentage increases in most of the metropolitan regions (see Table 42). It should be noted, however, that despite smaller percentage changes, the metropolitan regions will be accommodating more than half (54 percent) of the total growth in numbers of very old people in New Zealand between 1986 and 2011 (see Table 42).

Not only will social policy have to be flexible enough to deal with rapid changes in patterns of demand as cohorts of different sizes progress through the lifecycle, but there will also have to be flexibility in the implementation of policy in different parts of the country to cope with region-specific demographic developments. An example of the quite complex permutations of cohort and age-structure changes is given in Appendix 6, with reference to health planning Because of sub-national differences in population composition and change, there is a need for detailed local-level health planning within a broad national framework for policy formulation and implementation, which ensures equity and efficiency in service provision across regions.

Flexibility in policy formulation and planning at the national level is essential if regions are to cope with rapid changes in patterns of demand for services, as distinctive population structures evolve over time. There are also areas in which a different type of flexibility is required to ensure that particular regions can meet the needs of populations in other regions as well. Obvious examples are in the provision of tertiary education institutions and base hospitals providing

highly specialised services. This is a different aspect of flexibility in policy formulation and planning which permits convenient aggregates of regions to group and regroup for particular purposes.

In the contexts of effectiveness, efficiency and equity, policy formulation and planning at a national level remains essential and can never be replaced entirely by regional planning. Devolution of power and resources to regional authorities to provide and deliver services cannot be at the expense of equity in a national context. Much more effective integration of efforts to monitor need and demand at local and national levels is required, in order to cope with the increasing complexity of composition-led demographic change at a sub-national level. A wide range of information on aspects of regional populations exist in local authority administrative records. Yet to date these have been used primarily for day-to-day management rather than for comprehensive monitoring. An important step in policy formulation at the national level is to forge effective collaboration between central and local government so as to monitor change efficiently and accurately.

## The Labour Market

Historically, there was much uniformity among the regions of New Zealand because economic disparities were perceived to be small, there were comfortable welfare provisions, and few cultural differences between regions. Yet the pattern of uniformity has clearly been replaced by one of diversity. The regional classification in this report shows that the suggested clusters of regions, while useful in bringing some order to patterns of population change, remains uneasy as a result of strong differences within each grouping. A question arises as to whether such diversity is likely to continue in the future, or even become more pronounced. With respect to labour markets, there are many influences operating, often interdependently. However, current trends suggest a further divergence rather than a convergence in labour market patterns. There are at least five reasons for this.

The first is the continuing decline of manufacturing and the growth in service industries, combined with anticipated growth in types of horticulture, viticulture, forestry, and mining which will reinforce employment trends in train since the mid 1970s. Taking the change in full-time employment as a key indicator of economic health, the decline of traditional pastoral farming generated a total net loss of full-time jobs of around five percent between 1976 and 1986 in Wairarapa and Aorangi. The contraction of manufacturing generated a net decline of full-time employment of two percent in Southland and eight percent in Coastal-North Otago. In contrast, four regions managed a growth of full-time jobs comfortably above 16 percent over the decade 1976-86: Northland, Auckland, Bay of Plenty and Clutha-Central Otago. 'Think-big' projects boosted growth in Northland and Clutha-Central Otago, although these projects reinforced internal migration patterns which were established much earlier.

A second reason is the significant differences in age composition among the regions which affects the demand for services. These services tend to be non-tradable, and thus generate differences in the volume and type of employment creation between regions. For example, retirement migration will have a marked impact on Northland, Thames Valley, Bay of Plenty, Tongariro, Horowhenua, Nelson Bays, Marlborough, Clutha-Central Otago and, to a lesser extent, Aorangi, in terms of the need for service provision and the multiplier effects this generates. In some other regions, where traditional sectors of employment are contracting, an age structure with a large proportion of 15-24 year olds is noticeable (Waikato, Manawatu, Wellington and Coastal-North Otago), and jobs may be generated by further expansion of the education sector.

Thirdly, differences in age structure are reinforced by current differences in fertility which affect the future age composition of the labour force.Thus, youthful regions such as Waikato and East Cape have very different labour markets to those in 'greying' regions such as Marlborough and West Coast. In general the labour force of the South Island regions is older than the labour force in the North Island regions, partly due to outward migration of the young. The unemployment problem in the South Island has both a demand aspect (the effects of economic restructuring on employment in the primary and secondary industries and, indirectly, on service industries with strong linkages with other sectors), and a supply aspect (ageing of the workforce which tends to reduce labour mobility). In such circumstances, it is doubtful that an enhancement of labour-market flexibility, in terms of contracts and negotiations, would in itself be sufficient to reduce unemployment significantly.

Fourthly, ethnic differences between changes in the age composition of the labour force are likely to have region-specific consequences as well. For example, in five regions the proportion of people of Maori descent aged 0-14 years

is in excess of 41 percent (Thames Valley, Hawke's Bay, Manawatu, Wairarapa and Southland). Such regions can expect a relatively rapid increase in school leavers during the next decade. Without a policy response, increases in Maori unemployment in these regions would be very likely. It must be noted that these regions are not the ones which currently experience the highest Maori unemployment rates.

A fifth reason is the relatively stable internal migration patterns which were identified in this report. These patterns suggest that regions experiencing a net migration gain in the past will continue to receive one. Net gains or losses, small as they may be in relation to gross movement, do little to reduce uneven development. This is because net migration tends to generate cumulative ('snowballing') effects in which in-migration generates favourable factors such as job growth and investment, which induces further in-migration, population growth and economic expansion.

Finally, a turn-around of current levels of net emigration would affect population growth in Auckland, Wellington and, to a lesser extent, Canterbury. This would amplify differences in growth between these regions and the non-metropolitan regions. Even without net inward migration, current sectoral growth patterns would reinforce the gap between the economic performance of the metropolitan regions, which have the potential to generate further full- and part-time employment in services, and the other regions. Regions without good prospects in the primary sector, or in services such as education, tourism, or provision for the elderly, must find alternatives to offset the loss of employment in manufacturing industries. Such alternatives are unlikely to emerge without an active regional labour market policy, which facilitates research and development and encourages the establishment of new innovative enterprises.

While it is outside the scope of this report to identify what the objectives of regional development policy in the 1990s should be, and what policy instruments are to be used to stimulate this development, it is useful to point out that whatever national policy is adopted, it is impossible not to have a regional policy. Any form of government spending or social policy will affect different regions in different ways, even if regional considerations are not explicitly taken into account (Mabbett 1988). It is therefore imperative that regional labour-market trends are monitored carefully, since crude observations may be quite baffling. For example, in Coastal-North Otago we find a declining economy coinciding with an older labour force, high out-migration and high unemployment, while in Wellington there is also high out-migration, low job growth, but low unemployment. In contrast, Northland has rapid job growth, inward migration and persisting high unemployment.

The key labour-market issue has traditionally been the question of whether workers should migrate to where the jobs are, or whether jobs should be created where the workers are. Either policy involves some form of public subsidy. The choice of policy depends on the difference between the alternatives in terms of the net present value of the benefit accruing over time to the region and the nation. The lesson that can be learned from this report is that either alternative would affect regional population dynamics, and therefore may affect the socio-economic profile of the region in a number of ways. There will be an increasing need for high quality data at the regional level, and more sophisticated tools for projecting regional populations and economies.

## Maori Social Development

When addressing social policy issues of particular relevance to the Maori it must be recognised at the outset that most of the tangata whenua live in the metropolitan areas. Consequently, for many Maori, critical social policy issues relate to first, the general problems facing urban dwellers and secondly, the particular problem of being a member of a minority group in a metropolis. The high level of concentration of Maori in particular parts of the metropolitan regions, especially South Auckland and Porirua, has implications for many aspects of social policy which have been discussed elsewhere.

Many of the current policy issues, particularly those seen as problems, stem from the very rapid urbanisation of the Maori population after the Second World War. Today there is an ageing, urban, Maori-migrant population weighted towards the older labour-force ages. The early urban-born cohorts are now in the labour force, but are being succeeded by smaller cohorts of younger ages. In contrast, in the non-metropolitan regions, where Maori comprise a significant component of the resident population, the elderly are a more prominent group in the age structure.

Largely as a consequence of the changes accompanying urbanisation and the recent fertility decline, family and social dynamics have been dislocated, particularly by the geographical split along generational lines. The significance of this

dislocation for the transmission of language, taha Maori and for whanaungatanga have been masked, at least from the perspective of the majority Pakeha population, by the problems emanating from the arrival in urban areas of very large Maori birth cohorts of ages 10-29 years at exactly the same period when large Pakeha birth cohorts have attained the same ages. This has been a major factor in the high levels of unemployment occurring among young Maori.

Unemployment and under-employment had long been a feature of life for Maori in rural areas. However, to a large degree these problems had been seasonal or were masked in the statistical data. A downturn in the economy from the mid 1970s, coupled with the age-composition changes referred to above, have highlighted the unemployment issue. Significant numbers of urban Maori, often the children of people who had shifted from rural areas to the towns to seek permanent employment, have been displaced as a result of recession and economic restructuring. Some have returned to home communities, sometimes their own and sometimes those of an older generation. Such a movement of younger Maori is escalating an already serious unemployment problem in rural areas. Levels of unemployment are high and persistent among Maori at younger labour-force ages who were born in rural areas of small towns.

Many of the original urban in-migrants maintained links with rural marae and often cherished the dream of a return at retirement to their home communities. This expectation is now being realised and retirees are moving back to areas with highly localised concentrations of Maori: northern Northland, southern Waikato, King Country, Taupo, the Rotorua Lakes, eastern Bay of Plenty, the East Cape, Urewera, northern Hawke's Bay, northern Taranaki, coastal Wanganui and the Wanganui River, and other smaller districts throughout the country. The impact of this movement does not often show up in data for local government regions, or even counties and boroughs. It is obscured almost to the extent of being totally forgotten alongside the well-documented issues of ageing, composition change, and retirement migration to 'sun belt' locations among the majority Pakeha population.

For Maori trust boards, marae committees and whanau this retirement migration is a major issue which has both favourable and unfavourable implications. Determining the magnitude and precise effects of this movement are beyond the scope of this report, but it is necessary to draw attention to the issue which has implications for most aspects of community life. Above all, it must be appreciated that this movement is towards some of the more depressed sub-regions in the country, the very areas that are already coping with absorbing both discouraged urban workers as well as the unemployed among their younger population.

As a result of the rapid decline in Maori fertility during the 1970s, the generational structure of most urban and rural Maori communities is very different to that perceived by most Pakeha and many adult Maori. Urban Maori communities contain the last huge teenage and young adult generations. Neither rural nor urban Maori communities will see large cohorts of youngsters in an era when, for the first time since the 1890s, the size of the kaumatua generation will be rising.

The conclusions are clear. In a bicultural society the majority population's social policy concerns tend to become dominant. In the case of ageing, for example, the policy debate revolves around superannuation, retirement migration, and institutions for the dependent elderly. Yet within Maori communities a related but different debate is taking place, often unnoticed by Pakeha, involving culturally different perceptions about the role of, and services for, the elderly. Examples of these include the papakainga projects, the kaumatua housing projects, and the participation of the elderly in Te Kohanga Reo.

The issues may be far more complex and profound than this brief review suggests. The Maori dimension to regional population dynamics has relevance for a very wide range of national policy issues including health, education, housing, employment, social welfare, and compensation for illegal or unjust resource transfers. In the mosaic which constitutes the structure of many local government regions, the issues raised above and elsewhere in this report have considerable relevance for the debate about devolution of power and authority to Maori social units, especially the iwi.

APPENDIX 1

# A MEASURE OF REGIONAL VARIATIONS AROUND A NATIONAL AVERAGE

Comparison of figures on population growth, age structure, ethnic composition and labour-force characteristics in 22 regions is not easy, especially when the regions differ markedly in terms of numbers of residents. In order to make this comparison more meaningful a simple statistical procedure has been used in many of the maps in this report. This appendix outlines the steps taken to calculate a measure of regional variations in a particular index around a national average for this index. The procedure uses a variant of the formula for calculating the standard deviation of a series of numbers around the mean or average value for the series.

## The Statistical Procedure

The national value for a given index (e.g. percentage of the resident population which is of Maori descent; percentage of the population which is aged between 15 and 24 years etc.) is taken as the average. The value for the index in each region is then subtracted from the national value, and expressed as a deviation from the national average. For example, in the case of Northland Local Government Region, the Maori-descent population comprised 24.6 percent of the total residents in 1986. This compares with a national average of 12.4 percent. The deviation of Northland from the national average is +12.2 percent.

These regional deviations are then weighted by the proportion of the country's population which is resident in the region. These weighted deviations are summed to derive a measure of regional variation around the national average. The procedure can be expressed symbolically as a formula as follows:

where: $\sigma_\omega = \Sigma | x_i - x^1 | P_i/P$

$\sigma_\omega$ is the weighted average deviation from the national average

$x_i$ is the value for the index in region i

$x^1$ is the national value for the index

$P_i/P$ is the population in region i divided by the total population (the regional population share)

$\Sigma$ is the symbol to indicate that the results of the calculation for all the regions are added together.

## The Mapping Procedure

The sum of the weighted deviations is termed the 'weighted deviation' of the index, and this is recorded on each map where measures of population are shown in terms of regional deviations from the national average. The scales for the indices which are plotted on maps are all calculated in terms of up to 3 weighted deviation units from the national average. In the case of the map showing the percentage of each region's population in 1986 which was people of Maori descent (see Figure 6), the national average is recorded as 12 percent and the weighted deviation as 5 percent. This

means that people of Maori descent comprised between 7 percent and 17 percent of the populations of the regions, on average. In reality, some regions (like Northland) had much higher percentages, and these are shown in terms of deviation units above the national average. In the case of Northland, the percentage value is between two and three deviation units above the average — a significant variation from the national figure.

On the maps the colour black is used for regions which had values above the national average for a particular index. Where red is used, the value is below the national average. The regions with the highest (black) and lowest (red) values are shown in solid colour. Because the same scale of deviation units is used on all maps where regional variations around the national average are shown, it is possible to compare directly the different maps. The shadings used for the deviation units are consistent and regions can be easily identified in terms of their deviation from the national average.

APPENDIX 2

# TECHNICAL DETAILS OF MIGRATION ESTIMATES

The population census asks respondents where they usually lived at the date of the preceding census and relates the answers to their responses to the question concerning their current usual residence. The census results provide information specific by region, age and sex about:

i) internal inward migration — persons in a region who were resident in some other region at the time of the preceding census

ii) internal outward migration — former residents who moved to some other region during the period (at a national level they are the same people as the internal inward migrants)

iii) overseas inward migration — persons who usually lived overseas at the date of the preceding census

iv) total inward migration — the sum of internal inward and overseas inward migration

v) net internal migration — internal inward migration minus internal outward (nationally this figure is zero, but for regions the net figures vary widely).

The census does not provide information on persons who usually lived in New Zealand at the date of the preceding census but not at the date of the current census (the overseas outward migrants) because they do not receive a census questionnaire to complete. Consequently the figures on the total outward migrants and the net overseas migrants are not available either. Indirect estimates are possible to fill these gaps in order to provide a more comprehensive picture of regional migration patterns and have the beneficial side effect of allowing adjustments to be made for some of the limitations of the census migration data. This appendix describes the procedures adopted to make such estimates for two census periods, 1976-81 and 1981-86.

## Basis of Estimation Method

The basic formula for deriving regional overseas outward migrants is simply to estimate the total net migration in the period considered and to subtract it from the total inward migration (which is known) to obtain the total outward migration. The internal outward migration (which is known) is then subtracted from the estimated total outward migration to derive the overseas outward migration. Subtracting the estimated overseas outward migration from the (known) overseas inward migration indicates the net overseas migration. The (known) total inward migration is added to the estimated total outward migration to derive total/gross migration. It is imperative that the data all be on a strictly comparable basis, which necessitates certain adjustments to the raw census data. Various other adjustments have also been made to the census data to compensate for some of its technical limitations and these are discussed in the following sections. All estimates were made on the basis of five-year age-sex groups, partly for reasons of accuracy and partly because of the intrinsic interest of the results.

## Estimation of Net Migration

Net migration is the difference between total population change on the one hand and natural increase on the other. Natural increase consists of the difference between births and deaths, and in the case of cohorts alive at the start of the period measured, consists only of deaths. Death data were derived from unit records of deaths by date of death, date of birth, sex and location of usual residence at the time of death. The data were aggregated by age as at the date of the preceding census by region, and compared with the relevant population cohort data to derive net migration.

The use of unit records by date of death ensured that the data related to the exact intercensal period, and that almost all deaths registered in the subsequent or following registration year were allocated to the correct intercensal period. Accordingly the data differ slightly from the Department of Statistics and Department of Health death data compiled accordingly to date of registration generally used in other estimates of net migration. The age at the date of the preceding census had to be estimated from age at death and date of death in the case of deaths registered during 1976 and earlier. The population data used to calculate the population changes for comparison with the death data in deriving net migration, were adjusted for census under-enumeration.

The birth statistics used were births registered in the five-year periods ended 31 March approximating the intercensal periods. These are slightly less suitable than the actual births in the exact period, but are not a major source of error, and affect only the one cohort in any case.

## Adjustments to Census Data

Qualifications to the census migration data and adjustments made to take account of them are outlined below, item by item. It is intended to publish separately a more detailed account of the technical issues. The following notes are intended to provide the minimum information required to assess the estimates and appreciate their similarities with and differences from other studies of New Zealand migration.

*Coverage of persons born between censuses.* The published census tables do not present data for persons aged 0-4 years, because ages are expressed as at the date of the census at the end of the period. Persons aged 0-4 years at the census at the start of the period measured are therefore recorded as aged 5-9 years. Persons born between censuses are aged 0-4 at the end of the period, and are not considered as potential migrants as they did not have a residence five years previously. It is only possible to calculate their net migration and not their gross migration flows. Net migration of persons born between censuses is included in Table 8 in the text of the report, but excluded from Tables 11-19.

*Underenumeration.* The New Zealand population census has an extremely high coverage of persons liable to be counted, but some undercounting is inevitable. The official estimates of the census 'error of closure' measure the difference between the recorded population change and records of births, deaths and international migration in the same period. They thus provide an indication of changes in coverage between censuses.

The official estimates of the error of closure since 1945 were added together to provide an estimate of the undercounts in 1976, 1981 and 1986. This is as reliable as the official estimates of the error of closure, and conservative in that it does not allow for any undercount in 1945. This method gives a 1976 undercount of at least 58,290 compared with 1981 and 1986 undercounts of 46,120 and 54,640 respectively. These represent minimum undercounts in the range of 1.4 to 1.6 percent of the total populations. The undercounts were apportioned pro rata across each age group, sex and region. Any more sophisticated approach would have involved major expenditure for an uncertain improvement in accuracy. All the census migration data were scaled in proportion.

*Deaths of migrants before the census.* For obvious reasons it is not possible for the census to enumerate persons who die between the date of migration and the date of the census. It is essential to adjust the census data to allow for these people so that the census migration data are directly comparable with the net migration data. This adjustment involves dividing the census migration data by region-age-sex specific survivorship rates derived from the death and population data referred to above. The simplifying assumption was made that migrants have half the regional death rate, a simplifying assumption common in projection methodology. Survivorship rates are extremely high for all persons under the age of 55 or so, so that it is pensioner migration that is most affected by this adjustment.

*Non-specification of residence*. Significant proportions of census respondents fail to report their usual residence at either the current census or the previous census, or at both. These proportions vary between censuses, and between age-sex groups. No wholly satisfactory treatment of this problem is possible. It was judged preferable to allocate these persons pro rata between regions (within age-sex groups) rather than to eliminate them from the analysis. This procedure is doubtless an oversimplification of reality, but failing to adjust for the variation between censuses would have significantly distorted the estimates.
Variation in specification of usual residence. It is generally left to respondents to specify their usual residence. Not all respondents understand the term in exactly the same sense. Similarly their responses to their place of previous residence are not necessarily consistent with what they reported at the time of the preceding census. Nothing can be done about this after the event. The Department of Statistics has varied its coding practice to some degree between censuses which has also had some effect upon the combination of data from different censuses. This problem is discussed elsewhere (Lowe 1984).

Variations in procedures for determining who is considered to be currently an overseas resident affects the results because this determines who is deemed to be a usual resident of New Zealand and thus liable to be included in the migration data. It seems likely that this variation accounts for the positive net migration estimated for Nelson Bays for the 1976-81 period (Lowe 1984, 29).

*Population not in a local government region*. New Zealand residents giving their usual residence as shipboard, offshore islands not within a territorial local authority (often termed 'extra-county islands') and Chatham Islands county are classified as living outside a local government region. These persons have been treated in the computations as residing in a notional 23rd region for the sake of completeness.

*Great Barrier Island County*. This county was treated as part of the Auckland region in the 1981 Census, but as outside it in 1986. The same practice has been followed in the estimates for the sake of economy. The county has been allocated to the notional 23rd region for 1981-86. For most practical purposes any discontinuity in the data between the two periods can be ignored because the numbers of residents involved are so small.

*Recording of only one migration move per period*. As discussed in the main body of the text the census data record only one move per period. Significant numbers of persons do move more than once so that the data constitute an undercount of total moves. They nevertheless provide a useful indication of the medium-term effects of regional migration. This is satisfactory for most purposes. It is not regarded as a significant limitation for the purposes of this report, but it is necessary for readers to be aware what the data do and do not measure.

*Residents temporarily overseas*. New Zealand residents temporarily overseas at the time of the New Zealand census are not recorded. Nevertheless they form part of the population at risk of dying or migrating between censuses. Some may be recorded as a death in the intercensal period. Others may correctly report their previous residence as a different New Zealand region from their current residence, even though they are not recorded there in the census conducted at that time. Ideally they would have been estimated and incorporated into the adjustments to each census population and to the migration data.

It is considered that failure to adjust for these people has not had a significant effect on the results. The change in their numbers will affect the estimates of overseas outward migration to a minor degree and they will have a minor effect on the estimation of migrant survivorship rates.

*Age specification*. A significant number of census respondents slightly mis-state their age, most commonly by rounding up rather than sticking strictly to the principle of age-last-birthday. This may vary between censuses as the form of the relevant question has changed. No direct adjustments have been made on this account. Working with five-year age groups should have reduced the problem and the related problem of respondents preferring ages ending in particular digits. The aggregation of the five-year age group results into larger groups should have further reduced it.

## Appraisal of Migration Estimates

Considerable judgement and varying degrees of compromise were necessary in the analysis of the census migration data. Some of the adjustments could have been made in different ways and it can be argued that some further adjustments should have been made. At the same time it should be apparent that failure to modify the data would have amounted to distortion by default, because of the data limitations referred to. There is therefore more than one possible set of more or less equally 'correct' answers. All are approximations. While parts of this analysis could be improved, it would be difficult to achieve this without expensive supplementary analysis for an uncertain increase in data quality.

The estimates of overseas outward migration are the least reliable part of the analysis as any compounding of errors deriving from the original data and the simplifying assumptions of the analysis will tend to accumulate in the last item of the chain of calculations. It is likely that the results for the smaller regions will be the least reliable in detail, and those for the larger regions, and the more highly aggregated results, the most reliable. The magnitude of differences in levels of overseas migration for the two periods considered here are supported by the international migration records. They are so marked that the generalised results published in this report should be accepted as quite robust.

*Calculation of migration rates.* All migration rates have been calculated using the average of the regional populations at the beginning and end of the period, as the denominator. This is necessary in order to provide a basis common to internal and overseas migration flows. It is not the population at risk for any migration flow. The at risk population for both outward flows is the population in the region at the start of the period, that for internal inward migration is the sum of the other regions of New Zealand, and that for overseas inward migration is the rest of the world.

## APPENDIX 3: LIFE EXPECTANCY AT BIRTH AND AT SELECTED AGES, LOCAL GOVERNMENT REGIONS, 1985-87

| Local Government Region | Life expectancy at age (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Males | | | | | Females | | | | |
| | 0 | 5 | 25 | 40 | 60 | 0 | 5 | 25 | 40 | 60 |
| Northland | 70.4 | 66.5 | 48.0 | 34.1 | 17.4 | 76.8 | 72.7 | 53.2 | 38.9 | 21.6 |
| Auckland | 71.5 | 67.5 | 48.6 | 34.6 | 17.6 | 77.4 | 73.5 | 54.0 | 39.6 | 21.9 |
| Thames Valley | 71.9 | 67.6 | 49.3 | 35.2 | 18.1 | 78.4 | 74.1 | 54.9 | 40.3 | 22.1 |
| Bay of Plenty | 71.2 | 67.2 | 48.6 | 34.6 | 17.7 | 76.8 | 72.8 | 53.3 | 39.0 | 21.4 |
| Waikato | 70.8 | 66.9 | 48.1 | 33.8 | 17.0 | 77.8 | 73.5 | 54.0 | 39.6 | 21.9 |
| Tongariro | 70.5 | 66.4 | 47.9 | 33.9 | 17.2 | 76.6 | 72.7 | 53.2 | 38.9 | 21.4 |
| East Cape | 69.2 | 65.1 | 46.4 | 32.6 | 16.2 | 75.6 | 71.3 | 52.1 | 37.5 | 20.7 |
| Hawke's Bay | 70.8 | 66.9 | 48.1 | 34.0 | 17.3 | 76.3 | 72.3 | 53.0 | 38.5 | 21.1 |
| Taranaki | 71.3 | 67.2 | 48.3 | 34.1 | 16.8 | 76.7 | 72.4 | 52.8 | 38.3 | 20.8 |
| Wanganui | 70.1 | 66.4 | 47.7 | 33.7 | 16.6 | 76.7 | 72.6 | 53.2 | 38.9 | 21.3 |
| Manawatu | 70.9 | 67.1 | 48.4 | 34.3 | 17.1 | 76.3 | 72.3 | 52.9 | 38.5 | 20.7 |
| Horowhenua | 70.9 | 66.7 | 48.2 | 34.5 | 17.4 | 78.0 | 73.9 | 54.8 | 40.3 | 22.5 |
| Wellington | 71.4 | 67.6 | 48.5 | 34.3 | 17.1 | 77.1 | 73.0 | 53.5 | 38.9 | 21.0 |
| Wairarapa | 70.9 | 66.9 | 48.3 | 34.2 | 16.9 | 77.6 | 73.1 | 53.5 | 39.0 | 21.7 |
| Nelson Bays | 72.1 | 68.2 | 49.3 | 35.2 | 18.0 | 78.5 | 74.2 | 54.8 | 40.4 | 22.2 |
| Marlborough | 72.9 | 68.6 | 49.4 | 35.0 | 17.0 | 78.3 | 73.9 | 54.1 | 40.1 | 22.2 |
| West Coast | 67.9 | 63.7 | 45.2 | 31.8 | 16.0 | 75.1 | 70.9 | 51.6 | 37.0 | 19.8 |
| Canterbury | 71.8 | 68.2 | 49.0 | 34.9 | 17.7 | 78.1 | 74.1 | 54.6 | 40.1 | 22.1 |
| Aorangi | 71.3 | 67.5 | 48.2 | 34.0 | 17.1 | 77.6 | 73.6 | 53.9 | 39.4 | 21.4 |
| Clutha-Central Otago | 72.8 | 68.8 | 49.7 | 35.5 | 17.9 | 78.7 | 74.4 | 55.0 | 40.5 | 22.4 |
| Coastal-North Otago | 70.4 | 66.6 | 47.2 | 33.1 | 16.3 | 77.3 | 73.2 | 53.6 | 39.1 | 21.2 |
| Southland | 70.3 | 66.5 | 47.4 | 33.3 | 16.6 | 75.8 | 71.9 | 52.6 | 38.0 | 20.4 |

APPENDIX 4

# INTER-REGIONAL MIGRATION 1976-1986

The tables in this appendix contain information on the volume of inter-regional migration between censuses in 1981 and 1986, the net migration gains and losses to regions over the intercensal periods 1976-81 and 1981-86, and the increases (or decreases) in the size of migration flows to and from each region between censuses in 1971, 1976, 1981 and 1986. The data on migration have been obtained from published census tables referring to the place of usual residence of the New Zealand population aged five years and over, five years before the census. People aged less than five years are excluded because they were not alive five years before the census (see Appendix 2 for further elaboration on the nature of these data).

When extracting specific figures on migration from the matrices it is necessary to identify which region is the source of the migrants and which region is the destination. In all tables in this appendix the regions identified in the columns refer to the sources of migrants, while the regions listed in the rows are the destinations. To cite a specific example using Table A4a, the population usually resident in Northland LGR in 1986 included 9,258 people aged 5 years and over who had been resident in Auckland LGR in 1981. Reading across the rows in this table it is possible to identify the sources of migrants who were living in each LGR in 1986. These are the 'in-migrants'. Reading down the columns it is possible to identify the places of residence in 1986 of people who were living in each LGR in 1981. These are the 'out-migrants'.

In Table A4b and A4c the figures for net migration gains and losses to the population of each region are given. These are obtained by subtracting the number of in-migrants to a region from the number of out-migrants. Thus, in Table A4c, Northland LGR had a net gain of 1,701 people from Auckland LGR between 1981 and 1986. This is the balance between the flows of 9,258 in-migrants to Northland from Auckland and 7,557 out-migrants from Northland to Auckland which are shown in Table A4a. Conversely, Auckland LGR had a net loss of -1,701 people to Northland between 1981 and 1986 (see Table A4c). The net migration gains and losses during the previous intercensal period (1976-81) are shown in Table A4b.

In Tables A4d and A4e the differences in numbers of in-migrants to and out-migrants from each region during two successive intercensal periods are shown. In Table A4e, for example, it can be seen that the in-migrant flow to Northland LGR from Auckland LGR between 1981 and 1986 (the 9,258 shown in Table A4a) was 1,068 people more than the in-migrant flow between 1976 and 1981. In other words, the volume of in-migration to Northland from Auckland had increased during the last intercensal period. Table A4d shows that the change between the previous two intercensal periods (1971-76 and 1976-81) had been much smaller in the case of this population exchange between Auckland and Northland. The in-migrant flow to Northland from Auckland between 1976 and 1981 was only 84 people greater than the inflow between 1971 and 1976.

These matrices contain a great deal of quite specific information on the population exchanges between regions during the early 1980s. A detailed analysis of similar migration matrices for the periods 1971-76 and 1976-81 can be found in a report prepared by the Demographic Analysis Section of the Department of Statistics (1986) entitled *Inter-regional Migration in New Zealand 1971-81*.

# APPENDIX 4: INTER-REGIONAL MIGRATION, 1976-1986

## a) Inter-regional migration flows, 1981-86

| LGR of usual residence, 1986 | Local Government Region of usual residence, 1981 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NLD | AUCK | THAMES | BOP | WAIK | TONG | EAST C | HBAY | TARA | WANG | MANA | HORO | WELL |
| Northland | 0 | 9,258 | 639 | 1,344 | 2,058 | 537 | 285 | 576 | 711 | 393 | 597 | 162 | 1,161 |
| Auckland | 7,557 | 0 | 2,769 | 6,675 | 9,501 | 1,614 | 1,674 | 3,132 | 2,214 | 2,037 | 2,880 | 996 | 10,167 |
| Thames Valley | 429 | 3,360 | 0 | 1,356 | 3,171 | 303 | 171 | 285 | 330 | 225 | 282 | 87 | 363 |
| Bay of Plenty | 1,002 | 5,901 | 1,479 | 0 | 6,108 | 1,557 | 1,275 | 1,230 | 972 | 795 | 1,482 | 537 | 3,084 |
| Waikato | 1,467 | 7,032 | 3,432 | 4,500 | 0 | 1,782 | 786 | 1,353 | 1,212 | 924 | 1,206 | 339 | 2,088 |
| Tongariro | 291 | 1,413 | 213 | 816 | 1,329 | 0 | 213 | 684 | 330 | 501 | 522 | 174 | 807 |
| East Cape | 177 | 1,107 | 126 | 1,158 | 471 | 231 | 0 | 870 | 168 | 171 | 393 | 102 | 918 |
| Hawke's Bay | 300 | 1,809 | 147 | 921 | 921 | 474 | 1,065 | 0 | 477 | 684 | 1,911 | 375 | 2,550 |
| Taranaki | 297 | 1,878 | 249 | 594 | 1,416 | 402 | 150 | 477 | 0 | 795 | 1,074 | 327 | 1,419 |
| Wanganui | 231 | 1,599 | 87 | 552 | 612 | 423 | 186 | 543 | 816 | 0 | 1,500 | 381 | 1,503 |
| Manawatu | 399 | 2,058 | 219 | 795 | 1,077 | 384 | 474 | 2,070 | 1,224 | 1,959 | 0 | 1,455 | 3,003 |
| Horowhenua | 90 | 684 | 51 | 276 | 261 | 162 | 135 | 339 | 258 | 342 | 1,374 | 0 | 6,177 |
| Wellington | 630 | 6,030 | 247 | 1,638 | 1,965 | 627 | 1,014 | 2,232 | 1,230 | 1,464 | 2,778 | 2,295 | 0 |
| Wairarapa | 63 | 399 | 21 | 177 | 165 | 99 | 114 | 360 | 123 | 216 | 612 | 243 | 2,094 |
| Nelson | 192 | 972 | 78 | 249 | 288 | 90 | 57 | 195 | 192 | 117 | 300 | 126 | 927 |
| Marlborough | 84 | 537 | 48 | 156 | 171 | 48 | 51 | 156 | 78 | 162 | 207 | 90 | 621 |
| West Coast | 57 | 255 | 78 | 120 | 240 | 57 | 24 | 63 | 66 | 57 | 90 | 48 | 237 |
| Canterbury | 417 | 3,939 | 162 | 867 | 1,020 | 222 | 249 | 735 | 444 | 852 | 1,062 | 282 | 3,204 |
| Aorangi | 108 | 372 | 51 | 138 | 207 | 48 | 51 | 147 | 111 | 57 | 120 | 42 | 288 |
| Clutha-Central Otago | 60 | 381 | 63 | 117 | 120 | 147 | 51 | 102 | 84 | 42 | 81 | 15 | 207 |
| Coastal-North Otago | 204 | 1,728 | 108 | 414 | 507 | 87 | 111 | 399 | 222 | 216 | 321 | 120 | 1,218 |
| Southland | 129 | 534 | 51 | 213 | 291 | 66 | 96 | 192 | 126 | 117 | 162 | 15 | 420 |
| North Island | 12,933 | 42,528 | 9,679 | 20,802 | 29,055 | 8,595 | 7,542 | 14,151 | 10,065 | 10,506 | 16,611 | 7,473 | 35,334 |
| South Island | 1,251 | 8,718 | 639 | 2,274 | 2,844 | 765 | 690 | 1,989 | 1,323 | 1,620 | 2,343 | 738 | 7,122 |
| New Zealand | 14,184 | 51,246 | 10,318 | 23,076 | 31,899 | 9,360 | 8,232 | 16,140 | 11,388 | 12,126 | 18,954 | 8,211 | 42,456 |

| LGR of usual residence, 1986 | Local Government Region of usual residence, 1981 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WAIRA | NELSON | MARL | WEST | CANT | AOR | CLUTHA | COASTAL | SLD | NORTH | SOUTH | NZ |
| Northland | 204 | 123 | 90 | 51 | 618 | 165 | 78 | 288 | 225 | 17,925 | 1,638 | 19,563 |
| Auckland | 549 | 828 | 573 | 234 | 5,427 | 612 | 333 | 2,145 | 894 | 51,765 | 11,046 | 62,811 |
| Thames Valley | 75 | 66 | 33 | 48 | 183 | 54 | 39 | 90 | 66 | 10,437 | 579 | 11,016 |
| Bay of Plenty | 402 | 333 | 171 | 150 | 1,038 | 219 | 177 | 507 | 372 | 25,824 | 2,967 | 28,791 |
| Waikato | 276 | 288 | 189 | 204 | 1,212 | 309 | 153 | 606 | 486 | 26,397 | 3,447 | 29,844 |
| Tongariro | 141 | 66 | 51 | 45 | 213 | 102 | 42 | 135 | 117 | 7,434 | 771 | 8,205 |
| East Cape | 123 | 72 | 30 | 42 | 246 | 75 | 54 | 99 | 75 | 6,015 | 693 | 6,708 |
| Hawke's Bay | 567 | 258 | 156 | 102 | 744 | 201 | 120 | 384 | 282 | 12,201 | 2,247 | 14,448 |
| Taranaki | 192 | 252 | 84 | 96 | 558 | 171 | 78 | 282 | 183 | 9,270 | 1,704 | 10,974 |
| Wanganui | 318 | 150 | 189 | 66 | 843 | 177 | 78 | 225 | 201 | 8,751 | 1,929 | 10,680 |
| Manawatu | 1,026 | 213 | 273 | 87 | 1,083 | 219 | 102 | 357 | 285 | 16,143 | 2,619 | 18,762 |
| Horowhenua | 288 | 186 | 63 | 51 | 393 | 54 | 30 | 141 | 105 | 10,437 | 1,023 | 11,460 |
| Wellington | 1,614 | 1,104 | 786 | 282 | 4,389 | 540 | 258 | 1,962 | 642 | 23,764 | 9,963 | 33,727 |
| Wairarapa | 0 | 69 | 81 | 27 | 225 | 57 | 33 | 60 | 75 | 4,686 | 627 | 5,313 |
| Nelson | 114 | 0 | 738 | 750 | 1,854 | 459 | 264 | 621 | 600 | 3,897 | 5,286 | 9,183 |
| Marlborough | 75 | 555 | 0 | 327 | 1,806 | 438 | 222 | 360 | 417 | 2,484 | 4,125 | 6,609 |
| West Coast | 42 | 570 | 186 | 0 | 1,758 | 378 | 123 | 243 | 237 | 1,434 | 3,495 | 4,929 |
| Canterbury | 240 | 1,941 | 1,743 | 2,118 | 0 | 4,509 | 1,092 | 3,522 | 2,553 | 13,695 | 17,478 | 31,173 |
| Aorangi | 57 | 231 | 189 | 333 | 2,562 | 0 | 612 | 1,386 | 957 | 1,797 | 6,270 | 8,067 |
| Clutha-Central Otago | 45 | 135 | 84 | 162 | 951 | 1,188 | 0 | 2,520 | 2,337 | 1,515 | 7,377 | 8,892 |
| Coastal-North Otago | 69 | 369 | 243 | 264 | 2,181 | 1,827 | 2,715 | 0 | 2,319 | 5,724 | 9,918 | 15,642 |
| Southland | 66 | 213 | 141 | 153 | 1,278 | 774 | 1,230 | 1,632 | 0 | 2,478 | 5,421 | 7,899 |
| North Island | 5,775 | 4,008 | 2,769 | 1,485 | 17,172 | 2,955 | 1,575 | 7,281 | 4,008 | 231,049 | 41,253 | 272,302 |
| South Island | 708 | 4,014 | 3,324 | 4,107 | 12,390 | 9,573 | 6,258 | 10,284 | 9,420 | 33,024 | 59,370 | 92,394 |
| New Zealand | 6,483 | 8,022 | 6,093 | 5,592 | 29,562 | 12,528 | 7,833 | 17,565 | 13,428 | 264,073 | 100,623 | 364,696 |

**b) Net inter-regional migration flows, 1976-81**

| LGR of usual residence, 1981 | Local Government Region of usual residence, 1976 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NLD | AUCK | THAMES | BOP | WAIK | TONG | EAST C | HBAY | TARA | WANG | MANA | HORO | WELL |
| Northland | 0 | 348 | -45 | 102 | 408 | 99 | 33 | 96 | 105 | 78 | 279 | 120 | 339 |
| Auckland | -348 | 0 | -213 | 708 | 2,907 | 174 | 468 | 573 | 651 | 453 | 939 | 606 | 5,892 |
| Thames Valley | 45 | 213 | 0 | -414 | -276 | 87 | 57 | 90 | 27 | 33 | 138 | 39 | 141 |
| Bay of Plenty | -102 | -708 | 414 | 0 | 1866 | 513 | 312 | 324 | 429 | 363 | 798 | 312 | 1,596 |
| Waikato | -408 | -2,907 | 276 | -1,866 | 0 | 264 | 165 | 249 | 870 | 246 | 324 | 156 | 261 |
| Tongariro | -99 | -174 | -87 | -513 | -264 | 0 | -69 | 108 | 6 | 9 | 222 | 78 | 243 |
| East Cape | -33 | -468 | -57 | -312 | -165 | 69 | 0 | -39 | -42 | -57 | -123 | -6 | 9 |
| Hawke's Bay | -96 | -573 | -90 | -324 | -249 | -108 | 39 | 0 | 72 | 93 | -48 | 162 | 828 |
| Taranaki | -105 | -651 | -27 | -429 | -870 | -6 | 42 | -72 | 0 | -81 | -375 | 42 | 39 |
| Wanganui | -78 | -453 | -33 | -363 | -246 | -9 | 57 | -93 | 81 | 0 | -861 | 108 | -339 |
| Manawatu | -279 | -939 | -138 | -798 | -324 | -222 | 123 | 48 | 375 | 861 | 0 | 222 | 273 |
| Horowhenua | -120 | -606 | -39 | -312 | -156 | -78 | 6 | -162 | -42 | -108 | -222 | 0 | 2,592 |
| Wellington | -339 | -5,892 | -141 | -1,596 | -261 | -243 | -9 | -828 | -39 | 339 | -273 | -2,592 | 0 |
| Wairarapa | -51 | -300 | -69 | -342 | -252 | -93 | -72 | -270 | -54 | -45 | -363 | -126 | -75 |
| Nelson | 0 | 75 | -42 | -42 | 81 | 0 | 21 | 21 | -6 | 18 | -36 | -63 | -123 |
| Marlborough | 48 | -36 | -3 | -48 | 27 | 18 | -15 | -24 | -6 | -9 | -114 | 18 | -123 |
| West Coast | -18 | 39 | 3 | -48 | -12 | -39 | 0 | -30 | -15 | -21 | -45 | 9 | -48 |
| Canterbury | -159 | -2,019 | -18 | -399 | -156 | 39 | 54 | 33 | -45 | -96 | -84 | -36 | -774 |
| Aorangi | -33 | -288 | -18 | -123 | -81 | -63 | -6 | -69 | 33 | -30 | -45 | -30 | -189 |
| Clutha-Central Otago | -21 | 33 | 9 | -33 | 66 | 72 | 24 | -42 | 24 | -12 | -12 | -27 | -9 |
| Coastal-North Otago | -120 | -747 | 30 | -75 | -129 | -15 | 0 | -48 | -9 | -12 | -117 | -51 | -732 |
| Southland | -75 | -255 | 33 | -165 | -96 | 0 | 42 | -75 | -39 | -9 | -84 | -24 | -162 |
| North Island | -2013 | -13,110 | -249 | -6,459 | 2,118 | 447 | 1,152 | 24 | 2,439 | 2,184 | 435 | -879 | 11,799 |
| South Island | -378 | -3,198 | -6 | -933 | -300 | 12 | 120 | -234 | -63 | -171 | -537 | -204 | -2,160 |
| New Zealand | -2,391 | -16,308 | -255 | -7,392 | 1,818 | 459 | 1,272 | -210 | 2,376 | 2,013 | -102 | -1,083 | 9,639 |

| LGR of usual residence, 1981 | Local Government Region of usual residence, 1976 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WAIRA | NELSON | MARL | WEST | CANT | AOR | CLUTHA | COASTAL | SLD | NORTH | SOUTH | NZ |
| Northland | 51 | 0 | -48 | 18 | 159 | 33 | 21 | 120 | 75 | 2,013 | 378 | 2,391 |
| Auckland | 300 | -75 | 36 | -39 | 2,019 | 288 | -33 | 747 | 255 | 13,110 | 3,198 | 16,308 |
| Thames Valley | 69 | 42 | 3 | -3 | 18 | 18 | -9 | -30 | -33 | 249 | 6 | 255 |
| Bay of Plenty | 342 | 42 | 48 | 48 | 399 | 123 | 33 | 75 | 165 | 6,459 | 933 | 7,392 |
| Waikato | 252 | -81 | -27 | 12 | 156 | 81 | -66 | 129 | 96 | -2,118 | 300 | -1,818 |
| Tongariro | 93 | 0 | -18 | 39 | -39 | 63 | -72 | 15 | 0 | -447 | -12 | -459 |
| East Cape | 72 | -21 | 15 | 0 | -54 | 6 | -24 | 0 | -42 | -1,152 | -120 | -1,272 |
| Hawke's Bay | 270 | -21 | 24 | 30 | -33 | 69 | 42 | 48 | 75 | -24 | 234 | 210 |
| Taranaki | 54 | 6 | 6 | 15 | 45 | -33 | -24 | 9 | 39 | -2,439 | 63 | -2,376 |
| Wanganui | 45 | -18 | 9 | 21 | 96 | 30 | 12 | 12 | 9 | -2,184 | 171 | -2,013 |
| Manawatu | 363 | 36 | 114 | 45 | 84 | 45 | 12 | 117 | 84 | -435 | 537 | 102 |
| Horowhenua | 126 | 63 | -18 | -9 | 36 | 30 | 27 | 51 | 24 | 879 | 204 | 1,083 |
| Wellington | 75 | 123 | 123 | 48 | 774 | 189 | 9 | 732 | 162 | -11,799 | 2,160 | -9,639 |
| Wairarapa | 0 | 21 | -27 | 6 | -12 | 30 | -18 | 6 | -24 | -2,112 | -18 | -2,130 |
| Nelson | -21 | 0 | 81 | 279 | 366 | 225 | 162 | 354 | 348 | -117 | 1,815 | 1,698 |
| Marlborough | 27 | -81 | 0 | 99 | 141 | 111 | 30 | 171 | 135 | -240 | 606 | 366 |
| West Coast | -6 | -279 | -99 | 0 | -504 | 57 | -27 | 69 | -27 | -231 | -810 | -1,041 |
| Canterbury | 12 | -366 | -141 | 504 | 0 | 1,431 | 183 | 1,776 | 912 | -3,648 | 4,299 | 651 |
| Aorangi | -30 | -225 | -111 | -57 | -1,431 | 0 | 33 | 102 | 330 | -972 | -1,359 | -2,331 |
| Clutha-Central Otago | 18 | -162 | -30 | 27 | -183 | -33 | 0 | 237 | 684 | 90 | 540 | 630 |
| Coastal-North Otago | -6 | -354 | -171 | -69 | -1,776 | -102 | -237 | 0 | 315 | -2,031 | -2,394 | -4,425 |
| Southland | 24 | -348 | -135 | 27 | -912 | -330 | -684 | -315 | 0 | -885 | -2,697 | -3,582 |
| North Island | 2,112 | 117 | 240 | 231 | 3,648 | 972 | -90 | 2,031 | 885 | 0 | 8,034 | 8,034 |
| South Island | 18 | -1,815 | -606 | 810 | -4,299 | 1,359 | -540 | 2,394 | 2,697 | -8,034 | 0 | -8,034 |
| New Zealand | 2,130 | -1,698 | -366 | 1,041 | -651 | 2,331 | -630 | 4,425 | 3,582 | -8,034 | 8,034 | 0 |

### c) Net inter-regional migration flows, 1981-86

| LGR of usual residence, 1986 | Local Government Region of usual residence, 1981 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NLD | AUCK | THAMES | BOP | WAIK | TONG | EAST C | HBAY | TARA | WANG | MANA | HORO | WELL |
| Northland | 0 | 1,701 | 210 | 342 | 591 | 246 | 108 | 276 | 414 | 162 | 198 | 72 | 531 |
| Auckland | -1,701 | 0 | -591 | 774 | 2,469 | 201 | 567 | 1,323 | 336 | 438 | 822 | 312 | 4,137 |
| Thames Valley | -210 | 591 | 0 | -123 | -261 | 90 | 45 | 138 | 81 | 138 | 63 | 36 | 116 |
| Bay of Plenty | -342 | -774 | 123 | 0 | 1,608 | 741 | 117 | 309 | 378 | 243 | 687 | 261 | 1,446 |
| Waikato | -591 | -2,469 | 261 | -1,608 | 0 | 453 | 315 | 432 | -204 | 312 | 129 | 78 | 123 |
| Tongariro | -246 | -201 | -90 | -741 | -453 | 0 | -18 | 210 | -72 | 78 | 138 | 12 | 180 |
| East Cape | -108 | -567 | -45 | -117 | -315 | 18 | 0 | -195 | 18 | -15 | -81 | -33 | -96 |
| Hawke's Bay | -276 | -1,323 | -138 | -309 | -432 | -210 | 195 | 0 | 0 | 141 | -159 | 36 | 318 |
| Taranaki | -414 | -336 | -81 | -378 | 204 | 72 | -18 | 0 | 0 | -21 | -150 | 69 | 189 |
| Wanganui | -162 | -438 | -138 | -243 | -312 | -78 | 15 | -141 | 21 | 0 | -459 | 39 | 39 |
| Manawatu | -198 | -822 | -63 | -687 | -129 | -138 | 81 | 159 | 150 | 459 | 0 | 81 | 225 |
| Horowhenua | -72 | -312 | -36 | -261 | -78 | -12 | 33 | -36 | -69 | -39 | -81 | 0 | 3882 |
| Wellington | -531 | -4,137 | -116 | -1,446 | -123 | -180 | 96 | -318 | -189 | -39 | -225 | -3,882 | 0 |
| Wairarapa | -141 | -150 | -54 | -225 | -111 | -42 | -9 | -207 | -69 | -102 | -414 | -45 | 480 |
| Nelson | 69 | 144 | 12 | -84 | 0 | 24 | -15 | -63 | -60 | -33 | 87 | -60 | -177 |
| Marlborough | -6 | -36 | 15 | -15 | -18 | -3 | 21 | 0 | -6 | -27 | -66 | 27 | -165 |
| West Coast | 6 | 21 | 30 | -30 | 36 | 12 | -18 | -39 | -30 | -9 | 3 | -3 | -45 |
| Canterbury | -201 | -1,488 | -21 | -171 | -192 | 9 | 3 | -9 | -114 | 9 | -21 | -111 | -1,185 |
| Aorangi | -57 | -240 | -3 | -81 | -102 | -54 | -24 | -54 | -60 | -120 | -99 | -12 | -252 |
| Clutha-Central Otago | -18 | 48 | 24 | -60 | -33 | 105 | -3 | -18 | 6 | -36 | -21 | -15 | -51 |
| Coastal-North Otago | -84 | -417 | 18 | -93 | -99 | -48 | 12 | 15 | -60 | -9 | -36 | -21 | -744 |
| Southland | -96 | -360 | -15 | -159 | -195 | -51 | 21 | -90 | -57 | -84 | -123 | -90 | -222 |
| North Island | -4,992 | -9,237 | -758 | -5,022 | 2,658 | 1,161 | 1,527 | 1,950 | 795 | 1,755 | 468 | -2,964 | 11,570 |
| South Island | -387 | -2,328 | 60 | -693 | -603 | -6 | -3 | -258 | -381 | -309 | -276 | -285 | -2,841 |
| New Zealand | -5,379 | -11,565 | -698 | -5,715 | 2,055 | 1,155 | 1,524 | 1,692 | 414 | 1,446 | 192 | -3,249 | 8,729 |

| LGR of usual residence, 1986 | Local Government Region of usual residence, 1981 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WAIRA | NELSON | MARL | WEST | CANT | AOR | CLUTHA | COASTAL | SLD | NORTH | SOUTH | NZ |
| Northland | 141 | -69 | 6 | -6 | 201 | 57 | 18 | 84 | 96 | 4,992 | 387 | 5,379 |
| Auckland | 150 | -144 | 36 | -21 | 1,488 | 240 | -48 | 417 | 360 | 9,237 | 2,328 | 11,565 |
| Thames Valley | 54 | -12 | -15 | -30 | 21 | 3 | -24 | -18 | 15 | 758 | -60 | 698 |
| Bay of Plenty | 225 | 84 | 15 | 30 | 171 | 81 | 60 | 93 | 159 | 5,022 | 693 | 5,715 |
| Waikato | 111 | 0 | 18 | -36 | 192 | 102 | 33 | 99 | 195 | -2,658 | 603 | -2,055 |
| Tongariro | 42 | -24 | 3 | -12 | -9 | 54 | -105 | 48 | 51 | -1,161 | 6 | -1,155 |
| East Cape | 9 | 15 | -21 | 18 | -3 | 24 | 3 | -12 | -21 | -1,527 | 3 | -1,524 |
| Hawke's Bay | 207 | 63 | 0 | 39 | 9 | 54 | 18 | -15 | 90 | -1,950 | 258 | -1,692 |
| Taranaki | 69 | 60 | 6 | 30 | 114 | 60 | -6 | 60 | 57 | -795 | 381 | -414 |
| Wanganui | 102 | 33 | 27 | 9 | -9 | 120 | 36 | 9 | 84 | -1,755 | 309 | -1,446 |
| Manawatu | 414 | -87 | 66 | -3 | 21 | 99 | 21 | 36 | 123 | -468 | 276 | -192 |
| Horowhenua | 45 | 60 | -27 | 3 | 111 | 12 | 15 | 21 | 90 | 2,964 | 285 | 3,249 |
| Wellington | -480 | 177 | 165 | 45 | 1,185 | 252 | 51 | 744 | 222 | -11,570 | 2,841 | -8,729 |
| Wairarapa | 0 | -45 | 6 | -15 | -15 | 0 | -12 | -9 | 9 | -1,089 | -81 | -1,170 |
| Nelson | 45 | 0 | 183 | 180 | -87 | 228 | 129 | 252 | 387 | -111 | 1,272 | 1,161 |
| Marlborough | -6 | -183 | 0 | 141 | 63 | 249 | 138 | 117 | 276 | -285 | 801 | 516 |
| West Coast | 15 | -180 | -141 | 0 | -360 | 45 | -39 | -21 | 84 | -51 | -612 | -663 |
| Canterbury | 15 | 87 | -63 | 360 | 0 | 1,947 | 141 | 1,341 | 1,275 | -3,477 | 5,088 | 1,611 |
| Aorangi | 0 | -228 | -249 | -45 | -1,947 | 0 | -576 | -441 | 183 | -1,158 | -3,303 | -4,461 |
| Clutha-Central Otago | 12 | -129 | -138 | 39 | -141 | 576 | 0 | -195 | 1,107 | -60 | 1,119 | 1,059 |
| Coastal-North Otago | 9 | -252 | -117 | 21 | -1,341 | 441 | 195 | 0 | 687 | -1,557 | -366 | -1,923 |
| Southland | -9 | -387 | -276 | -84 | -1,275 | -183 | -1,107 | -687 | 0 | -1,530 | -3,999 | -5,529 |
| North Island | 1,089 | 111 | 285 | 51 | 3,477 | 1,158 | 60 | 1,557 | 1,530 | 0 | 8,229 | 8,229 |
| South Island | 81 | -1,272 | -801 | 612 | -5,088 | 3,303 | -1,119 | 366 | 3,999 | -8,229 | 0 | -8,229 |
| New Zealand | 1,170 | -1,161 | -516 | 663 | -1,611 | 4,461 | -1,059 | 1,923 | 5,529 | -8,229 | 8,229 | 0 |

**d) Change between 1971-76 and 1976-81 flows (- = decrease)**

| Destination of migrants | Origin of migrants | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NLD | AUCK | THAMES | BOP | WAIK | TONG | EAST C | HBAY | TARA | WANG | MANA | HORO | WELL |
| Northland | 0 | 84 | 9 | 192 | 366 | -36 | 9 | 117 | -27 | 24 | 183 | 78 | 120 |
| Auckland | -192 | 0 | 159 | 234 | 534 | -159 | 96 | 78 | 69 | 123 | 462 | 327 | 1,149 |
| Thames Valley | 33 | -327 | 0 | -15 | -18 | -75 | 15 | 51 | -93 | -15 | 39 | 6 | -18 |
| Bay of Plenty | 39 | -177 | 135 | 0 | 468 | 57 | -21 | 168 | -3 | 39 | 237 | 102 | 399 |
| Waikato | -15 | -696 | -78 | -108 | 0 | -447 | 0 | 171 | 369 | 72 | -18 | 54 | 81 |
| Tongariro | 33 | 45 | 12 | -54 | 279 | 0 | -21 | 45 | 108 | -129 | 72 | 9 | 81 |
| East Cape | 15 | 45 | -18 | 108 | 78 | 48 | 0 | 222 | 9 | -24 | -9 | -33 | 300 |
| Hawke's Bay | -27 | 30 | -33 | -24 | -99 | -33 | -105 | 0 | -201 | -21 | 75 | 51 | 90 |
| Taranaki | -15 | -279 | 6 | -27 | -36 | -225 | 42 | -66 | 0 | -78 | 6 | 9 | 3 |
| Wanganui | 21 | 165 | -9 | 135 | 39 | 96 | -12 | 9 | -84 | 0 | -12 | 24 | -171 |
| Manawatu | -12 | 306 | -6 | 24 | 72 | -51 | 3 | 150 | 24 | 198 | 0 | -6 | -57 |
| Horowhenua | -15 | -39 | 15 | 24 | -12 | -33 | -39 | -54 | -9 | -102 | 42 | 0 | -1,227 |
| Wellington | 57 | -477 | -24 | -315 | -69 | -225 | -360 | -174 | -207 | -279 | -18 | 291 | 0 |
| Wairarapa | 33 | -9 | 0 | 39 | -42 | -9 | -39 | -21 | -6 | -78 | -6 | 30 | -636 |
| Nelson | 21 | 0 | -3 | -21 | -42 | -18 | -3 | -18 | -9 | 18 | -84 | 6 | -108 |
| Marlborough | 36 | 3 | 9 | -18 | -18 | 27 | -9 | 39 | -6 | -27 | -15 | -6 | -42 |
| West Coast | 0 | -30 | 6 | -3 | 9 | -12 | 21 | 9 | 18 | -54 | -15 | 36 | -12 |
| Canterbury | -33 | -261 | -3 | -72 | 6 | -84 | -63 | -138 | -171 | -144 | -72 | -42 | -237 |
| Aorangi | -3 | -132 | 12 | 9 | 3 | -150 | -33 | -90 | 6 | 6 | -3 | 18 | -96 |
| Clutha-Central Otago | 21 | 48 | 9 | 33 | 51 | 42 | 12 | 6 | 54 | 12 | 75 | -9 | -33 |
| Coastal-North Otago | -39 | -519 | -6 | -75 | -30 | -36 | -33 | -36 | -75 | -18 | -57 | -15 | -258 |
| Southland | -108 | -66 | 6 | -27 | -42 | -45 | -9 | -18 | -30 | 39 | -27 | 9 | 24 |
| North Island | -45 | -1,329 | 168 | 213 | 1,560 | -1,092 | -432 | 696 | -51 | -270 | 1,053 | 942 | 114 |
| South Island | -105 | -957 | 30 | -174 | -63 | -276 | -117 | -246 | -213 | -168 | -198 | -3 | -762 |
| New Zealand | -150 | -2,286 | 198 | 39 | 1,497 | -1,368 | -549 | 450 | -264 | -438 | 855 | 939 | -648 |

| Destination of migrants | Origin of migrants | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WAIRA | NELSON | MARL | WEST | CANT | AOR | CLUTHA | COASTAL | SLD | NORTH | SOUTH | NZ |
| Northland | 12 | 27 | -15 | -12 | 36 | 12 | 21 | 96 | 6 | 1,131 | 171 | 1,302 |
| Auckland | -9 | 3 | -48 | -96 | 558 | 141 | 93 | 267 | -123 | 2,871 | 795 | 3,666 |
| Thames Valley | 24 | 15 | 9 | -12 | 6 | 9 | 9 | -27 | -15 | -393 | -6 | -399 |
| Bay of Plenty | 123 | 45 | 6 | 48 | 294 | 114 | 93 | 9 | 33 | 1,566 | 642 | 2,208 |
| Waikato | 57 | -66 | -57 | -12 | 78 | -9 | -12 | -18 | -72 | -558 | -168 | -726 |
| Tongariro | -6 | 0 | 15 | 9 | 36 | 54 | -9 | 6 | -27 | 474 | 84 | 558 |
| East Cape | 42 | -21 | 39 | 9 | 21 | 6 | 6 | -24 | -39 | 783 | -3 | 780 |
| Hawke's Bay | -72 | -39 | 54 | -21 | -78 | -27 | 9 | 3 | -12 | -369 | -111 | -480 |
| Taranaki | -48 | -30 | 21 | 3 | -75 | -45 | 30 | -6 | -21 | -708 | -123 | -831 |
| Wanganui | 0 | 15 | 3 | 27 | 84 | 9 | 27 | -33 | 12 | 201 | 144 | 345 |
| Manawatu | -30 | -18 | 69 | 27 | -45 | 9 | 69 | 96 | -39 | 615 | 168 | 783 |
| Horowhenua | -48 | 87 | 12 | 3 | -51 | 9 | -3 | 42 | 15 | -1,497 | 114 | -1,383 |
| Wellington | 225 | 81 | -81 | -81 | -81 | -78 | -87 | -264 | -171 | -1,575 | -762 | -2,337 |
| Wairarapa | 0 | 42 | -51 | -30 | -15 | -33 | 6 | -3 | -27 | -744 | -111 | -855 |
| Nelson | -36 | 0 | 24 | 54 | 189 | 129 | 87 | 78 | 21 | -297 | 582 | 285 |
| Marlborough | -24 | -60 | 0 | 84 | -198 | -81 | -9 | 36 | 12 | -51 | -216 | -267 |
| West Coast | -24 | 0 | 24 | 0 | -315 | 75 | -15 | 51 | 0 | -51 | -180 | -231 |
| Canterbury | -27 | 33 | 156 | 36 | 0 | -54 | -39 | -114 | -270 | -1,341 | -252 | -1,593 |
| Aorangi | -63 | 27 | 21 | -66 | -456 | 0 | -180 | -609 | -534 | -516 | -1,797 | -2,313 |
| Clutha-Central Otago | 15 | 48 | 36 | 24 | 102 | 315 | 0 | 378 | 444 | 336 | 1,347 | 1,683 |
| Coastal-North Otago | -54 | -87 | -3 | -48 | -297 | 114 | -504 | 0 | -555 | -1,251 | -1,380 | -2,631 |
| Southland | 24 | -12 | -30 | 18 | -81 | 75 | 105 | -12 | 0 | -270 | 63 | -207 |
| North Island | 270 | 141 | -24 | -138 | 768 | 171 | 252 | 144 | -480 | 1,797 | 834 | 2,631 |
| South Island | -189 | -51 | 228 | 102 | -1,056 | 573 | -555 | -192 | -882 | -3,441 | -1,833 | -5,274 |
| New Zealand | 81 | 90 | 204 | -36 | -288 | 744 | -303 | -48 | -1,362 | -1,644 | -999 | -2,643 |

**e) Change between 1976-81 and 1981-86 flows (- = decrease)**

| Destination of migrants | Origin of migrants | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NLD | AUCK | THAMES | BOP | WAIK | TONG | EAST C | HBAY | TARA | WANG | MANA | HORO | WELL |
| Northland | 0 | 1,068 | 213 | 279 | 153 | 180 | 39 | 75 | 276 | 84 | -18 | -39 | 12 |
| Auckland | -285 | 0 | -60 | 435 | -825 | -78 | 72 | 486 | -48 | 15 | -69 | -144 | -1,449 |
| Thames Valley | -42 | 318 | 0 | 210 | 0 | 3 | 9 | 33 | 57 | 75 | -42 | -18 | -45 |
| Bay of Plenty | 39 | 369 | -81 | 0 | 114 | 24 | -27 | -111 | -30 | -147 | -36 | -6 | -234 |
| Waikato | -30 | -387 | -15 | 372 | 0 | 12 | -6 | 75 | -867 | -66 | -93 | -84 | -336 |
| Tongariro | 33 | -105 | 0 | -204 | -177 | 0 | 57 | 21 | -90 | 21 | -30 | -30 | -111 |
| East Cape | -36 | -27 | 21 | 168 | -156 | 6 | 0 | -144 | 12 | 30 | 69 | 36 | -141 |
| Hawke's Bay | -105 | -264 | -15 | -96 | -108 | -81 | 12 | 0 | -12 | -36 | -141 | -102 | -678 |
| Taranaki | -33 | 267 | 3 | 21 | 207 | -12 | -48 | 60 | 0 | -111 | 219 | 51 | -51 |
| Wanganui | 0 | 30 | -30 | -27 | -132 | -48 | -12 | -84 | -171 | 0 | 21 | -15 | -33 |
| Manawatu | 63 | 48 | 33 | 75 | 102 | 54 | 27 | -30 | -6 | -381 | 0 | 21 | -30 |
| Horowhenua | 9 | 150 | -15 | 45 | -6 | 36 | 63 | 24 | 24 | 54 | 162 | 0 | 1,095 |
| Wellington | -180 | 306 | -20 | -84 | -198 | -48 | -36 | -168 | -201 | -411 | 18 | -195 | 0 |
| Wairarapa | -45 | 39 | -21 | -9 | -9 | 3 | 33 | -15 | -30 | 9 | -60 | 21 | 264 |
| Nelson | 39 | 123 | 39 | -57 | -54 | 6 | -30 | -66 | 24 | -36 | 45 | -21 | -135 |
| Marlborough | -24 | 27 | 6 | 42 | -6 | -18 | 0 | 15 | -6 | -24 | 9 | -21 | -27 |
| West Coast | 0 | 24 | 30 | 9 | 87 | 27 | -12 | -15 | -6 | 6 | 3 | 0 | -48 |
| Canterbury | 0 | -9 | -21 | -132 | -243 | -75 | -90 | -132 | -15 | 90 | 117 | -24 | -498 |
| Aorangi | 3 | -12 | 3 | -39 | 12 | -6 | -9 | 15 | -21 | -45 | -42 | -6 | -105 |
| Clutha-Central Otago | 3 | 0 | 21 | -45 | -54 | 39 | -6 | 27 | -3 | -18 | -45 | 0 | 18 |
| Coastal-North Otago | 27 | 321 | 21 | 45 | -24 | -6 | 12 | 39 | 9 | -3 | -12 | 15 | 63 |
| Southland | -12 | -147 | -21 | -12 | -3 | -18 | -63 | -69 | -9 | -33 | -9 | -36 | -162 |
| North Island | -612 | 1,812 | 13 | 1,185 | -1,035 | 51 | 183 | 222 | -1,086 | -864 | 0 | -504 | -1,737 |
| South Island | 36 | 327 | 78 | -189 | -285 | -51 | -198 | -186 | -27 | -63 | 66 | -93 | -894 |
| New Zealand | -576 | 2,139 | 91 | 996 | -1,320 | 0 | -15 | 36 | -1,113 | -927 | 66 | -597 | -2,631 |

| Destination of migrants | Origin of migrants | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WAIRA | NELSON | MARL | WEST | CANT | AOR | CLUTHA | COASTAL | SLD | NORTH | SOUTH | NZ |
| Northland | 45 | -30 | 30 | -24 | 42 | 27 | 0 | -9 | 9 | 2,367 | 45 | 2,412 |
| Auckland | -111 | 54 | 27 | 42 | -540 | -60 | -15 | -9 | -42 | -2,061 | -543 | -2,604 |
| Thames Valley | -36 | -15 | -12 | 3 | -18 | -12 | 6 | 33 | 27 | 522 | 12 | 534 |
| Bay of Plenty | -126 | -15 | 9 | -9 | -360 | -81 | -18 | 63 | -18 | -252 | -429 | -681 |
| Waikato | -150 | 27 | 39 | 39 | -207 | 33 | 45 | -54 | 96 | -1,575 | 18 | -1,557 |
| Tongariro | -48 | -18 | 3 | -24 | -45 | -15 | 6 | 27 | 33 | -663 | -33 | -696 |
| East Cape | -30 | 6 | -36 | 6 | -39 | 9 | 21 | 0 | -42 | -192 | -75 | -267 |
| Hawke's Bay | -78 | 18 | -9 | -6 | -90 | 0 | 3 | -24 | -54 | -1,704 | -162 | -1,866 |
| Taranaki | -15 | 78 | -6 | 9 | 54 | 72 | 15 | 60 | 9 | 558 | 291 | 849 |
| Wanganui | 66 | 15 | -6 | -6 | -15 | 45 | 6 | -6 | 42 | -435 | 75 | -360 |
| Manawatu | -9 | -78 | -39 | -45 | 54 | 12 | -36 | -93 | 30 | -33 | -195 | -228 |
| Horowhenua | -60 | -24 | -30 | 12 | 51 | -24 | -12 | -15 | 30 | 1,581 | -12 | 1,569 |
| Wellington | -291 | -81 | 15 | -51 | -87 | -42 | 60 | 75 | -102 | -1,508 | -213 | -1,721 |
| Wairarapa | 0 | -33 | 27 | -9 | -66 | -9 | 3 | -12 | 9 | 180 | -90 | 90 |
| Nelson | 33 | 0 | 126 | -3 | -270 | -66 | -51 | -48 | 24 | -90 | -288 | -378 |
| Marlborough | -6 | 24 | 0 | 0 | 54 | 78 | 99 | -15 | 129 | -33 | 369 | 336 |
| West Coast | 12 | 96 | -42 | 0 | 114 | 6 | 24 | -45 | 0 | 117 | 153 | 270 |
| Canterbury | -63 | 183 | 132 | -30 | 0 | -36 | 102 | -261 | 234 | -1,095 | 324 | -771 |
| Aorangi | 21 | -69 | -60 | 18 | -552 | 0 | -186 | -336 | -162 | -231 | -1,347 | -1,578 |
| Clutha-Central Otago | -3 | -18 | -9 | 36 | 144 | 423 | 0 | -297 | 255 | -66 | 534 | 468 |
| Coastal-North Otago | 3 | 54 | 39 | 45 | 174 | 207 | 135 | 0 | -39 | 510 | 615 | 1,125 |
| Southland | -24 | -15 | -12 | -111 | -129 | -15 | -168 | -411 | 0 | -618 | -861 | -1,479 |
| North Island | -843 | -96 | 12 | -63 | -1,266 | -45 | 84 | 36 | 27 | -3,215 | -1,311 | -4,526 |
| South Island | -27 | 255 | 174 | -45 | -465 | 597 | -45 | -1,413 | 441 | -1,506 | -501 | -2,007 |
| New Zealand | -870 | 159 | 186 | -108 | -1,731 | 552 | 39 | -1,377 | 468 | -4,721 | -1,812 | -6,533 |

APPENDIX 5

# INTERNAL AND OVERSEAS MIGRATION RATES, SELECTED REGIONS 1981-1986

The graphs in this appendix show migration rates by age group and sex for four types of migration (internal inward, internal outward, overseas inward and overseas outward) in five local government regions and in the South Island as a whole. The method used to calculate these rates is outlined in Appendix 2.

There is considerable variation in the age composition of migration flows to and from regions, and this is illustrated in the graphs for Northland, Auckland, Thames Valley, Horowhenua and Southland. When interpreting these graphs it should be noted that the scales for migration rates (the vertical axis on the graphs) are not constant. The graphs cannot be compared directly as a result of this variability. However, despite this it is clearly evident in the graphs for Horowhenua and Thames Valley, for example, that levels of inward internal migration of people aged 55 years and over are significantly higher than those for Northland or Auckland. In the latter two regions the only major peak in migration rates is for inwards (and outwards) migration of people aged between 15 and 29 years. In the case of Auckland the overseas inward and outward rates for men and women in this age group almost equal the internal inwards and outwards rates. This is a distinctive feature of migration patterns in the Auckland LGR.

The graphs for age-specific migration rates in Southland show a heavier incidence of internal and overseas outward migration for all age groups compared with the relevant inward migration rates. For the South Island as a whole the gap between outward and inward migration rates is not as marked as in the specific case of Southland. However for most age groups in the South Island internal outward migration rates exceed the internal inward rates.

APPENDIX 5: INTERNAL AND OVERSEAS MIGRATION RATES: SELECTED REGIONS, 1981-1986.

APPENDIX 6

# CHANGING POPULATION COMPOSITION AND HEALTH SERVICE PROVISION IN THE WAIKATO HOSPITAL BOARD AREA

The issue of region-specific flexibility in policy responses to changes in patterns of demand as population cohorts of different sizes progress through the life cycle can be illustrated with reference to work which Dr Janet Sceats (1987) has done on health planning in the area encompassed by the Waikato Hospital Board. Sceats (1987) has examined the implications of changing population composition for the provision of health services in a region where the Maori-descent component of the population is larger than the national average. Working from the assumptions that there is no change in current patterns of admission and discharge, nor in the incidence or prevalence of conditions which bring people into hospital, Sceats projects that there will be a 25 percent increase in case load in the Waikato Hospital Board region between 1986 and 2001. The projected increase in the size of the population over the same period is 21 percent. The case load increases more rapidly than the population because of ageing, especially growth in numbers aged 45 years and over between 1986 and 2001.

The question which Sceats posed with regard to these changes is: 'what is going to have the major impact on the hospital services: is it the ageing of the population or is it the increases in the numbers of Maori coming into the key ages when they are likely to be heavy users of the services?'. When growth in population and case load are disaggregated to determine the contribution of each ethnic group it can be shown that 80 percent of the population growth but only 78 percent of the case load comes from changes in the size of the non-Maori population. For Maori the respective contributions are 20 percent of the population growth and 22 percent of the case load.

When a further disaggregation is made, it is evident that age groups 15-44 years and 45-64 years contribute more to overall population growth than to increases in case load. At ages over 65 years the reverse is true. In fact the impact on case load due to growth of the non-Maori population aged 75 years and over will exceed the impact of Maori population growth across all ages combined. The reason for this is that a decline in the Maori population at paediatric ages between 1986 and 2001 counteracts the increased demand for services coming from growth in the Maori population at other ages, particularly at 15-44 years and 65-74 years (Pool 1989).

Sceats highlights the importance of intra-regional variations in population composition for patterns of service demand with reference to two hospital catchment areas which are of similar size and have similar proportions of Maori residents within the Waikato Hospital Board region. In one of these hospital catchment areas the growth in case load between 1986 and 2001 is expected to be in the order of 7 percent. In the other catchment area, which has an older Pakeha population, the case load is expected to increase by 45 percent over the same period.

Not only is there intra-regional variation, but within hospitals various specialities will be affected differentially by changes in population composition. Thus a marked increase in Maori patients in the oncology area can be expected as larger numbers come into the age groups where they are at increased risk for conditions such as cancer of the lung, cervix and breast. To take another example, the nature of orthopaedic services will change as the number of young trauma victims decline and old women with fractured necks of femur gain ascendancy.

Achieving an equitable bicultural health service in an area such as that administered by the Waikato Hospital Board, which has a significant and growing Maori population and a relatively youthful age structure by national standards, is going to require very careful and sensitive planning. An important first step in this planning is recognition of the complex interrelations between changes in age structure, ethnic composition and patterns of hospital use in particular

# Summary

## Section A - General Trends

New Zealand's population growth is slow because of low fertility levels and net migration losses. During the decade 1976-1986 the total population grew by only 5.7 percent, the smallest increase recorded for any decade since the first national census in 1858.

Natural increase (the balance of births over deaths) still makes the major contribution to New Zealand's population growth. Currently, there is an increase in numbers of births, the result of a combination of large numbers of women in the child-bearing ages and a trend towards women having children at older ages.

Changes in fertility levels have produced a very irregular age structure in New Zealand which has important implications for social policy and planning in the 1990s and early twentyfirst century.

The 22 local government regions of New Zealand vary greatly in both geographical size and population. In the 10 years between 1976 and 1986 they also displayed quite diverse patterns of population change.

In the late 1970s nine regions, including the three with the cities of Wellington, Christchurch and Dunedin, experienced absolute population declines for the first time since 1945. Between 1981 and 1986 most regions had population growth rather than absolute decline.

Areas with higher-than-average population growth between 1981 and 1986 were not all concentrated in the northern North Island — three were in the South Island (Nelson Bays, Marlborough, Clutha-Central Otago) and one in the southern North Island (Horowhenua).

Regional population estimates for 1988 suggest rates of population growth have fallen in most regions since the census in 1986. These trends have been influenced by factors such as the termination of major construction projects and economic restructuring.

Regional differences in population growth rates are also affected by the ethnic mix of people. Because the age structures of the three largest ethnic groups in New Zealand society (people of European descent, people of Maori descent, and people of Pacific Island Polynesian descent) remain quite distinctive, these populations have different 'growth' potentials. In nine North Island regions over 20 percent of the population was non-European in 1986.

Over half the population in all local government regions live in towns and the North Island has only a marginally higher percentage of its population in large cities (30,000 or more people) than the South Island.

## Section B - Regional Population Change

The components of population growth — natural increase and net migration — vary greatly among the regions, but all experience significant change in their populations as a result of internal migration and to a lesser extent, from overseas migration.

There has been a tendency in recent decades for migration to become relatively more important in determining regional population growth. Between 1981 and 1986 net migration was equivalent to more than half the natural increase in two outof three regions. Internal migration accounts for about three-quarters of all moves into and out of the regions between 1981 and 1986. The other quarter was movement to and from overseas.

Between 1985 and 1987 the total fertility rate for the New Zealand population averaged two births per woman. Sub-replacement fertility (below 2.1 births per woman) dominated in the South Island, while in the North Island all but three regions recorded rates above 2.1 births per woman.

Most Maori women have their children at younger ages than Pakeha women and regions with a high Maori female population in this age group have high fertility rates. Pakeha women especially in larger urban centres have a high fertility rate at ages 30-34.

Mortality differentials are less pronounced than fertility differentials and there are no significant north-south variations.

Gross migration flows into and out of the regions largely balance each other and the impressions often conveyed of large-scale exoduses from one part of the country to another (or overseas) are quite misleading. Even Aorangi and Southland, which had the largest net migration losses between 1981-86, gained 11 or 12 migrants for every 20 lost.

Inter-regional migration does have an important redistribution effect on the population, but most of the effect is to maintain the existing broad pattern. A large share of each region's population exchange is with adjacent regions.

Overall the total volume of migration between local government regions has been static or at most experienced a very slight increase since 1971. This migration reflects the changing age structure of the population.

External migration affects Auckland more than other regions. Just under 45 percent of the people who were usually resident in Auckland in 1986 and had been living somewhere else in 1981, gave an overseas address as their former residence. An estimated 42 percent of the people who left Auckland between 1981 and 1986 had gone overseas.

Auckland is a significant link in an international migration system which includes Australian east coast cities and the islands of Polynesia.

Of those people in New Zealand in 1986 who had been living in Australia in 1981, 70 percent were New Zealand born. Return migration of New Zealanders from overseas comprise a substantial proportion of total overseas migration.

The significant flows of New Zealand-born people back into the country from overseas destinations suggests that overseas-source regions can be stepping-stones in sequences of internal migration. Thus emigration of a person from Coastal-North Otago to Australia in one period may become immigration into Auckland from Australia during another period.

Migrants tend to be concentrated in the youthful working-age groups especially between 15-24 years of age. The age composition of migrant flows into and out of the regions is quite variable with some regions attracting elderly people for retirement while others are centres of attraction for young migrants seeking work and university education.

New Zealand has long had a relatively young population compared with most developed countries. However, New Zealand's population is now ageing as the baby-boom cohorts get older. All local government regions are experiencing ageing of their populations, although the shifts have been uneven.

The two most striking trends between 1981 and 1986 are the absolute decline in numbers of children (under 15 years of age) in all regions except Northland, and the significant increases in numbers of adults aged 25-44 years in most of the local government regions.

There is a clear division between regions in the southern part of the South Island and those north of Tongariro in patterns of change in age-sex composition and these variations will increase over time because of the impact of age-sex specific migration between the regions.

Within the working-age population there are some important regional differences. For example, Wellington has more in the 25-44 age group while Canterbury has more older workers (45-64 years).

Horowhenua is the region with the largest proportion of elderly people (65 years and over) in its resident population where there are 700 elderly per 1000 children. On average, there are fewer than 500 elderly people for every 1000 children in the population.

The most obvious characteristic of Maori and Pacific Island Polynesian populations is their youthful age structures. In 1986 almost 40 percent of the relevant descent populations were under 15 years of age, compared with 24 percent for the total New Zealand population. The significance of the youthful Maori and Pacific Island Polynesian population for demographic change in the regions is that this component will grow much more rapidly over the next 30 years than the non-Maori population. However, only in a few regions in the North Island will this growth have much impact on the composition of the total population.

Higher proportions of Maori and Pacific Island Polynesian are in the labour- force-entrant age group (15-24 years), especially in the five regions with metropolitan centres.

Composition-driven change is having a much more significant impact on social planning in most regions in the 1980s than absolute growth (or decline) in numbers of residents.

In no region in New Zealand has employment kept pace with the growth in labour supply. Unemployment increased in all regions between 1981 and 1986. Since 1986 unemployment has increased even further in all regions and the current economic recession coupled with continuing growth in labour supply is likely to generate further unemployment growth in the short-term.

A shift in the regional dimension of unemployment occurred during the decade 1976-86. Growth in unemployment during the first half of the decade tended to be particularly pronounced in the North Island regions where unemployment rates were already high in 1976 (for example, Northland, Auckland, Thames Valley, Bay of Plenty). Between 1981 and 1986 unemployment grew much more rapidly in South Island regions.

The unemployment problem in the 1980s has affected Auckland and Wellington less than other cities and rural areas. There are also variations in patterns of demand for labour which reflect differences in the structure of regional economies. Employment of women in the full-time workforce is more significant in Auckland and Wellington.

Full-time labour-force participation of Maori and Pacific Island Polynesian males is lower than participation for males in the total population. The reverse is true for part-time participation, especially for Pacific Island Polynesian males. Part-time labour-force participation is significantly less for Pacific Island Polynesian females compared with the level of participation for all women in the labour force.

There are significant differences in unemployment rates of the sexes and ethnic groups between Auckland and Wellington. Unemployment rates for all age-sex groups in the different ethnic categories is higher in Auckland than in Wellington, except for Pacific Island Polynesian males aged 15-24 years.

Female unemployment rates are higher than male rates. Female unemployment rates tend to be higher for Maori than Pacific Island Polynesians. Maori unemployment among males in the age group 30-34 years is extremely serious in Northland and East Cape, while for females the situation is particularly serious in the Waikato.

At the time of the 1986 Census 16 percent of the working-age population was involved in some type of unpaid voluntary work with 19 percent involvement in rural areas and less than 15 percent in Auckland.

Population trends in the regions over the next 25 years will be largely determined by the national trend towards very slow growth unless there are marked unforeseen changes in fertility patterns and levels of immigration. Composition-driven change will be more important than growth-driven change. Variability in age composition at the regional level is likely to increase between 1986 and 2011.

Regional population projections to the year 2011 produce quite marked variations in the overall percentage increase and the average annual rates of population growth. The largest proportional increases are for Northland, Bay of Plenty and Auckland. The only other regions where growth is projected to be above 15 percent are Horowhenua, Tongariro and Thames Valley. These are all projected to be regions of net in-migration after 1991.

In all regions the percentage population increase over the 25 years 1986-2011 will be less than half the increase recorded in the previous 25 years (1961-1986). The population of the South Island is projected to grow by only three percent between 1986 and 2011 compared with just under 19 percent between 1961 and 1986. In three regions (Aorangi, Southland and Coastal-North Otago) absolute population decline is forecast.

There will be a decline in the number of children in the population by the year 2011, ageing of the labour force, and very substantial increases in the numbers of elderly people. The decline in the youthful population will be much more significant in the South Island than in the North Island.

For the population aged 65 years and over, the projected increase for the country as a whole is 46 percent, but in five regions in the North Island and one in the South Island numbers of elderly are projected to be over 60 percent greater in 2011 than they were in 1986.

The age composition of the labour force will change markedly over the next two decades. The labour-force-entrant age group (15-24 years) in all regions is projected to be smaller in 2011 than it was in 1986. These declines will be particularly marked in the South Island regions.

Patterns of change for the population aged between 25 and 44 years show two distinctive trends. All regions in the North Island are projected to have larger populations in this age group in 2011 than they had in 1986. In the South Island all regions, except Clutha-Central Otago are projected to have smaller populations in the younger working ages.

The older working population (45-64 years) is projected to grow by almost two-thirds between 1986 and 2011. The largest increases (80 percent or more) will be in Northland, Auckland and Bay of Plenty.

The ratio of elderly people to those in the labour force, or the aged dependency ratio, is projected to rise in all regions over the period 1986-2011.

# Section C - Policy Implications

Regions can be placed in classifications to assist in policy formulation. The clusters are, the five metropolitan regions which contain 100,000 people or more, non-metropolitan regions which are likely to experience growth, non-metropolitan regions which are unlikely to have growth, and non-metropolitan regions where population is projected to decline.

The Auckland and Waikato regions, with more youthful age structures, sizeable Maori populations, and more diverse urban and rural economies, will have demographic futures characterised by growth in relation to the other metropolitan regions. However the ageing population in this region must not be overlooked in social policy planning.

In the non-metropolitan regions where population growth is likely to continue, ageing is the most obvious demographic trend and provides the main focus for social policy and planning. Younger populations must not be overlooked for planning purposes in these regions, especially where there is in-migration of commuters (for example, Horowhenua), or people providing services for the elderly (for example, Thames Valley), or people seeking alternative lifestyles (for example, Nelson Bays and Thames Valley).

In non-metropolitan regions with little prospect for population growth, the main issues facing social planners are likely to be urban and rural unemployment; servicing a dispersed rural population (especially in the remote hill country areas); and coping with the ageing of a workforce either currently or previously employed in primary production. In the southern regions the need to plan for older populations is already much more obvious than in the north where the needs of different ethnic groups will demand greater attention from policy makers.

Flexibility in policy formulation and planning at the national level is essential if regions are to cope with rapid changes in patterns of demand for services as distinctive population structures evolve over time. Increasing diversity in sub-national population trends requires that more attention is paid to regional monitoring of both demand and supply factors. This should lead to more sensitive policy formulation within a context of population needs and resource constraints.

The critical problem for planners is that large cohorts, at some stages in their lifestyle, will produce demands which could well dominate social life and policy concerns, perhaps to the detriment of smaller cohorts.

In the contexts of effectiveness, efficiency and equity, policy formulation and planning at the national level remains essential and can never be replaced entirely by regional planning. Much more effective integration of efforts to monitor need and demand at local and national levels is required.

Regions without good prospects in the primary sector, or in services such as education, tourism or provision for the elderly, must find alternatives to offset the loss of employment in manufacturing industries. Such alternatives are unlikely to emerge without an active regional labour market policy, which facilitates research and development and encourages the establishment of new innovative enterprises. The Maori dimension to regional population dynamics has relevance for a very wide range of national and regional policy issues including health, education, housing, employment, social welfare, and compensation for illegal or unjust resource transfers. Attempts to ensure that Maori needs are identified and met through devolution of authority and power are reasonable and understandable: the needs of minorities are at risk of being diluted within general policy formulation and implementation, even at a regional level.

Unemployment and underemployment have long been a feature of life for Maori in rural areas. In recent years the migration of urban-born Maori to rural areas has escalated an already serious unemployment problem in rural areas. For iwi authorities, Maori trust boards, marae and whanau, retirement migration of urban Maori back to rural marae is a major issue with both favourable and unfavourable implications. This movement is often to some of the most economically depressed sub-regions in the country, the very areas that are already coping with absorbing both discouraged urban workers as well as the unemployed among their younger population.

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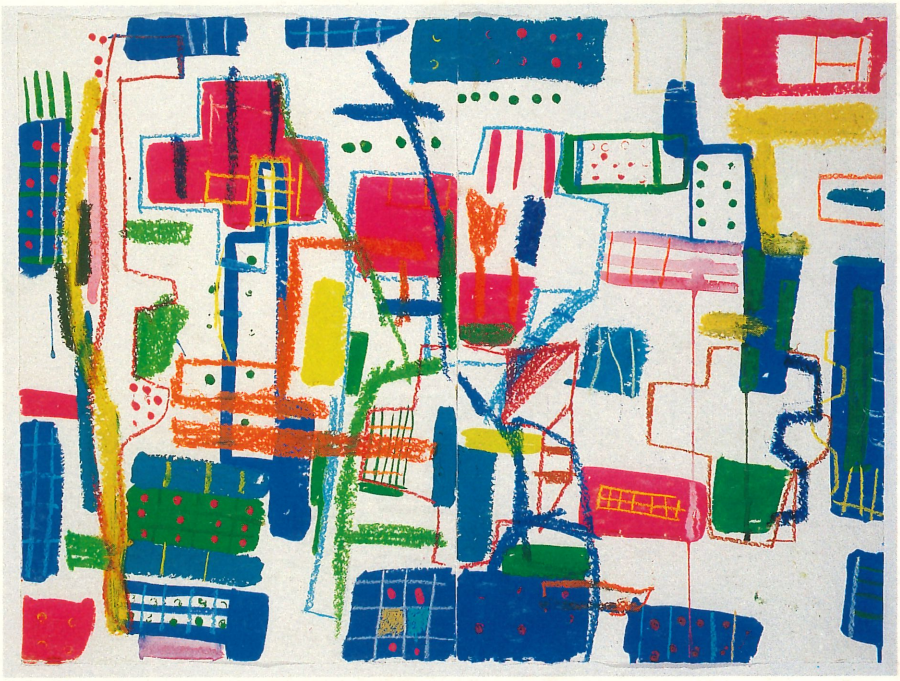

JULIAN DASHPER New Zealand 1960
Tolaga Bay at Fergusson wharf
pastel on paper 760 x 570
private collection