THE NEW ZEALAND POPULATION: PATTERNS OF CHANGE

Population Monitoring Group

d Planning Council Monitoring Report

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New Zealand Planning Council P.O. Box 5066 Wellington

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The Chairman,
New Zealand Planning Council,
WELLINGTON.

Dear Mr Douglas,

I have pleasure in forwarding to you, for transmission to the Planning Council, the first report of the Population Monitoring Group.

You will recall the PMG was set up by the Planning Council early in 1982, following a suggestion from the New Zealand Demographic Society that such a group was needed to identify important population issues and their implications for planning and policy-making.

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

Specifically, the Population Monitoring Group was given the following terms of reference by the Planning Council:

(a) To monitor demographic trends and to comment on policy implications

(b) To make, whenever necessary, an input into specific projects on the Planning Council's work programme

(c) To recommend to the Planning Council projects of a demographic nature which warrant further research, and to aid in the carrying out of research which the Council wishes to undertake.

In this, its first report to the Planning Council, the Population Monitoring Group provides an overview of demographic trends and considers their implications for policy.

Finally I would like to thank the group's liaison officer, Andrew Fraser of the Planning Council secretariat, for his assistance in the preparation of this report.

Yours sincerely,

P. G. Koopman-Boyden

Peggy G. Koopman-Boyden
Convenor
Population Monitoring Group

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This report, published by the New Zealand Planning Council, was prepared independently by the Population Monitoring Group. The views expressed are the sole responsibility of the Population Monitoring Group and are not necessarily endorsed by the Planning Council.

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SUMMARY

- By world standards, New Zealand's level of fertility is low, and is today at its lowest level ever. The non-Maori fertility rate has fallen to just below replacement level and may be levelling off at that rate (1.9 in 1981). The Maori fertility rate decreased sharply during the 1960s and early to mid-1970s, with a slower drop in more recent years to somewhat above replacement level (2.6 in 1981).

- Immediate implications of this trend are a reduced demand for pediatric medical services and primary school education. In the longer term, reduced fertility implies a markedly accelerated process of ageing.

- The Total population is projected to grow only slowly if current levels of sub-replacement fertility are maintained. From 1996 the number of births will begin to decrease. Although only a modest increase in the size of the Total population is projected, the demand for new dwellings will increase sharply in the near future, mainly because of the large population cohort entering the household formation ages.

- As a result of delayed marriages, fewer births occur to non-Maori mothers aged under 25 years. Maori births occur largely in the early years of childbearing, with high fertility to mothers under 25. Child spacing is particularly compressed among both Maoris and non-Maoris. The timing of births, along with the close spacing and the potential for negative effects on the mother's health, needs to be made a more explicit aspect of parent education.

- Life expectation in New Zealand is high by world standards, but has recently fallen behind. This is largely due to a lack of improvement in adult life expectation (particularly for males), and unsatisfactorily high levels of post-neonatal infant mortality. Promotion of changes in contemporary lifestyles, and in the social and economic environment of parenting, may be more effective than a medical policy response.

Very recently though, there has been an improvement in survivorship rates of the middle-aged. This could have a significant effect on increased life expectation and survivorship at older ages for the Total population, especially for males.

The subsequent increase in the number of one and two-person households will further accentuate the reduction in household size and the demand for smaller houses.

- In New Zealand, as in other developed countries, cardiovascular diseases are the single most important cause of death, with Maori females experiencing the highest risk, especially at reproductive and post-reproductive ages.

Accidents are also a significant cause of death, particularly among males in the 15-24 age-group, Maori males of all ages, and the oldest age-groups.

- New Zealand is a migrant society, and recent trends illustrate the marked fluctuations in permanent and long-term external migration. Migration patterns have altered dramatically since about 1980, from a period of negative net migration in the late 1970s, to one of positive net migration. The change has occurred at least in part because of the return of New Zealanders who had migrated or travelled overseas in the late 1970s, but it is more the result of a reduced outward movement of residents.

Immigration to New Zealand has been mainly from the British Isles. Pacific Islanders constitute the second largest immigrant group. Pacific Island immigration was significant in the early 1970s, but permanent migration from this source has slowed recently. Migration between Australia and New Zealand has normally been two-directional - Australians form the third largest overseas-born group in New Zealand.

- While a number of ethnic groups are represented in the New Zealand population, it is largely composed of those of European descent (86 percent in 1981). Since 1900 the New Zealand Maori population has grown as a proportion of the Total population, but this trend began to level off in the late 1970s.

- Since 1940 New Zealand has had a "youthful age distribution", but from 1961 ageing has occurred, and is projected to become more pronounced. There has been a numerical increase in older age-groups which, together with a decrease in younger ages, will continue. Thus, the youth dependency burden will continue to decline while the aged dependency burden increases. In the short term, however, both youth and aged dependency will decrease.

- The increasing proportion of the population aged 60 and over will necessitate greater support services. Furthermore, the increasing number of those aged 75 and over will disproportionately increase the demands for health and other social services. Changing patterns in consumer demand can also be expected.

- Major trends in full-time labour force participation have been the decreasing labour force participation of 15-19 year olds, the increasing labour force participation of women, and early retirement.

  The ageing of a large cohort of experienced workers will bring with it the increasing prevalence of illnesses such as arthritis and strokes, as well as a work force which becomes less geographically and occupationally mobile.

  In the medium term, labour force growth is likely to be about 2 percent per annum. The male labour force partipation rate is projected to decline further and the female rate to continue to increase until at least 1996.

- New Zealand's population has become increasingly urbanised from early in the history of European settlement. Today, over four-fifths of the population is classified as urban.

  Over a number of decades population has become geographically more concentrated in metropolitan regions and in the northern North Island. However, Auckland is the only metropolitan region to have experienced much growth since the late 1970s.

Since the 1981 Census there have been relatively rapid rates of growth in the Auckland, Northland and Bay of Plenty regions. There has been some slow growth in Canterbury, while the Wellington and Coastal-North Otago regions have experienced population decrease. Given the marked changes that have occurred in traditional growth relativities between regions, and the uncertainty surrounding future changes, it would be unwise for regional policy to discriminate automatically, either directly or indirectly, for or against particular classes of regions (eg metropolitan regions). Regional policy needs to be sensitive to the particular character of, and prospects for, individual regions.

Section 2

POPULATION GROWTH

(a) Introduction

The 3.2 million New Zealanders discussed in this report are composed of two major ethnic groups, Maoris and non-Maoris. The latter group is primarily of European origin but includes others as noted in Section 3(a).

By world standards New Zealand has a low density of population. However, because of the generally hilly or mountainous terrain of much of the country, densities are higher relative to productive land area. Furthermore, the population is unevenly spread - 84 percent of the population live in urban areas, and 73 percent are in the North Island. Within the North Island there is a further degree of concentration, particularly around Auckland, which, with its adjacent areas, accounts for one-third of the entire population. The other four main urban centres are Hamilton, Wellington, Christchurch, and Dunedin.

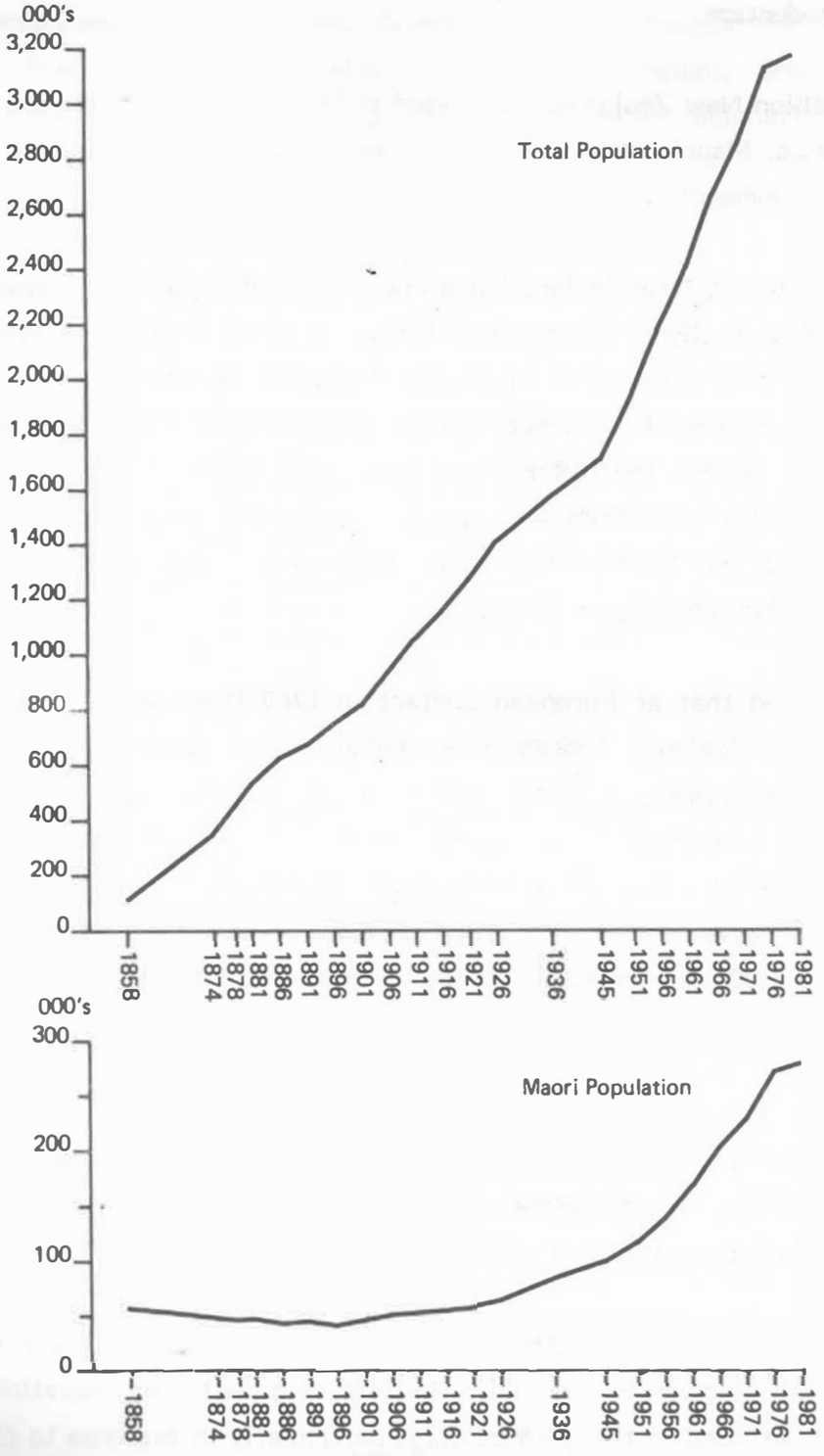
It is estimated that at European contact in 1769 there were 125,000 to 175,000 Maoris in New Zealand. Subsequently, and primarily because of newly-introduced communicable diseases, the Maori population decreased rapidly until 1857-58, when Maoris were outnumbered by non-Maoris for the first time. Maori population growth fluctuated until 1901 when numbers were only about 45,000. The growth rate then increased until it had reached close to the biological maximum fertility rate (40 per 1,000) by the early 1960s . Since then the rate has dropped sharply. In 1981 Maoris in New Zealand numbered 280,380.

While Maori population growth is possible only through natural increase, non-Maori numbers accrued from early settlement by immigration and natural increase. There were half a million non-Maoris in New Zealand by 1881, one million by 1908, and 2.9 million at the time of the 1981 Census.

The size of the Total population (Maori plus non-Maori) and its Maori component at selected years is given in Figure 1. The rate of growth (net migration plus natural increase) fluctuated in the 19th century, particularly in response to changes in the level of non-Maori net migration and the rapid decline in the non-Maori birth rate.

Figure 1

GROWTH IN THE MAORI AND THE TOTAL POPULATION, 1858–1981



Source: Census of Population and Dwellings 1951–1981, Department of Statistics

The growth rate was low during the depression and again in the late 1970s (the average annual growth rate for 1976-81 was 0.3 percent), while high rates (2 percent) were often achieved during the baby boom years, 1945 to 1966. In the late 1970s the crude birth rate declined but has since increased.

These fluctuations in the rate of growth of the Total population have primarily been due to changes recorded by the non-Maori population. The overall effects of changes in the components of growth prior to 1982 are shown on the left of Figure 2. In most years, natural increase has contributed more to growth than net migration, but in the late 1940s and early 1970s the net gain through immigration exceeded the net gain by natural increase. In 1979 the net loss through emigration exceeded the net gain through natural increase.

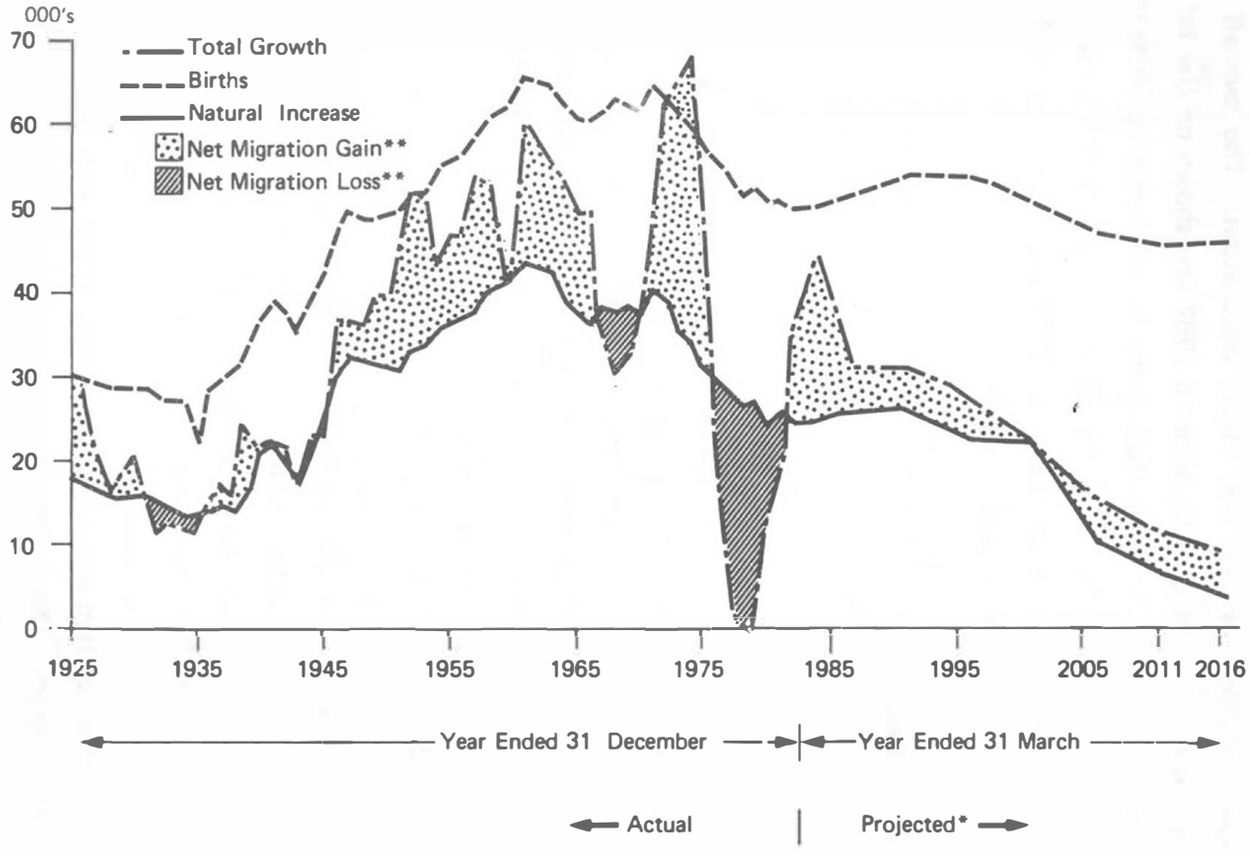
(b) Natural Increase

(i) Fertility

By world standards the level of fertility in New Zealand is low, and is now at its lowest level ever. Among low fertility populations however, the New Zealand level is in the upper range. The present fertility level is the result of a long-term decline, which commenced in the 19th century and was interrupted by a temporary upturn after World War II. The total fertility rate in Figure 3 shows the decline of non-Maori fertility to low levels in the depression, the return to a high level in the post-war period and the recent decrease.

The total fertility rate is a period index bringing together for each year the experiences of diverse cohorts, which have had very different reproductive histories. Although this period rate shows what a cohort would achieve if it were to follow for its entire reproductive span the patterns of fertility operating in one calendar year, the actual experience of each is measured by its completed fertility rate (the total number of live births per woman for those who have reached the end of the reproductive span). The comparison in Figure 4 of these two different indices shows the total fertility rate has exaggerated trends by slightly understating fertility in the depression and by markedly overstating the level during the baby boom.

Figure 2
HISTORICAL AND PROJECTED ANNUAL BIRTHS, NATURAL INCREASE, NET EXTERNAL MIGRATION AND TOTAL POPULATION GROWTH, 1925–2011

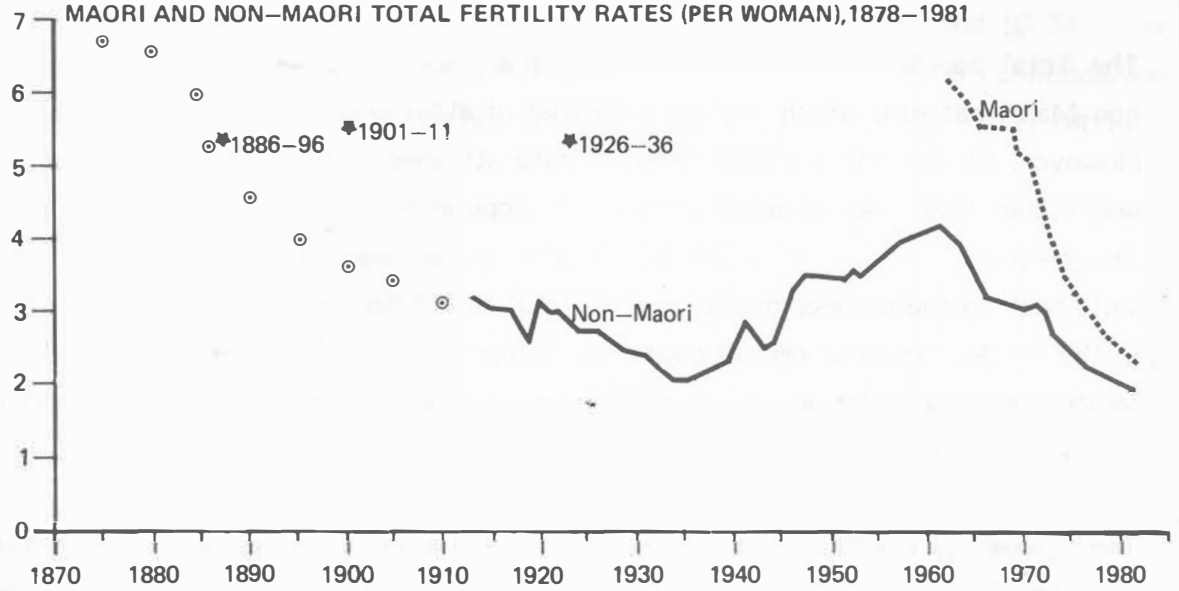


*From (31 March 1982 Base) Projections of Total Population, based on the 'Medium' fertility variant, 'Medium' short-term net migration, and long-term net annual immigration of 5000

**Figures are exclusive of the Armed Forces

Source: Census of Population and Dwellings 1925–1981, Department of Statistics Projections of Total New Zealand Population 1938–2016 (Base: 31 March 1982), Department of Statistics.

Figure 3
MAORI AND NON–MAORI TOTAL FERTILITY RATES (PER WOMAN), 1878–1981

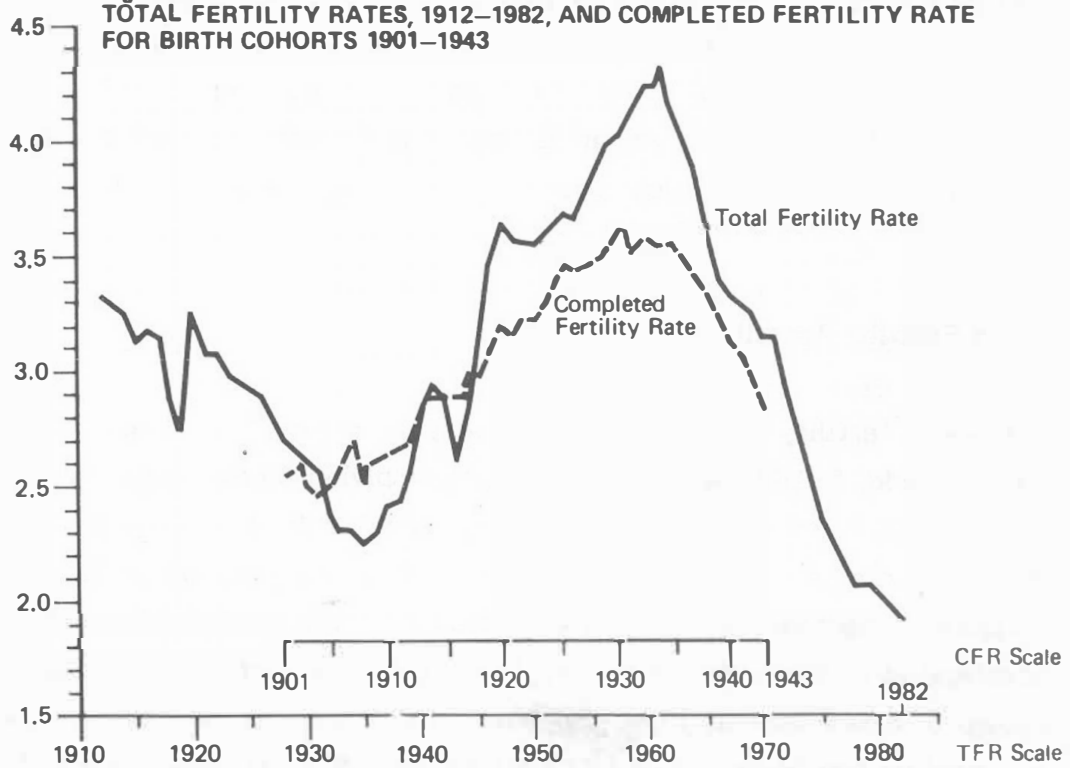


— Rates computed from Department of Statistics Data

⊙ Non–Maori Rates, estimated for Census years. From Gibson, C.J., Demographic History of New Zealand, unpublished PhD dissertation, University of California, 1971

Maori Rates, estimated for various periods. From Pool, I., The Maori Population of New Zealand, Oxford and Auckland University Press, 1977

Figure 4
TOTAL FERTILITY RATES, 1912–1982, AND COMPLETED FERTILITY RATE FOR BIRTH COHORTS 1901–1943



Source: Department of Statistics Data

Non-Maori Fertility Transition

The Total population trend described on the previous page reflects primarily the non-Maori pattern, which is similar to that of other populations of European origin. However, the baby boom total fertility rate attained by non-Maori New Zealanders was higher than that of most comparable populations and the era more prolonged. This period is perhaps more correctly termed a marriage boom, involving, as it did, a shift back to the pioneer marriage pattern of the 1870s. Since then, and particularly in the 1970s, the total fertility rate has fallen to just below replacement, although by the late 1970s the decrease had decelerated and the total fertility rate may now be levelling off at about 1.9.

The triggering mechanisms for this decline were complex. It did not commence because of the use of hormonal contraceptives, it was already well underway prior to their general availability. Moreover, the experience of the depression shows low fertility could be achieved without modern contraceptive technology. Finally, it should be clear from Figure 3 that the decline spanned years of both economic boom and recession - it cannot therefore be attributed in any simplistic way to the state of the economy.

The recent decline in fertility has been due in part to changes in the timing and spacing of marriages and births, including once again a shift back to traditional European marriage and reproduction patterns involving delayed marriage and, concomitantly, delayed childbearing. In 1971, 76 percent of non-Maori births were to mothers aged under 25 years. By 1981 however, this was true for only 39 percent of births.

Maori Fertility Transition

The Maori fertility transition has been very different. For as far back as estimates can be made, fertility was high (Figure 3), implying a crude birth rate in excess of 40 per 1,000. This remained true until the 1960s. Post-World War II urbanisation, improvements in infant and childhood survivorship and other factors acted as triggering mechanisms for a rapid decrease, which started in the 1960s and accelerated in the early 1970s. By 1977-78 this rate of decrease had decelerated. Figure 3 shows that in 1970, the Maori total fertility rate was 5.4, a level not achieved by non-Maoris since last century. By 1977 the Maori rate had dropped to 2.9, a level achieved by non-Maoris as recently as 1972. By 1981 the

Maori rate was down to 2.6. This rapid decrease occurred at older ages: in 1981 the Maori rates were lower than the non-Maori in age-groups 25-29 and 30-34. The timing of Maori births was still compressed into the early years of childbearing: 57 percent of births were to mothers under 25 years old in 1981. Maori fertility remains very high at ages 15-19.

Recent Fertility Patterns

By the late 1970s the level and pattern of total fertility in New Zealand were similar to those of other developed countries. There were however a few distinct features:

(a) The fertility level was in the upper range among populations with very low fertility.

(b) The fertility level at 15-19 years was high by comparison with most other developed countries.

(c) Fertility regulation was extremely efficient. Two regional surveys have indicated high levels of sterilisation (well above those in the USA). Levels of hormonal contraceptive use appear very high whereas, by contrast, abortion levels are low.

(d) Child spacing was particularly compressed, with short inter-pregnancy intervals.

(e) The rapid decrease in Maori fertility produced a convergence with non-Maori levels although a differential still remained. There also appeared to be socio-economic differentials, notably that delayed childbearing was more likely among more affluent couples, and younger parenthood among lower income groups.

(f) The ex-nuptial fertility ratio is high - over 20 percent of all births. However, exact indices have shown that exposure to risk of ex-nuptial conception has declined, that the probability of ex-nuptial conception, precipitate marriage, and nuptial birth have decreased significantly, and that the rate of ex-nuptial conception and ex-nuptial birth has remained static

and is starting to decrease, except at ages below 17 years. (Problems with analysing ex-nuptial fertility are discussed briefly in Appendix III.)

Fertility Scenarios

Fertility is a complex phenomenon. It is important that this be recognised, because future population trends will be strongly influenced by changes in fertility. Four possible future patterns can be postulated, each of which has a different set of implications, and each of which could alter the projected pattern shown on the right-hand side of Figure 2.

I Further decline in the total fertility rate to the sub-replacement level already observed in some European countries, say 1.5-1.6. This scenario seems, at the moment, to be unlikely. Nevertheless, it has been adopted for what is termed the "low fertility" variant in the Department of Statistics 1983 population projections.

II Current levels of sub-replacement maintained. In view of the total fertility rate for the last few years, this is a likely scenario and is very close to the "medium fertility" variant in the official projections. It implies a slight recuperation of delayed births by those in their early thirties.

Projections assuming this pattern (Figure 2), show the number of births may climb from the present level of just under 50,000 to reach 54,000 in 1996. Thereafter it would start to decrease. Negative natural increase would eventually become apparent as the size of the population at risk of high mortality increased, without any compensating effects from fertility.

III A gradual increase in fertility to about replacement level resulting from a levelling off of the decline in fertility at younger ages, together with the "recuperation" of delayed births by couples in their late twenties or early thirties. This also is regarded as a likely scenario - being close to the high fertility variant in the official projections - and could be accomplished by very slight changes in fertility.

IV Rapid increases in fertility as a result of both recuperation of delayed births and a return to higher fertility at younger ages. Though feasible, this is the least likely of the four scenarios.

Maori Fertility Scenarios

Because the Maori fertility decline has been rapid and recent, and the pattern different from that of the non-Maori, it is necessary to develop separate scenarios. Two seem feasible:

I Maori fertility remaining higher than non-Maori at younger ages and lower at older ages. This can be viewed as a transitional pattern, and indeed often occurs among populations undergoing a rapid decline, particularly through the limitation of family size by efficient means such as sterilisation and hormonal contraception. A logical progression is to adopt a more varied pattern of timing and spacing. This scenario allows for a continuing decline at younger ages, with a slight recuperation to the non-Maori levels used in Scenario III by the 1990s.

II The maintenance of present levels and patterns. Given that the decline in the Maori total fertility rate decelerated so rapidly in the late 1970s, this is a viable alternative.

Using the first fertility scenario, the number of Maori births in 1996 would be over 7,500 or 12-13 percent of the Total, as against 6,600, 13 percent of the Total, in 1981. The second fertility scenario would give 8,800 births, constituting perhaps 14-15 percent of the Total in 1996.

(ii) Mortality

Life expectation in New Zealand today is high (Table 1), although not as high as in a number of other countries. Until recently New Zealand was at a similar level, but has slipped behind, due to unsatisfactorily high levels of mortality.

Although Maori and non-Maori levels of life-expectation have shown a long-term convergence, particularly since World War II, a differential still persists (see Figure 5 for females). This holds true for all but the perinatal ages.

The level of post-neonatal infant mortality is a sensitive measure of differences in standards of living. The New Zealand level for the Total population is twice that of Scandinavia, and the Maori level three times. Yet in the 1950s New Zealand had a level among the lowest in the world. Moreover, differential mortality at this age is predominantly produced by social and economic factors rather than biomedical ones.

Table 1: Life Expectation at Birth and 15 Years, 1981

At Birth

	Male	Female
Maori	65.4	70.0
Non Maori	70.8	77.2
Total	70.5	76.9

At 15 Years

Maori	51.7	55.0
Non Maori	57.2	63.3
Total	56.9	63.0

Source: Abridged Life Tables for 1981, Department of Statistics

These general trends in mortality have come at the end of different transitions for Maoris and non-Maoris. The general trends of each transition can be gauged from Figure 5.

Non-Maori Mortality Transition

In 1876 non-Maori life expectation at birth was the highest on record at that time. Mortality levels have undergone a long, gradual decline with the most rapid changes occurring prior to 1901, particularly at younger ages. Declines in mortality due to improved health services occurred during several subsequent periods - the early 1900s, 1920s, 1940s (when they were relatively rapid and were associated with the introduction of extensive social welfare programmes), and in the late 1970s.

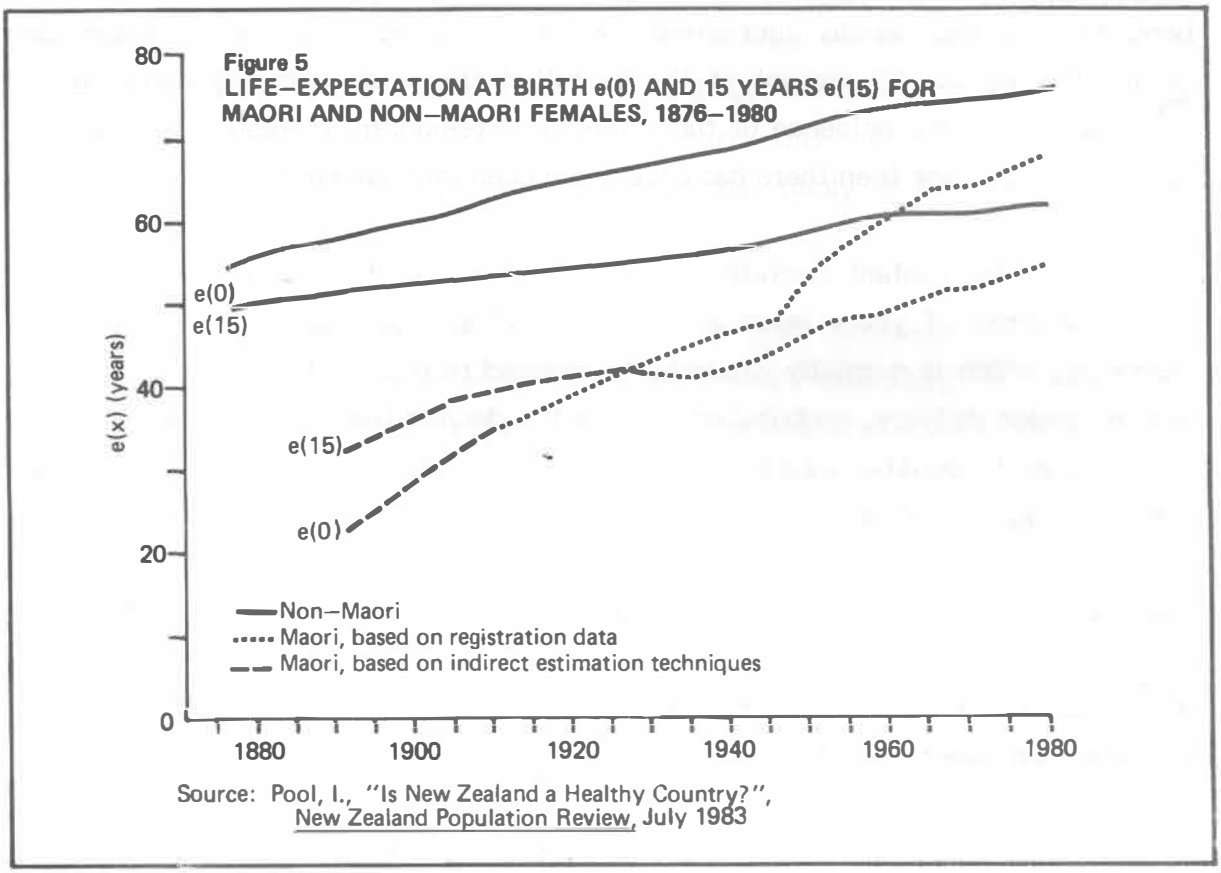


Figure 5
LIFE–EXPECTATION AT BIRTH e(0) AND 15 YEARS e(15) FOR MAORI AND NON–MAORI FEMALES, 1876–1980

Source: Pool, I., "Is New Zealand a Healthy Country?", New Zealand Population Review, July 1983

Post-neonatal infant mortality levels have remained unchanged since the early 1950s, when New Zealand's non-Maori levels were among the lowest anywhere. In the 1960s and early 1970s there was, in common with other developed countries, a lack of improvement in adult life expectation, particularly for males. This appears to have resulted from contemporary lifestyle (over-nutrition, smoking, alcohol,) and also possibly because contemporary cohorts include some persons who have, as it were, "artificially survived" infancy through medical intervention. Whichever factor operated, there was an improvement in the late 1970s, again mirroring a trend occurring overseas.

Maori Mortality Transition

The Maori mortality transition has been very different. From extremely low levels of life expectation at birth (well below 30 years), in the 19th century a rapid improvement in the early 1900s appears to have been produced, at least in part, as a result of the primary health care programmes of Maori medical practitioners such as Pomare and Buck. Further change took place after World War II, when an accelerated increase began. This was due to a combination of factors such as

efficient health programmes, the effects of new medical and social security benefits, and the rapidly increasing use of antibiotics and chemotherapeutics. During this period, 50 percent of the overall decrease in mortality came from a rapid decline in the incidence of tuberculosis. A temporary plateau occurred in the late 1960s, but since then there has once again been improvement.

The rate of Maori infant mortality has also declined rapidly since World War II. But over a number of years (such as the late 1970s), decreases in neonatal infant mortality, which is normally expected to respond to high technology and high-cost health service delivery, contributed more to the decline than might be expected. By contrast, post-neonatal infant mortality, which responds more to social welfare programming, did not fall as rapidly as might have been expected.

Scenarios for Mortality Changes

To review the effects of recent declines in mortality, and to postulate future patterns, it is appropriate to consider three components:

- infant (perinatal and post-neonatal) and childhood (up to 14 years) mortality
- mediatric (15-59 years) mortality
- geriatric (60+ years) mortality

As noted above, perinatal mortality declined significantly in the late 1970s but this had little overall impact on life expectation. Although post-neonatal mortality is still high relative to that of other similar countries, the overall effect of such a decline on life expectation would be relatively slight. It would, of course, have a marked effect on New Zealand's rank in terms of the infant mortality rate. Reductions in mortality at childhood contribute little to overall trends however, as the level is already very low at these age.

Mortality changes likely to influence life expectancy occur at adult ages. Recent life tables have shown a significant improvement in survivorship rates over a wide range of mediatric ages for both Maoris and non-Maoris. For the Total population the most rapid improvement between 1976 and 1981 has occurred for males, aged 40-59 years. However, the recent increase in mediatric survivorship merely compensates for the effects of the earlier rise in mortality among a number of non-Maori male cohorts and non-Maori female birth cohorts of the early 1920s,

and for the general lack of improvement for females in the late 1960s. Consequently, some caution must be adopted when predicting changes in mediatric mortality. To have a significant effect, these improvements must continue until 1986 and beyond. (Latest official projections carry this improvement through to 1991.) If such sustained improvements do occur, they imply an increase in the size of each cohort reaching geriatric age.

Recent life table data (Appendix IV) have demonstrated increased life expectation and survivorship at older ages for the Total population, especially for males. This holds true for both the Maori and the non-Maori population. These improvements carry a number of implications. There will be increased numbers at all geriatric ages, but the effect will be greater at older ages. The changes in sex ratios for 1976-81 show some movement back towards a more equal balance, but it is difficult to determine whether this is a temporary or a long-term trend.

Causes of Death

The causes of death which contribute to current patterns of mortality form too complex a mosaic to be discussed in detail here, but a few key points can be made.

The communicable diseases (those which are infectious, respiratory, diarrhoeal, etc) are of little general significance today except for respiratory diseases at post-neonatal ages, particularly among Maoris. By contrast, degenerative diseases increased in the 1950s and 1960s and are today the major causes of death. Declines in these causes have, however, been the key factor in recent improvements in survivorship at both mediatric and geriatric ages, apparently because of what might be broadly characterised as lifestyle changes, plus interventions such as the use of anti-hypertensives.

As in other developed countries cardiovascular diseases are the major cause of death. Patterns in New Zealand are similar to those overseas except in one respect - Maori females still suffer severe disadvantages (relative to Maori males and to non-Maoris) as regards coronary heart diseases at reproductive and post-reproductive ages.

Accidents are of considerable and increasing significance today as a cause of death. This is mainly due to the decline of other causes. For males, relatively high rates at ages 15-24 have always occurred and persist primarily because of motor accidents. By contrast, there has been a decline among older non-Maori males of workforce age as a result of the shift to tertiary industry. But for Maori males, accident death rates are uniformly high at all workforce ages because of Maori industrial participation patterns. At geriatric ages, which have always had high accident levels, there have been few changes.

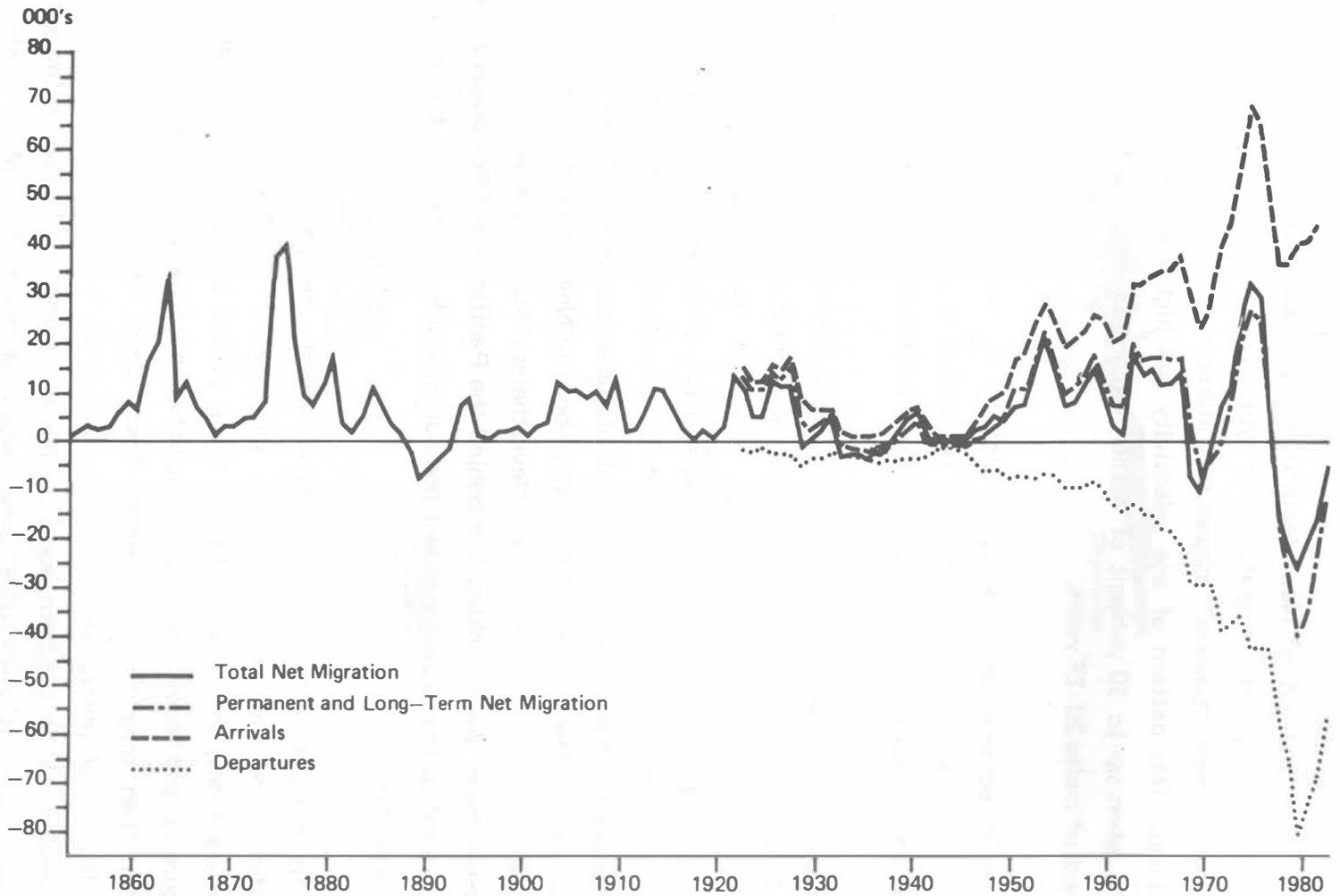
(c) International Migration

Historically New Zealand has been a migrant society. In most decades since the late 19th century however, natural increase has been the prime growth component. Figure 6 shows that after initial European colonisation, peak periods of immigration occurred in the 1860s, the 1870s, the early 1900s (when there was considerable movement from Australia), immediately after both World Wars, and in the early 1970s. Emigration was important at various periods of economic recession, but became a matter of critical public concern only in the late 1960s, and again in the late 1970s.

Since 1945 permanent and long-term immigration has fluctuated markedly. Over the long term however, there has been a general increase (Figure 6). Until 1968 immigration occurred mainly as a result of various displaced person, labour force, and family settlement policies pursued by different governments. It was also affected by conditions in the country of origin (usually the United Kingdom) and in New Zealand itself. Because immigration decreased markedly in 1968-69, an attempt was made to recruit immigrants. This resulted in one of the heaviest inflows in New Zealand's history in the early 1970s, a period in which immigration into Australia was curtailed. In the mid-1970s, New Zealand governments cut back on immigration.

By contrast, throughout the post-war period, emigration had demonstrated an almost perfect exponential increase. Net migration had thus been mainly influenced by fluctuations in immigration trends. In the late 1960s and again, and more spectacularly, in the late 1970s, decreases in immigration produced negative net migration. This was popularly interpreted as a sudden outflow. It was in fact due to the continuation of a long-term trend in emigration coupled with a sharp decline in immigration.

Figure 6
ANNUAL LONG–TERM AND PERMANENT MIGRATION, 1925–82



Source: Farmer, Ruth S.J., Department of Geography, University of Waikato

Since about 1980 migration trends have altered radically. Emigration has decreased, while immigration has increased. The latter has been due, at least in part, to the return of New Zealanders who had migrated or travelled overseas in the late 1970s, but the decrease in emigration was the key factor in the turn around.

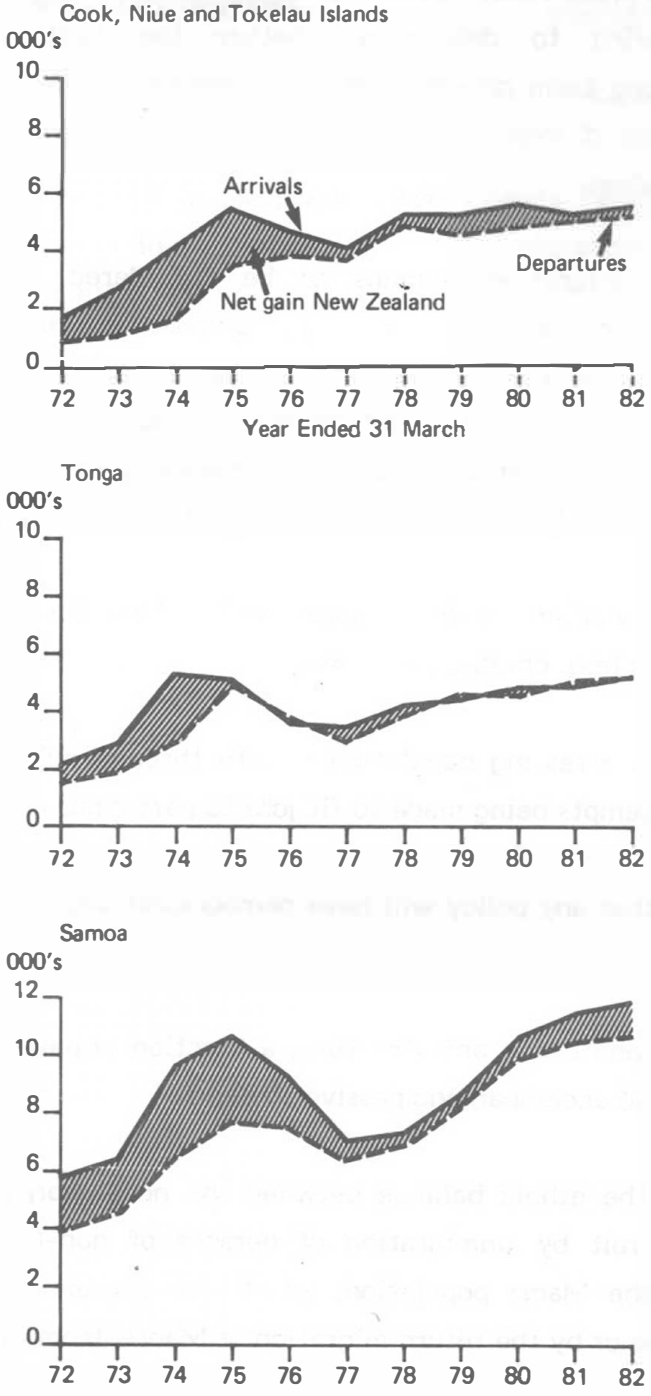
Migration in and out of New Zealand is highly age selective. "Active" migrants (those who initiate the migration) are typically aged 15-34 years, while they may bring with them "passive" migrants (children, or, through family reunion, older relatives). This pattern of age selectivity was highly accentuated during the late 1970s, when up to 50 percent of women emigrants were aged 15-24 years and 45 percent of males 20-29 years.

The most obvious demographic impact of migration is on the age structure. However, as will be discussed under population distribution, immigrants cluster in urban areas, thus accentuating patterns of spatial concentration.

Immigration has been mainly from the British Isles, either directly or via Australia. The flow of Australians is perhaps more important than many people recognise but, contrary to popular belief, has normally been two-directional. 176,714 New Zealanders were living in Australia in 1981 (a 97 percent increase between 1976 and 1981), representing 1.2 percent of the Total population and 6 percent of overseas-born Australians. 42 percent of these had been in Australia for less than three years. The number of Australian-born in New Zealand in 1981 was 43,809, a decline of 7 percent from 1976. Nevertheless Australians were the third largest overseas-born group, ranking just behind the Pacific Island Polynesians and forming 1.4 percent of the usually resident population and 9.4 percent of the usually resident overseas born.

Pacific Islanders constitute the second largest immigrant group after the British. Pacific Island emigration gradually increased after World War II, but became significant only in the early 1970s. Since 1975 the flow has decelerated markedly (Figure 7), and today most movement between Polynesia and New Zealand is travel rather than migration. Moreover, these people have had the typical age/sex distribution of immigrants: an over-representation of males, and a clustering at age-groups 15-34 for both sexes . This was extreme in 1971-76 for Samoans and Tongans, but has diminished since. Many of the factors of concentration noted earlier also apply to Pacific Island immigrants. They have clustered in Auckland (Central/South Auckland), Wellington (Porirua Basin) and Tokoroa urban centres.

Figure 7
MIGRATION BETWEEN POLYNESIA AND NEW ZEALAND, 1971/72–1981/82 BIRTHPLACE GROUPS



Source: Bedford, R., "Net Migration and Polynesian Population Growth in New Zealand 1971–81", New Zealand Population Review, July 1983.

Scenarios for International Migration

The trends and characteristics described above suggest net migration changes are currently affected by the dampening down of the various severe fluctuations introduced from 1968. Nevertheless the emigration patterns will require close monitoring to determine whether the first significant counter-trend to the long-term growth is merely temporary, being a function of current economic conditions, or more permanent, implying a new and radically different situation.

One other aspect of migration remains to be considered, namely the determinants of flow. Immigration is not only composed of returning New Zealanders, but also of active labour force, refugee and family reunion components. The size of the active labour force component, currently rather small, depends on policy interventions based on perceptions of current labour supply and demand. This has been translated into migration policy in two ways:

(a) recruitment of workers with specified skills, often accompanied by passive migrants (e.g. children, parents)

(b) a general policy stressing population growth through migration, with only limited attempts being made to fit jobs to particular migrants.

It must be recognised that any policy will have demographic implications, such as:

(a) the effect on cohort size and structure, a function in part of the size of the active and accompanying passive streams

(b) the effect on the ethnic balance between the non-Maori population, which can recruit by immigration of persons of non-New Zealand descent, and the Maori population, which can recruit only through natural increase or by the return migration of Maoris from overseas

(c) the effect on regional growth, particularly where job recruitment is for large-scale localised projects.

The effects of migration of those who do not immediately enter the workforce are not necessarily felt right away, but could exert an effect over many years. Refugee migration trends are the most difficult to project as they depend on need and policy response.

Given the factors noted above, the current official preferred projection which takes the short-run return migration effect into account and limits net migration gain to 5,000 a year, would seem fairly realistic. Of course, a sudden policy change in favour of large-scale migration recruitment could reintroduce the fluctuations which dramatically affected net migration in the 1970s.

Section 3

POPULATION COMPOSITION

(a) Ethnicity

Although a number of different ethnic groups are significantly represented in the New Zealand population, it is still overwhelmingly composed of those of European descent - 86 percent in the 1981 Census (Table 2). The New Zealand Maori population has grown as a proportion of the Total throughout this century. Recently though, this trend has begun to level off - New Zealand Maoris were 8.7 percent of the Total in 1976, 8.9 percent in 1981.

In addition to its significant Maori population, New Zealand has experienced a considerable inflow of Pacific Island Polynesians in recent years, as noted earlier. This flow has further enhanced the diversity of the population, especially in the North Island urban areas. Auckland has become the centre of a major Polynesian community and as such is recognised as an important focal point of the South Pacific. The Pacific Island Polynesian group made up 2.8 percent of the Total population in 1981. Since the mid-1970s natural increase rather than migration has been the major component of growth of the Pacific Island Polynesian population.

Table 2: Usually Resident Population by Ethnic Origin, 1981

	Total	As Percentage of Total
European	2,696,586	85.8
NZ Maori	279,081	8.9
Pacific Islands Polynesian	88,827	2.8
Other, Non-European	42,201	1.3
Not specified	36,612	1.2
Total	3,143,307	100.0

Source: Census of Population and Dwellings 1981, Department of Statistics

(b) Age-Sex Composition

(i) Sex Composition

Historically, New Zealand has had a high ratio of males to females because of the sex-selectivity of non-Maori migration. These levels of "masculinity" decreased as natural increase became the dominant factor in the growth of cohorts at adult ages. In older age-groups this shift occurred later - high masculinity ratios were still recorded at older ages earlier this century. However, today masculinity levels are also relatively low at geriatric ages.

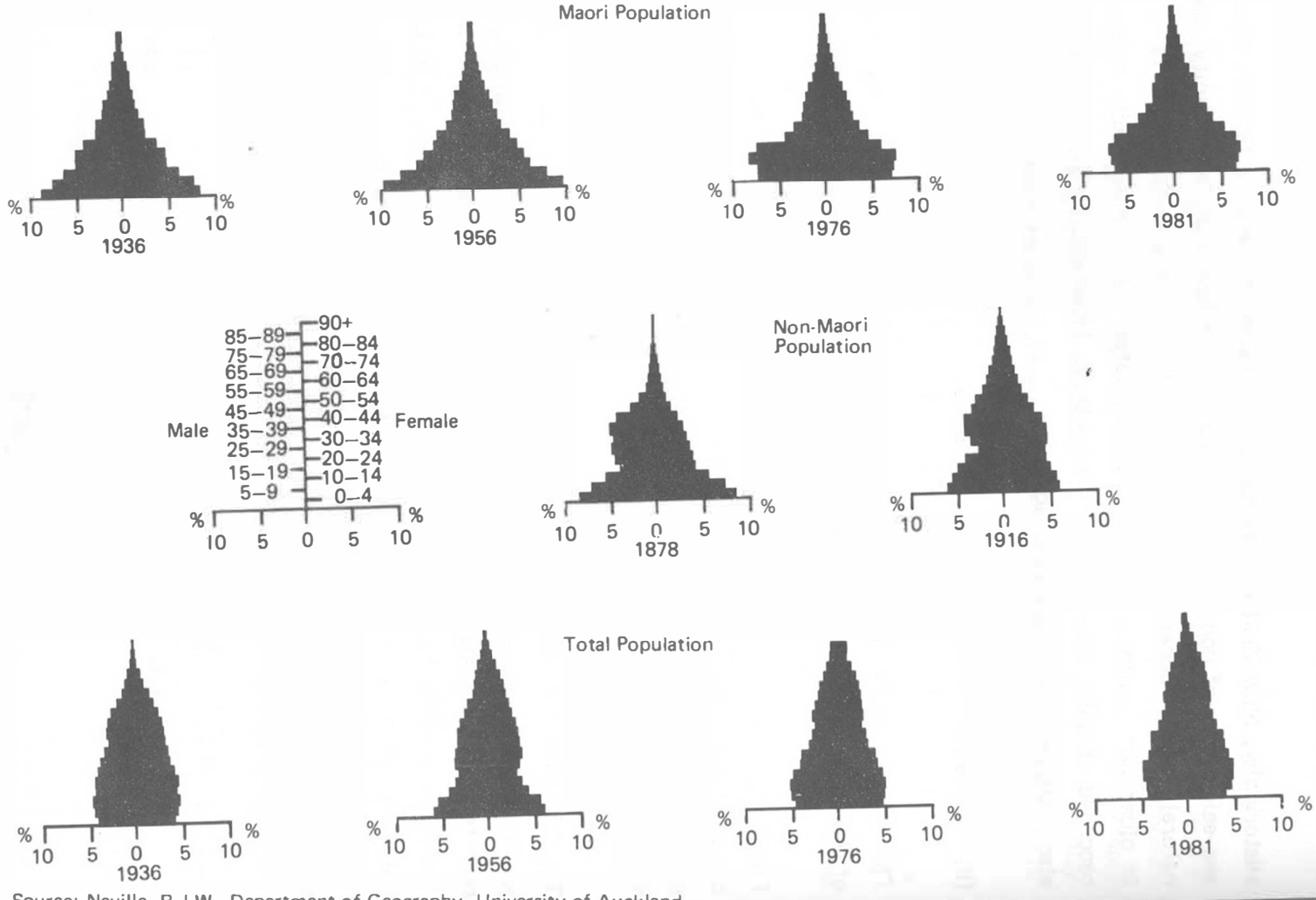
(ii) Age Composition

The growth trends noted earlier have had significant effects on the changing pattern of the age composition of New Zealand's two major ethnic groups (Figure 8).

For most of this century, the Maori age composition has had a "youthful" structure because of its high level of fertility. This was reinforced between 1936 and 1956 by a rapid decline in mortality. By 1976 however, the effects of the rapid decline in fertility since 1964 were already evident in the sudden constriction of the pyramid.

The non-Maori population structure of 1878 shows the high level of masculinity at young working ages which is associated with migration. The youthfulness of a very high fertility population is also obvious. By 1896 both these patterns are changing. The peculiar distortion in 1916 is due to the war-time absence of males. At 1936 the pyramid reflects the mature pattern of a low fertility population, but this pattern is abruptly broken in 1956 by the baby boom. The 1976 pyramid resembles that of 1936 although there were some minor differences due to the depression and the baby boom fluctuations in fertility.

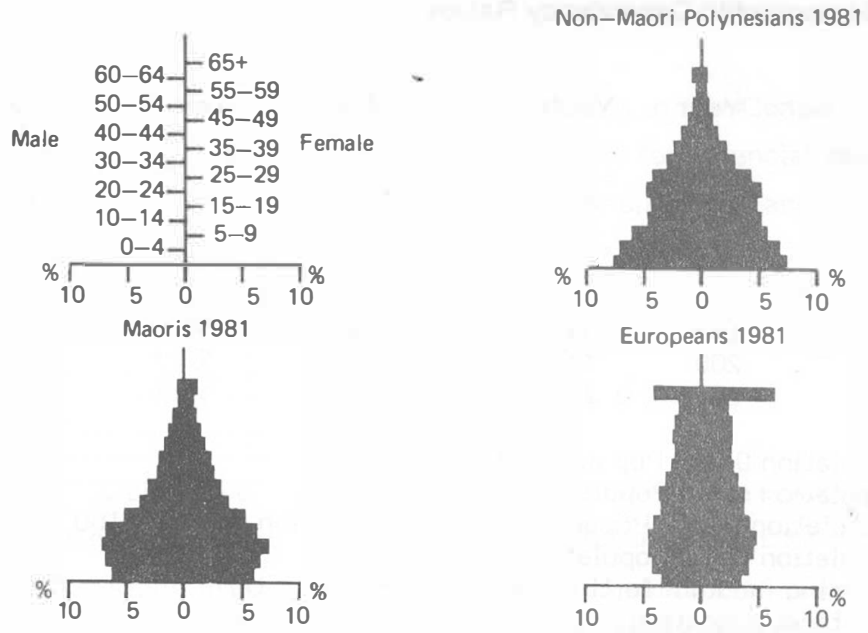
Figure 8
THE AGE STRUCTURE OF THE NEW ZEALAND POPULATION, FIVE-YEAR AGE GROUPS: HISTORICAL EXAMPLES



Source: Neville, R.J.W., Department of Geography, University of Auckland

The age and sex structure of the various ethnic groups in New Zealand's population in 1981 are shown in Figure 9. The Maori and European pyramids further reinforce the 1976 pattern already noted. The non-Maori Polynesian pyramid shows the effects of age-selective Pacific Island migration and relatively high fertility.

Figure 9
AGE–SEX STRUCTURES OF NON–MAORI POLYNESIANS, MAORIS AND EUROPEANS, 1981



Source: Census of Population and Dwellings 1981, Department of Statistics

Throughout the post-war period and up until recently New Zealand has, by the standards of industrialised countries, had a "youthful" age distribution (Table 3). Since 1961, however, ageing has occurred and is becoming more pronounced.

When discussing demographic ageing (which refers to the population and not to individuals), two separate aspects must be kept in mind. Firstly, there is the numerical increase of older age groups, which over the short term is unlikely to be affected by other factors. Between 1981 and 2001 the population aged 60 and over is projected to increase by 33 percent, whereas growth of the total population (all ages) will be much lower (13 to 22 percent, depending on which of the current projections is used).

Secondly, the youth dependency rate will decline and the aged dependency ratio will increase slightly, producing a change in the index of ageing. Significant increase of the age dependency burden per se will occur later - into the 21st century - although in the interim it could be reduced by a change in fertility to levels above those currently projected. The elderly population will still be increasing numerically though, and any increase in fertility would lead to a period of heavy total (youth and aged) dependency.

Table 3: Demographic Dependency Ratios

	Year	Youth[1]	Old Age[2]	Total[3]	Index of Ageing[4]
Actual:	1945	45.2	22.3	67.5	49.3
	1971	57.0	22.4	79.4	39.4
	1981	45.5	23.1	68.6	50.8
Projections:[5]	1991	35.2	24.6	59.8	69.9
	2001	33.0	24.9	57.9	75.5
	2011	29.3	29.0	58.3	99.0

1 (Population 0-14/ Population 15-59) x 100
2 (Population 60+ / Population 15-59) x 100
3 ((Population 0-14+ Population 60+) / Population 15-59) x 100
4 (Population 60+ / Population 0-14) x 100
5 Assuming medium fertility and medium short-term migration, and 5,000 long-term migration

Sources: Census of Population and Dwellings, Department of Statistics
Projections of Total New Zealand Population 1983 - 2016 (Base: 31 March 1982), Department of Statistics

In discussing the effects of ageing it is important not to ignore the upward shift of the mediatric population. This will be significant in the 1990s, and because of life-cycle related changes has a number of demographic implications.

The Maori population has been "youthful" since World War II. Indeed in the 1950s almost 50 percent were aged under 15, with 20 percent at ages 0-4. Because of a rapid fertility decline these percentages dropped radically. Moreover, regardless of which of the two fertility scenarios is used - a Maori total fertility rate of 2.6 or at replacement level in 1996 - the proportion aged 0-4 and 0-14 will continue to decrease.

To compensate for this decline, there will be a rapid increase at older ages. More importantly, the labour force ages will increase proportionately. Indeed, the proportion of women at key reproductive ages, a result of both ageing and higher fertility in the 1960s and early 1970s, will increase and act to keep the number of Maori births at a high level, both numerically and as a percentage of the Total, until 1996. At that stage this factor will also start to decline, as the smaller birth cohort of the 1980s reaches reproductive ages.

(c) Labour Force

The full-time labour force in New Zealand is defined in the Census as persons who are normally employed 20 hours or more each week for financial reward, or as an unpaid relative assisting in business, plus persons unemployed and seeking work. A part-time worker is defined as a person who usually works 1 to 19 hours a week. It should be noted that the labour force is one area in which available statistics are somewhat deficient. The pertinent questions about the true rate of unemployment and the informal economy are too complex to deal with here.

This discussion is concerned with the full-time labour force. However, the number of part-time workers is now quite considerable and should not be overlooked. The 1981 Census counted 115,113 part-time workers, 83 percent of whom were women. About 17 percent of women in the labour force work fewer than 20 hours per week.

Growth of the Full-Time Labour Force

Changes in the size of the labour force are the result of variations in the size and composition of the population of working age and/or changes in age-specific participation rates. Growth of the population of working age, overall participation rates and growth of the labour force are reported in Table 4.

Table 4: Population Growth and Full-Time Labour Force Participation, 1951-2016

Year	(1) Population aged 15+	(2) Intercensal Average Annual Percentage Growth in (1)	(3) Labour Force Participation (%)	(4) Full-time Labour Force	(5) Intercensal Average Annual Percentage Growth in (4)	(6) Male Labour Force Participation (%)	(7) Female Labour Force Participation (%)	(8) Females per 100 Males in the Labour Force
1951	1,367,231		54.1	740,496		83.2	25.0	30
1956	1,488,838	1.7	54.8	816,852	2.0	83.7	26.0	31
1961	1,616,042	1.7	55.4	895,353	1.9	83.3	27.7	34
1966	1,804,520	2.2	56.9	1,026,039	2.8	83.1	30.9	38
1971	1,953,008	1.6	57.3	1,118,835	1.7	81.2	33.8	43
1976	2,201,178	2.4	57.8	1,272,333	2.6	79.5	36.6	47
1981(a)	2,327,166	1.1	58.0	1,332,351	1.2	77.6	39.1	52
1986(b)	2,514,500	1.8	58.6	1,472,700	2.0	76.6	41.2	55
1996(b)	2,831,000	1.2	59.3	1,678,000	1.3	76.5	42.6	57
2006(b)	3,056,000	0.8	58.6	1,792,200	0.7	75.5	42.3	58
2016(b)	3,238,700	0.6	56.2	1,820,800	0.2	72.9	40.1	57

(a) From 1981 onward, labour force participation relates to the usually resident population only

(b) Projected usually resident population and labour force produced by the Population Monitoring Group, based on the Department of Statistics preferred population projection and the participation rates in Table IVa.

Sources: Census of Population and Dwellings 1981, Department of Statistics
Projections of Total New Zealand Population 1983 - 2016 (Base: 31 March 1982), Department of Statistics

This table shows an average annual rate of increase of 1.8 percent for the population aged 15 years and over, from 1.4 million in 1951 to 2.3 million in 1981. Differences between intercensal periods were due to changes in the size of the entry cohort and the impact of external migration. Peak growth of the population of working age was experienced during the 1971-76 intercensal period. This was the result of a large cohort of more than 300,000 teenagers entering the potential work force, coupled with net immigration of about 77,000 persons. Between 1976 and 1981 the growth rate of the population aged 15 and over fell rapidly, despite another relatively large entry cohort. This was due to net emigration of about 100,000 persons.

Table 4 shows a gradual increase in the overall labour force participation rate over the 1951-81 period from 54 to 58 percent. This illustrates the increase in the labour force over the whole period was due primarily, but not entirely, to population growth. However, increase in the labour force between 1951 and 1981 was always greater than growth of the population as a whole. The labour force increased in size from 0.75 to 1.3 million over the period, resulting in an average growth rate of 2.1 percent per annum.

Table 4 also shows that while the overall female participation rate has increased considerably, the male rate has decreased since 1956. The trends in overall male and female participation are the result of changes in age-specific participation rates, not age composition effects. Three major trends (in age-specific participation) can be noted:

(a) Decreased labour force participation of those aged 15 to 19 as a result of prolonged education.

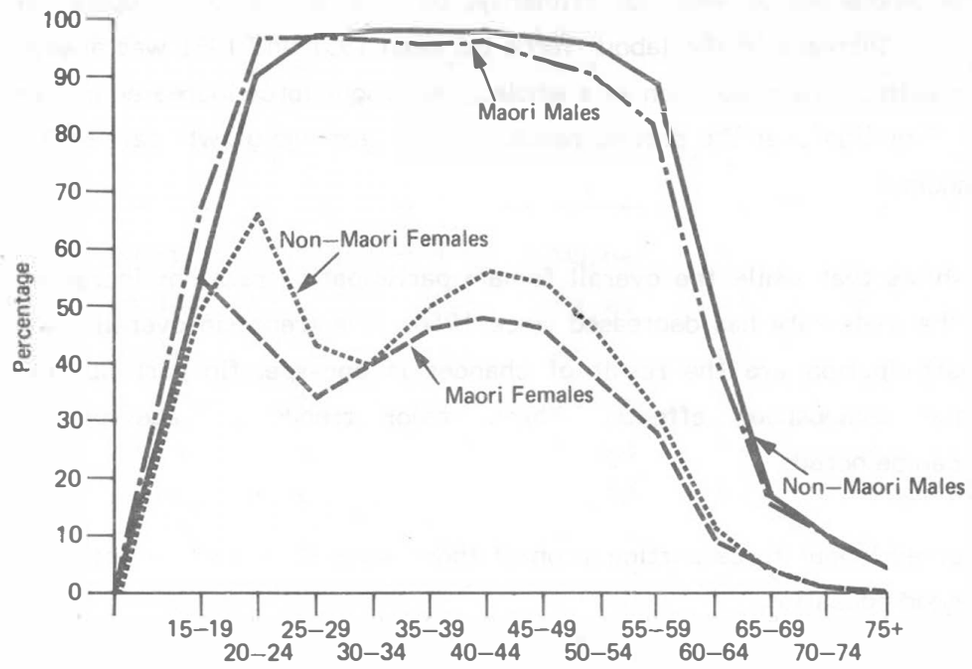
(b) Increased labour force participation of women during and after family formation. This was the principal cause of the increase in the number of females per 100 males in the work force from 30 in 1951, to 52 in 1981.

(c) Earlier retirement, possibly as a result of increased wealth, better retirement provision and, during the 1970s, a slack labour market.

Age-sex specific participation rates

Figure 10 shows the age profile of labour force participation rates derived from the 1981 Census. Maori and non-Maori profiles are shown separately.

Figure 10
MAORI AND NON–MAORI, MALE AND FEMALE LABOUR FORCE PARTICIPATION RATES, 1981



Source: Census of Population and Dwellings 1981, Department of Statistics

Levels of male non-Maori labour force participation increase sharply from 55 percent for those aged 15-19, to more than 95 percent for the 25-54 age-group. Despite the availability of national superannuation, labour force participation of non-Maori men aged 60-64 is still almost 47 percent. Maori male participation rates are generally lower except for the young (ages 15-24) and the old (70 and over). Labour force participation of Maori males aged 15-19 was 12 percentage points higher than that of non-Maori males of the same age. This reflects shorter periods of time spent in formal education by young Maoris. The reasons for lower Maori male participation rates at ages 25-59 are complex and include factors such as health differentials and attitudes towards seasonal and part-time work.

Differences between the Maori and non-Maori female age profiles are even more pronounced. For both ethnic groups, participation as a function of age has two peaks. The first peak occurs earlier for Maori women as a result both of less time spent in schooling and of the different patterns of birth spacing noted earlier. Non-Maori females have higher labour force participation at all ages except 15-19. The difference is particularly large in the 20-24 age-group, with 66 percent of non-Maori women and 44 percent of Maori women in the work force. At the second peak which occurs in the 40-44 age-group, Maori labour force participation is 48 percent, as against 55 percent for non-Maori females.

Although these differences can be attributed partly to social and cultural causes, economic factors are also involved. Traditionally, a limited range of occupations has been available to Maori women. A proportion of Maori women is also discouraged from seeking work as a result of the high incidence of unemployment among them.

Finally it should be noted that at the second peak in the female labour force participation profile when many women return to work after childbearing, the participation rate of women was still 43 percentage points below the corresponding male rate in 1981. However, labour force participation of women over 30 has more than doubled since 1951. Female participation rates are expected to continue to increase for some time.

Labour Force Projections

The size of the usually resident labour force by age and sex has been projected until the year 2016. For this purpose projected participation rates were applied to the latest preferred population projection from the Department of Statistics. Two labour force scenarios were considered. The first assumes a continuation of trends in age-specific male participation until 2001 and of female trends until 1986. This results in low labour force growth. The second scenario yields high labour force growth because it assumes a continuation of current trends in female age-specific participation rates until 2001 and of the trends for males until 1986. These scenarios are seen as providing a lower and an upper limit respectively for the likely growth of the full-time labour force. (Technical details about the projections are given in Appendix V.)

Projections for the usually resident population and the labour force are given in Table 4. The projected full-time labour force shown in the table is the average of the two scenarios described above. The maximum difference between the two scenarios is about 128,000 persons in 2016, or 7 percent of the average of the two projections.

As a result of net migration, the population aged 15 and over is likely to grow faster in the next few years than during the 1976-81 intercensal period. After 1996 however, sub-replacement fertility may have an impact on the population of working age, in which case the annual growth rate could drop to below 1 percent. In the medium term, labour force growth is likely to be about 2 percent per annum. Overall male labour force participation will decline further and overall female

participation will continue to increase until 1996 at least. Although the increase is not as dramatic as that observed between 1966 and 1981, the result will be a more even sex composition of the labour force, with 58 females per 100 males as compared with 52 in 1981. However, when part-time workers were included, the 1981 ratio was 61 females per 100 males. This ratio is likely to increase faster than the ratio for full-time workers alone.

Age Composition

Changes in the age composition of the population of working age and in labour force participation rates directly affect the age composition of the labour force. Ageing of the population will result in an ageing labour force. In 1981, 34 percent of males in the full-time labour force were aged between 40 and 59. This is projected to increase to 48 percent in 2016 (in this respect there is little difference between the two scenarios). In the female labour force, which has a larger proportion of young workers than the male labour force, the proportion aged 15-29 may drop from 46 percent in 1981 to 32 percent in 2016. The implications of changes in the size and composition of the labour force for employment policy are discussed in Section 5.

Section 4

GEOGRAPHICAL DISTRIBUTION OF POPULATION

The Maori population of New Zealand has always been concentrated in the North Island. The non-Maori population also largely lived there during the early years of settlement except for the last four decades of the 19th century, when the South Island non-Maori population outnumbered that of the North Island (Figure 11). From the mid 1890s however, more than half the Total population has lived in the North Island. Its share of the Total has increased steadily ever since and is now about 73 percent.

The northward drift of population, while true as a generalisation, should not obscure the fact that individual regions have grown more or less rapidly than the national average at different times. Some southern regions have gained population from migration, sometimes for lengthy periods, while northern North Island regions have experienced slow or negative population growth.

For most of the period from the early years of the century until the end of World War II, the South Island lost population by net migration, although its population increased considerably through natural increase. Contrary to common belief, the South Island did gain some population from net migration for much of the post-war period. Recently, however, the South Island has lost numbers through migration and its population has decreased absolutely. The more rapid growth of the North Island's population reflects a younger age structure, higher fertility and absorption of a high proportion of international migration.

The non-Maori population has become increasingly urbanised (Figure 12). In the 1860s approximately one-third of the non-Maori population lived in urban areas. By early in the 20th century this proportion had increased to half, and today well over 80 percent of the population is classified as urban. One of the most marked population shifts within the overall pattern has been the growth of metropolitan Auckland from around 15 percent of the Total population of New Zealand in 1921, to about 26 percent in 1981. The growth of Auckland has thus represented a major factor both in the urbanisation of the population and in the so-called "drift to the north".

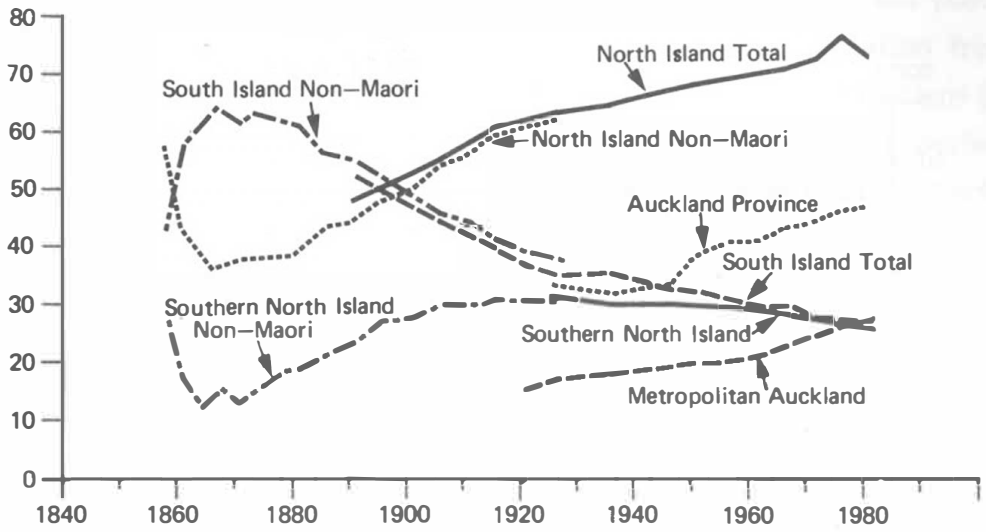
The geographic distribution of the Maori population has changed in a significantly different way. In the mid-1920s, 95 percent of Maoris lived in the North Island, nearly three-quarters in the northern North Island. Only about 16 percent lived in towns with populations of more than 1,000. Since then, there has been a significant shift to the southern North Island and the South Island, although two-thirds of Maoris still live in the northern North Island. The most striking characteristic, however, has been the extremely rapid urbanisation. The proportion of the Maori population living in urban areas had increased from barely one-quarter in 1945, to more than half in the early 1960s, and to more than three-quarters by the mid-1970s. In 1981 the proportion stood at 78.5 percent, not very far behind the urban share of the Total population.

(a) Population Distribution 1945-1976

From the mid-1940s to the mid-1970s, population growth became increasingly concentrated in the metropolitan regions and in the northern North Island generally. Growth was most concentrated geographically during the late 1960s when national population increase was at its lowest point of the 30-year period. It was more dispersed during the early 1970s when the level of national population growth reached a record volume for an intercensal period.

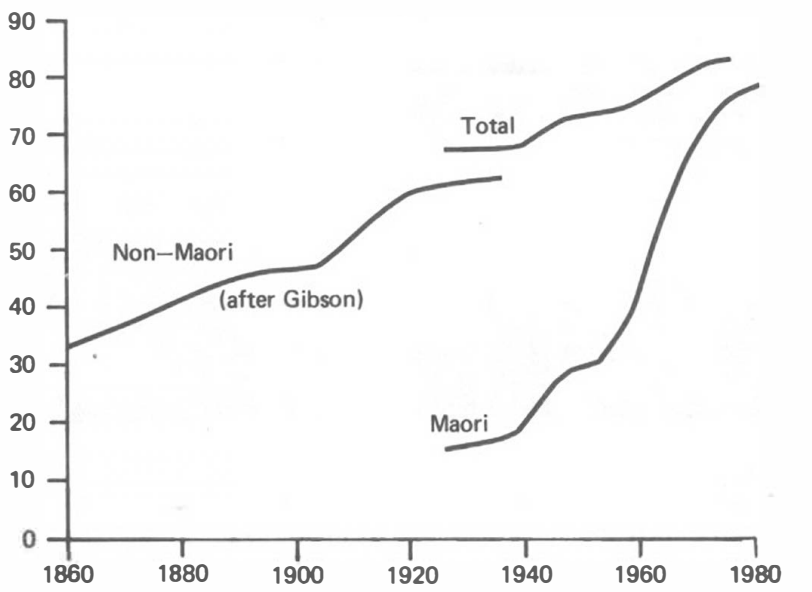
Non-metropolitan regions as a whole experienced decreasing shares of growth during the period, but gained an increased share during the early 1970s compared with the 1960s. The growth rates of individual regions have varied considerably within these overall patterns, reflecting changes in national economic structure, migration of pensioners, education-related migration and other factors.

Figure 11
GEOGRAPHIC DISTRIBUTION OF THE NEW ZEALAND POPULATION AS A PERCENTAGE OF THE TOTAL POPULATION, 1858–1980



Source: Census of Population and Dwellings, Department of Statistics

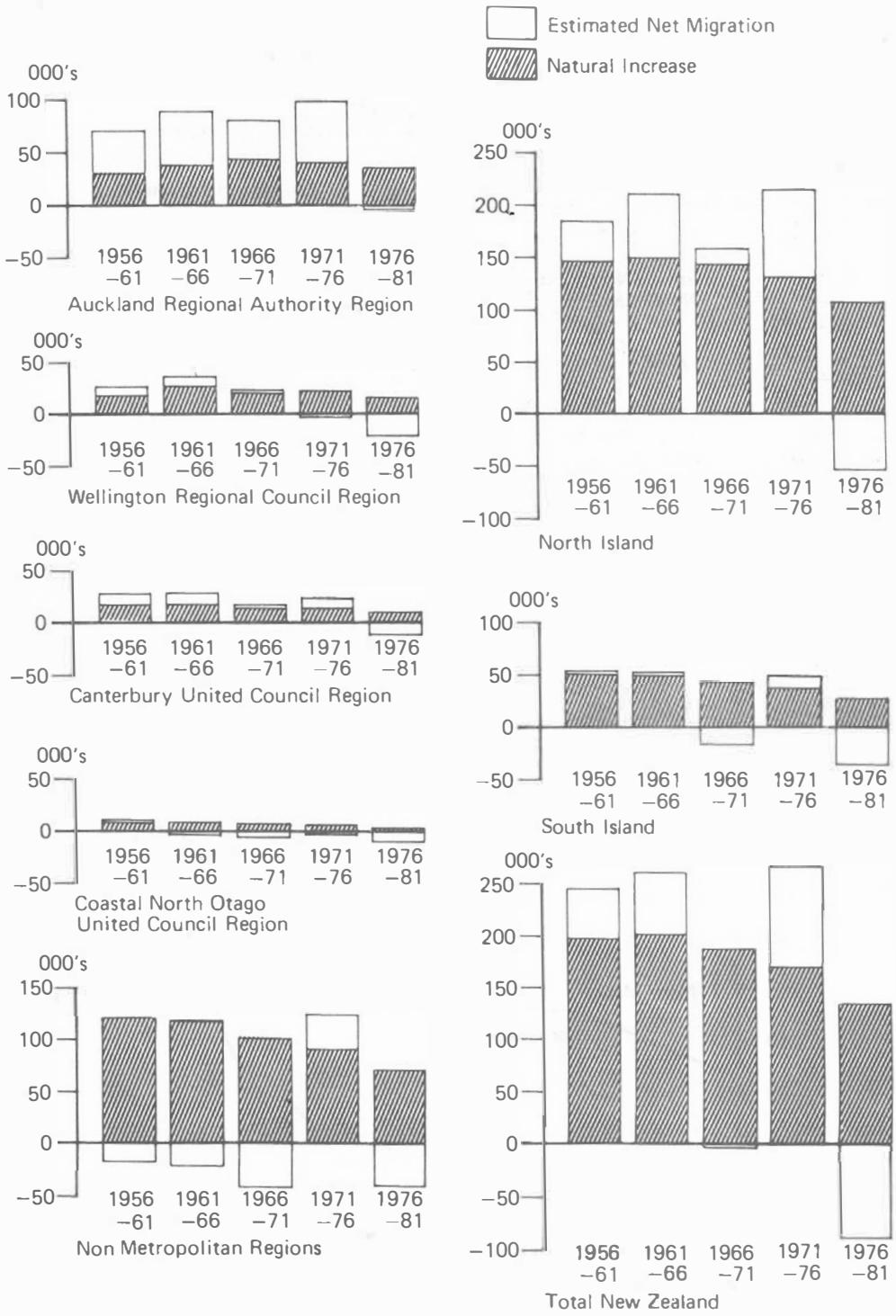
Figure 12
URBAN POPULATION AS A PERCENTAGE OF THE TOTAL POPULATION, 1860–1981



Source: Gibson, C.J., Demographic History of New Zealand, unpublished PhD dissertation, University of California, 1971

Census of Population and Dwellings, Department of Statistics

Figure 13
POPULATION CHANGE BY REGION, INTERCENSAL PERIODS 1956–1981



Source: Lowe, R.J., Regional Population Change 1976–81, Town and Country Planning Division Technical Report No.10, Ministry of Works and Development, 1981

(b) Population Distribution in the late 1970s

Between 1976 and 1981 Total population growth was at its lowest level for any intercensal period this century. This was due partly to lower natural increase, but the main cause was net emigration. All regions had significantly lower population growth than over the preceding five years; nearly all lost population from net outward migration, and many suffered absolute decrease in their populations (Figure 13). Auckland had much lower population growth than previously and experienced a significant degree of net outward migration. However, the increase in Auckland's numbers still represented a large share of Total population growth.

The Wellington and Canterbury local government regions (which approximate to the second and third largest metropolitan regions), experienced increasing shares of national growth until the 1970s, but both lost population during the late 1970s due to high levels of net outward migration. The Coastal-North Otago local government region (in which Dunedin is located) experienced a marked increase in its level of net outward migration, resulting in the largest and most rapid population decrease of any local government region during this period.

Population growth in non-metropolitan regions as a whole was large in relation to Total population growth, but this mainly reflected growth in two regions only, Northland and the Bay of Plenty. In the case of the Bay of Plenty, the growth was much lower than the region had experienced for some decades. Northland's growth during the late 1970s was lower than during the early part of the decade but it was still relatively high compared with the two preceding decades. After Auckland, Northland and the Bay of Plenty had the fastest rates, as well as the greatest volumes, of growth and were the only local government regions with significant net migration gains. Their relatively rapid growth reflects high growth in a number of industries including agriculture, together with retirement migration.

The third fastest rate of growth during the period was experienced by the Clutha-Central Otago region, reflecting growth in the town of Cromwell as a result of water resource development. The largest population loss was experienced by the Aorangi region - this is largely attributable to the reduction in the construction labour force housed in the town of Twizel.

(c) Population Distribution since 1981

The Total population is estimated to have increased by nearly 55,000 persons between the 1981 Census and the end of March 1983, considerably exceeding the increase during the preceding five years. To date, only limited data are available but it is clear that a number of regions have experienced increased population growth while others have gained little, or have continued to experience declines through net outward migration. The information available implies there has been a continuation of the relatively large shares and relatively rapid rates of growth of the Auckland, Northland and Bay of Plenty regions and further population decreases in the Wellington and Coastal-North Otago regions but some slow growth in Canterbury.

There have also been significant differences in the rates and shares of population growth among the non-metropolitan local government regions. In addition to Northland and the Bay of Plenty, a number of the other regions appear to have experienced relatively rapid population growth, the Thames Valley in particular. The Waikato, Nelson and Hawke's Bay regions appear to have increased at approximately the national rate. A number of others, including Wanganui, Wairarapa, West Coast, Aorangi and Southland, have experienced further decrease in population. The largest decrease has again been in the Aorangi region.

During 1982-1983 increases in unemployment in Auckland and the Bay of Plenty have occurred to a more marked degree than nationally. These regions have also experienced greater than average decreases in the number of dwelling permits issued. These changes may foreshadow shifts in internal migration which, if they continue, will reduce the population growth rates of these regions relative to other regions. Northland's more rapid growth rate is clearly directly related to major construction work of finite duration, and may not continue unless there is substantial growth in permanent jobs in the area. Major construction work related to energy development projects in Taranaki appears to have been reflected in increases in the number of households, but to not nearly the same degree as in Northland.

(d) Future Distribution of Population

Unless there are very marked increases in either fertility or international migration, there will be much lower population growth in New Zealand during

the next 30 years than during the last 30. The reduction in the rate of labour force growth is unlikely to be so marked however. Future regional population changes will thus occur within a very different national context and few, if any, regions are likely to experience population growth on the same scale as during the period since World War II. Even given a situation of permanently more or less static Total population, it is likely there will continue to be regional shifts in population resulting from economic and demographic structural changes. Furthermore with an ageing population, retirement migration is likely to become relatively more important than employment-related migration, especially in a decade or two.

If the national total fertility rate remains close to, or below, replacement level and birth rates in the metropolitan regions remain relatively low compared to the national average, the metropolitan centres will only be able to maintain their share of national population through net inward migration. Recently the metropolitan regions have experienced some net migration loss, with the second, third and fourth largest regions losing quite heavily over a number of years. Inter-metropolitan shifts could nevertheless occur in the situation where metropolitan regions in the aggregate have an approximately static share of Total population.

Whether metropolitan centres maintain their historical dominance will depend on particular structural changes in the economy and changing spatial patterns of resource development. Inevitably there is considerable uncertainty attached to anticipating how such changes may develop, just as there is in forecasting the national economy even in the short term. There are significant differences in scenarios of economic restructuring and responses to closer economic relations with Australia with consequential differences in the implications for individual regions and the metropolitan regions in particular.

Regardless of possible longer-term changes, it is clear from the greatly reduced, or even negative, population growth in metropolitan regions since the mid 1970s, that there needs to be both a rethinking of earlier attitudes towards these regions and a reconsideration of any historically based presumption that regional development policies should automatically discriminate against them.

Non-metropolitan regions also face widely differing futures within even a relatively conservative range of possible national development alternatives. Inflexible assessments of policy needs are also inappropriate in their case. Formulation and implementation of regional population distribution policy should be based on identifying the needs of each region, metropolitan or otherwise, and balancing policies relating to it against the needs of other regions and the national population generally. Regional policy in this sense is taken to embody intra-regional policy needs. Central and regional government need to reach agreement on policy objectives for each region.

Section 5

MAJOR POPULATION DEVELOPMENTS AND THEIR IMPLICATIONS FOR POLICY

(a) Introduction: Key Developments Identified

In Sections 2 to 4 a number of population developments have been identified which, together and individually, have major implications for policy formulation. These are reviewed briefly before considering their implications.

Together, the three components of population growth - birth, death and migration - point to very limited growth in both the short and the long term. The projection recommended by the Department of Statistics indicates growth of the Total population of 21 percent in the 30 years from 1976 to 2006 (0.64 percent per annum). This represents very slow growth by post-war standards - in the 31 years from 1945 to 1976 the total population grew by 84 percent (1.99 percent per annum). Even allowing for an increase in fertility to just above replacement level, after this initial upsurge the number of births would be only slightly higher by the early 1990s. There was, however, no increase in the birth rate during 1982/83, so there is as yet no early sign of a possible fertility recuperation. Declines in mortality are of some importance in the first year of life and at over 60 years but their overall effect on population growth is quite limited.

The most volatile factor affecting population growth is migration. If it remains as liable to change as it has been in recent years, current projections of population growth may prove to be relatively unreliable. If, however, the recent fluctuations in emigration and immigration stabilise, net migration may exert only a restricted effect on population growth. Of the Total population increase of 40,000 in the 1982/83 year (much the largest for several years), about 24,000 was natural increase. The rest was due to net migration.

The recent rapid fertility changes will affect overall growth and produce dramatic changes in the age structure of New Zealand's population. The effect of this has been termed "population peristalsis", where a large cohort is followed by a much smaller one, thus over time first distending, then shrinking, particular age-groups. The large cohorts of the baby boom years and the early 1970s will inevitably exert a strong influence over major aspects of social and economic policy - today at the

labour force entrant ages, then at later mediatric ages, and next century at older ages. A 33 percent growth in the 60+ population is projected between 1981 and 2001, while an increase of 77 percent is projected for the 75+ age group.

Table 5: Projected Growth of Total Population by Age-Groups (%), 1981-2011

	0-4	5-14	15-24	25-44	45-59	60+	Total
1981-1991	4	-15	1	30	11	21	10
1991-2001	-2	4	-16	10	36	10	8
2001-2011	-13	-2	-12	-1	68	33	12

Sources: Census of Population and Dwellings 1981, Department of Statistics
Projections of Total New Zealand Population 1983-2016 (Base: 31 March 1982), Department of Statistics

The last point must not, however, be allowed to obscure other important changes. The projections point to an increase in the labour force of 25 percent or more by the turn of the century. This is due partly to population growth but also to changing labour force participation rates. Whereas prior to World War II the labour force consisted of over 80 percent of all males aged 16-60+ and about 25 percent of females of those ages, we can expect somewhat lower male, and considerably higher female, participation rates by the year 2000.

Maori population growth will follow a different pattern. The rate of natural increase will decline for two reasons: the birth rate is dropping radically and the population is ageing rapidly. These trends will eventually increase the proportion of the population at older ages and the crude death rate will increase because of age composition effects.

If the Maori birth rate continues to gradually decline, Maoris will constitute 10.8 percent of the population in 1996, as opposed to 8.8 percent in 1981. If present Maori fertility patterns are maintained, the proportion will be marginally higher in 1996, say 11.3 percent. Those estimates take no account of inter-ethnic migration, a process by which one ethnic group gains people from another by

assimilation. If inter-ethnic migration continues at the same level as in recent decades, those percentages will be significantly lower. The estimates assume there is little Total population gain from net international migration. If there were major net international migration gains, this would also tend to alter the ethnic balance, thus reducing the Maori proportion of the population.

Auckland, Northland and the Bay of Plenty have had relatively large shares of Total population growth but the volume of growth has generally been small compared with that of earlier years. Recently the metropolitan centres have been growing at markedly reduced rates, experiencing no growth, or, in many cases, losing population.

(b) Policy Influences on Population Change

Information on the growth, composition and distribution of the present and future population provides a basis for policy and planning in areas such as health, welfare, education, housing and employment at the national and regional level. These and many other policies in turn have an effect on population, so that the relationship between population characteristics and policy is a two-way one.

Sometimes the effects of government policies on population characteristics are clear, as with the effect of migration policy on population size, but in many instances there are unintended consequences of policies, in both the short and long term. It is not possible to document these policy effects here, but a few examples will suffice.

The use of policies in New Zealand to effect changes in fertility has been minimal. Decisions affecting fertility have traditionally been seen as those of the individuals concerned, with any direct state interference representing a limitation on personal freedom. By world standards, contraceptive usage in New Zealand is high and efficient, yet the incidence of unintended pregnancies, particularly among teenagers, points to a problem of some magnitude. Obviously not all people have sufficient knowledge of human biology or access to contraception and abortion to make fully informed and free choices. This lack of knowledge, and its effect on fertility, is at least in part the outcome of legal policies.

The restriction of access to fertility control may or may not be the intention of current policy. By contrast, preventive social policies, such as those resulting in improved health and housing, have had an intentional and direct effect on perinatal mortality rates and on mortality generally.

The direct effect of policy intervention on population change is more readily identified in the areas of international migration and population distribution. As Australia is a major origin and destination of international migration to and from New Zealand, Australian migration policy has the potential to affect levels of New Zealand migration significantly . Changes in trans-Tasman migration have been a major factor in the recent migration turnaround. Australian immigration officials have noted that only a minority of New Zealand migrants entering Australia would meet the entry criteria applied to other migrants, and some powerful political groups in that country have argued for further restrictions on New Zealand immigration. Should changes be made de-liberalising the conditions of movement between the two countries, they would have a significant direct impact on this key area of change in the New Zealand population and give Australian government policy a greater effect on the formation and implementation of New Zealand policies in several areas. Generally speaking, any restrictions would run counter to the spirit of the moves towards closer economic relations with Australia.

Migration policy has largely restricted entry to migrants with sought-after skills and those wishing to settle in New Zealand as refugees or in order to re-unify families. Such policies have usually been viewed as part of labour, rather than population, policy so that the demographic implications of such policies are usually not considered (e.g. family formation patterns). Furthermore, despite the long-standing nature of the immigration programme, surprisingly little is known about its economic impact. It is not at all clear for example, whether such policies deprive local people of jobs, or stimulate the demand for labour, lead to housing shortages or to a more efficient use of the housing stock and infrastructure. The evidence of social and cultural effects of migration is more anecdotal than empirical. There is a clear need for more effective analysis of the economic and social effects of migration flows.

Recent national development policies have also had major impacts on population distribution. The energy development programme has caused redistribution of population in Northland and North Taranaki. Regional policies encouraging the development of smaller economic units in rural land use (horticulture), and zoning to allow rural housing have been at least partly responsible for the growing significance of rural re-population.

(c) Policies Affected by Population Characteristics

The demographic tool of the cohort is useful for considering the policy implications of population characteristics. Cohort analysis focuses on the size and composition of particular population cohorts and follows them through their life-cycle, just as individuals can be followed through career paths or their family life-cycle. The advantage of the cohort approach is the identification of specific policy responses required as particular cohorts age, and as cohorts of differing sizes reach particular life-cycle stages.

The effects of changing cohort size are already evident in, for example, the closure of some maternity hospitals and the decline in teacher employment.

The current 15-40 year old cohort born in the high fertility period from the late 1940s to the 1960s, is now exerting tremendous pressure on the labour force. Yet in a decade the place of this large cohort at the younger labour force ages will have been overtaken by the much smaller cohort arising from the following low fertility period. Throughout this population peristalsis, an objective of labour policy should be to encourage a balanced recruitment and training programme to ensure that the large numbers of entrants to the labour force in the early 1970s are followed by appropriately experienced and skilled workers in the subsequent smaller cohort.

The ageing of the mediatric population, which will be significant in the 1990s, will cause further life-cycle related changes with policy implications. These include the ageing of a large cohort of experienced workers, the prevalence of late mediatric morbid conditions (e.g. stroke, arthritis), and the distribution of households by type. As the Total population and the work force ages, it will inevitably become geographically and occupationally less mobile.

One of the best demonstrated effects of sustained low fertility is a shift in the age structure of the population towards the mediatric and the geriatric. Between 1981 and 2001 the absolute number of those aged over 60 years is projected to increase by 95,500, 51,000 of which would be over 75 years. From the viewpoint of those producing and delivering goods and services, increases in absolute numbers rather than changes in percentage shares of the Total population are of importance. For the aged population a number of crucial services are involved. The

overwhelming majority of old persons live in their own homes. Support services which used to be provided by family members (usually daughters) are now in shorter supply. This is because the number of such family members is now generally fewer, they are more geographically mobile, and more likely to have entered the work force. The importance of the increasing proportion of the elderly aged 75 and over should be stressed. This section of the aged population is considerably more dependent on health services than the younger aged and as their number increases at a proportionately higher rate, the demand for health services will increase at a greater rate than the growth in the aged population as a whole.

As a consequence, greater reliance is going to fall on the state and voluntary and private support services. Greater state involvement will raise the per capita cost of elderly persons to the taxpayer, as well as necessitating the systematic planning of institutional structures. Increased involvement of private organisations using part-time and unpaid workers has a number of ramifications. For example, it presupposes (as do state facilities) a sufficient supply of persons trained in the social services generally, and the care of the elderly in particular.

Several possible scenarios for fertility have been presented. Under the scenario of a continuing sub-replacement level, the most obvious short-term demographic effect will be an on-going decline in the youthful population with its related decrease in the demand for child care services, education and health services, family benefit payments, etc. However, the scope to reduce the level of resources committed to education may be short-lived.

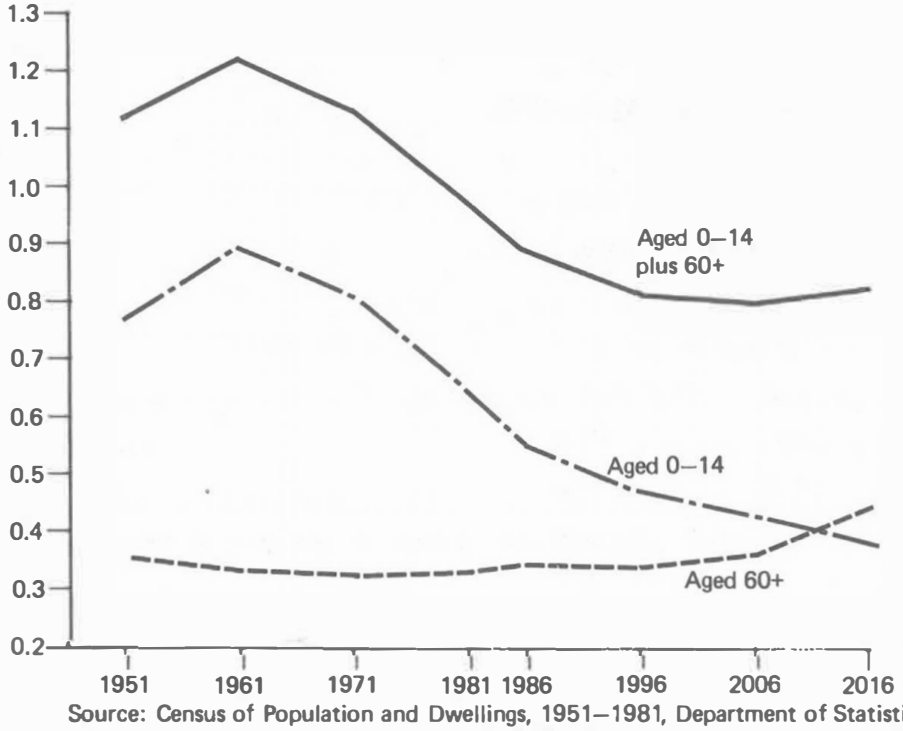
Firstly, the projected decline in the population of primary/intermediate school age occurs only until the early 1990s, after which time the size of the group is more or less unchanging for some 15 years. A broadly similar pattern is projected for the secondary school population, although the forecast decline in numbers starts and finishes somewhat later.

Secondly, the decline in numbers will be much smaller if the slight recuperation in fertility discussed earlier occurs, because this will increase the size of each primary school new entrant class by about 12 percent, or 6,000 children overall. Such a recuperation in fertility would also limit the scope for retrenchment of services to the young in other areas, such as health and child care, and imply a somewhat greater expenditure on income support.

Declining fertility has been a major contributor to the declining average size of households in New Zealand. Other contributing factors have been a changing age structure, and a rapid increase in the number of single-person households. These various factors have contributed to a decline in the average size of households from 3.6 in 1951, to 3.0 in 1981. Continuation of this trend, together with the large size of the cohorts entering the household formation ages, means that despite the projected modest increase in the size of the total population, the demand for new dwellings will increase sharply in the near future.

The changing size of the young and old age-groups implies a changing total dependency ratio - a strictly demographic measure of the dependency burden, which was presented earlier. A somewhat more satisfactory measure of the "economic dependency burden" is the number of dependants (usually interpreted as those aged 0-14 plus those aged 60+) per member of the full-time labour force. Values for this measure have been calculated for 1945 through to 2016 using the data provided in Section 3(c). They are graphed in Figure 14.

Figure 14
NUMBER OF DEPENDENTS PER FULL-TIME LABOUR FORCE PARTICIPANT, 1951–2016



Source: Census of Population and Dwellings, 1951–1981, Department of Statistics
Projections of Total New Zealand Population 1983–2016 (Base: 31 March 1982), Department of Statistics

Two features stand out. Firstly, the overall "burden" is currently at its lowest level in 30 years, with the 1981 burden of 0.97 dependants per full-time labour force participant just 80 percent of the peak, 1961, level. The fluctuations in the dependency burden between 1945 and 1981 are attributable to changes in the size of the youth population, as the number of old age dependants per worker has been almost constant. Secondly, the burden will decline further before increasing early next century, when the large baby boom cohorts reach retirement age.

Excessive gloom about the prospects for the "dependency burden" would appear, on this evidence, to be misplaced. However, this measure of the burden is, at best, suggestive and extreme caution must be exercised when interpreting these results. In particular, the measure assumes the old and the young are equally burdensome, whereas in fact they are not. Weighting the young and old populations according to the demand they exert on the economy and on state services implies a greater real burden which may show the projected improvement over the next two decades to be illusory. Moreover, this interpretation does not take account of the burden posed by the unemployed and those supported by other social security benefits. The projected rapid increase in the size of the labour force suggests unemployment will increase in the near future, especially if the recent experience of substantial net immigration is maintained. Any increase in the unemployment rate makes it extremely unlikely there will be any deviation from the long-term trend toward larger numbers being supported by the domestic purposes benefit.

Current demographic trends have indicated New Zealand has a higher fertility level at younger ages than some other developed countries, and that a significant number of births to young mothers are ex-nuptial. Studies here and overseas have shown that children born to young mothers have lower life chances than others, because of their economic and social circumstances. Future welfare policies will need to relate these clearly-established research findings with the demographic trend and consider the future commitment to these potentially disadvantaged children. The growing differential in the timing of births between higher and lower socio-economic groups also needs to be taken into account. Similarly, the relatively close spacing of children in New Zealand families compared with patterns overseas, and the potential for negative effects on the mother's health and marital satisfaction, need to be made a more explicit aspect of parent education.

It has been established that, relative to many other Western countries, New Zealand has a high post-neonatal mortality rate. This rate probably cannot be significantly lowered further by a medical response, but will instead require a more general improvement in the social and economic environment of parenting. Those responsible for delivery of the necessary supportive family policies will need to recognise that post-neonatal mortality falls disproportionately on Maori families.

As life expectation increases at the older ages, so does the number of widowed persons in the population and the number of older people living alone. This will further accentuate the trend towards smaller household size and will be reflected in the increasing demand for single-person housing. Changing patterns in consumer demands can be expected due to the increasing size of this age-group.

Migration patterns also have a variety of policy implications. In the short term, migrants returning from overseas at a time of high unemployment and low levels of housing construction, will put further pressure on both the labour and housing markets. In the medium term, as these migrants have children, they will generate a greater demand for expenditure in health, education and welfare. A significant longer-term effect of sustained net migration, due to its age selectivity, would be a slow down in the general ageing of the population.

The period of slow growth of recent years has meant regional changes have to be seen in a different context, and that some regional policy concerns are clearly no longer relevant. From a situation of coping with rapid growth during the post-war period to the early 1970s, the emphasis has shifted to managing to maximum advantage the comparatively low population growth currently occurring, and forecast to continue. The ageing of the population is likely to influence patterns of inter-regional migration to a significant degree, as retirement related migration can be expected to increase in importance.

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Appendix I

GROWTH IN THE MAORI AND THE TOTAL POPULATION, 1858-1981

Table I: Growth in the Maori and the Total Population, 1858-1981

	Maori	Non-Maori	Total
1858	56,049	59,413	115,462
1874	47,330	297,654	344,984
1878	45,542	412,465	458,007
1881	46,141	487,889	534,030
1886	43,927	576,524	620,451
1891	44,177	624,474	668,451
1896	42,113	701,101	743,241
1901	45,549	770,313	815,862
1906	50,309	886,000	936,309
1911	52,723	1,005,589	1,058,312
1916	52,997	1,096,228	1,149,255
1921	56,987	1,214,681	1,271,668
1926	63,670	1,344,469	1,408,139
1936	82,326	1,491,486	1,573,812
1945	98,744	1,603,586	1,702,330
1951	115,676	1,823,796	1,939,472
1956	137,151	2,036,911	2,174,062
1961	167,086	2,247,898	2,414,984
1966	201,159	2,475,760	2,676,919
1971	227,414	2,635,217	2,862,631
1976	270,035	2,859,348	3,129,383
1981	279,252	2,896,485	3,175,737

Source: Census of Population and Dwellings, Department of Statistics

Appendix II

ACTUAL AND PROJECTED TOTAL POPULATION BY AGE-GROUPS, 1951-2016

Table IIa: Total Population by Age-Groups, 1951-1981

Age-Groups	1951	1956	1961	1966	1971	1976	1981
0- 4	234,432	256,548	292,073	306,643	297,862	296,105	252,636
5- 9	181,697	240,583	261,701	299,257	309,804	311,773	290,070
10-14	154,492	186,127	245,168	266,499	301,957	320,327	305,874
15-19	130,514	155,645	186,249	245,367	260,789	300,737	307,920
20-24	140,673	135,671	158,063	190,652	234,959	259,575	273,324
25-29	146,454	153,025	143,773	167,246	187,312	249,140	241,932
30-34	136,398	153,790	157,899	149,396	166,690	199,498	240,060
35-39	138,443	143,354	158,870	163,889	151,189	177,097	193,188
40-44	127,648	140,642	143,996	160,180	161,696	152,631	170,517
45-49	111,609	129,748	141,493	145,788	159,367	162,878	148,968
50-54	97,133	108,225	126,143	138,004	140,799	155,701	156,261
55-59	82,389	94,052	104,682	121,754	132,183	137,186	149,196
60-64	78,511	77,091	86,255	99,151	113,857	127,228	129,603
65-69	70,495	71,034	70,809	79,429	90,614	106,448	115,296
70-74	53,910	57,844	58,490	58,547	65,683	75,855	88,752
75+	53,054	68,717	79,350	85,117	87,870	97,204	112,149
Not Specified	1,620	1,966					
All Ages	1,939,472	2,174,062	2,414,984	2,676,919	2,862,631	3,129,383	3,175,737

Source: Census of Population and Dwellings 1981, Department of Statistics

Table IIb: Projected Total Population by Age-Groups, 1986-2016

Age-Group	1986	1991	1996	2001	2006	2011	2016
0- 4	252,600	263,200	267,800	258,900	240,600	228,300	227,100
5- 9	257,100	252,700	263,300	267,800	259,000	240,800	228,400
10-14	292,900	256,000	251,700	262,100	266,700	257,800	239,700
15-19	306,400	291,700	254,800	250,400	260,900	265,500	256,600
20-24	302,000	296,600	281,900	245,300	241,000	251,300	255,800
25-29	280,300	306,100	300,800	286,100	249,600	245,300	255,700
30-34	255,000	289,200	315,000	309,600	295,100	258,700	254,500
35-39	245,700	259,000	293,100	318,700	313,400	298,900	262,800
40-44	196,900	247,300	260,600	294,500	319,800	314,500	300,100
45-49	170,500	195,800	245,500	258,600	291,900	316,800	311,600
50-54	145,700	167,400	192,100	240,700	253,500	286,100	310,400
55-59	150,400	141,200	162,300	186,200	233,000	245,400	276,900
60-64	141,800	143,000	134,400	154,400	177,000	221,200	232,900
65-69	118,600	131,000	132,300	124,400	142,900	163,500	203,900
70-74	99,800	104,100	114,800	115,800	109,000	125,400	143,100
75+	134,700	161,300	180,900	199,000	209,800	209,200	220,200
All Ages	3,350,400	3,505,600	3,651,300	3,772,500	3,863,200	3,928,700	3,979,700

Source: Projections of Total New Zealand Population 1983-2016 (Base: 31 March 1982), Department of Statistics

Appendix III

THE ANALYSIS OF EX-NUPTIAL FERTILITY

Analysis of ex-nuptial fertility is made more difficult by the fact that registered marriage is not the only socially acceptable procedure for, as it were, "legitimising" conjugal unions. In New Zealand, as in Europe, increasing numbers of couples cohabit.

In New Zealand, registration must be seen merely as the legal enforcement of non-Maori norms relating to legitimation of unions. With the termination of the legal distinction of legitimacy as applied to inheritance and to welfare provision, registration is decreasingly relevant for many non-Maoris, while for Maoris it has always been a superstructure imposed over their existing procedures for legitimation. Consequently, Maori births are over-represented among the ex-nuptial. Many occur at older ages and clearly were born to long-standing unions.

Appendix IV

SURVIVORSHIP

Table IV: The Effects of Recent Improvements in Survivorship at Older Ages - Age and Sex Distribution of Life-Table L(x) Values

Age-group	L(x): Average Number Living in Quinquennial Age-group[1]							
	Males			Females			Males per 100 Females	
	1975-77	1980-82	% Change	1975-77	1980-82	% Change	1975-77	1980-82
60- 64	375,09	385,717	2.83	423,126	431,418	1.96	88.6	89.4
65- 69	321,959	335,758	4.29	391,080	400,226	2.34	82.3	83.9
70- 74	253,000	269,524	6.53	343,783	354,971	3.25	73.6	75.9
75- 79	173,460	192,598	11.03	276,850	293,811	6.13	62.7	65.6
80- 84	99,776	116,707	16.97	194,760	214,008	9.88	51.2	54.5
85-103	52,680	72,643	37.89	151,056	196,209	29.89	34.9	37.0

1 L(x) can be interpreted as the life-table population structure, but is more correctly defined as the total person-years lived between ages x and x+5 by the survivors of an original cohort of 100,000 persons

Sources: New Zealand Life Tables 1975-77, Department of Statistics, 1979
Abridged Life Tables 1980-82, Department of Statistics, unpublished

Appendix V

LABOUR FORCE PROJECTIONS

The size of the usually resident labour force by age and sex is projected until 2016. The procedure is based on the latest Department of Statistics projections of the Total population by age, combined with assumptions about participation rate trends and the ratio of the Total to the usually resident population. The scenario used to project the Total population assumes medium fertility combined with net immigration in the short run and long-run net immigration of 5,000 persons.

These assumptions result in the standard projection for the Total population. The usually resident population by age and sex was obtained by applying 1981 age-sex specific usually resident/Total population ratios to the projected Total population by age and sex (see second column, Table Va). With respect to age-sex specific participation rate trends, two scenarios were considered.

The first scenario assumes a continuation of the trends in age-specific male participation until 2001, after which the rates remain constant. Female participation rate trends continue only until 1986, after which they too are assumed constant. This scenario produces a lower limit for the likely growth of the labour force and will be referred to as the low growth scenario.

The second scenario assumes male participation rates follow the trend until 1986, after which they do not change. Female participation rate trends continue until 2001. Note the trends considered are not linear, and some levelling off takes place for most age-groups as a response to the likely development of the demand for labour. For example, it is assumed the labour force participation of women aged 40-44 will not exceed 70 percent. The second scenario provides an upper limit for the likely growth of the work force.

Age-sex specific participation rate trends are tabulated in Table Va.

Table Vb shows the projected male and female labour force at five-yearly intervals until 2016.

The life-cycle labour force participation rates for Maoris and non-Maoris, shown in Figure 10, are tabulated in Table Vc.

Table Va: Male and Female, Actual and Projected Labour Force Participation Rates, 1976-2001

Male

Age	Ratio of Usual Resident to Total Pop	Actual 1976	1981	1986	Projected 1991	1996	2001
15-19	0.9958	56.2	56.6	55.8	55.1	54.4	53.7
20-24	0.9860	91.3	91.0	90.8	90.7	90.6	90.5
25-29	0.9831	97.6	96.6	96.1	95.6	95.1	94.6
30-34	0.9869	98.5	97.6	96.8	96.1	95.4	94.7
35-39	0.9887	98.6	97.6	96.8	96.1	95.4	94.7
40-44	0.9888	98.3	97.6	97.1	96.6	96.1	95.6
45-49	0.9883	97.7	96.9	96.4	95.9	95.4	94.9
50-54	0.9875	95.9	95.3	94.8	94.3	93.8	93.3
55-59	0.9847	90.7	88.9	87.4	85.9	84.4	82.9
60-64	0.9784	58.1	46.7	39.2	31.7	24.2	16.7
65+	0.9794	16.3	11.2	8.4	6.3	4.7	3.5

Female

Age	Ratio of Usual Resident to Total Pop	Actual 1976	1981	1986	Projected 1991	1996	2001
15-19	0.9959	51.1	49.5	47.9	46.3	44.7	43.1
20-24	0.9871	58.8	63.7	67.7	71.7	75.7	79.7
25-29	0.9882	36.0	42.3	47.3	51.3	54.3	56.3
30-34	0.9923	35.5	39.9	43.9	46.9	48.9	49.9
35-39	0.9932	44.4	49.2	52.0	54.8	57.6	60.4
40-44	0.9927	48.5	54.9	58.3	61.7	65.1	68.5
45-49	0.9893	46.6	53.0	56.4	58.1	59.8	61.5
50-54	0.9852	40.6	44.3	46.3	48.3	50.3	52.3
55-59	0.9783	29.0	31.6	33.6	35.6	36.6	37.6
60-64	0.9717	13.9	12.1	10.4	8.9	7.6	6.6
65+	0.9799	2.8	1.9	1.4	1.0	0.7	0.5

Table Vb: Male and Female, Actual and Projected Full-Time Labour Force, 1981-2016

	Males		Females	
	Low Scenario	High Scenario	Low Scenario	High Scenario
1981	876,615		455,736	
1986	947,100	947,100	525,600	525,600
1991	1,005,700	1,020,700	562,200	586,500
1996	1,050,900	1,080,800	587,900	636,400
2001	1,080,000	1,127,100	605,100	675,200
2006	1,111,300	1,162,500	620,400	690,300
2011	1,127,500	1,184,200	628,200	697,000
2016	1,132,400	1,192,200	624,600	692,400

Sources: Census of Population and Dwellings 1981, Department of Statistics
Projections of Total New Zealand Population 1983-2016 (Base: 31 March 1982), Department of Statistics

Table Vc: Age-Specific Maori and Non-Maori, Male and Female Labour Force Participation Rates, 1981

	NZ Maoris		Non-Maoris	
	Males	Females	Males	Females
Age	%	%	%	%
15-19	67.4	50.5	55.2	49.4
20-24	96.1	43.7	90.4	66.2
25-29	96.5	33.9	96.7	43.1
30-34	96.3	39.6	97.7	39.9
35-39	95.6	45.6	97.8	49.5
40-44	95.5	48.4	97.8	55.4
45-49	92.7	46.3	97.2	53.6
50-54	89.8	37.0	95.6	44.7
55-59	82.0	27.9	89.2	31.8
60-64	42.5	10.3	46.9	12.2
65-69	14.7	3.7	18.2	4.0
70-74	9.5	0.6	9.4	1.5
75+	4.7	0.1	3.8	0.5

Source: Census of Population and Dwellings 1981, Department of Statistics

Appendix VI

DEMOGRAPHIC STATISTICS FOR SELECTED COUNTRIES

Table VI: Demographic Statistics for Selected Countries (a)

	Population (m)	Population Density (per sq km)	Population Growth (b) %	Crude Birth Rate (c)	Crude Death Rate (d)	Infant Death Rate (e)	Life Expectancy Males (yrs)	Life Expectancy Females (yrs)	Population aged 0-14 %	Population aged 65+ %	Total Fertility Rate
New Zealand	3.2	12	0.2	16	8	12	70	77	26	10	1.9
Argentina	28.1	10	1.3	24	9	39	65	71	29	8	
Australia	14.9	2	1.2	16	7	10	71	78	26	9	1.9
Bangladesh	90.6	629	2.3	47	18	140	48	49	42	3	
Brazil	121.5	14	3.0	23	7	68	61	67	41	3	
Canada	24.2	2	1.0	16	7	10	70	77	23	9	1.9
China	1,007.8	105	1.3	21	7	49	62	66		5	3.3
East Germany	16.7	156	-0.1	14	14	12	69	75	20	16	1.8
Egypt	43.5	43	2.6	38	10	74	54	56	34	3	
France	54.0	99	0.4	15	10	10	70	78	22	14	
Greece	9.7	74	1.2	15	9	18	71	75	23	13	2.3
India	676.2	206	2.0	33	13	130	52	51	40	3	5.3
Indonesia	150.5	79	2.4	24	11	75	49	51	43	3	4.1
Ireland	3.4	49	1.3	9	11	70	75	31	11		
Italy	57.2	190	0.4	11	10	14	70	76	24	13	1.8
Japan	117.6	316	0.9	13	6	7	73	78	24	9	1.8
Malaysia	14.4	44	2.4	30	6	26	67	73	40	4	4.4
Netherlands	14.2	349	0.7	13	8	8	72	79	23	11	
Nigeria	79.7	86	3.3	50	18	141	46	49			
Norway	4.1	13	0.4	13	10	8	72	79	23	15	
Poland	35.9	115	0.9	19	9	21	67	75	24	10	
Romania	22.5	95	0.9	18	10	29	67	72	26	10	2.6
Singapore	2.4	4,205	1.2	17	5	11	68	72	28	5	1.9
South Africa	30.1	25	2.8	38	10	101	59	62			
Sweden	8.3	19	0.3	11	11	7	72	79	20	16	1.7
Switzerland	6.5	157	-0.1	12	9	9	70	76	20	14	
U.K.	55.8	229	0.0	13	12	12	70	76	21	16	1.9
U.S.A.	229.8	25	0.7	16	9	12	70	77	15	11	1.8
U.S.S.R.	267.7	12	0.9	19	10	28	64	74		10	2.4
West Germany	61.7	248	-0.1	10	12	13	69	76	19	16	1.4

(a) In general statistics are for 1981
(b) 1975-1980 average
(c) Annual number of births per 1,000 population
(d) Annual number of deaths per 1,000 population
(e) Deaths of infants under 1 year per thousand births in the same year

Sources: U.N. Demographic Yearbook 1980
U.N. Population and Vital Statistics Report, Volume 35, Number 1, 1983

GLOSSARY

Cohort

A group of individuals which experiences the same demographic event during a specified brief period and which may be identified as a group at successive later dates on the basis of that common demographic experience, e.g. birth cohorts, marriage cohorts.

Cohort Analysis

Cohort analysis focuses on the size and composition of particular population cohorts and follows them through their life-cycle, just as individuals can be followed through career paths or their family life-cycle.

Completed Fertility Rate

The average number of children born alive to a birth cohort of women who have completed their reproductive span.

Crude Birth Rate

The number of births per 1,000 population.

Crude Death Rate

The number of deaths per 1,000 population.

Decrement Table

A table describing the demographic experience of a particular population by the use of mathematical functions. The traditional life-table is a single decrement table. A working life-table which describes the patterns of entry and exit from the labour force is a multi-decrement table. See Life Table.

Dependency Burden

"Demographic dependency" is described by the relationship between the active (labour force ages) and non-active components of the population. Defined as the ratio of inactive (persons 0-14 years and 65+ years) to active (15-64 years). When age-group 0-14 years is taken as the dependent population, the term "youth dependency" is employed; when 65+ is taken, the term "old age dependency" is used.

The concept of "economic dependency" is somewhat different. It is a measure of the extent to which those not contributing to production exert demands on the economically active population. It is variously measured but typically makes allowance in the dependency ratio for the proportion of those of labour force age who are not labour force participants.

Fecundity

The capacity to participate in reproduction. The antonym of fecundity is sterility.

Fertility

Actual reproductive performance of an individual or group. See Completed Fertility Rate and Total Fertility Rate.

Inter-Ethnic Migration

The process by which one ethnic group gains members from another.

Life Table	Traditionally, a life-table described the course of mortality throughout life by means of mathematically related functions. Today life-table methodology is used for a wide variety of purposes, including the study of nuptiality and fertility, but the basic principles remain the same. See Decrement Table.
Mediatric	The ages 15-59, as opposed to pediatric and geriatric ages.
Neonatal	Occurring in, or relating to, the period from birth until the age of about one month.
Net Migration	The balance of arrivals over departures.
Participation Rate (Labour Force)	The percentage of the labour force or of a particular cohort in, or seeking, full-time employment.
Perinatal	Of, or occurring in, the period immediately before or after birth.
Population Peristalsis	A term used to describe the demograhic phenomenon when large and small birth cohorts successively follow one another, thus over time first distending, then shrinking particular age groups.
Post-neonatal	Occurring in, or relating to, the period from about one month after birth until the age of 12 months.
Replacement	The way in which a population's adult generation is replaced by the subsequent one. Gross replacement takes no account of mortality before the end of the reproductive period. In net replacement this mortality is taken into account. The replacement level of fertility is that at which a population closed to migration will just replace itself. "Sub-replacement" is used to describe a situation in which this rate is not achieved. Prolonged sub-replacement will result in negative natural increase of the population.
Survivorship	A general concept relating to survival probabilities and rates. The hypothetical survivorship function of a life-table shows the number of people in a cohort of births who survive to exact age x. When surviving actual populations, a central rate is used which measures the probability of a population in a given age-group surviving for a specified period. See Appendix IV.
Total Fertility Rate	The number of children that would be born to a woman were she to follow the pattern of fertility operating in one calendar year for her entire reproductive span.
Urban Population	A population of 1,000 or more people.

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